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ABSTRACTS

EAORL Abstract Supplement: 4th EHNS Athens 4–6 March 2010

Welcome to 4th EHNS 2010

Dear colleagues,

It is a great honor, a privilege and a pleasure to welcome you in the 4th European Conference on Head and Neck Oncology in Athens, Greece on 4–6 March 2010.

The European Head and Neck Society (EHNS) founded in 2006, despite its relatively short existence, has already been established as a true multidisciplinary platform for head and neck oncology. It is the intend of the Society to act within the European Union, and not only, as a multidisciplinary body bringing together clinicians, scientists and other health professionals involved in the fight against head and neck cancer.

After its first three European conferences, the two first held in Lille, France, and the third in Zagreb, Croatia, the Society decided to hold its meetings every 2 years in an effort to accumulate and report the European scientific achievements in clinical and basic research.

It is our intend to make the 4th European Conference an event of high scientific merit and a friendly gathering of old friendships and new acquaintances.

During the 4th European Conference, care will be taken for the individual head and neck groups from all over Europe to find a hospitable territory to present their individual efforts and liaise between them. It is the scope of the Society to encourage and promote surgeons, radiotherapists and medical oncologists to incorporate basic science into every day clinical practice. We have no doubt that translational research is the cornerstone of modern clinical oncologic head and neck practice.

Greece as the host country, and its capital Athens, represents with its history and cultural heritage the perfect location for this endeavor.

We are sure that the 4th European Conference on Head and Neck Oncology with your participation will be a memorable scientific event.

Welcome in Athens,

Kindest regards

Professor Jean Louis Lefebvre MD, PhD
Chairman of the EHNS Founding Board

Professor Alexander D. Rapidis MD, DDS, PhD
Local Chairman on 4th European Conference on Head and Neck Oncology

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Lisa Licitra, Italy	Amanta Psyrri
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Jean Bourhis, MD, PhD

Prof. Jean Bourhis graduated in Paris as a Medical Doctor (MD) and was board certified in Radiation Oncology in 1990. He became Professor of Radiation Oncology at the University of Paris in 1999 and since 2002, he is the Head of the Radiation Oncology Department at the Institute Gustave Roussy (Villejuif, France). His clinical activity is focused on Head and Neck Oncology and he has been principal investigator of a number of clinical trials in this field, including several multicentric randomized trials. He coordinated several large-scale international collaborative meta-analyses, whose contributions have been recognized worldwide. He is also co-founder and co-chair of the GORTEC group, dedicated to conducting clinical trials in head and neck cancers. Beside his clinical activities, he has a major interest in Laboratory and Translational Research. He spent a year at the Gray Laboratory in London and obtained a PhD in Molecular Oncology in 1992 at the University of Paris. He is currently the Director of a laboratory dedicated to Experimental and Translational Research in Radiation Oncology. Professor Jean Bourhis is also scientific director of the research and development project ARCHADE in Caen on Hadrontherapy (development of a cyclotron for proton and carbon ions acceleration).

Recently, Professor Jean Bourhis has been elected as the next President of the European Society for Therapeutic Radiology Oncology (ESTRO).

Patrick J. Bradley, MB, BCh, BAO, DCH, FRCSIr, FRCSEd, FRCSEng, FHKCORL, FACS, FRCSLT (Hon), FRACS (Hon), MBA (Health)

Patrick J. Bradley, Irish by birth, graduated from University College Dublin, and initially pursued a career in general surgery and gained FRCS in Ireland. He then went to Liverpool, and completed his Otorhinolaryngology-Head and Neck Surgery training, under the guidance of Professor Philip Stell, and obtained the FRCS Ed. He was appointed as Head and Neck Surgeon in 1982 at the University Hospital Nottingham, and set up a cancer service with the help of his ORL-HNS colleagues, and radiotherapist, Dr. David Morgan, as well as many of his nursing, dietetic and speech and language therapists. Initially they set-up a post-graduate instructional course, successfully run for several years, which was the successor to the annual Stell and Maran Head and Neck Foundation Course.

He is invited to faculty membership of "all" head and neck teaching courses, clinical and anatomical, that are held in the UK annually. He has published widely, with more than 120 peer-reviewed articles, on diverse topics as diagnosis and management of head and neck cancer, hospital management and evidence-based otolaryngology. He is a member of numerous National Journal Editorial Boards; *Journal of Laryngology and Otology*, *CME Otolaryngology*, *Oral Oncology* as well as International Journals: *Laryngoscope*, *Head and Neck*, and *Acta Otolaryngologica*. He has been involved for many years in ENT News and is currently Chairman of the Editorial Board. He is also a member of the board of ENT Espanola.

He has been invited as visiting Professor to many parts of the world; USA, Germany, Spain, Italy, Syria, Pakistan, India, and Australia and was the Gene Myers International Head and Neck Lecturer at the American Academy ORL-HNS in 2000. He has been involved in the British Association of Otolaryngologists, Head and Neck Surgeons (BAOHNS) and was Chairman of the Education and Training Committee. He recently completed MBA (Health) at Nottingham University through an NHS Bursary over a 5-year period (part-time). He is a member of the RCS London, Cancer Committee representing BAOHNS, and is Chairman of the BAOHNS Cancer Committee. He is currently President of the British Association of Head and Neck Oncologists (2003–2005) and President of the European Laryngological Society (2004–2006). He has recently been appointed to the Executive Committee of the recently formed European Academy of Otorhinolaryngology Head and Neck Surgery. He is also a member of the Board of the European Head and Neck Society.

He is National Lead Clinician-Head and Neck Cancer for the English National Health Service (2003–2006), which is involved in implementing "good practice" and striving to improve quality care for the cancer patient.

He is married to Sheena, a Consultant Radiologist and has five children, one of whom is studying medicine. He enjoys skiing, travelling, golf and scuba and attends as faculty member on an annual basis, the International Sisson Head and Neck Cancer, The Vanderbilt Course at Vail, CO, USA and the High Altitude and Masters of Otolaryngology, the Pittsburgh Course.

James S. Brown, MD, FRCS, FDSRCS, MRCS, LRCP, BDS

Mr. Brown has been a member of the Head and Neck team at the University Hospital Aintree since 1992. He trained in Sunderland and the West Midlands before being appointed to his present post. He is the Lead Cancer Clinician and also chairs the Multidisciplinary Team Meetings (Tumour Board). He is the co-editor of the *International Journal of Oral and Maxillofacial Surgery* and of the Editorial Board of Head and Neck.

He is part of the adult skull-base team in Liverpool and has considerable experience in mid-face reconstruction. His main interest is in the use of the vascularised iliac crest with internal oblique for maxillary and mid-face reconstruction. He has developed a classification of the maxillectomy defect. Other interests include methods of oropharyngeal reconstruction and, in particular, the soft palate. He has suggested the use of a superiorly based pharyngeal flap to support the radial forearm flap in soft palate reconstruction. One of his important contributions has been the instigation of the Head and Neck database in Liverpool, which has resulted in high quality outcome research.

Mr. Brown has concentrated pathological research into the patterns and routes of tumour invasion of the mandible. Recent work has involved the development of a guide to mandibular resection based on the clinical and imaging assessment of tumour invasion. He has been awarded a Hunterian Professorship from the Royal College of Surgeons for 2004–2005 on this subject which was also the topic for his MD thesis awarded from the University of Birmingham 1995. This research has helped to direct the clinician in the management of the mandible in the treatment of oral cancer. His latest interest is in the development of a multi-centre trial into the efficacy of post-operative radiotherapy in Head and Neck Cancer. Over the last 5 years (2000–2004), he has published 8 papers as first author out of a total of 24.

Prof. Dr. Med. Volker Budach, MD, PhD

Professor Budach is the Head of the Department for Radiation Oncology, Campus-Mitte and Campus-Virchow, Charité University Medicine Berlin, Germany. After qualifying in medicine in Heidelberg and Kiel, he was trained in Radiation Oncology in the Departments of Diagnostic Radiology and Radiation Oncology, West German Tumour Centre, University of Essen, Essen, Germany and obtained his PhD in 1990. In 1993, he was appointed Full Professor and Chairman of the Department for Radiation Oncology, Campus-Mitte, Charité University Medicine Berlin, Berlin.

Professor Budach is an executive member of EORTC and has been a board member of the ESTRO and DEGRO. He is a Founding member of the Interdisciplinary Head and Neck Group of the German Cancer Society (DKG) and since 2009 Chairman of the Tumour Centre Berlin. He is currently the President of the German Society for Radiation Oncology (DEGRO).

Professor Budach is a member in numerous scientific societies including: The American Society for Radiation Oncology (ASTRO), the American Society for Clinical Oncology (ASCO), and the German Cancer Society (DKG). He is the Principal Investigator of 2 German Multicenter Studies (ARO 95-06 and ARO 04-01) for chemoradiation of locally advanced head and neck cancer; principal radiooncologic investigator of an EORTC Multicentre Study (22011-40014) on radiotherapy and adjuvant and concurrent Gemcitabine after pancreaticoduodenectomy for pancreatic head cancer; principal investigator of 2 large German multicentre trials on neoadjuvant radiochemotherapy of rectal cancer and intraoperative radiotherapy for breast cancer. His interests include basic and clinical research in head and neck cancer, gastrointestinal cancer, soft tissue sarcomas and modern treatment technologies (IMRT).

Professor Budach is the recipient of several grants from the German Research Council (DFG) and the Federal Ministry of Research and Technology (BMFT) since 1988. He was the recipient of the Röntgen Prize for radiobiological studies on xenograft soft tissue sarcoma in 1988. He has published more than 200 papers in peer-reviewed journals, and contributed with more than 40 textbook chapters and review articles. He is a member in the Editorial Boards of *International Journal of Radiation Oncology*, *Biology and Physics*, *Radiotherapy and Oncology*, *Strahlentherapie and Onkologie*, *TumorDiagnostik and Therapie*, *Der Onkologe*, and "*Deutsches Ärzteblatt*"

Jan Klozar, MD

Jan Klozar graduated from the 1st Medical Faculty, Charles University, Prague, Czech Republic. Passed Diplome en Cancerologie Cervico-Faciale at the University Paris Sud, France. In 1984–1985 and 1992–1993 spent 7 and 12 month at Institut Gustave Roussy in Villejuif, France. Shorter stays at ENT Head and Neck Surgery Departments in Freiburg, Marburg, Erfurt, Greifswald, Bern, Geneva, Marseille, Centre Oscar Lambret in Lille, Mount Sinai Hospital and Memorial Sloan Kettering Cancer Center in New York. Associated professor and vice head at the Department of Otolaryngology Head and Neck Surgery, 1st Medical Faculty, Charles University Prague since 1997. President of the Oncologic Section of the Czech Society of Otolaryngology Head and Neck Surgery since 1995.

Lisa Licitra, MD

Dr. Lisa Licitra is Board certified in medical oncology, with a special expertise in the treatment of head and neck cancer. She is presently Assistant Physician, Chief of the Head and Neck Cancer Medical Oncology Unit at Fondazione IRCCS "Istituto Nazionale dei Tumori", Milan, Italy.

Current scientific and editorial activities:

- Free-contract professor at State University of Milan.
- Elected as a Chair of Head and Neck Cancer Cooperative Group of European Organization for the Research and Treatment of Cancer (EORTC).
- Co-founder and member of Italian Group for the Evaluation of Outcomes in Oncology (IGEO).
- Member of The Educational Committee of European Society for Medical Oncology (ESMO).
- Co-founder and member, as medical oncologist, for the European Head and Neck Cancer Society.
- Member of the Clinical Editorial Board of the *Journal of Clinical Oncology*.
- Editor of state-of-the-art (START) oncology in Europe (http://www.startoncology.net) a project of Alleanza Contro il Cancro, Ministry of Health, Italy.
- Reviewer of the PDQ Summaries on head and neck cancers.

Memberships:

- American Society for Clinical Oncology (ASCO).
- European Society for Medical Oncology (ESMO).
- Italian Association for Medical Oncology (AIOM).
- European Society for Therapeutic Radiology and Oncology (ESTRO), Honorary Member.

Main fields of interest are head and neck neoplasms, evidence-based medicine, clinical methodology in oncology and quality of life.

Over the years she has written 5 book chapters and over 50 scientific articles.

Dr. Christopher M. Nutting, BSc, MRCP, FRCR, MD, ECMO

Dr Nutting is Consultant and Honorary Senior Lecturer in Clinical Oncology at the Royal Marsden and Royal Brompton Hospitals. He had specialized in the management of head and neck, thoracic and pelvic malignancy and has a specialist interest in the application of high-technology radiotherapy techniques and chemoradiation for a number of tumour types. He is an International expert in Intensity Modulated Radiotherapy (IMRT), and other conformal radiation techniques. He also has an interest in chemoradiation techniques applied to head and neck and lung cancer.

He was trained in Oncology at the Royal Marsden Hospital and St Bartholomews Hospital, and was awarded his Medical Doctorate from The Institute of Cancer Research (University of London). He gained specialist clinical training in New York, University of Michigan, and a number of European Centres. He is a regular contributor to National and International clinical meetings and has published over 100 articles in his field of expertise.

Prof. Dr. Miquel Quer

Chairman of the Department of Otorhinolaryngoly and Head and Neck Surgery University Hospital de la Santa Creu i Sant Pau (Barcelona, Spain) and Full Professor of the Universitat Autonoma de Barcelona. Past-President of the European Laryngological Society. Member of the Catalan Oncologic Committee and the Spanish National Comision of Otorhinolaringology. Chief-Editor of Otorrinolaringológica Española (2001–2006) and member of Editorial Board of European Archives of Otorhinolaryngology.

Prof. Stina Syrjänen, DDS, PhD

Stina Syrjänen was graduated in dentistry at the University of Helsinki, Finland 1975, finished her PhD thesis on salivary glands in rheumatoid arthritis in 1982, become a Board-Certified Specialist in Clinical Dentistry (Oral Radiology) in 1985 and Board-Certified Specialist in Clinical Dentistry (Oral Pathology) in 1988 at the University of Kuopio. She served as an acting director of A. I. Virtanen Institute (Institute of Applied Biotechnology) at the University of Kuopio 1991–1992. Since 1993, Stina Syrjänen has been Professor of Oral Pathology and Head of the Department of Oral Pathology and Oral Radiology at the Institute of Dentistry, Faculty of Medicine, University of Turku. She served as a Director of the Institute of Dentistry in 1996–1999. Professor Syrjänen was also the Chairman of the Turku Immunology Center during the years 2003–2005. She is also the Director of Finnish National Graduate School of Oral Sciences funded by the Academy of Finland.

She has published over 380 original papers, 80 international reviews and has co-authored 6 textbooks on human papillomavirus. Her research group was the first to suggest the association of HPV with oral cancer and laryngeal cancer, in 1982. She has delivered more than 140 invited lectures in international congresses worldwide.

Irma Verdonck-de Leeuw, PhD

Irma Verdonck-de Leeuw (PhD) graduated as a psychologist, speech pathologist, and phonetic scientist. She is a senior researcher in the Department of Otolaryngology-Head and Neck Surgery of VU University Medical Center, Amsterdam, The Netherlands, and leader of the Research Programme "Quality of life in head and neck cancer".

This research programme comprises three main topics: patients reported outcome, psycho-oncology, and allied health services. The main aim is to generate knowledge on quality of life issues and psycho-oncology in head and neck cancer patients and their relatives and cost-efficacy of cancer care and rehabilitation. We use cohort studies and randomised controlled trials in our studies. Voice, speech, and swallowing (patient reported) outcome measures were developed and validated. OncoQuest, a touch screen computer system was developed enabling systematic routine screening of patient reported outcome and is implemented in clinical practice. Currently, research is focussing on cost-effectiveness of allied health services, e-health, and stepped care programmes. Furthermore, research is focussing on the impact of head and neck cancer on quality of life in relation to a broad perspective of possible moderators and mediators such as sociodemography, comorbidity, coping style, lifestyle, and tumour and treatment related aspects.

Irma Verdonck-de Leeuw has published about 75 peer reviewed papers, chapters, reports and professional publications on quality of life, psycho-oncology, and voice, speech, and swallowing function in head and neck cancer patients. She is a member of the Committee "Screening" of the Dutch Association of Psycho-Oncology, member of the American Psychosocial Oncology Society and the International Psychosocial Oncology Society, member of the EORTC Quality of Life Group, Dutch Committee Member of the European COST 2103 project, and board member of the International Association of Logopedics and Phoniatrics.

Jan B. Vermorken, MD, PhD

Jan B Vermorken is Professor of Oncology and Head of the Department of Medical Oncology at the University Hospital Antwerp, Antwerp, Belgium. Professor Vermorken graduated from the University of Amsterdam, The Netherlands in 1970 and became a board-certified Specialist in Internal Medicine in 1975 following his training at the University Hospital, Vrije Universiteit, Amsterdam. He has worked in the field of Medical Oncology in the Departments of Internal Medicine and Medical Oncology at the University Hospital, Vrije Universiteit, Amsterdam, where he received his PhD in Medical Sciences in 1986. Professor Vermorken was officially registered as a Medical Oncologist in the Netherlands in 1992.

Professor Vermorken's main fields of interest are gynecologic oncology and head and neck oncology. His areas of research include early clinical and pharmacologic studies with new drugs, studies on the interaction of chemotherapy and radiation therapy and studies on HPV in various malignancies. In addition, Professor Vermorken has coordinated large trials in breast and colon cancer and devotes a significant amount of his time for teaching, professional training, and medical education.

Professor Vermorken is a prominent member of the European Society of Medical Oncology (ESMO) (having chaired the ESMO National Representatives Committee from 1991 to 1996, and the ESMO Educational Committee from 1996 to 2002), and is member of the European Society of Gynaecology (ESGO) (serving as a council member from 1989 to 2000). Professor Vermorken has been a member of the European Organisation for Research and Treatment of Cancer (EORTC) Gynaecological Cancer Group since 1980, serving as its Chairman from 1983 to 1989, chairing its Chemotherapy Committee from 2000 to 2002, and participating as a member of its Executive Committee from 1998 to 2002. Since April 2006, he has been Chairman of the EORTC Head and Neck Cancer Group, having served as its Secretary from 1995 to 2006, in addition to serving as Chairman of its Subcommittee for Chemotherapy from 1985 to 1991. He is also a member of a number of international organizations, including the International Gynecologic Cancer Society (serving as a council member from 1989 to 1993) and the International Association of Oral Oncology (serving as a council member since 2005). He is a founding member of the Gynecologic Cancer Intergroup (which he chaired from 1997 to 2002).

At a more local level, he was a member of the scientific board of the Dutch Cancer Society from 1988 to 1993; he was Chairman of the Dutch Society of Oncology from 1989 to 1997; and was appointed Chairman of the Belgian Association of Cancer Research in 2003.

Professor Vermorken serves as a reviewer or member of the Editorial Board of numerous international journals and has authored or co-authored more than 400 international publications. In 2007, he received the ESMO award for contributions to the development of medical oncology. As of 1 January 2009, he is Editor-in-Chief of *Annals of Oncology*, the official journal of the European Society for Medical Oncology and the Japanese Society of Medical Oncology.

OP01

Impact of HPV infection on clinical outcome of p-CAIR trial in head and neck cancer

M. Miroslaw Snietura[2], Wojciech Piglowski[2], Magdalena Jaworska[2], Aleksandra Goraj- Zajac[2], Grzegorz Wozniak[1], Dariusz Lange[2], **Rafal Suwinski**[1]
[1]Department of Radiation Oncology, Center of Oncology, Maria Sklodowska-Curie Memorial Cancer Center and Institute of Oncology, Gliwice Branch, Poland, [2]Department of Pathology, Center of Oncology, Maria Sklodowska-Curie Memorial Cancer Center and Institute of Oncology, Gliwice Branch, Poland

Introduction/purpose: To analyze an influence of HPV infection on the outcome of a randomized clinical trial of conventional (CF) versus 7-days-a-week postoperative radiotherapy (p-CAIR) for squamous cell cancer of the head and neck.
Materials and methods: Between 2001 and 2004, 279 patients with high-risk squamous cell cancer of the larynx or cancer of the oral cavity/oropharynx were enrolled. They were randomized to receive 63 Gy in fractions of 1.8 Gy given 5-days-a-week or 7-days-a-week (Suwinski et al. in Radiother Oncol 87:155–163, 2008). Presence of HPV DNA in archival paraffin blocks was assessed with multiplex RealTime PCR using five consensus primers for conservative L1 region and molecular beacon probes targeting 14 high risk HPV subtypes. Following the RT-PCR procedure, we could determine the presence and type of HPV16, HPV18 and other 12 less frequent oncogenic subtypes. Thus far we obtained the data on HPV status from 63 patients.
Results: Out of 63 samples 9 were HPV positive, 54 were negative. All 9 HPV positive patients had cancer of the oral cavity/oropharynx. Five-year LRC in HPV postive patients was 100%, compared to 55% in HPV negative group ($p = 0.019$, log-rank test). Among HPV negative patients, 5-year LRC was 65% in p-CAIR versus 44% in CF.
Conclusion: These preliminary results support the studies that demonstrate the favourable outcome of HPV-positive patients with squamous cell cancer of the head and neck. To better address the predictive value of HPV for accelerated postoperative radiotherapy, we currently analyze the HPV status in the remaining samples available from the trial.

OP02

A retrospective review of patients treated for tonsillar carcinoma at a single centre

Robert I. Smee, Kathryn Broadley
Department of Radiation Oncology, The Prince of Wales Cancer Centre, High St, Randwick, New South Wales, Australia

Purpose: To evaluate retrospectively a population of patients treated for tonsillar carcinoma in a single centre.
Materials and methods: The Oropharyngeal Cancer database at the Prince of Wales Hospital was audited for all patients presenting: with a diagnosis of squamous cell carcinoma origin in tonsil or tonsillar pillar and having all definitive treatment at POW Hospital. Patient, disease and treatment characteristics were extracted with follow-up information obtained from the database, hospital notes, referring doctors or Cancer Registry. Endpoints evaluated were: 'ultimate local control, regional control and cancer-specific survival'. A sub-group had HPV evaluation on the paraffin-embedded biopsy/operative specimen.
Results: In this Ethics approved study there were 179 patients with minimum 2-year follow-up. 128 (72%) males and 51 (29%) females. Only 14 (8%) were never smokers. 30 patients had a prior malignancy diagnosis. The cancer was operable in 161 (90%) and 164 patients (92%) were fit enough for a surgical procedure. Staging was 17 (10%) Stage I, 35 (20%) II, 57 (32%) III, and 70 (39%) Stage IV. Treatment was surgery in 16, Radiotherapy 102, and surgery plus radiotherapy in 57. Ultimate local control was achieved in 140 (78%); however, 46 patients (26%) developed a new primary. The outcome for the 83 patients with HPV evaluations of the primary specimens will be presented separately.
Conclusion: Despite 71% of patients presenting with Stage III/IV disease, local control was achieved in 78% and cancer-specific survival rate was 69.8%. However, a high proportion of patients had a prior or subsequently developed another malignancy.

OP03

The role of P16 as surrogate marker of HPV in oral squamous cell carcinomas (OSCCs). Analysis by tissue micro-array (TMA), immunohistochemistry (IHC) and methylation-specific pcr (MSP)

Giuseppe Pannone[1], Angela Santoro[1], Pantaleo Bufo[1], Silvana Papagerakis[2], Lorenzo Lo Muzio[3]
[1]Department of Surgical Sciences, Section of Anatomic Pathology and Cytopathology, University of Foggia, Foggia, Italy, [2]Department of Otolaryngology, Head and Neck Surgery and Oncology, Medical School, University of Michigan Ann Arbor, Ann Arbor, MI, USA, [3]Department of Surgical Sciences, Section of Oral Pathology, University of Foggia, Foggia, Italy

Introduction: Recent studies have shown a distinct subgroup of oral cancer, characterized by typical histopathological findings: HPV positivity, favourable response to concurrent chemo-radiation protocol and an overall better outcome, compared to HPV negative cancers. Several authors have also emphasized that a hallmark of the presence of HPV in cancer could be found in p16 overexpression.
Purpose: To establish the sensitivity, specificity and accuracy of p16 detection in OSCCs, with different prevalence of HPV.
Materials and methods: 126 OSCC were analysed by TMA. 37 representative OSCCs were studied by both molecular methods for HPV (PCR and/or in situ hybridization) and IHC for p16. Cut-off point for p16 positivity was set at 50% of immunostained neoplastic cells. Further investigations were carried out in order to quantify epigenetic alterations of CDKN2a locus in OSCCs. P16 expression was also associated to the common risk factors (tobacco/alcohol abuse).
Results: The overall prevalence of HPV infection was 10.5% in OSCC (7.5% HR-HPV). By TMA and IHC we have observed 36.5% of p16 positive tumors. All HPV positive OSCCs showed high and diffuse level of p16 immunostaining. Therefore, no false negative cases (p16 negative; HPV positive) were found, with a sensitivity of 100%; on the other hand, our results confirm that a false positive subgroup (26%) of OSCC was p16 positive but HPV negative with a specificity of 74%. The accuracy of p16 detection was 90.5%.

Finally, MSP showed that the methylation of CDKN2a is an important epigenetic alteration in oral cancer and revealed that p16 was inactivated in 75% of OSCCs. The relative methylation frequencies, with their confidence intervals (CI) at 95%, in OSCC cases and in the matched controls were studied by Fisher exact test, revealing statistically significant results ($p < 0.05$).
Conclusion: When performing the molecular detection of HPV DNA, it is essential that the diagnostic procedures employed are highly sensitive, specific and reliable. Because of the limited availability of antibodies against specific types of HPV or the low applicability in clinical routine and because HPV positive OSCCs are characterized by CDKN2a overexpression, p16 was considered a surrogate marker of HPV infection. It is well known that p16 is the most imbalanced tumor suppressor in oral carcinogenesis (deletion, promoter methylation, allelic imbalance and loss of heterozygosity). Two subgroups of OSCCs may be identified. The big one (89.5%) showed negative or low level of p16 expression, corresponding to HPV negative cases and with epigenetic or genetic suppression of gene expression. The second group (10.5%) is characterized by p16 overexpression (>50%) and HPV infection.
This study also demonstrated that an epigenetic mechanism was associated to tobacco/alcohol consumption. Finally, our results confirm high level of sensitivity, specificity and accuracy of p16 protein expression, as surrogate marker of HPV infection.

OP04
The prevalence of high-risk HPV in head and neck cancer patients from Eastern Austria

Dietmar Thurnher[1], Markus Brunner[1], Gregor Heiduschka[1], Gabriela Kornek[2], Barbara Bachtiary[3], Christian Schopper[4], Martin Burian[1]
[1]*Department of Otolaryngology-Head and Neck Surgery,* [2]*Department Internal Medicine I, Division of Oncolgoy,* [3]*Department of Radiotherapy,* [4]*Department of Maxillofacial Surgery Medical University of Vienna, Vienna, Austria*

Introduction: The association between human papilloma virus (HPV) infection and cervical cancer is long established. Recently it could be shown that the "high risk" HPV serotypes 16 and 18 are involved in the development of a subset of head and neck cancers.
Purpose: The aim of this study was to determine the prevalence of "high-risk" HPV in patients with squamous cell carcinoma of the head and neck from Easter Austria.
Materials/patients: In the last 12 months we screened 73 consecutive patients with newly diagnosed head and neck cancer for HPV-status, using multiplex-PCR and in situ hybridization.
Results: 14 patients (21%) were positive for "high-risk" HPV: 1/26(4%) of oral cavity tumors, 11/30 (37%) of the tumors of the oropharynx and 2/7 (28%) laryngeal tumors, respectively, were HPV-positive. All tumors of the hypopharynx were HPV-negative. Furthermore, 16 of the 30 patients with oropharyngeal cancer were treated with primary radiochemotherapy. Of the eight HPV-negative patients, only one has complete remission, the other seven have residual disease or have died within months. Of the eight HPV-positive patients only one has residual disease, the other seven patients are tumor-free, so far.
Conclusions: (1) In contrast to recent publications from other continents we had almost no HPV-positive tumors of the oral cavity, a finding which might indicate that the prevalence of high risk HPV in subsites differs considerably in different regions of the world. (2) Even for such a short observation period, HPV-status demonstrated significant prognostic value. Therefore, HPV-screening has been added as SOP for our tumor board.

OP05
HPV type in association with the prognosis of tonsillar cancer

Dong Hwan Roh, Kwang Hyun Kim
Department of Otolaryngology-Head and Neck Surgery, Seoul National University College of Medicine, Seoul, Republic of Korea

Introduction: HPV is most frequently associated with tonsils in head and neck cancers. Recently, it is known that HPV 16 is related with better prognosis in oropharyngeal cancer. However, the prognostic significance and possible mechanisms of other types of HPV are not reported.
Purpose: To determine the prevalence and prognostic implications of HPV types by PCR-based DNA test with serologic test in tonsillar cancer.
Methods: A retrospective analysis was performed on 106 eligible patients with tonsillar cancer between 1998 and 2007. Fixed tissues from 68 patients were investigated for the PCR-based HPV DNA typing and ELISA performed for HPV16/18 L1 virus-like particles as an antigen. All patients had histologically proven carcinoma without evidence of distant metastases at presentation and were treated with curative intent. Treatment was categorized into three groups: (1) chemotherapy (followed by RT, CCRT, and surgery), (2) surgery (±postop RT), and (3) primary RT.
Results: Mean follow-up duration was 50 (6–127) months. HPV DNA was positive in 36 cases (53%) and negative in 32 cases (47%). HPV 16/18 L1 seropositivity was found in 27 cases (40%). HPV 16 type was found in 19 cases (53%) and HPV 18 was found in 18 cases (50%), in which 3 cases (8%) of HPV 16, 18 co-infection. HPV 39, 43,45, 53, 59, 68, 69, 84 were found in one or two cases, most of which were co-infected with HPV 16, 18.

The Kaplan–Meier 5-year overall survival rate (OS) for HPV-negative group, HPV 16, HPV 18 group were 77, 100, and 46, respectively ($p = 0.003$ by log-rank test). And 5-year disease-free survival rate (DFS) was 67, 89, and 46% ($p = 0.028$). 5-year OS for HPV L1 negative, weak positive, and positive group was 82, 42, and 100% ($p = 0.010$). 5-year DFS was 74, 42, and 80% ($p = 0.119$).

In overall and advanced stage, DFS were better in surgery (±postop RT) than other groups ($p = 0.004$).
Conclusions: HPV 18 was found to be associated with poor prognosis than even HPV negative group. And strong host immune response to viral antigen showed better results. Further studies targeting on HPV 18 and viral antigen should be done.

OP06
Prevalence of human papillomavirus and P53 mutation in oral tongue squamous cell carcinoma their association between cervical lymph node metastasis and tumor differentiation in Iranian patients: a multicenter study

Nassrin Yazdani[1], Jalal Mehdizadeh[1], Layla Vazifeh Mostaan[2], Zahra Ousati Ashtiani[3], Sayyed Mohammad Hasheminasab[3], Siamak Mehdizadeh Seraj[1]
[1]*Otorhinolaryngology Research Center, Tehran University of Medical Sciences, Tehran, Iran,* [2]*Department of Otorhinolaryngology, Mashhad University of Medical Sciences, Mashhad, Iran,* [3]*Department of Medical Genetics, University of Tehran Medical Sciences, Tehran, Iran*

Introduction: Head and neck squamous cell carcinoma (HNSCC) is the sixth most common cancer worldwide. The most common site of

oral-cancer development is the anterior two thirds or the oral tongue. Over the last few years it has become clear that human papilloma virus (HPV) is associated with subset of HNSCC and it has been recently suggested to be considered as a risk factor besides the tobacco and heavy alcohol consumption.
Purpose: The purpose of this study was to investigate the prevalence of HPV infection in patients with squamous cell carcinoma (SCC) of the tongue and subsequently its significance on cervical lymph node metastases, tumor differentiation.
Materials: Sections of formalin-fixed, paraffin-embedded tissue blocks from a 100 and 15 histologically confirmed tongue SCC patients, underwent primary surgical treatment from April 2001 through March 2008, were enrolled in this study. Patients' demographic and clinical characteristic data were collected.
Methods: Immunohistochemical (IHC) technique was used to study tissue P53 expression. Polymerase chain reaction (PCR) was performed using β-globin primers for confirmation of amplifiable DNA in the tissue extracts. β-Globin positive samples were analyzed by polymerase chain reaction for detection of HPV 16 and 18 infection.
Results: Frequency of HPV 16 and HPV 18 infection were 10.6 and 18%, respectively. P53 expression was found in 76.4% of patients. Young patients (age below 45 years) comprised 20.4% of all patients. There was no significant association between P53, HPV 16 or HPV 18 presence and higher stages of the tumor, tumor differentiation or presence of nodal metastasis.
Conclusion: Although association between HNSCC and HPV infection is being recognized and reported, our data implicate that HPV infection or P53 mutation may not play a significant role in oral tongue SCC pathogenesis, differentiation or metastasis.

OP07
Human papillomavirus infection and its relationship with tonsillar cancer

Eliška Rotnáglová[1,2], Ruth Tachezy[2], Martina Saláková[2], Eva Košlabová[1,2], Eva Veselá[3], Jana Šmahelová[2], Eva Hamšíková[2], Viera Ludvíková[2], **Jan Klozar**[1]
[1]*Department of Otorhinolaryngology, Head and Neck Surgery, First Faculty of Medicine, Charles University in Prague and University Hospital Motol, Prague, The Czech Republic,* [2]*Department of Experimental Virology, Institute of Haematology and Blood Transfusion, Prague, The Czech Republic,* [3]*Department of Pathology and Molecular Medicine, 2nd Faculty of Medicine, Charles University in Prague, The Czech Republic*

Introduction: The association of HR HPV with tonsillar cancers (TC) has been recently documented by several authors. Furthermore, patients with HPV-positive tumors were shown to have better prognosis. However, some studies suggest that not all HPV DNA positive tumors are etiologically linked with viral infection. Therefore, markers for a very specific selection of patients have to be evaluated.
Methods: A cohort of 109 patients with primary TC was screened for HPV DNA presence in the tumor tissue by means of PCR and hybridization method. Sera of patients were tested for the presence of HPV-specific antibodies and data regarding demographics, behavioral risk factors, and risk related to HPV exposure were collected. Forty-five specimens were analyzed for viral HPV 16 E6mRNA expression by means of RT-PCR and the level of p16 and p53 protein expression was assessed by immunohistochemistry. All these data were correlated with clinical outcome.
Results: The prevalence of HPV DNA in TC tissue was 64.2%. Patients with HPV positive tumors were less likely to be smokers. HPV positive tumors were more often metastatic and bigger. Except for two samples, all HPV 16 DNA positive samples also expressed HPV16 E6 viral mRNA. The p16 IH positivity correlated well with HPV presence. The disease-specific survival rate was significantly better in patients with HPV positive tumors.
Conclusions: Results of this study provide a strong evidence of the involvement of HPV infection in the etiology of TC and show that HPV positive TC form very probably a distinct tumor entity with distinct clinical behavioral.

OP08
Immunohistochemical subclassification of HPV-associated head and neck squamous cell carcinomas

Dana Holzinger[1,2], Gordana Halec[1,2], Michael Pawlita[2], **Franz X. Bosch**[1]
[1]*Molecular Biology Laboratory, Department of Otolaryngology, Heidelberg University, Heidelberg, Germany,* [2]*Division of Genome Modifications and Carcinogenesis, German Cancer Research Center (DKFZ), Heidelberg, Germany*

Introduction: A subset of head and neck squamous cell carcinomas (HNSCC) is causally linked with human papillomavirus (mostly HPV type 16). In a further subset, HPV DNA is present but the role of the virus is unclear.
Purpose: To subclassify and characterize HPV DNA-positive HNSCC by protein expression patterns relevant for cell cycle control, apoptosis and regulation of gene expression and differentiation, with emphasis placed on tumors with questionable HPV involvement.
Materials and methods: 310 formalin-fixed paraffin-embedded HNSCC with known HPV DNA status were analysed on tissue microarrays for expression of 19 different proteins representing several regulatory networks. Bioinformatics evaluation of the expression patterns employed Pearson Product Correlation tests and Kaplan Meier analysis.
Results: HNSCC containing HPV16 with E6/E7 oncogene expression were characterized by reduced or absent pRb, low p53 and Cyclin D1 and elevated $p16^{INK4a}$ expression. In accordance with their histology, cytokeratin 14 was often reduced. Of the transcriptional and epigenetic regulators analyzed, lymphoid-specific helicase (hells) and Dnmt3B but not Snail was correlated with HPV DNA and RNA status. No such patterns could be detected in tumors lacking E6/E7 expression.
pRb, p53, $p16^{INK4a}$ and Cyclin D1 correlated with survival in Kaplan Meier analysis, but did not reach the significance level of the HPV RNA status.
Conclusion: Truly HPV16-driven tumors show specific and characteristic protein expression patterns. HNSCC with questionable HPV involvement (HPV16 DNA-positive but RNA-negative) were clearly distinct from the HPV-driven group in protein expression pattern as well as in their clinical behavior.

OP09
Human papilloma virus in precancer and cancer of larynx

PierGiorgio Giacomini[1], Simona Ferraro[1], **Francesco Passali**[1], Mario Ciotti[2], Augusto Orlandi[3], Fabrizio Ottaviani[1]

[1]ENT Department, "Tor Vergata University", Rome, Italy, [2]Virology Unit, "Tor Vergata University", Rome, Italy, [3]Anatomy Pathology Department, "Tor Vergata University", Rome, Italy

Background: Human papilloma virus (HPV) seems to be an etiological agent in laryngeal carcinogenesis: prevalence of viral infection in different laryngeal pathologies may be of interest. The aim of the present study was to investigate the presence/absence of different types of HPV in various neoplastic laryngeal tissues and its relationship with the clinical profile of patients studied.
Methods: Forty-one cases were randomly selected from patients undergoing surgical treatment of the larynx for neoplastic lesions. Patients were divided into two groups: chronic dysplastic laryngitis and laryngeal carcinoma. We also selected 21 patients undergoing surgical treatment of the larynx for inflammatory as control group.
Results: In benign laryngeal chronic inflammations, HPV prevalence was 11% (similar to the normal population), pre-cancer lesions rose to 75%, and cancer cases were 75%. Type 6 was always predominant.
Conclusion: The presence/absence of HPV and its relationship with the clinical profile of patients studied has shown that in the larynx, heavy smoking increases the probability of HPV prevalence. In addition, pre-cancer and cancer lesions show a higher rate of infection vis-à-vis polyp/cyst, and HPV type 6 seems to be prevalent in all groups.
Pre-neoplastic conditions versus control cases seem to show a wider variety of HPV types while cancer patients are invariably affected by types 6, x and 66.

OP10
HPV-DNA prevalence and HPV type distribution in squamous cell carcinomas (SCC) of the oral cavity and oropharynx

Enrico M. Silini[2], Mariano Lombardi[2], Luigi Corcione[2], Nicoletta Campanini[2], Tiziana D'Adda[2], Silvia Pizzi[2], Barbara Dal Bello[3], Tito Poli[1], Alfredo Balestreri[1], Davide Lanfranco[1], Enrico Sesenna[1]

[1]Maxillofacial Surgery Section, Head and Neck Department, University Hospital of Parma, Parma, Italy, [2]Dipartimento di Patologia e Medicina di Laboratorio, Azienda Ospedaliero-Universitaria di Parma, Parma, Italy, [3]Unità Operativa di Anatomia Patologica, Fondazione IRRCS Policlinico San Matteo, Pavia, Italy

Introduction: Variable prevalences of human Papillomavirus (HPV) DNA have been reported in H&N SCCs. Available data for SCCs of the oral cavity proper are limited, in particular, for SCCs of the tongue whose incidence is increasing among young subjects.
Materials and methods: We analyzed a retrospective series of 203 naïve SCCs (133 males, mean age 66 years) of the oropharynx (36) and the oral cavity (167) consecutively observed in a single tertiary Hospital. HPV typing was performed by the INNO-LiPA HPV genotyping assay on DNA extracted from pathological archival specimens. Expression of p16-ink4a, p53 and EGFR was detected by immunostaining. p16 promoter methylation was assessed by Msp1 methylation assay.
Results: Overall HPV-DNA prevalence was 69.4 and 59.7% for HR-HPV types. The most common genotypes were HPV31, 33, 52, 35, 6, 16 and 39; 38% of infections were multiple. Immunoreactivity was observed in 23% of cases for p16, 70% p53 and 57% EGFR; p16 promoter was methylated in 56% of cases. HPV status did not correlate with demographical variables, grade, stage, site, immunostains or p16 methylation. HR-HPVs were more frequent among men in the oropharynx ($p< 0.001$). LR-HPVs were more frequent among women (<0.005), >40 years old ($p < 0.05$) and in oral sites other than the tongue ($p < 0.01$). p16 staining correlated with unmethylated p16 ($p < 0.05$) and distinct pathological features including basaloid phenotype. p16 methylation was more frequent in the tongue ($p < 0.005$) and correlated with HPV status ($p < 0.005$).
Conclusions: The use of a highly sensitive HPV assay evidenced a higher prevalence and a wider spectrum of viral types than previously reported. p16 immunostaining was not a reliable surrogate for HR-HPV infections. HPV types and p16 methylation status varied according to sex and site suggesting difference in pathogenetic mechanisms among HNSCCs.

OP11
HPV16 oncogene RNA expression in oropharyngeal squamous cell carcinomas: a better prognostic factor than HPV viral load

Dana Holzinger[1,3], Marc Zapatka[2], Markus Schmitt[3], Michael Pawlita[3], Franz X. Bosch[1]

[1]Molecular Biology Laboratory, Department of Otolaryngology, Heidelberg University, Heidelberg, Germany, [2]Division of Theoretical Bioinformatics, German Cancer Research Center (DKFZ), Heidelberg, Germany, [3]Division of Genome Modifications and Carcinogenesis, German Cancer Research Center (DKFZ), Heidelberg, Germany

Introduction: Human papillomavirus type 16 (HPV16) is causally linked with a subset of oropharyngeal squamous cell carcinomas (OPSCC). In a further group of HPV16 DNA positive OPSCC, the role of HPV16 is still unclear.
Purpose: HPV DNA genotyping alone is insufficient to define the role of the virus. We included HPV RNA expression analysis and evaluated the interactions of DNA and RNA status with clinical parameters.
Materials and methods: 199 fresh-frozen OPSCC were subjected to multiplex papillomavirus genotyping (MPG). HPV16 DNA positive tumors were analysed for oncogene RNA expression. Statistical evaluation involved Cox regression and Kaplan Meier analysis.
Results: HPV16 DNA was detected in 97/199 (48%) OPSCC, with 61 (31.1%) showing low (HPV^+ group) and 36 (18.4%) showing high viral load (HPV^{++}). In three tumors we found HPV18, HPV33 and HPV35, respectively.
Tonsillar carcinomas had the highest prevalence of HPV16 infection, and prevalence increased from 1990 to 2008.

35/37 (94.6%) HPV^{++} tumors but only 14/60 (23.3%) HPV^+ tumors expressed HPV16 E6*II RNA and RNA expression levels were also lower in the HPV^+ group.

Both viral load and level of oncogene RNA expression were correlated with the clinical course of disease, but RNA levels were superior ($p = 0.035$ vs. $p = 0.015$).

Conclusion: OPSCC-expressing oncogene HPV16 RNA is truly HPV-driven tumor. OPSCC harboring HPV16 DNA but negative for E6*II behave like the HPV negative tumors with regard to clinical parameters.

OP12
Association between human papilloma virus (HPV) infection and laryngeal squamous cell carcinoma. Using IHC and SPF 10 PCR/DEIA methods

Kamal Morshed[1], Małgorzata Polz-Dacewicz[2], Marcin Szymański[1], Dorota Polz[2], Agata Smoleń[3]
[1]*Department of Otolaryngology Head and Neck Surgery,* [2]*Department of Virology,* [3]*Department of Mathematics and Biostatistics Medical University of Lublin, Poland*

Introduction: Several techniques have been used to detect the presence of HPV in tissues. Particularly, HPV-16 is suspected to play a role in etiopathogenesis of LSCC. The immunohistochemistry reaction (ICH) and the SPF10 PCR assay.
Purpose: The aim of our study was to compare the prevalence of human papilloma virus (HPV) infection in laryngeal squamous cell carcinoma (LSCC) using two methods: PCR-DNA enzyme immunoassay method (PCR/DEIA) and immunohistochemistry (IHC) reaction for HPV detection in laryngeal squamous cell carcinoma specimens and to correlate HPV presence with the epidemiological and clinicopathological features, recurrence and survival.
Materials and methods: HPV DNA was amplified from 93 paraffin-embedded LSCC tissue specimens by the short PCR fragment (SPF 10) primer set using PCR/DNA method. HPV detection using monoclonal anti-human papillomavirus antibodies clone K1H8 for immunohistochemistry reaction was performed in 130 specimens.
Results: HPV was identified in 35.5% of patients with LSCC using PCR/DEIA method and 27.7% using IHC method. There was no statistically significant association between presence of HPV and epidemiological and clinicopathological features and recurrence. There was neither statistically significant association between presence of HPV and overall survival (OS) nor disease-specific survival (DSS). Statistically significant correlation between HPV detection using PCR/DEIA technique and IHC technique was found.
Conclusion: The presence of HPV infection in 27.7 and 38.9% of the cases may suggest a possible role in the aetiology of LSCC. The SPF_{10} PCR/DEIA technique is the most accurate method to detect the presence of HPV in LSCC.

OP13
High risk HPV in squamous cell carcinoma of the tonsil in a Korean population

Young-Hoon Joo, Dong-Il Sun, Jun-Ook Park, Kwang-Jae Cho, Min-Sik Kim
Department of Otolaryngology-Head and Neck Surgery, College of Medicine, The Catholic University of Korea, Seoul, Korea

Objectives: To determine the role of high risk human papillomavirus (HPV) in the pathogenesis of the squamous cell carcinoma (SCC) of the tonsil in a Korean population.
Subjects and methods: The study included 54 subjects with SCC of the tonsil. High risk HPV in situ hybridization was performed to detect HPV infection. We evaluated the relationship between high risk HPV and age, gender, smoking status, alcohol use, primary tumor stage, and cervical metastasis.
Results: The positive rate of high risk HPV in situ hybridization was 31.5% (17/54). Significant correlations were found between high risk HPV and younger age (younger than 50 years of age) and non-smoking status ($p = 0.005$ and $p = 0.045$, respectively). However, there was no significant correlation between gender ($p = 0.149$), alcohol abuse ($p = 0.506$), primary tumor stage ($p = 0.091$), cervical metastasis ($p = 0.289$) and high risk HPV. In those patients followed for more than 12 months there was a 5-year overall and disease-specific survival of 64 and 69%, respectively. High risk HPV was not associated with the disease-specific survival ($p = 0.681$).
Conclusion: High risk HPV infection is associated with the SCC of the tonsil among subject with younger age and tobacco use in Korean.

OP14
Laser resection of the oropharynx: an alternative to chemo-radiation

Paul J. Donald[1], D. Gregory Farwell[1], Danny Enepikedes[2]
[1]*Otolaryngology-Head and Neck Surgery Department, Davis University of California, Davis, USA,* [2]*Sunnybrook Health Sciences Center, Department of Otolaryngology-HNS, Toronto, ON, Canada*

The pendulum of management of oropharyngeal squamous carcinoma in the last decade has swung from primary surgery towards combined radiation and chemotherapy. A viable alternative to this treatment especially for small primary tumors combines the organ sparing modality of transoral laser microsurgery and selective neck dissection in the N0 neck and modified radical neck dissection in the N positive neck.

At the University of California, Davis, Department of Otolaryngology we have been using this treatment algorithm since 1998 for most T1, T2 and selected T3 carcinomas of the oral cavity and oropharynx. Since then, 450 patients with cancer of the oropharynx have been treated. 70 patients were treated by transoral laser microsurgery.

The majority of patients (60) had either T1or T2 lesions. Nodal involvement was seen in 42 patients. Laser excision combined with selective neck dissection was used in 13 patients and modified radical neck dissection in 35 patients. Radiation therapy was reserved for patients with multiple adenopathy or extracapsular spread of tumor. Survival rates, complications and days in hospital will be reported.

Primary laser resection will be seen to be an excellent treatment option in limited lesions of the oropharynx sparing the patients the inevitable unfavorable side effects of chemotherapy and radiation as well as the prolonged period of treatment that this combination requires.

OP15
Cyclooxygenase-2 overexpression in pharyngeal squamous cell cancer

Dubravka Krleza Supic, **Marija Pastorcic Grgic**, Bozena Sarcevic, Danijel Dosen
University Hospital for Tumors, Zagreb, Croatia

Introduction: Cyclooxygenase-2 (COX-2) overexpression has been found in many solid tumors, and is considered one of critical prognostic factors.

Purpose: To evaluate correlations between COX-2 overexpression in pharyngeal cancer and accepted prognostic factors and survival.
Materials and methods: In this retrospective study we investigated immunohistochemical expression of cyclooxygenase-2 (COX-2) in 94 patients with pharyngeal squamous cell cancer treated at the University Hospital for tumors. The study included oropharyngeal and hypopharyngeal tumors. COX-2 expression in the primary tumor and surrounding tissue and its correlation with the stage of tumor dissemination at diagnosis (TNM status), grade of tumor differentiation and 5-year survival were assessed.
Results: Positive and negative reactions for COX-2 were seen in 44 and 56% of the patients, respectively. The difference between the two groups was not statistically significant ($p > 0.05$). COX-2 expression did not correlate with the tumor size, occurrence of distant metastases, pathohistological grade of tumor differentiation, or 5-year survival. COX-2 expression is higher in N0 and N1 stages of the disease. There is a statistically significant difference in COX-2 expression between pathohistological grades I and II, and grades I and III ($p < 0.05$).
Conclusion: COX-2 overexpression is more frequent in early diagnosed well-differentiated cancer, possibly connecting early cancer with preexisting chronic inflammatory changes.

OP16
Head and neck cancer in elderly: a retrospective study of 10 years (1999–2008)

Astrid Kruse, Marius Bredell, Klaus W. Grätz
Department of Craniomaxillofacial and Oral Surgery, University Hospital Zurich, Zurich, Switzerland

Purpose: The percentage of elderly people with head and neck cancer is rising due to increasing life expectancy.
The aim of the retrospective study was to evaluate the data from patients older than 70 years who suffered from head and neck cancer.
Patients and materials: From 376 patients suffering from head and neck cancer that were treated between 1999 and 2008, 103 (27.4%) were older than 70 years and were evaluated retrospectively.
Results: The male–female ratio was 50:53, mean age 70 years (71–98). From 95 patients with a squamous cell carcinoma, four patients had a verrucous form. Five patients revealed a malignoma of the small salivary glands, two patients a malignant melanoma and one metastasis of a prostate carcinoma. Special attention was paid to co-morbidities and therapy strategies.
Conclusion: Decisions in cancer therapy for elderly patients are challenging. Patients suffering from operable head and neck cancer should be treated with curative intend with regard to quality of life, if a careful assessment of co-morbidities is performed preoperatively.

OP17
Should older head and neck patients be treated differently?

D. Dequanter, M. Shahla, P. Paulus, E. Boutremans, Ph. Lothaire
CHU, Charleroi, Belgium

Introduction: The prolongation of life expectancy results in an increasing number of malignant neoplasms occurring in the elderly population. For a long time these patients were not considered good candidates to receive aggressive therapy and probably were inadequately treated in many instance.
The objective of this study was to question the appropriateness of feasible aggressive curative treatment for these older patients.
Methods: A chart review of patients with head and neck squamous cell carcinoma (HNSCC) of the oral cavity pharynx and larynx, 70 years or older who were primarily treated by our service were evaluated. Demographics, pre-treatment co-morbidities and treatment modalities and their related morbidity and mortality were reviewed.
Results: 32 males and 12 females with an average age of 77 (70–88 years) were treated. 23 patients had stage IV disease, five patients stage III disease, 13 patients had stage II disease and 3 patient stage I disease. All had a least one co-morbidity. 9 patients received radiotherapy, 18 patients received concomitant chemoradiotherapy; 14 patients underwent surgery with adjuvant chemoradiotherapy. 3 patients were treated by salvage surgery after radiotherapy failure.
Among the 44 patients who were treated for cure, there were 12 deaths, 7 from recurrences 2 from treatment's complications, one from infarct, one from peritonitis and one from pneumonia.

The average lifespan of the 32 survivors (until death or end of the study) was 2.8 years.
Conclusion: HNSCC is a serious disease that often necessitates aggressive treatment. All the patients who were medically eligible received curative treatment, with age not serving as an exclusion criterion. Considering the expected lifespan, seniors with HNSCC may benefit from curative treatment, and exclusion should be based on an individual basis.

OP18
Head and neck cancer surgery in elderly: does age influence the postoperative course?

Pedro Ricardo Milet[1,2], Yann Mallet[1], Sophie El Bedoui[1], Nicolas Penel[3,4], Veronique Servent[5], Jean-Louis Lefebvre[1]
[1]Cervico-Facial Oncology Department, Centre Oscar Lambret, Lille, France, [2]Head and Neck Surgery Department, Brazilian National Institute of Cancer-INCA, Rio de Janeiro, Brazil, [3]General Oncology Department, Centre Oscar Lambret, Lille, France, [4]Equipe d'Accueil 2694: Public Health, Epidemiology and Modelisation of Chronicle Diseases, Lille II University, Lille, France, [5]Onco-Geriatric Unit, Centre Oscar Lambret, Lille, France

Introduction: There are few data focusing on postoperative course after major head and neck cancer surgery in elderly compared to younger population.
Objective: The aim of this study was to assess the impact of age on postoperative outcomes.
Materials and methods: At the hospital admission, we prospectively collected data from 261 patients separated in two groups regarding their age (≥70 years or younger).
Results: Twenty-nine of them were over 70 years old. Median length of stay was similar in both populations (22 vs. 21 days, $p = 0.66$). Incidence of severe postoperative complications was similar: surgical site infection (6/29 vs. 89/232, $p = 0.77$), pneumonia (4/29 vs. 29/232, $p = 0.13$) and infection caused by multiresistant pathogens (1/29 vs. 14/232, $p = 0.08$). There was no significant increase in postoperative deaths (4/29 vs. 6/232, $p = 0.12$).

The impact of age on postoperative deaths was assessed after adjustment of potential risk factors. In a logistic regression model, postoperative death risk remained insignificantly increased in elderly (adjusted odds ratio = 3.3 [0.7–14.9], $p = 0.22$).
Conclusion: In our experience, the postoperative course in elderly patients was not significantly different than in younger patients.

OP19
Out comes of patients more than 70 years old with advanced head and neck treated with chemoradiation or radiotherapy

André Fortin, Éric Vigneault, Chun Shu Wang
L'hotel Dieu de Québec, Département de radiothérapie, Québec, Canada

Introduction: Oncologists are often reluctant to give radiochemotherapy (CRT) for patients more than 70 years old (YO). In this retrospective study, effect of age on survival and locoregional control (LRC) will be studied among patients treated by CRT or radiotherapy.
Methods: All advanced stages treated by CRT from 1999 to 2007 (405 pts, 80 pts >70 years old) or by XRT from 1989 to 1999 (477 pts, 133 pts >70 years old) were included. Chemotherapy was either DPP 100 mg/m^2 X3 or weekly DDP 40 mg/m^2.
Results: Survival was lower if >70 YO: hazard ratio (HR) for >70/ ≤70 YO were: 2.25, $p = 0.0003$ and 1.5, $p = 0.03$ for CRT and XRT. For pts > 70 YO, 3-year survival was 57 and 27%, $p = 0.005$ and 3-year LRC was 82 and 42%, $p < 0.01$ for CRT and XRT. Among pts > 70 years treated by CRT, survival and LCR were idem for patients treated by DDP 100 or 40 mg/m^2 although early deaths were a bit higher with DDP 100 mg, $p = 0.1$. For pts treated by CRT, hospitalization rates were 47 and 50% for pts <70 and ≥70 YO. Only KPS < 80 was prognostic for survival in pts > 70 YO treated by CRT.
Conclusions: Effect of age was stronger for patients treated by CRT, indicating that this is a more lethal treatment than XRT in pts 70 YO. Despite of that, survival and LCR remain much better with CRT than XRT. CRT should be considered in older pts with KPS ≥ 80.

OP20
Complication and co-morbidity in elderly laryngeal cancer patients

Thomas T. A. Peters, Bernard F. A. M. van der Laan, Boudewijn E. C. Plaat, Jan Wedman, Gyorgy B. Halmos
Department of Otolaryngology, University Medical Center Groningen, Groningen, The Netherlands

Introduction: There is a debate in the literature in the approach to manage cancer in the elderly. Although age has not been found to be an independent negative prognostic factor in head and neck cancer patients, morbidity and mortality are increased with the higher incidence of co-morbidity.
Purpose: (1) To determine the complication rate of different treatment modalities in elderly laryngeal cancer patients. (2) To explore relation between severity of pre-treatment co-morbidities and post-treatment complications in elderly laryngeal cancer patients.
Materials: Patients 75 years old or older (elderly group; $n = 139$) at the time of diagnosis with laryngeal cancer were diagnosed in our department between 1998 and 2008. Patients under 65 with the diagnosis of laryngeal cancer diagnosed in our department as a control group ($n = 289$).
Methods: Retrospective, case-controlled medical chart analysis. Pretreatment co-morbidity (ACE-27), initial staging, tumor localization, treatment intention and modality, recurrence, post-treatment complications data have been analyzed.
Results: There is no correlation between age and complication rate. Significant difference has been found in the incidence of co-morbidities according to age. The higher the incidence of co-morbidity is, the higher the chance of treatment-related complications. Endolaryngeal laser treatment has the lowest and radiotherapy has the highest complication rate in both groups (no significant difference according to age). The severity and rate of complications after a total laryngectomy are significantly more in the elderly group.
Conclusions: Elderly laryngeal cancer patients should be treated according to protocols as other patients, although careful pretreatment evaluation is essential because of the higher incidence of co-morbidities in this patient group.

OP21
Profile of young patients with oral squamous cell carcinoma (OSCC) diagnosed at National Cancer Institute (INCA-RJ) from 2001 to 2004

Rhayany Lindenblatt[1], Gisele Lago Martinez[2], Danielle Resende Camisasca[1], Licínio Esmeraldo Silva, Paulo Silvestre Faria[4], Fernando Luiz Dias[5], **Nathalie Henriques Silva Canedo**[3], Simone de Queiroz Chaves Lourenço[1]
[1]Pathology Post Graduation Program, Fluminense Federal University (UFF), Rio de Janeiro, Brazil, [2]Oncology Student, National Cancer Institute (INCA), Rio de Janeiro, Brazil, [3]Pathologic Anatomy Department, Rio de Janeiro Federal University (UFRJ), Rio de Janeiro, Brazil, [4]Pathology Division, National Cancer Institute (INCA), Rio de Janeiro, Brazil, [5]Head and Neck Service, National Cancer Institute (INCA), Rio de Janeiro, Brazil

Introduction: Oral squamous cell carcinoma (OSCC) is primarily disease of older men with a long history of tobacco and/or alcohol use. Uncommonly, similar tumors affect young adults, with age from 18 to 45 years, with different features and debatable behavior.
Purpose: This study aimed to review the profile of young patients with a diagnosis of OSCC in National Cancer Institute from 2001 to 2004 and to evaluate clinicopathological factors.
Materials and methods: The sample was selected from the files of the hospital and clinicopathological informations of each case were obtained from medical records and tumor registries. In this study were included only patients aged between 18 and 45 years, with SCC of tongue and/or floor of mouth, which treatment had been surgery and had performed neck dissection. SPSS statistical program was used for the analysis. Differences were considered significant for p value ≤0.05.
Results: Decades of life were statistically associated with sex ($p = 0.012$), with history of tobacco and alcohol ($p = 0.011$) and treatment ($p = 0.037$). Recurrence and lymph nodes involvement showed a significant association with overall survival ($p = 0.0005$ and 0.032).
Conclusion: The OSCC in young patients with ≤40 years showed different clinicopathological features to compare with patients >40 years, like significant number of women affected, and a little influence of tobacco–alcohol use as etiologic factors. Further studies are necessary to better understand the behavior of these lesions.

OP22
Clinical outcome of squamous cell carcinoma of tongue in young patients: stage matched comparative analysis

Jun-Ook Park, Dong-Il Sun, Kwang-Jae Cho, Young-Hoon Joo, Hwa-Jong Yoo, Min-Sik Kim
Department of Otolaryngology-Head and Neck Surgery, College of Medicine, The Catholic University of Korea, Seoul, Korea

Introduction: The incidence of tongue cancer in young patients is increasing recently, especially in female patients without consuming alcohol or tobacco. So, there has been a suggestion that it has different clinical characteristics and disease progression from that of old group.
Purpose: The aim of this study was to analyze clinical characteristics of tongue cancer in this group, and to compare with that of old group.
Materials and methods: A retrospective review was made of 85 patients who diagnosed as squamous cell carcinoma of oral tongue, and divided into two age groups, over 45 years of age and under 45 years. The following data were recorded from the patients file: age, sex, tobacco and alcohol consumption, staging, pathology, treatment modality, hospital day, and clinical outcome. To compare the prognosis of similar staged patients in both group, each age group was divided into early (stages I and II) and advanced stage group (stages III and IV), and compared individually.
Results: There were 23 patients in the young age group, and 62 patients in the old age group. According to early stage group, clinical prognosis of patients in both the age groups was good, and there was no significant difference. But, according to advanced stage group, the recurrence rate was 47.8% in young age group and 25.8% in old age group. It was significantly higher in young age group ($p = 0.019$*). The disease-specific survival rate of patients in young age group was significantly lower than that of patients in old age group ($p = 0.025$*).
Conclusion: Tongue cancer in young age has significantly different clinical outcome according to stage. The clinical outcome of advanced staged tongue cancer (stages III and IV) in young age is poorer than that in old age. Early detection in susceptible patients, and early evaluation may reduce the diagnostic delay and prevent poor outcome.

OP23
Marijuana and head and neck cancer in the young

Paul J. Donald
Otolaryngology-Head and Neck Surgery Department, Davis University of California, Davis, USA

Most series quote the average age of a head and neck cancer patient between the ages of 60 and 65. The most important etiological factors are tobacco use and heavy alcohol intake. We have seen a group of patients under 40 years of age (average age 29) who have contracted upper aerodigestive tract malignancy, where the common etiological thread appears to be the smoking of marijuana.

There are 80 patients in the cohort and 90% of them have been or were marijuana users. In that about 35% of the youthful population has smoked the drug for at least 1–2 months; the epidemiological statistic regarding the presence of malignancy and the use of this drug are striking. The 5-year survival rate is remarkably good in the marijuana users and much less good in those with a negative history. The possible etiologic mechanisms will be described and the DNA characteristics of a small subset of patients who were P53 positive will be presented.

OP24
Head and neck cancer in young adults treated with 3-D conformal radiotherapy

Igor Stojkovski[1], Valentina Krstevska[1], Nenad Mitreski[1], Eleonora Stojkovska[1], Daniela Simonova[1]
University Clinic of Radiotherapy and Oncology, Skopje, Fyrom

Purpose: Purpose of this study is to determine patterns of failure in young adults with head and neck cancer treated with 3-d conformal radiotherapy.
Materials: 28 patients with head and cancer younger than 41 years were treated with 3-d conformal radiotherapy. Nasopharynx and oral cavity were the most frequent sites of the primary tumors. Stages III and IVA were equally presented. Patient's median age was 31.4 years.
Methods: Radiotherapy with linear accelerator was delivered with median total dose to PTV of 67.2 Gy (range 60.0–70.0 Gy) with or without concurrent cisplatin.
Results: The median duration of follow-up was 20 months. Distant metastases were the most frequent pattern of failure present in six patients followed by local recurrence in two patients. Distant metastases and local recurrence were present in one patient. Four patients remained alive at the close-out date. Five patients died after developing distant metastases, three patients died because of local or locoregional relapse, and five patients with partial response following treatment died because of the progression of their persistent disease. The locoregional relapse-free survival (LRR-FS) rate at 2 years was 66.6%. The median duration of LRR-FS was 15 months. The distant metastases relapse-free survival (DMR-FS) rate at 2 years was 65.7%. The median duration of DMR-FS was also 15 months. The overall survival (OS) rate at 2 years was 57.2%. The median duration of OS was 20 months.
Conclusions: Radiotherapy with or without concurrent chemotherapy plays important role in treatment of patients with head and neck cancer. Recent developments of new radiotherapy techniques have increased rates of local control. Distant metastases still remain most frequent pattern of failure in this group of young adults with head and neck cancer. Introducing new cytotoxic and target therapies in the future could lead to better outcome in this subgroup of patients.

OP25
Head and neck microvascular free tissue transfer in the elderly patient

Gregorio Sanchez-Aniceto, Ramon Gutierrez, Ignacio Zubillaga, Antonio Fernández, Maria Angeles Escudero, Juan Jose Montalvo
Department of Oral and Maxillofacial Surgery, 12 de Octubre University Hospital, Madrid, Spain

Introduction: Life expectancy increases, so does the number of elderly patients with advanced head and neck tumors candidates to

surgical treatment including extensive resections and microvascular reconstruction.
Purpose: A retrospective analysis is done in a group of elderly patients treated at a University Hospital undergoing free flap reconstruction, identifying predicting outcome factors.
Materials: 49 patients presenting with advanced head and neck tumors underwent surgical treatment including free flap reconstruction in the period 1997/2008. Age ranged from 70 to 86 years. 26 patients (53%) presented no previously registered co-morbidities. 23 patients (47%) presented major co-morbidities either systemic (including HBP, cardiopathy, diabetes and obesity) or affecting at least one organ or system (chronic airflow obstruction, liver and kidney failure). Tumor location included oral cavity, 34 patients [floor of mouth (11), cheek (8), gum (7), others (8)], Skull base (12 patients), and other locations (3). Transferred free flaps included radial forearm (16), anterolateral tight (14), fibula (12), rectus abdominus (7) and others (2).
Methods: Our database was used to analyze different complications and predictive factors.
Results: 25 patients did uneventfully (51%), 24 patients presented postoperative complications including flap failure (5), bleeding (6), respiratory problems (4), infection (4), etc. 5 patients died postoperatively (10%), 4 of them presenting previous major co-morbidities, 4 of them being older than 80. Two major incidents were identified.
Conclusions: Free flap head and neck reconstruction is a relatively safe procedure in elderly patients. Co-morbidities are the most important predictive outcome factor, especially in patients being 80 years old or older.

OP26
Profile and trend of reconstructive options in compromised patients with head and neck cancer

Marius Bredell, Astrid Kruse, Klaus Grätz
Department of Cranio-maxillofacial Surgery, University Hospital of Zürich, Zürich, Switzerland

Introduction: A wide array of reconstructive possibilities exists in patients afflicted by oral cancer and treated with ablative surgery with or without chemoradiotherapy. When the patient's general or local condition is compromised, the ablative and reconstructive possibilities may need to be adapted.
Purpose: To evaluate the profile and trend of reconstructive possibilities in potentially compromised patients over the past 10 years in a single institution.
Materials and methods: A total of 121 patients of 70 years or older were surgically treated for head and neck cancer from 1999 to 2009 and included in this study. Patients were evaluated according to the following criteria: possible reconstructive options that were available, which were eventually performed, reasons for a possible adaption of a treatment plan, outcome and functional result.
Results: Reconstructive treatment options and success were often heavily influenced by local and not always systemic morbidities. An initial preference to ablative surgery with dominantly soft tissue reconstruction and later free bone grafts has gradually been replaced by more immediate definitive reconstructive efforts. Age alone as a compromising factor was not a dominant factor. Free bone grafts even in radiated areas had a better than expected success. Reconstruction plates seemed to be a constant problematic factor.
Conclusion: Although cases have to be selected well, the success of regional and of free vascularised flaps seems not to be age-dependant. Options of even free calvarial bone grafting are an option in a smaller subgroup of patients.

OP27
Maxillary reconstruction options in young and old oncologic patients

Andrea Battisti, Andrea Cassoni, Ikenna Valentine Aboh, Marco Della Monaca, Paola Ascenzi, Valentino Valentini
Department of Maxillo-facial Surgery, Policlinico Umberto I of Rome, Sapienza University of Rome, Rome, Italy

Introduction: The advent of microsurgery made great improvement in oncological surgery.
The chance, given from microsurgery, for wide and complex reconstruction enlarged oncological guidelines for more wide resections. Before making reconstructive planning consideration about patient's clinical conditions and his age most be made.
Purpose: The paper's purpose is to present authors' clinical series of young and old oncological patients who underwent maxillary reconstruction after malignancy ablation.
Materials: More than 10 years experience of Maxillo-facial Surgery Department of Rome is presented; clinical data of the patients and surgical procedures are presented.
Methods: Authors present their experience in maxillary reconstruction on oncological patients. They deal with reconstructive problems and different reconstructive techniques. In particular, they focus attention on matters concerning relationships between patients' age and reconstructive options.
Discussion: Resection of maxillary malignancy can give considerable aesthetic and functional problems. Clinical assessment of these patients can show altered occlusion; difficulty in chewing, speaking, swallowing; labial incompetence; and drooling associated with aesthetic impairment. Surgeon's goals are aesthetic recovery (support of the nasal pyramid, lips, cheek, orbital cavity, and restoration of the projection of middle thirds of the face) and functional rehabilitation (labial competence, chewing, speaking, swallowing, and breathing).
Conclusions: We believe that before reconstructive considerations, one must carefully evaluate some other important factors such as: patient age, local and general conditions of the patient: previous radiotherapic treatments, dysmetabolic pathologies, systemic vascular pathologies and compliance. Patients' age and their general clinical conditions play a tremendous role in the choice of the right reconstructive option.

OP28

Evaluation of immunohistochemical and biomolecular parameters as markers of the biological behaviour of head and neck carcinomas: preliminary results of a multicenter italian project

Tito Poli[1], **Alfredo Balestreri**[1], Davide Lanfranco[1], Roberto Cocchi[2], Claudio Marchetti[3], Maria Pia Foschini[4], Anna Farnedi[4], Roberto Perris[5], Nicoletta Bertani[5], Silvia Rossi[5], Enrico Sesenna[1]

[1]Maxillofacial Surgery Section, Head and Neck Department, University Hospital of Parma, Parma, Italy, [2]Maxillo-Facial Surgery Complex Operative Unit, Bellaria Hospital, Bologna, Italy, [3]Maxillofacial Neurological-Sensory-Motility Department, Oral Surgery and Maxillo-Facial Complex Structure, University Hospital of Bologna, S. Orsola-Malpighi, Italy, [4]Department of Radiological and Histological and Cytopathological Sciences, Section of Anatomic Pathology, University of Bologna, Bellaria Hospital, Bologna, Italy 5. Department of Genetics, Microbiology and Anthropology, University of Parma, Parma, Italy

Introduction: Despite early detection (pT1\pT2), squamous cell carcinoma of the oral cavity (OSCC) frequently relapse and metastasize following resection and no specific markers are currently available to predict this behaviour. The oral cavity can also be affected by salivary gland tumours (SGT) that respond poorly to radio- and chemotherapy and similarly lack distinctive markers.
Purpose: The study aims at exploiting a multidisciplinary approach that combines retrospective and prospective analyses to identify molecular markers predicting the clinical behaviour of OSCC and SGT. In particular, the project attempts to disclose prognostic markers capable of defining the clinical course of three discrete classes of patients: those with early stage T1-T2 OSCC with unexpected aggressive behaviour; young patients (<40 years) affected by OSCC and lacking overt risk factors; and patients affected by metastatic SGT.
Methods: In selected primary and metastatic lesions of OSCC, we examined, at both mRNA and protein level, the expression pattern of an apparently OSCC-enriched p63 variant and the 12 currently known cell surface-associated proteoglycans (NG2, syndecans-1-4 and glypicans-1-6). We evaluated these previously identified putative biomarkers both qualitatively and quantitatively and correlate their expression patterns with the clinical course of the patients. In parallel, we performed whole-genome comparative genetic screenings on primary lesions from metastatic and non-metastatic patients and secondary lesions of post-surgical patients. Both intact tumour samples and laser microdissected specimens were examined. These experimental approaches have been combined with hierarchical agglomerative clustering of previously identified gene markers through current bioinformatic algorithms and dedicated software tools.
Results: We foresee to reveal novel prognostic markers capable of predicting the unfavourable clinical course of early stage (T1-T2) OSCC patients, young (<40 years) OSCC patients lacking risk factors and individuals developing SGT. These molecular tools is instrumental for the clinical management and design of more tailored and individualized post-surgical treatments of subjects affected by these tumours.

OP29

Pharyngeal pouch carcinoma: a systematic review and meta-analysis of all studies published over 112 years

Afroze Shah Khan[1,*], Raghav Dwivedi[1,*], Shahnawaz Khan[2], Peter H. Rhys-Evans[1]

**Joint authors, [1]Head and Neck Unit, Royal Marsden Hospital, London, SW3 6JJ, UK, [2]Department of Trauma and Orthopaedics, Epsom General Hospital, Dorking Rd, Epsom, KT18, UK*

Introduction: Carcinoma is a rare complication of pharyngeal pouches, to date only 60 cases have been reported in the English literature. As such there is a paucity of information about its incidence, presentation, management and treatment outcomes. A systematic review and analysis of all reported cases have been carried out.
Purpose: To review and evaluate the literature and to perform a meta-analysis on all pharyngeal pouch carcinoma cases published in the English literature over the last 112 years.
Materials and methods: A comprehensive literature search for pharyngeal pouch carcinoma was performed on PUBMED/MEDLINE, EMBASE, CINAHL and Science Citation Index from 1896 to 2008. The keywords used were pharyngeal pouch carcinoma, Zenker's diverticulum carcinoma, hypopharyngeal pouch carcinoma and oesophageal pouch carcinoma. The citations from the selected articles were cross-referenced and relevant publications (including the first pharyngeal pouch carcinoma case reported by Pitt GN, in 1886) were added to the final review and meta-analysis. Articles published in languages other than English were excluded.
Results: Forty-one articles reporting 60 cases satisfied the inclusion criteria. Their findings were tabulated, analysed and evaluated for survival rates depending on treatment modality, duration of pouch/symptoms and age at the presentation. The mean age at presentation was 68.8 years (SD 9.8) with M:F ratio of 3.8:1. The mean duration of symptoms was 12 years (SD 9.8), with duration >10 years confounding poor outcome. Thirty-one patients underwent excision alone, 9 excisions with post-operative radiotherapy (PORT) and 11 radiotherapy alone, while 7 patients did not receive any treatment for carcinoma. Excision alone gave the best outcomes with 1-, 3- and 5-zyear survival rates of 64, 39 and 18%, respectively.
Conclusion: Carcinoma arising in pouches of a longer duration (>10 years) carries a poor prognosis. Treatment with excision alone confers better outcomes compared to PORT or radiotherapy alone.

OP30

Premalignant nature of oral squamous cell carcinoma (OSCC). A retrospective study of 500 patients with and without oral premalignant lesions (OPL)

Thaddeus S. Boucree, Li Mao, Robert A. Ord

Department of Oral and Maxillofacial Surgery, University of Maryland, Baltimore, MD, USA

Introduction: While oral premalignant lesions are determined with histology, predicting malignant transformation is not known. The rate

of malignant transformation of patients with OPL varies and depends on population, diagnostic criteria, and length of follow up.
Purpose: This study is to determine the incidence of OPLs in patients with OSCC to provide a foundation for future investigations in OSCC early detection and prevention.
Materials and methods: We retrospectively reviewed written records of 500 consecutive OSCC patients who underwent surgery from 2/1991 to 5/2002. The OPL status was recorded along with multiple clinical parameters.
Results: In our retrospective review of 500 OSCC patients, non-smokers were more likely to have premalignant lesions 74%, than smokers 49%; statistical significance ($P < 0.0001$). In the nonsmoker group being female and being between the ages of 40 and 70 years increased the chances of premalignant transformation even greater.
Conclusions: Historically, diagnosis of OSCC was relatively uncommon in patients younger than age 50 and usually occured in a diseased of male in the sixth through eighth decade of life. In fact, the median age at diagnosis, according to data compiled by the SEER tumor registry is 62.0 years of age. Predicting what leukoplakia will become a malignancy and at what age and gender inspired us to publish our findings.

OP31
Predictive assay: better targeting in head neck cancer

Andreas Dietz[1], Iris-Susanne Horn[1], Ralph Dollner[2], Andreas Boehm[1], Gunnar Wichmann[1]
[1]*Department of Otorhinolaryngology, Head and Neck Surgery, University Clinic of Leipzig, Leipzig, Germany,* [2]*Department of Otorhinolaryngology, Head and Neck Surgery, Oslo University Hospital, Rikshospitalet, Norway*

Introduction: Due to the fact that competitive therapy strategies in case of resectable HNSCC (i.e. advanced laryngeal and hypopharyngeal cancer) are increasingly promoted, and many new substances, antibodies, and small molecules come into the clinical view, individual response evaluation for better targeted, biology-based decision making is more desirable than ever. Even in multimodality treatment current clinical trials face dramatically increasing early and late toxicities, which require more robust pre-treatment criteria to select responders.
Materials and methods: For HNSCC, assay-based individual testing is hindered by a series of technical problems and principal questions like micro-heterogeneity, flavin-induced cell toxicity, lack of differentiation between tumor and stromal cells, differences in chemosensitivity of tumor and stromal cells, structural needs for specific handling of the testing, lack of specific dose-related sensitivity towards single and combined substances etc. To address this needs, we developed the "short-time ex vivo colony-forming assay—flavin-protecting conditions" (FLAVINO-Assay) in last 15 years which is now evaluated for clinical research. This test requires a strong definitive hospital setting with a closed relation between the surgical and the laboratory units and performance under flavin protecting conditions in a "same day" procedure.
Results: The Flavino-assay was used to test docetaxel, cisplatin, cetuximab and lapatinib as single and combined testing in primary tumor cultures of given patients. Also, combined testing with radiotherapy was possible.
Conclusion: Ex vivo chemosensitivity testing with Flavino-assay of the individual tumor proved to be robust, reproducible and representative in biopsies of a given tumor.

OP32
Chemo-electroporation in the head and neck for otherwise untreatable patients

Remco de Bree, Bernard M. Tijink, Guus A. M. S. van Dongen, C. René Leemans
Department of Otolaryngology, Head and Neck Surgery, VU University Medical Center, Amsterdam, The Netherlands

Introduction: Bleomycin-electroporation therapy (bleomycin-EPT) is a therapeutic tumor ablation modality for treatment of solid tumors.
Purpose: The aim of the study is to determine the safety, effectiveness, and burden of bleomycin-EPT for patients with head–neck or skin cancer.
Materials and methods: A total of 24 tumors in 14 patients with head and neck mucosa ($n = 6$) or skin ($n = 8$) cancer, which could no longer be treated by surgery or radiotherapy, or for which conventional treatment would be very extensive, were treated by bleomycin-EPT.
Results: The procedure was well-tolerated by the patients in all cases. Four patients reported complaints about pain, which was easily treated with oral analgesics. All 24 tumors have responded to treatment. Three out of 24 tumors showed residual disease within 6 months. Two patients died with local control before 6 months. One patient was tube feeding dependent after treatment and one other patient had a carotid blow out due to wound healing problems. In all other cases functions were preserved successfully.
Conclusions: Bleomycin-EPT is an easy to perform treatment that causes little burden to the patient and is potentially effective in patients with a head–neck or skin tumor. Bleomycin-EPT has the potential to become a valuable addition to the treatment options for patients with head and neck or skin tumors.

OP33
Magnetic drug targeting: an innovative method for local chemotherapy

Christoph Alexiou[1], Stefan Lyer[1], Rainer Tietze[1], Eveline Schreiber[1], Irmgard Wiest[2], U. Jeschke[2], Tobias Struffert[3]
[1]*Section for Experimental Oncology and Nanomedicine (Else Kröner-Fresenius-Professorship), Department of Oto-Rhino-Laryngology, Head and Neck Surgery, University Hospital Erlangen, Erlangen, Germany,* [2]*Department of Obstetrics and Gynecology, LMU-Munich, Munich, Germany,* [3]*Neuroradiology Division, University Hospital Erlangen, Erlangen, Germany*

Introduction: The systemic administration of chemotherapeutic agents can often lead to severe negative side effects in patients. This disadvantage is caused by the application-to-tumor-dose-ratio due to the insufficient drug dose in the respective tumor region.
Purpose: With magnetic drug targeting (MDT), chemotherapeutic agents bound to magnetic nanoparticles can be directed to desired body compartments using an external magnetic field.
Materials and methods: Superparamagnetic Fe_3O_4-nanoparticles (diameter 11 nm) bound to the antineoplastic agent mitoxantrone were injected into the tumor supplying vascular system in rabbits focused by an external magnetic field. The biodistribution of the nanoparticles and mitoxantrone was detected by histology,

chromatography, radiology and the alteration of the tumor morphology was observed by individual measurement of the tumor and by imaging methods (DYNA-CT, MRI).
Results: All methods described above evidenced enrichment of the drug-loaded nanoparticles in the defined tumor region. The outcome of the therapy could be documented due to the complete tumor reduction and the imaging methods. This could be achieved with only 10% of the regular systemic mitoxantrone dose and negative side effects have not been detected, so far.
Conclusion: Magnetic drug targeting is a new and innovative method to treat cancer locoregionally. Negative side effects could not be seen in the animal studies. These data are encouraging and the research group will translate these therapeutic models into human trials.
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OP34
Improved tumor targeting of anti-epidermal growth factor receptor nanobodies through albumin binding: taking advantage of modular nanobody technology

Bernard M. Tijink[1], Toon Laeremans[3], Marianne Budde[1], Marijke Stigter-van Walsum[1], Josi Holz[3], Hans J. de Haard[3], C. René Leemans[1], Guus A. M. S. van Dongen[1,2]
[1]*Otolaryngology-Head and Neck Surgery Department,* [2]*Nuclear Medicine and PET Research Department, VU University Medical Center, Amsterdam, The Netherlands,* [3]*Ablynx, Ghent, Belgium*

Introduction: The ~15-kDa variable domains of *camelid* heavy-chain-only antibodies (called nanobodies) can easily be formatted as multivalent or multispecific single-chain proteins. Because of fast excretion, however, they are less suitable for therapy of cancer.
Purpose: We aimed for improved tumor targeting of a bivalent anti-EGFR nanobody (αEGFR-αEGFR) by fusion to a nanobody unit binding to albumin (αAlb).
Methods: Biodistributions of αEGFR-αEGFR, αEGFR-αEGFR-αAlb (~50 kDa), αTNF-αTNF-αAlb (control, binding tumor necrosis factor-α) and the ~150-kDa anti-EGFR antibody cetuximab were compared in A431 xenograft-bearing mice. The proteins were radiolabeled with ^{177}Lu to facilitate quantification.
Results: Tumor uptake of ^{177}Lu-αEGFR-αEGFR decreased from 5.0 ± 1.4 to 1.1 ± 0.1%ID/g between 6 and 72 h after injection. Due to its rapid blood clearance, tumor-to-blood ratios >80 were obtained within 6 h after injection. Blood clearance became dramatically slower and tumor uptake became significantly higher by introduction of αAlb. Blood levels of αEGFR-αEGFR-αAlb were 21.2 ± 2.5, 11.9 ± 0.6, and 4.0 ± 1.4 and tumor levels were 19.4 ± 5.5, 35.2 ± 7.5, and 28.0 ± 6.8%ID/g at 6, 24, and 72 h after injection, respectively. Tumor uptake was at least as high as for cetuximab (15.5 ± 3.9, 27.1 ± 7.9, and 25.6 ± 6.1%ID/g) and significantly higher than for αTNF-αTNF-αAlb. αEGFR-αEGFR-αAlb showed faster and deeper tumor penetration than cetuximab.
Conclusions: Simple fusion of αEGFR and αAlb building blocks results in a bifunctional nanobody format, which seems more favorable for therapy as far as pharmacokinetics and tumor deposition are concerned.

OP35
Definitive accelerated radiation therapy gives high rate of tumour-cure with organ-preservation either in T1-2 and selective, small volume T3-4 larynx cancer patients

Krzysztof Skladowski, Marcin Hutnik, Wiesława Przeorek, Maria Goleń, Andrzej Wygoda, Tomasz Rutkowski, Beata Lukaszczyk-Wideł, Boleslaw Pilecki, Ida Cedrych, Barbara Bobek-Billewicz, Krzysztof Slosarek, Aleksander Zajusz, Boguslaw Maciejewski
Maria Sklodowska-Curie Memorial Cancer Center and the Institute of Oncology (MSCMCCIO), Gliwice, Poland

Purpose: The number of 2,969 patients treated at MSCMCCIO with definitive radiation and reported in the literature over 40 years (1963–2002) has proved the remarkable experience toward larynx-preservation treatment. Over the last 8 years, the organ-preservation approach in larynx cancer patients has been realised through the patient selection, sc. CT tumour-volume-based policy, and definitive conformal accelerated radiotherapy (ART).
Materials and methods: This report concerns larynx-preservation treatment realised in the group of 202 patients (82% in N0 stage) treated over the years 2002–2006 by ART. There were 80 patients with glottic (T1 50 pts and T2 30 pts) and 122 patients with supraglottic (T2 70 pts, T3 27 pts and T4 25 pts) larynx cancer. Supraglottic T3 and T4 pts were selected to the ART when their CT-volumes were less than 11 cm^3. Conformal ART consisted in three regimens: 51 Gy in 17 fractions over 3.5 weeks for T1 glottic pts, 62.5 Gy in 25 fractions over 5 weeks for T2 glottic pts and 66.6–72 Gy in 37–40 fractions over 37–40 days in T2-4 supraglottic pts (7 pts with bulk N-stage had concurrent chemo-radiation).
Results: Actuarial 3-year LC and larynx-preservation rates are as follow: 100 and 97%, 82 and 79% in both T1 and T2 glottic cancer pts, in supraglottic cancer pts, independently on T-stage, the rates are 80 and 75%. The 3-year rate of grades 3–4 late morbidity of the larynx is 5%.
Conclusions: Proper patient selection to the ART, based on CT tumour-volume measurement, gives excellent local control and larynx-preservation outcome with minimal risk of serious adverse events.

OP36
Three-dimensional tumor visualisation: a new tool for better planning in head and neck cancer treatment

Andreas Boehm[1], Jana Dornheim[2], Stefan Müller[1], Gero Strauß[1], Andreas Dietz[1], Bernhard Preim[2]
[1]*Department of Otolaryngology, Head and Neck Surgery, University of Leipzig, Leipzig, Germany,* [2]*Department of Simulation and Graphics, University of Magdeburg, Magdeburg, Germany*

Introduction: The treatment of patients with head and neck cancers is increasingly challenging with regard to raising therapeutic options. The anatomy and multi-faceted function of the head and neck, a

precise imaging is opposed by the clinical reality of the panendoscopy, which has not changed over the last decades.
The available data show the advantages of a computer-assisted diagnosis and therapy planning in head and neck surgery. The development of a 3-D-panendsocopy based on a patient-specific 3-D-model is the first step to a complete electronic therapy-accompanying patient document.

At present, the patient model is virtually generated by the surgeon. Systems for computer-assisted data interpretation do not exist for daily use.
Methods: The 3-D model is generated by segmentation and visualisation from regular diagnostic CT-scan and is the base for integration of many functional patient data. 3-D-presentations approve better descriptions of small and complex structures and interpretation (minimal distance to risk structures). The integration of non-radiological information is possible [tumour fixation, photos, functional imaging (PET), and histology].
Results: The 3-D panendoscopy improves documentation for the patient-individual tumour. Especially the 3-D presentation enables a more reliable evaluation of minimal distances to risk structures and consequently enables better planning of therapy. Further developments aim at the use of the 3-D-panendoscopy as the base for the integration of the whole data accompanying the patient's therapy (pathology: instantaneous sections, biopsies; radiotherapy: irradiation planning).
Conclusion: The 3-D panendoscopy system sets the start of an individual 3-D patient model for daily use, which besides image data contains a multitude of functional information.

OP37
Prognostic software

Marciano B. Ferrier[1], **Robert J. Baatenburg de Jong**[2]
[1]LUMC, Leiden The Netherlands, [2]Erasmus MC, Rotterdam, The Netherlands

Introduction: The TNM system is a well-established prognostic tool. However, the ideal tool would extend the prognostic power of anatomical staging by enabling the incorporation of non-anatomical prognostic factors of different types. It would also be flexible enough to be applied to many different types and sites and scalable enough to incorporate new prognostic factors as they emerge.
Purpose: Development of a flexible survival program for cancer patients.
Materials and methods: Since 2002, we use OncologIQ as a prognostic tool in head and neck cancer. Based on that, experience software is developed which can accommodate data of all possible tumor types and sites. The software performs univariate analysis as well as multivariate regression analysis and produces relative risks and survival estimates instantly.
The number of variables is technically unlimited, but statistically it is limited by the number of events in the database.

The software will be web-based to enhance its use.
Conclusion: Prognostic software meets the current requirements of cancer care givers and their patients.

OP38
Integration of clinical, histopathological, radiological and biomolecular data for prediction of oral cancer recurrence: the NeoMark project's first report

Tito Poli[1], Alfredo Balestreri[1], Davide Lanfranco[1], Gianfranco Chiari[2], Diego Ardigò[3], Enrico Silini[4], Mariano Lombardi[4], Roberto Perris[5], Nicoletta Bertani[5], Silvia Rossi[5], Enrico Sesenna[1]
[1]Maxillofacial Surgery Section, Head and Neck Department, University Hospital of Parma, Parma, Italy, [2]Radiology Department, University Hospital of Parma, Parma, Italy, [3]Internal Medicine and Biomedical Sciences Department, University Hospital of Parma, Parma, Italy, [4]Pathology and Laboratory Medicine Department, University Hospital of Parma, Parma, Italy, [5]Department of Genetics, Microbiology and Anthropology, University of Parma, Parma, Italy

Neoplastic diseases are at large the second cause of death in the western world. In the last decade, the continuous improvement in treatment protocols has substantially increased the number of patients who achieve a complete disappearance of the disease after treatment. At this stage, called "remission", there are no clinical, laboratory or imaging evidences of the neoplastic mass, but there can still be invisible residual disease that can still evolve overtime and metastasize. Therefore, reaching the remission state does not automatically imply the complete healing of the patient and there is a substantial risk of disease reoccurrence in the following years.
NeoMark Project: ICT-Enabled Prediction of Cancer Reoccurrence performs research in the integration of heterogeneous clinical, laboratory, biomolecular and imaging data to develop a data integration environment facilitating multiscale and multilevel modeling, aimed at advancing models and methods currently in use to predict neoplastic reoccurrences, and to apply it to the study of oral cancer.
Specifically the *scientific target* is to apply this multi-level data integration environment to the monitoring of the disease after remission, in order to early identify local or metastatic reoccurrence of the disease.

The *technical target* is the development of two functional environments: one for the definition of biomarker profiles and one for the follow-up of the evolution of the disease.

They are based on the "fusion" of information from clinical data from health records and standard laboratory markers; from histological data from tumor mass specimens; from highthroughput genomic data from tumor tissue specimens, profiling gene expression at wholegenome level by oligo-RNA microarrays; from high-throughput genomic data from circulating cells specimens (whole blood sample), profiling gene expression at whole-genome level by oligo-RNA microarrays; from imaging data of the prime tumor mass (and secondary localizations if present) through imaging techniques, including image fusion, where relevant. The outcomes of the project are validated in two primary Clinical Centres in Spain and in Italy. In this phase the *early exploitation* of NeoMark is also assessed through the use of a RT-PCR platform to develop highly individual diagnostic tests to be used both at the time of first diagnosis, as well as for reoccurrence identification.

OP39

Hypoxic BTV delineation according to tumour ratios using ^{64}CU-ATSM in squamous cell carcinoma of the head and neck and the impact on dose-escalated IMRT strategies

Russell Norman Moule[1], Irfan Kayani[3], Rowena Paul[2], John Dickson[3], Michael O'Doherty[2], Michele Iris Saunders[1]

[1]Department of Oncology, University College Hospitals NHS Foundation Trust, London, UK, [2]Clinical PET Centre, Guys and St Thomas' Hospital NHS Foundation Trust, London, UK, [3]Department of Nuclear Medicine, University College Hospitals NHS Foundation Trust, London, UK

Purpose: Cu(II) diacetyl-bis(N^{4}methylthiosemicarbazone) (^{64}Cu-ATSM) is a hypoxic radio-nuclide investigated in both NSCLC and cervical cancer. Poor overall and progression-free survival are associated with a tumour to muscle ratio of greater than 3.5.
We have investigated the differences in BTV delineation using various tumour to muscle, tumour to blood, and tumour to background ratios.
Materials and methods: Patients with SCCHN [University College Hospital (UCLH), UK] who were due to receive primary surgery underwent a dynamic 1 h PET/CT immediately after injection of 450–600 MBq of ^{64}Cu-ATSM.
Images were reconstructed at 5–20 and 40–60 min post-injection. Uptake in the ROI was calculated on each slice. ROI were placed in the tumour/nodes, contra-lateral sternocleidomastoid muscle and great vessels of the neck.

The hypoxic BTVs were automatically (PETVCAR) contoured at tumour to muscle, tumour to blood and tumour to background ratios of: 2.0, 2.5, 3.0, 3.5, and 4.0 at 5–20, 40–60 min, and 24 h post-injection.
Results: Four patients have been recruited to date at UCLH and the ratios illustrated in Table 1.

Table 1 Tumour ratios post-^{64}Cu-ATSM injection within the region of interest

Time post-injection	Tumour:muscle BTV		Tumour:blood BTV		Tumour: background	
	Mean	SE of mean	Mean	SE of mean	Mean	SE of mean
5–20 min	2.983	0.195	2.342	0.160	3.224	0.189
40–60 min	4.015	0.295	3.242	0.232	3.836	0.215
24 h	4.772	0.333	3.328	0.272	5.056	0.416

There was a highly significant increase in the ratios with time (tumour to muscle and tumour to background). The tumour-to-blood ratio was only significantly different at 40–60 min compared to 5–20 min.

The BTV delineated increased with time post-injection as shown in Table 2 and reduced with each increase in the ratio.

Table 2 BTV delineated by the tumour-to-muscle ratios at each time point investigated

Ratio	Tumour:muscle BTV (cm^3) 5-20 min post-injection	Tumour:muscle BTV (cm^3) 40–60 min post-injection	Tumour:muscle BTV (cm^3) 24 h post-injection
2.0	3.1–51.8	10–61.2	3.3–60.5
2.5	1.2–43.5	6.6–49.1	2.4–43.6
3.0	0–34.6	2.6–40.9	1.4–33.4
3.5	0–30.6	1.1–26.4	0–28.9
4.0	0–25.4	0.3–14.6	0–24.3

Conclusions: ^{64}Cu-ATSM accumulates with the ROI and is more prominent on at 40–60 min and 24 h post-injection.
The phenotypic BTV delineated will impact on the ability to implement dose escalation strategies to improve local control in patients with SCCHN. SUV may be of benefit in BTV delineation of novel PET/CT radio-nuclides but without prior validation its use is limited.

OP40

Concurrent radiotherapy and weekly cisplatin with or without cetuximab in locoregionally advanced squamous-cell carcinoma of head and neck (SCCHN). A phase II toxicity and safety study

Charalampos Andreadis[1], Chrysoula Eliopoulou[2], Ioannis Boukovinas[3], Kostas Vahtsevanos[4], Maria Kinigou[5], Aris Ntomouchtsis[4], Athanassios Kyrgidis[4], Thomas Sidiras[5], Despina Mouratidou[1]

[1]3rd Department of Clinical Oncology, [2]Radiotherapy Oncology Department, [3]2nd Department of Clinical Oncology, [4]Maxillofacial Surgical Oncology, [5]ORL Clinic, Theagenion Cancer Hospital, Thessaloniki, Greece

Introduction: Chemoradiotherapy is an effective treatment in patients with locoregional advanced SCCHN.
Purpose: To evaluate toxicity and safety of radiotherapy given concurrently with cisplatin and cetuximab.
Materials: Patients with histologically proven SCCHN, in stages III/IV were eligible in this phase II study. All had PS $\leq$ 2. Males/females: 44/6, aged 25–78 years (mean 58 years). Disease site: larynx 25, oral cavity 12, nasopharynx 8, others 3 and unknown 2.
Methods: Conventional radiotherapy (65–70 Gy, 1.8 Gy per day) concurrently with weekly cisplatin (40 mg/m^2) (group A, $n = 25$) or with weekly cisplatin (40 mg/m^2) and weekly cetuximab 250 mg/m^2, after initial dose of 400 mg/m^2) (group B, $n = 25$) was applied (in a 1:1 randomization ratio). The two groups were well balanced in age, sex, PS, and disease site.
Results: Grade 3/4 toxicity was significantly more frequent in the group B compared with group A (mainly acneiform rash and stomatitis). Treatment was well accepted with no withdrawal in 21 (84%) and in 16 (64%) of group A and B, respectively (Pearson's χ^2,

$P = 0.023$). Two and 7 patients of groups A and B, respectively, had to temporarily interrupt the chemoradiotherapy protocol by reason of toxicity. Two patient of each group had to stop the therapy because of toxicity. One patient from group A died during the therapy (pulmonary embolism). Two patients of group B died due to systemic mycosis caused by the therapy protocol.
Conclusions: Radiotherapy delivered concurrently with weekly cisplatin and cetuximab is more toxic and leads in more interruptions of the protocol schedule compared with chemoradiotherapy with cisplatin.

OP41
Pre-radiation neck dissection after induction chemotherapy in advanced head and neck cancer under organ preservation strategies

Soo-youn An, J. Hun Hah, Tack-Kyun Kwon, Myung-Whun Sung, Kwang Hyun Kim
Department of Otorhinolaryngology-Head and Neck Surgery, Seoul National University Hospital, Seoul, Korea Republic

Introduction: Poor-responders in the neck after induction chemotherapy (IC) followed by radiation (RT) or concurrent chemoradiation (CCRT) were associated with high rate of treatment failure in spite of salvage surgery.
Purpose: To establish the role of pre-radiation neck dissection (pre-RT ND) in patients with head and neck squamous cell carcinoma (HNSCC) undergoing organ preservation treatment.
Materials and methods: Retrospective study of 144 patients with histologically confirmed HNSCC in stages III–IV with regional metastasis who underwent in IC between January 1999 and April 2008. A total of 99 patients who showed complete or partial response (CR or PR) in primary tumor to IC and underwent subsequent neck management were enrolled in this study.
Results: Twenty-five patients showed CR in neck and underwent sequential RT (CR group, $n = 25$). Patients who showed PR or no response in neck underwent sequential RT only ($n = 29$), CCRT ($n = 24$), and pre-RT ND ($n = 21$). We calculated the metastatic lymph node volume with CT scans before and after IC, and compared them between groups. PreRT ND group showed better regional control rate compared to other groups, even though LN volumes were more massive than RT and CCRT groups. PreRT ND and CCRT groups showed comparable results in regional control, locoregional control, disease-free survival, and overall survival, even though stages (especially N) were more advanced than CR group.
Conclusions: PreRT ND could be one of the treatment options for huge lymph nodes and for the poor-responders of the neck to IC of HNSCC under organ preservation strategies.

OP42
Fascin expression in head and neck squamous cell carcinoma is related to prognosis

Konstantinos Papaspyrou, Wolf J. Mann, Juergen Brieger
Department of Otolaryngology, Head and Neck Surgery, University Medical Center of the Johannes Gutenberg University Mainz, Mainz, Germany

Introduction: Fascin is a protein which, by cross-binding actin bundles to form membrane protrusions and intracellular actin-based structures, plays an important role in cellular motility and migratory changes in carcinogenesis. Fascin has emerged as a very interesting candidate biomarker because its expression is low or absent in the majority of normal adult epithelia, yet up-regulation of the protein has been reported in numerous carcinomas and may correlate with invasion and metastasis.
Purpose: The predictive value of fascin as marker for the likelihood of recurrence in head and neck squamous cell carcinoma (HNSCC) was examined.
Materials: In this retrospective study, we analysed 41 tumours and adjacent healthy tissues from 36 patients.
Methods: We performed an immunohistochemical analysis. Staining intensities were measured using a semiquantitative scoring approach; localisation (tumour vs. healthy, directly the tumour adjacent epithelial) as well as clinical data was analysed and correlated with follow-up.
Results: Fascin was increased in primary tumours of patients with later recurrence. High levels of fascin expression in healthy epithelial in patients which did not receive radiotherapy after surgery were significantly correlated to development of recurrence.
Conclusions: Fascin should be further analysed for its value as marker for prognosis in HNSCC.

OP43
The killing effect of CTL primed by two different methods preparation of dendritic cells pulsed with antigen on TCA8113 cells in vitro

Wenhao Ren, **Keqian Zhi**, Lu Zhao, Lin Gao, Fang Guo, Chengqun Hou
Department of Oral and Maxillofacial Surgery, Hospital of Stomatology, Xi'an Jiaotong University, Xi'an, China

Introduction: Inducing tumor-specific T-lymphocyte immune response in various ways has become an effective anti-tumor therapy. DC vaccination has yielded encouraging efficacy in malignant lymphoma, malignant melanoma, prostate cancer and other cancer treatment.
Objective: To study the feasibility of DCs vaccine on the therapy of tongue carcinoma and find the better way of antigen load.
Methods: The antigen peptides of Tca8113 cells were obtained by acid eluted technique and repetitive freeze thaw method, separating T cell and inducing dendritic cells from human peripheral blood monocyte. It is divided into three groups: weak acid elution method antigen group, anti-freeze–thaw method antigen group, the control group (without tumor antigen). T cells and DCs were mixed by different effector–target ratio. Using MTT assay, the quantities of absorbance were measured and stimulation index was calculated. Dendritic cells pulsed with antigen was mixed with T cells by different effector–target ratio. Using MTT assay the quantities of absorbance were measured and killing rate was calculated, and compared among three groups.
Results: DCs vaccine was constructed successfully. DCs vaccine can induce T lymphocytes to kill Tca8113 cells and displayed the dose–effect relationship. There was significant difference among the three groups. The acid eluted and repetitive freeze thaw groups were superior than the control group; The acid eluted group is better than repetitive freeze thaw group.
Conclusion: DCs vaccine can induce T lymphocytes to kill Tca8113 cells. The antigen peptides obtained by acid eluted technique is better than repetitive freeze thaw method in immunotherapy of tongue cancer.

OP44
Loss of MTBP expression identifies a sub-set of squamous cell carcinoma of the head and neck (SCCHN) patients with reduced survival

Ashraf El-Fert[1], David M. Gore[1], Andy Dodson[2], Andrew S. Jones[1], Tim R. Helliwell[1,2], Terence M. Jones[1,3], Nikolina Vlatković[1], **Mark T. Boyd**[1]
[1]School of Cancer Studies, The University of Liverpool, Liverpool, UK, [2]Department of Pathology, Royal Liverpool University Hospital, Liverpool, UK, [3]Department of Otolaryngology/Head and Neck Surgery, Aintree University Hospitals NHS Foundation Trust, Liverpool, UK

Introduction: Genetic studies have implicated p53 mutation as a significant risk factor for therapeutic failure in SCCHN. We have extended p53-pathway analysis to include MDM2 (essential negative regulator and transcriptional target of p53) and MTBP, we discovered an MDM2 binding protein which alters p53/MDM2 homeostasis and may contribute to metastatic suppression.
Purpose: To identify and investigate novel biomarkers as prognostic tools and identify novel targets for intervention.
Materials: 198 SCCHN patient tissue samples and 7 SCCHN cell lines were analysed.
Methods: Samples were micro-arrayed and analysed by immunohistochemistry. Functional cell motility and invasion studies using RNAi-modulated gene expression were performed in Boyden chambers using real-time live cell microscopy.
Results: Using IHC for p53 and MDM2 to dichotomise patients into p53 "wild-type" and "mutant" groups (Boyd and Vlatković, Expert Opinion in Medical Diagnostics, 2008), loss of MTBP expression is significantly associated with reduced survival ($P = 0.004$, HR = 2.78, 95% CI 1.39–5.54) in p53 "mutant" patients, independently of nodal status. RNAi studies demonstrate that MTBP is a suppressor of cell motility.
Conclusions: This is the first examination of MTBP expression in human tissues and provides evidence for a p53-dependent role for MTBP in suppressing disease progression. Combining this with in vitro data demonstrating that MTBP suppresses cell motility suggests that loss of MTBP leads to increased cell motility (a major determinant of metastatic potential) and may provide a link between the observed loss of MTBP expression and lower survival. MTBP has potential for both prognostication and may also provide a novel therapeutic opportunity.

OP45
Narrow band imaging (NBI) and high definition television (HDTV) in oral and oropharyngeal cancer: a prospective study on 80 patients

Cesare Piazza[1], Daniela Cocco[1], Francesca Del Bon[1], Stefano Mangili[1], Alessandra Majorana[2], Andrea Bolzoni Villaret[1], Giorgio Peretti[1]
[1]Department of Otorhinolaryngology-Head and Neck Surgery, University of Brescia, Brescia, Italy, [2]Dental Clinic, University of Brescia, Brescia, Italy

Introduction: NBI is an optical technique in which a filtered light enhances superficial neoplasms thanks to their neoangiogenic pattern. NBI accuracy is implemented by combining it with an HDTV camera.
Purpose: To prospectively evaluate the diagnostic gain of these technologies in the evaluation of oral (O) and oropharyngeal (OP) squamous cell cancer (SCC).
Materials and methods: Between April 2007 and September 2009, we analyzed 80 patients divided into 2 groups: Group A included 26 patients already known to be OSCC and OPSCC and subjected to pre- and intraoperative HDTV white light (WL) and HDTV NBI endoscopy; Group B included 54 subjects previously treated for an OSCC or OPSCC and followed-up by HDTV WL and HDTV NBI.
Results: Nine of 26 patients (34%) in Group A showed adjunctive findings with NBI compared with standard WL. All received histopathologic confirmation. Eleven of 54 patients (20%) in Group B showed positive NBI findings. All were histologically confirmed as neoplasms. Sensitivity, specificity, positive, negative predictive values, and accuracy for HDTV WL were 47, 100, 100, 87, and 68%, respectively, and for HDTV NBI 95, 100, 100, 93, and 97%, respectively.
Conclusions: Twenty of 80 patients (25%) received a diagnostic gain by NBI HDTV: 6 obtained a diagnosis of recurrence and 1 of persistence after previous treatments; 5 showed a metachronous and 4 a synchronous tumor; 3 lesions were upstaged; 1 patient affected by an unknown primary was demonstrated to harbour it in the anterior tonsillar pillar.

OP46
Predictors of percutaneous gastrostomy tube dependence in advanced head and neck cancer

Enyinnaya Ofo, Jean-Pierre Jeannon, **Ricard Simo**, Rachael Donnelly, Lesley Freeman, Mary O'Connell, Francis Calman
Department of Otolaryngology and Head and Neck Surgery, Guy's and St Thomas' NHS Foundation Trust, London, UK

Introduction: Dysphagia following treatment for locally advanced squamous cell carcinoma of the head and neck (SCCHN) is a well-recognised clinical problem, with adverse effects on patients' quality of life. Nutritional support via percutaneous endoscopic gastrostomy (PEG) tube can be associated with significant complications such as local site infection, leakage and intra-abdominal sepsis.
Purpose: To determine the rate of PEG tube dependence in our institution, as well as factors predictive of prolonged PEG tube usage.
Materials: Patients undergoing treatment (all modalities) for AJCC stage III and IV SCCHN requiring PEG tube insertion over a 2-year period from January 2006 to December 2007. All patients were followed up for at least 12 months.
Methods: Retrospective review. Data collected included age, sex, primary tumour site, TNM status, treatment modalities, pretreatment body mass index (BMI), PEG tube dependence (in weeks) and overall survival. All statistical analyses were performed using the statistical package for social services version 14.0 (SPSS Chicago, IL).
Results: Mean age was 58.8 years, with the oropharynx (45%), nasopharynx (19%), and oral cavity (17%) accounting for the primary site in most cases. Majority of patients were treated primarily with chemoradiotherapy (60%). 40.2% of patients were PEG tube dependent at 1 year (52 weeks). The median time to PEG tube removal was 47 weeks (range 9–110 weeks). On binary logistic regression, age ($p < 0.017$), treatment modality ($p < 0.130$) and BMI ($p < 0.07$) were put forward for multiple regression analysis from which age ($p < 0.02$) and BMI ($p < 0.05$) were predictive of PEG tube dependence at 39 weeks (i.e. 9 months) post-insertion.

Conclusion: Age and BMI appear to be predictors of prolonged PEG use. This knowledge may aid clinicians and dieticians in the management of SCCHN patients requiring nutritional support via PEG tubes.

OP47

Body weight and plasma protein changes after ablative surgery for head and neck cancer: prospective observational study

Mario Airoldi[1], Giancarlo Pecorari[2], Massimiliano Garzaro[2], Matteo Sensini[2], Luca Raimondo[2], Carlo Giordano[2]
[1]*Department of Medical Oncology, San Giovanni Battista Hospital, Turin, Italy,* [2]*Ist ENT Clinic, Physiopathology Department, University of Turin, Turin, Italy*

Introduction: Malnourishment is very common in patients who underwent ablative surgery for head and neck cancer: long time oral feeding inability could increase local complications and delay the functional recovery.
Purpose: Aim of this study was the clinical and haematologic evaluation of the nutritional trend in post-operative time in head and neck cancer surgical-treated patients, using a specific nutritional protocol.
Materials: Pre- and post-operative nutritional status was evaluated in 44 patients (37 males and 7 females), median age 61 years, collecting the following parameters: BMI, weight, albumin, prealbumin, transferrin, and CRP.
Methods: Every patient received the following protocol: operation day ev idratation, 1st day parenteral nutrition, from 2nd day enteral nutrition with polymeric mixture by nasoenteral feeding tube or percutaneous endoscopic gastrostomy; daily calories (basal energy expenditure $\times$ 1.3), proteins (1.2 kg^{-1} day^{-1}) control and glucose correction. All above-mentioned parameters were evaluated at 7, 14 and 21 days.
Results: Albumin, prealbumin and transferrin values decreased during the first post-operative week and increased during second and third week in all patients. Basing on CRP trend (increased or decreased), we observed that there was a correlation between high levels of the inflammatory marker and lower late protein (albumin, prealbumin and transferrin) synthesis.
Conclusions: Nutritional protocol was well tolerated. No significative weight changes were recorded. Post-operating recovery of late proteic synthesis indexes is related to persistence of inflammatory activation. A higher proteic production is associated with an earlier recovery with lower rate of local and systemic complications.

OP48

Restoration of the natural feeding after microsurgical reconstruction of the oral cavity for patients with head and neck tumors

Igor Reshetov, Sergey Kravtzov, Oleg Matorin, Andrey Polyakov, Michael Ratusyny, Michael Philyushin
Department of Microsurgery and Head and Neck Surgery, P.A. Hertzen Cancer Researh Institute, Moscow, Russia

Purposes: Functional and social rehabilitation improvement of patients after eradication of locally invasive oral cavity malignant tumors. Method of orthotopical microsurgical reconstruction of orofacial zone and oral cavity tissues is used after eradication of malignant tumors using morphofunctionally homogeneous autotissues. We accumulated the treatment experience of 264 patients, and 279 autotransplantation was made. Primary tumors were discovered in 113 (43%) cases. The III st. of tumorous process ascertained in 35% of cases and the IV st. in 60%, 121 patients had recurrent tumors (46.2%). 26 patients (9.8%) had an operation on account of postoperative defects. Skull base resection was made in 35 (14%) of observations.
For reactivation of natural feeding and correction of 166 (63%) orofacial defects, 35 (14%) cranioorofacial defects, 55 (21%) oroorbitofacial, 6 (2%) isolated defects of lower jaw, 279 autotransplants were used: visceral 38 gastroomental, 13 colonomental, 33 omental; skin-muscular-bone: 14 radial, 16 iliac, 12 fibular, 102 rib-muscular, 25 different skin-muscular flaps, and 26 skin-fascia radial flaps.
Results: Natural feeding was reactivated in 88.6% of patients. In most cases the nature feeding has been restored for 14 days after operation. After reconstruction of the oral cavity by visceral autotransplants, natural feeding started in 2–3 weeks. Using the bone-muscular, skin-fascial and skin-muscular, it started in 4–7 weeks. Postoperative complications were in 58 (25%) of patients. Total flap necrosis as a result of microvascular anastomosis thrombosis were in 12 (5.2%) patients. 32% of patients returned to labour.

OP49

Refeeding syndrome in head and neck cancer patients

Samit Ghosh[1,2], **Nazia Munir**[1,2], James Hare[2], Rachel Skelly[3], Arvind Arya[1,2], Nicolas Roland[1], Jeffrey Lancaster[1], Shaun Jackson[1], Terry Jones[1,2]
[1]*Department of Otolaryngology/Head and Neck Surgery, Aintree University Hospital NHS Foundation Trust, Liverpool, Merseyside, UK,* [2]*School of Cancer Studies, University of Liverpool, Liverpool, Merseyside, UK,* [3]*Department of Nutrition and Dietetics, Aintree University Hospital NHS Foundation Trust, Liverpool, Merseyside, UK*

Introduction: Refeeding Syndrome (RfS) may result following the re-establishment of feeding in malnourished individuals. RfS has multisystem consequences and an associated mortality rate. Head and neck cancer patients are at risk of RfS due to their often poor nutritional status and co-morbidities.
Purpose: To identify the prevalence of RfS risk in patients being treated for squamous cell carcinoma of the head and neck (SCCHN).
Materials: 189 patients [133 males:56 females, mean age 61 years, range 29–82 years] undergoing curative treatment for SCCHN were included.
Methods: Nutritional status, biochemical profile and tumour characteristics were recorded on admission. Patients were closely observed for signs of RfS following the commencement of feeding.
Results: 14 patients had lost >10% and 28 >15% body weight in the preceding 3 months. 68 were found not to be meeting nutritional requirements on admission: 12 had biochemical abnormalities. Overall, 104 (55%) were considered at risk of RfS. 18 (9.5%) developed RfS, 13 of whom had BMIs <20 m/kg^2 and 16 of whom were identified as at risk on pre-feeding assessment. 15/23 (69%), 24/42 (57%), 20/47 (42.5%) and 37/71 (52.1%) of patients with tumours of the hypopharynx, larynx, oropharynx and oral cavity, respectively, were found to be at risk of RfS. Of these 1 (4.3%), 0, 2 (4.2%) and 14 (19.7%), respectively, developed RfS on the commencement of feeding.

Conclusions: Most head and neck patients are at risk of RfS. Mitigation against its occurrence requires vigilance. Oral cavity, oropharynx and hypopharynx tumours rendered patients at particular risk of developing RfS.

OP50
Vitamin D levels in patients with head and neck cancer

Helena Orell-Kotikangas[1,2], **Antti Mäkitie**[3]
[1]*Department of Clinical Nutrition Therapy,* [2]*Department of Oncology,* [3]*Department of Otolaryngology-Head and Neck Surgery, Helsinki University Central Hospital, Helsinki, Finland*

Introduction: Low serum levels of vitamin D, measured as 25-hydroxy-vitamin D (S-25-OHD), have been observed in several cancers. There are no data about vitamin D status in head and neck cancer patients at the beginning of cancer treatment. It is known that vitamin D status influences recovery and rate of complications.
Purpose: The aim of the present study was to evaluate S-25-OHD concentrations in patients with head and neck carcinoma prior to treatment.
Materials: Sixty-four adult patients, 49 males and 15 females (median age 61 years), with histologically confirmed head neck squamous cell carcinoma were enrolled in this prospective study during 2007–2009.
Methods: Blood samples were obtained prior to cancer treatment. S-25-OHD and plasma Ca and Pi were measured by standard methods. S-25-OHD <50 nmol/L was defined as hypovitaminosis and values <20 mmol/L as vitamin D deficiency.
Results: The mean (SD) S-25-OHD was 41.9 (22) nmol/L. Vitamin D hypovitaminosis was found in 64% and deficiency in 16% of the patients. Two patients had extreme vitamin D deficiency with values <10 nmol/L. No seasonal variation was observed. There were no statistically significant differences in vitamin D concentrations between the genders. Subnormal plasma Ca levels were found in 11% and low Pi levels in 9% of patients.
Conclusions: Subnormal vitamin D levels were found in a significant proportion of the patients already prior to treatment. Since vitamin D deficiency may pose these patients to increased risk of therapy-related morbidity, special attention should be paid to correction of nutritional deficiencies.

OP51
The incidence of thyroid dysfunction following radiotherapy for early stage carcinoma of the larynx

Sonia Kumar, Ram Moorthy, Stuart Thompson, Ganapathy Dhanasekar, Huw Griffiths
Royal Shrewsbury Hospital, Mytton Oak Road, Shrewsbury, UK

Introduction: External bean radiotherapy is the current gold standard treatment for early laryngeal cancer (T1/2) and thyroid dysfunction is a well-recognized complication of treatment. Overt hypothyroidism is a specific clinical disorder which in most patients will be recognized and treated. The problems associated with subclinical hypothyroidism (elevated TSH with normal T4), however, are only now being recognized and their management is to some extent still controversial.
Purpose: The aims of our study are to determine the incidence of clinical and subclinical hypothyroidism in those who have been treated solely with curative radiotherapy for early laryngeal cancer.
Materials: All patients who underwent curative radiotherapy for T1/T2 laryngeal cancer between 1998 and 2002 were identified.
Methods: We performed a retrospective observational study.
Results: 33 patients were identified (mean 66.85 years, range 48–93). 19 patients had T1 lesions (58%), 14 had T2 lesions (42%) and 27 were N0 (82%). 23 patients were euthyroid post-treatment (70%), 2 became overtly hypothyroid (6%) and 8 developed subclinical hypothyroidism (24%). There was no association between tumour stage ($p = 0.97$), nodal stage ($p = 0.46$) and thyroid status; however, there was an association between age and deteriorating thyroid function ($p = 0.01$).
Conclusion: Our study showed that of patients with early laryngeal cancers treated solely with curative radiotherapy, 24% developed subclinical hypothyroidism and 6% were overtly hypothyroid (elevated TSH and reduced T4). We feel that patients should receive regular thyroid function testing following completion of treatment and should be adequately counselled on the risk of thyroid dysfunction following radiotherapy at pre-operative visits.

OP52
Functional rehabilitation after tumor surgery

Stephan Thomas Becker[1], Marc Menzebach[1], Daniela Müller[2], Jörg Wiltfang[1]
[1]*Department of Oral and Maxillofacial Surgery, Christian-Albrechts Universität Kiel, Kiel, Germany,* [2]*Praxis für Logopädie Averdieck, Munich, Germany*

Introduction: Although the main goal of tumor surgery remains survival of the patient, postoperative life quality is becoming a more and more important parameter.
Purpose: To evaluate the differences between the objective determination of postoperative speech and swallowing by a speech pathologist and a surgeon and the patient's subjective assessment for different reconstruction techniques after tumor surgery.
Materials and methods: 40 patients at least 1 year after tumor surgery of the tongue and the lower jaw region were asked to fill in the EORTC QLQ C30 and H&N35 questionnaires. A surgeon determined speech and swallowing semiquantitatively and a speech pathologist used the Frenchay dysarthria examination. The reconstruction groups were divided in the following manner: laser-resection, myocutaneous flaps, fasciocutaneous, and osteomyocutaneous flaps.
Results and conclusions: The best subjective and objective results were obtained for laser resections, the second best results for thin fasciocutaneous transplants. Pedicled myocutaneous transplants were partly better rated than osteomyocutaneous flaps. The assessment of the patient and the speech pathologist for speech were similar. Laserresections were rated too positive from the surgeons. Swallowing was significantly reduced for all reconstruction techniques. The discrepancies in the assessment of swallowing between patient and surgeon were remarkable. The neuromuscular coordination of swallowing cannot be improved—independent of the reconstruction techniques.

PP001
Laser safety in head and neck cancer surgery

Ferhan Ahmed[1], Andrew J. Kinshuck[1], Mike Harrison[1], Dan O'Brien[1], Jeff L. Lancaster[1], Terry M. Jones[1,2]
[1]*Department of Otolaryngology and Head and Neck Surgery, University Hospital Aintree, Liverpool, UK,* [2]*Division of Surgery and Oncology, School of Cancer Studies, University of Liverpool, Liverpool, UK*

Introduction: There is an increase in the popularity of the use of CO_2 lasers in Head and Neck cancer surgery.
Purpose: To study the safety aspects of CO_2 lasers in Head and Neck cancer surgery.
Materials and methods: A Sigmacon Acupulse Lumenis^{TM} CO_2 laser was evaluated. The beam was focused to the smallest dot at 402 mm focal length. Various materials (gauze swabs, neurosurgical patties, surgical gloves, paper drapes and endotracheal tubes) were tested against the following laser variables: wattage, beam characteristics and two angles (90° and 45°). Laser penetration time was recorded and repeated with dry and wet materials. The mean of three recordings was taken.
Results: Dry gauze swabs, neurosurgical patties and paper drapes provided 0 s protection at 2 W (lowest setting). However, when wet, the laser failed to penetrate the swabs and neurosurgical patties, even after 180 s of continuous application.
The laser penetrates gloves, double gloves and endotracheal cuffs in less than 1 s at 2 W. Time to penetrate a size 6.0 endotracheal tube at 2 W continuous setting increased from <1 s at 90° to 42 s at 45°. Full tabulated results with all laser variables are available.
Conclusions: These data are invaluable for anyone using CO_2 lasers in this setting. The importance of keeping laser consumables wet throughout the procedure is high-lighted. The angle at which the laser hits the endotracheal tube may impart some protection against airway fire but the data support the need for some form of endotracheal tube protection.

PP002
Carotid artery resection and reconstruction in patients with head and neck malignant tumors

Nazim Korkut[1], Alper Ozdilek[1], Hasan Tuzun[2], Emin Karaman[1], Ender Inci[1], Harun Cansiz[1]
[1]*Istanbul University Cerrahpasa Medical Faculty Otolaryngology Department, Istanbul, Turkey,* [2]*Istanbul University Cerrahpasa Medical Faculty Cardiac and Vascular Surgery Department, Istanbul, Turkey*

Introduction: There are controversies on management of carotid artery invasion in advanced head and neck cancer. Carotid artery resection has been shown to yield a chance of cure in patients with advanced head and neck carcinoma involving the carotid artery.
Purpose: The purpose of this study was to determine the efficiency of carotid resection and reconstruction after en bloc resection of the tumor.
Materials and methods: We studied 19 patients with head and neck tumor involvement of the carotid artery between March 1994 and September 2007. Autogenous saphenous vein graft ($n = 17$) and polytetrafluoroethylene (PTFA) synthetic vascular graft ($n = 2$) were used. Eleven patients required wound coverage with pectoralis major myocutaneous flap. Gastric pull-up was also performed in two patients who underwent esophagectomy.
Results: Disease survival was 31.5% in 2 years. Five patients died from local recurrences ($n = 2$, 10%) and lung metastasis ($n = 3$, 16%) with mean duration of 19 and 18.5 months, respectively. Two patients, one with postoperative neurological deficit died on the 8th day and the other one with acute graft thrombosis and acute heart failure died on 35th day, respectively.
Conclusions: Carotid artery reconstruction is superior to ligation in avoiding the neurological complications of carotid artery resection. Carotid artery reconstruction may improve the quality of life and regional control of the disease. Resection carotid artery and reconstruction is shown to be a feasible modality in treatment of advanced head and neck cancer with carotid artery invasion.

PP003
Oral squamous cell carcinomas: diagnostic agreement between cytopathology and histopathology

Karin Cunha[1,2], Karla Bianca Fontes[1,2], Maria Piragibe[1], Fabiana Rodrigues[1], Licínio da Silva[1], Eliane Dias[1]
[1]*Postgraduate Program of Pathology, Medicine School, Universidade Federal Fluminense, Niteroî, RJ, Brazil,* [2]*Dentistry School, Nova Friburgo University Pole, Universidade Federal Fluminense , Nova Friburgo, RJ, Brazil*

Introduction: Oral cancer is one of the most common cancers worldwide and constitutes a public health problem. A key factor in the lack of improvement in patient prognosis over the years is that a significant proportion of oral squamous cell carcinomas is not diagnosed or treated until they reach an advanced stage. Cytological study of oral cells is a non-aggressive technique that is well accepted by patients. Nevertheless, its usage has been limited so far due poor sensitivity and specificity, observed in some studies, in diagnosing oral cancer.
Purpose: The aim of this research was to investigate the correlation of the cytopathological analysis with the histopathological diagnosis of 132 patients with oral squamous cells carcinoma.
Materials and methods: After the cytopathological criteria establishment, all smears were evaluated by three independent examiners and classified as negative for malignancy, positive for epithelial dysplasia, suspicious for squamous cell carcinoma, positive for malignancy, positive for carcinoma and positive for squamous cells carcinoma.
Results: The comparative analysis between cytopathological and histopathological aspects (gold standard) showed diagnostic agreement of 83.3 with 95% confidence, estimated at between 76.9 and 89.7%.
Conclusions: Considering the cellular changes sufficient to diagnose, the results indicate that cytopathology can be usually used as a routine diagnostic method of oral squamous cell carcinoma as it presents good diagnostic agreement.

PP004
Do histological characteristics of the primary tumor in early carcinoma of the tongue help determine the management of the neck?

John C. Muthusami, Anshika Mittal, Pranay Gaikwad, Amit Jiwan Tirkey
Department of Head and neck Oncosurgery and general surgery, Christian Medical College, Vellore, India

Introduction: Early carcinoma tongue is associated with significant occult neck nodal metastasis. Many reasons have been attributed to this.
Purpose: To describe the relationship of the pattern of lymph node metastasis with respect to the histopathological characteristics of the primary tumor in patients with $T_{1\text{-}2}$ N_0 M_0 carcinoma of the tongue.

This may enable to better plan the management with regard to neck dissection.
Materials: Thirty patients that were diagnosed to have early carcinoma tongue ($T_{1\text{-}2}$ N_0 M_0) between July 2006 and August 2008 underwent wide local excision of the primary lesion and either modified radical neck dissection or radical neck dissection.
Methods: A descriptive study was conducted after obtaining appropriate approval from the Institutional Review Board. The pathology specimens were examined to evaluate for the primary tumor characteristics and the pattern of lymph node metastasis. A univariate analysis was done using SPSS software Chi-square test and p value of <0.05 was considered significant.
Results: Out of these 30 patients, 7 (23.3%) were found to have occult metastasis to the neck lymph nodes. All of these nodal metastases were limited to the levels I, II and III lymph node groups. A univariate analysis of primary tumor histopathological characteristics revealed that the presence of perineural invasion, angiolymphatic invasion or an invasive growing front are factors significantly related to the presence of occult lymph nodal metastasis.
Conclusions: Incidence of occult metastasis in early tongue carcinoma is significant but limited to levels I, II and III especially when histopathology of the primary tumor reveals perineural invasion, angiolymphatic invasion and invasive growth front. Selective neck dissection of nodal levels I through IV seems justified.

PP005
Is there a correlation between intraoperative hypothermia and postoperative morbidity in head and neck cancer patients?

Rania Mehanna, Conrad Timon
Otorhinolaryngology Head and Neck Surgery, St. James Hospital, Dublin, Ireland

Introduction: It is well documented that decreased core temperature leads to decreased blood flow causing decreased postocclusive reactive hyperaemia and increased vascular resistance in the flap. We hypothesized that this leads to increased risk of flap complications.
Purpose: To establish if intraoperative hypothermia correlates with increased postoperative morbidity in patients undergoing resections of head and neck cancers with subsequent free/pedicled flap(s) reconstruction.
Materials and methods: Retrospective chart review for patients undergoing flap reconstruction in our institution (academic tertiary care hospital) over 5 years. Several patient variables were analyzed including age, sex, oncological stage, smoking status, and prior radiotherapy exposure. Intraoperative temperature was measured via urinary catheter, and a mean was calculated. Results were analyzed using independent t test, odds ratio, and logistics regression.
Results: Of the 41 patients included, 16 had pedicled/rotational flaps, 23 had free flap reconstructions, and 2 underwent a combination of free and rotational flaps. Of our patients, 15 experienced flap complications with 9.5% having greater than 50% flap loss/dehiscence. And 9.5% with less than 50% flap loss. 2 patients developed myocutaneous fistulas. It was calculated that with a 1°C temperature drop, the probability of having postoperative complications increased by 6.43 times.
Conclusions: Hypothermia is known to cause reduced blood flow and increased vascular tone. This causes significant postoperative flap morbidities. Other variables such as age, smoking and previous radiotherapy had no impact on morbidity. Thus, hypothermia is an independent risk factor for the development of postoperative morbidity in patients undergoing flap reconstruction for head and neck cancers.

PP006
Tracheostomy to the oncological patient-particular issues

Dimitra Aggeli, **Anastasios Stefanidis**, Stavroula Soldatou, Konstantinos Paraskevopoulos, Aris Ntomouxtsis, Natalia Mpania, Ioannis Thomaidis, Maria Kynigou, Thomas Sidiras
ENT Department, Theageneion Hospital, Thessaloniki, Greece

Introduction: Tracheostomy is the surgical procedure by which an artificial opening is created to the anterior wall of trachea. Indications to perform a tracheostomy are respiratory tract obstruction, need for prolonged mechanical breathing and the protection of the tracheobronchial tree.
Purpose: Presentation of our experience in tracheostomy performed on various oncological patients in our hospital.
Materials: In Theageneion Hospital, we perform about 50 tracheostomies per year, not only on ENT patients, but also on patients of maxillofacial surgery department, who suffer from tongue or maxillar cancer.
Methods: Tracheostomy is classified to emergency, surgical and percutaneous tracheostomy.
Emergency tracheostomy is performed under local anesthesia. A vertical incision is made, thyroid gland is recognised and its isthmus is either moved or cut. An incision is made to the anterior wall of trachea, and the tracheostomy tube is inserted so that the patient can be ventilated. Surgical tracheostomy is performed under general anesthesia. Incision may be horizontal or vertical. After recognition of thyroid gland and exposure of trachea, the 2nd–3rd tracheal ring is cut, a tracheostomy tube is inserted and airway is ensured. Percutaneous tracheostomy is performed in intensive care units, on the patient's bed, using a leading wire and dilators. It is not indicated for all patients, because there is danger for serious haemorrhage. Postoperative care for the first few days includes aspiration of secretions, humidity, physiotherapy, changing the tracheostomy tube and equipment that is kept by the bedside of the patient.
Results: T*o* what oncological patients are concerned, in ENT region, tracheostomy is used mostly in cases of laryngeal cancer when laryngectomy or radiotherapy is going to follow. Immunosuppression and complications are more frequent than in non-oncological patients.
Conclusions: Management of oncological patients with tracheostomy has special demands. Because of cancer, the patient's general condition is affected. Many problems may be caused if management of the tracheostomy is not proper.

PP007
Management of upper airway obstruction in a University Hospital in Gulf area

Haitham AbouZeid[1], Mohamed Regal[2], Yasser Ghonamy[2]
[1]Anesthesia Department, [2]Thoracic surgery Department, King Faisal University, King Fahd Hospital of University Alkhobar, Alkhobar, Saudi Arabia

Introduction: Upper airway obstruction (UAO) is characterized by progressive dyspnea, wheezes, stridor, cough and failure to swallow fluids.
Acute obstruction of the airways in the emergent situation results from a wide variety of malignant and benign disease. Bronchoscopic management (fibroptic or rigid) is the first step to provide a diagnosis, stabilize the airways and management. Fibreoptic bronchoscopy is a safe technique to secure the airway and facilitate the intubation of the trachea resulting in an excellent outcome and short hospital stay. We hypnotize that early use of fibroptic and rigid bronchoscopy to manage UAO cases will reduce the side effects and complications of tracheostomy with better outcome.
Patients and methods: Retrospectively, reviewing of medical charts and radiological images of 56 patients complained of dyspnea, stridor, cough and/or failure to swallow and have been operated upon during the period of October 2002 to June 2009 in King Fahd University Hospital. Anesthetic management or sedation techniques used were recorded. In cases in which both fiberoptic bronchoscopy (FOB) and rigid bronchoscopy (RB) were used, side effects and complications were recorded. Cases with severe respiratory distress or impending suffocation and successfully ventilated were collected.
Results: There were 37 males and 19 females, aged 3 weeks to 67 years. There were 31 benign causes (55.35%) and 25 malignant causes (44.65%). 42 cases with UAO and urgent bronchoscopic evaluation of the airways was required initially in all cases. Mortality was four cases (0.07%).
Conclusion: Airway management of UAO was traditionally secured via tracheostomy. Bronchoscopy is the first step to provide a diagnosis, stabilize the airways, evaluate and manage the cases. In most cases the definitive management is surgical resection and reconstruction, which provides the best opportunity.

PP008
Radiofrequency surgery treatment of tongue base hypertrophy

Dimitra Aggeli, Stefanidis Anestis, Triaridis Athanasios, Kinigou Maria, Chatziavramidis Aggelos, Sidiras Thomas
ENT Department, Theagenion Anticancer Hospital, Thessaloniki, Greece

Introduction: Hypertrophic lymphoid tissue of the base of the tongue may lead to problems affecting both the upper respiratory and digestive system. Radiofrequency surgery is a minimally invasive technique used for reduction of those lesions.
Purpose: We present a patient with a gross hypertrophy of the tongue base and sleep disorder that was treated with radiofrequency diathermy.
Materials: A 55-year-old man who presented to his primary physician complaining of voice changes and difficulty in breathing at sleep. Physical examination revealed a mass of the tongue base. The patient was referred to our hospital for further evaluation. Indirect laryngoscopy confirmed the presence of the mass of the base of the tongue.
Methods: Two biopsies of the mass were performed with punch forceps under local anesthesia. Histology reported lymphadenoid tissue hyperplasia. Magnetic resonance imaging (MRI) was suggestive of a benign mass with no significant lymphadenopathy. Patient received under general anesthesia two treatment sessions with radiofrequency diathermy. MRI examination was repeated 4 weeks after each session.
Results: Radiological evaluation showed minor change of the size of the mass after radiofrequency diathermy surgical treatment. Nevertheless, the patient reported significant improvement of his symptoms having no sleep or voice disorders.
Conclusion: Use of radiofrequency diathermy can lead to clinical improvement of symptoms associated with lymphoid hypertrophy of tongue base not necessarily justified by imaging techniques.

PP009
Technical considerations for retropharyngeal lymphatic nodes approach

Antoine Digonnet, Esther Willemse, Guy Andry
Department of Thoracic and Head and Neck Surgery, Jules Bordet Institute, Free University of Brussels, Brussels, Belgium

Metastatic retropharyngeal nodes may occur in head and neck squamous cell carcinoma (HNSC) and in well-differentiated thyroid cancer. Surgical management of disease in this location can be problematic due to the proximity of the internal carotid and jugular vessels. Traditional extirpative procedure to retropharyngeal nodes involves a transcervical approach. In HNSC it can be performed by a superior extension of neck dissection. However, in well-differentiated thyroid cancer a transcervical approach would add considerable morbidity.

Here, we discuss here two cases of metastatic retropharyngeal nodes, one from a recurrent oro-pharynx carcinoma and one from a well-differentiated thyroid carcinoma. The latest was managed by a transoral approach using an ultrasound lead in the operation room. Our approach required an incision in the soft palate to facilitate the exposition field. The nodes were removed easily within 30 min. The patient was allowed to eat a mixed diet the day after surgery. The patient with recurrent oropharyngeal carcinoma after radiation therapy had local as well as regional recurrences. Transcervical approach with mandibulotomy was performed, giving exposition to allow control of internal carotid, which proved to be mandatory to remove the adherent node. The patient return to a normal diet after day 15, this delay was ascribable to the removal of the primitive tumour. The technical choice remains patient's dependant and must be carefully examined before surgery, in all case with preoperative MRI.

PP010
Anatomical analysis of positive resection margin in tongue cancer

C. S. Cheng[1], Y. L. Hsiao, C. K. Poon, M. Y. Chan, Y. K. Wong
Taichung Veterans General Hospital, Taichung, Taiwan Republic of China

Purpose: Positive resection margin is the worst predictive factor in the treatment of oral cavity carcinoma. We supposed that different positive resection sites could demonstrate variant risk of local recurrence and treatment failure. Thus, it could be worthy to concern about anatomical differences of positive resection margin, which possibly related to overall outcomes of tongue cancer patients.
Materials and methods: Eventually, five anatomic locations of surgical margin were classified, such as four superficial surface margins (anterior, posterior, medial, and lateral) and deep soft tissue margin. Of 265 patients with tongue cancer, 39 patients with positive margin or distance of free margin less than 3 mm were reviewed. Among them, 20 patients (51.3%) were found superficial margins involved and 19 patients (48.7%) showed deep surgical margin involved.
Result: There was significant worse impact to 5-year overall survival rate on patients who was cut margins involved compared to patients with margin free (46 vs. 69%, $P = 0.0002$). However, it was no difference between anatomic locations of positive margin in survival rate and risk of local recurrence (local recurrence rate was 69.2 and 61.5%). Average survival duration in patients with those two groups was 3.07 and 2.62 years.
Conclusion: Surgical positive margin has been shown to be one of the most important factor in treatment outcomes, whether involved superficially or deep soft margin. Among two groups of patient, local recurrence was the common cause of treatment failure.

PP011
Neck treatment in T1-T2/N0 oral cancer

Olivier Lenssen, Johan Abeloos, Philippe Lamoral, Frank Lippens, Nathalie Neyt, Gwen Swennen, Calix De Clercq
Department of Surgery, Division of Maxillofacial Surgery, General Hospital St. John Bruges, Bruges, Belgium

Introduction: In tumours of oral tongue and floor of mouth (FOM), the incidence of occult cervical metastasis is relatively high. This is the most important prognostic factor, which can lead to a reduction in the probability of disease control. No evidence-based data about the management of the neck in these early disease stages exist.
Objectives: Comparison of results of observation and elective neck dissection (END) in stages I and II disease of oral tongue and FOM. Calculation of recurrence and survival rates of these different treatment modalities.
Materials and methods: A retrospective review on patients treated in our service with a SCC of FOM or oral tongue between 1988 and 2008 was carried out. Clinical data included location and dimensions of tumour, nodal status, staging, treatment, tumour recurrence and metastasis. Disease-free interval (DFI), overall (OS) and disease-specific (DSS) survival rates were calculated.
Results: 84 patients with early stage SCC were treated in our department. 61 patients with complete files were included in this review. Small tumours (T1) were usually treated without END, while patients with larger tumours (T2) usually received an END. Only 3 patients (9%) had an occult neck metastasis (N1). The 5-year DSS rate was 91% and the 5-year OS rate was 75%; the 5-year DFI was 77%.
Conclusion: Because of the inhomogenous groups, no conclusion could be drawn regarding neck management. Elective neck dissection is an effective method of locoregional tumour control in early stage SCC, with good survival rates.

PP012
Analysis of postoperative complications in primary surgery for oral cavity carcinoma: the UKM medical centre experience

Nazimi Jabar[1], Rifqah Nordin[1], Razif Yunus[2], Primuharsa Athar[3], Faizal Ali[4]
[1]Department of Oral and Maxillofacial Surgery, National University of Malaysia Medical Centre (UKMMC), Malaysia, [2]Department of Otorhinolaryngology, National University of Malaysia Medical Centre (UKMMC), Malaysia, [3]Ear, Nose and Throat-Head and Neck Consultant Clinic, Seremban Specialist Hospital, Malaysia, [4]Plastic and Reconstructive Surgery Unit, National University of Malaysia Medical Centre (UKMMC), Malaysia

Background: The objective of this study was to report the incidence of postoperative complications in primary surgery for oral cavity carcinoma in our centre and to correlate patient's systemic, tumour and surgical related factors in predicting the postoperative complications.
Methods: A total of 6 patients who underwent primary surgical resection of oral cavity carcinoma, neck dissection with or without flap reconstruction treated between August and October 2009 were included in the study. We record both local and systemic postoperative complications during their hospital stay. Surgical procedures, patients and tumour characteristic were also recorded. Their correlations were analysed by univariate and multivariate analyses.
Results: No mortality and flap loss was recorded. There were seven local and two systemic complications were recorded. Local complications of wound infection and dehiscence were the most common complications, occurred in 3 (50%) patients, followed by haematoma and fistula formation. Most common systemic complications included episodes of pneumonia and atelectasis. Increase hospital stays and patient with existing medical morbidity showed higher local and systemic postoperative complications. Types of neck dissection and extent of tumour and surgery, somewhat were not a predictive factor for local complications.
Conclusion: The length of hospital stay and medical morbidity are correlated to postoperative complications. Types of neck dissection and extent of tumour and surgery were not predictive factors for local complications.

PP013
Conversion to comprehensive neck dissection in clinically N0 cases : is it necessary?

Dong Jin Lee, Hyung Ro Chu, Young-Soo Rho
Department of Otorhinolaryngology-Head and Neck surgery, Ilsong Memorial Institute of Head and Neck Cancer Center, Hallym University Medical Center, College of Medicine, Seoul, Republic of Korea

Introduction: Selective neck dissection is generally accepted as an elective neck treatment method for the N0 patients. But, sometimes, conversion from selective neck dissection to comprehensive neck dissection is needed, especially when we find the suspicious neck node in the operative field.
Purpose: The purpose of this study was to compare the therapeutic results between the selective neck dissection (SND) and the conversion comprehensive neck dissections (CCND) for the clinically N0 but pathologically N positive cases.
Materials: We reviewed the medical records of 562 newly diagnosed head and neck squamous cell carcinoma patients from 2000 to 2008.
Methods: We used Kaplan–Meyer's method to compare the therapeutic results between selective neck dissection group and conversion comprehensive neck dissection group.
Results: Among 18 cases who got the selective neck dissection, 12 cases were NED (no evidence of disease) state. One case died with local recurrence and 3 cases were alive with lung metastasis. Two cases died with other cause. Among 10 cases who got the conversion comprehensive neck dissection, 7 cases were NED state and two cases died with local recurrence and lung metastasis, respectively. One case died with other cause. When we used Kaplan–Meyer's survival curve, there was no statistic significance between the selective neck dissection group and the conversion selective neck dissection group ($p = 0.2886$).
Conclusion: In conclusion, even in clinically N0 but pathologically N positive cases, selective neck dissection had the same disease control rate as the conversion comprehensive neck dissection.

PP014
Prevalence and distribution of cervical node metastases in hypopharyngeal cancer according to the subsites

Hyung Ro Chu, Jin Hwan Kim, Young Soo Rho
Department of Otorhinolaryngology-Head and Neck Surgery, Ilsong Memorial Institute of Head and Neck Cancer, Hallym University Medical Center, Seoul, Korea

Background: Management of head and neck cancer has evolved, with therapies becoming increasingly targeted and tailored, allowing preservation of function and cosmesis without impairing oncological effectiveness. We have retrospectively analyzed the prevalence and distribution of histologic cervical node metastases in hypopharyngeal squamous cell carcinoma to determine the most appropriate form of neck dissection.
Materials and methods: We have examined specimens from 83 patients in whom neck dissection was part of primary treatment of hypopharyngeal carcinoma. Thirteen patients were treated by unilateral or bilateral selective dissection of levels II–IV ± VI for N0 disease and 70 by comprehensive dissection for N+ disease. Assessment was by separation of the specimens into node levels at the time of surgery and embedding all the resected material for histologic analysis.
Results: Nodal metastases were found in 53.8% of ipsilateral and 9.1% of contralateral dissections in the N0 cases. The corresponding prevalence in N+ cases was 91.4 and 30.6%. The majority of metastases in N0 and N1 disease were confined to levels II, III, and IV. Metastases to levels I (7.1%) and V (7.1%) were infrequent even in N+ disease. The tumors invading pyriform sinus apex (15.4 vs. 8.6%) and having multiple metastatic nodes ($p = 0.001$) had a higher likelihood of level VI metastases.
Conclusions: Our results support the use of elective dissection of node levels II–IV for N0 hypopharyngeal carcinoma. We suggest the inclusion of level VI node for tumor invading pyriform sinus apex, and multiple lateral neck metastases. The prevalence of bilateral metastases was great in multiple nodal metastases, multi-subsite involvement, and postcricoid region.

PP015
Nodal status as an independent predictor of survival in oral squamous cell carcinoma

Rajgopal Shenoy, Gabriel Rodrigues, Ananda Rao
Department of Surgery, Kasturba Medical College, Manipal University, Manipal, Karnataka, India

Background: Though the association between nodal status and survival in oral cavity carcinomas has been proposed, there are no studies which agree with this proposal.
Objective: To determine, using institutional database of oral squamous cell carcinoma, whether nodal status impacts survival in node positive tumors.
Results: 128 patients between 1996 and 2006 with N1 and N2 nodal status with oral squamous cell carcinoma were included in the study. The mean number of nodes identified was 39.2 and mean nodal ratio was 8%. Nodal ratio was strongly statistically associated with survival in both univariate and multivariate analyses. Patients could be stratified into low (0–6%), moderate (6–12%), and high risk (>12%) groups based on nodal ratio.
Conclusions: In oral squamous cell carcinoma, an increased nodal ratio is a strong predictor of decreased survival.

PP016
Modified extended half-apron incision (MEHAI) for planned neck dissections (PND) following organ preservation therapy for head and neck squamous cell carcinoma (HNSCC)

Ricard Simo, Jean-Pierre Jeannon, Aris Manganaris, Guillem Bruch, Alistair Balfour
Department of Otorhinolaryngology Head and Neck Surgery, Guy's and St Thomas NHS Foundation Trust, London, UK

Introduction: Patients with locally advanced HNSCC are increasingly treated with chemo-radiation therapy (CRT) followed by staged PND. Radiotherapy (RT) or CRT produces an inflammatory reaction followed by fibrosis, having an adverse effect on the surgical morbidity.

Purpose: To describe our experience on the use of a modified extended half-apron single incision for PND.
Materials and methods: Retrospective review of 28 patients treated with organ preservation therapy for locally advanced HNSCC that have undergone PND after CRT or RT, between September 2003 and to date. Data on the type of surgery, pre-operative and post-operative complications has been collected and analyzed.
Results: 25 patients have undergone CRT and 3 RT. Two patients underwent selective ND, 22 patients had a modified radical ND, 2 had a radical ND and 2 extended RND. The mean time between ending CRT or RT and undergoing surgery was 42 days. Fourteen patients underwent PND via a MEHAI. Surgical complications were seen in 15 (53%) patients, being seroma the most common one. No tissue breakdown was observed in patients who underwent MEHAI as opposed to other incisions.
Conclusions: Planned ND following chemo-radiation treatment for carcinoma of the upper aero-digestive tract is increasingly used but remains controversial for patients with a complete clinical response. PND is associated with significant morbidity and potential tissue breakdown. The use of a MEHAI allows adequate access to all levels of the neck and minimizes the risk tissue breakdown.

PP017
Submandibular gland excision during neck dissection: does it always have to face the guillotine?

Pranay Gaikwad, John C. Muthusami, Abraham Mathew, Cecil Thankachan Thomas, Amit Jiwan Tirkey, Anshika Mittal
Department of Head and Neck Oncosurgery and General Surgery, Christian Medical College, Vellore, India

Introduction: Nearly all types of neck dissections for head and neck cancers entail surgical removal of the submandibular gland. Tumor metastases to this gland are infrequent.
Purpose: To assess the incidence and factors associated of secondary metastases to the submandibular salivary gland(s) in the patients undergoing neck dissections for head and neck cancers. To identify subgroup(s) of patients in whom this gland may be spared during neck dissections.
Materials: A retrospective study was done to review the hospital records of 284 patients that underwent neck dissections for head and neck cancers excluding thyroid malignancies between September 2003 and August 2009.
Methods: Clinicopathologic correlation between the primary tumor, nodal involvement and stage of the disease were studied with respect to the metastatic involvement of the submandibular gland. Standard statistical tests of significance were done using SPSS 11.0.1. p value of <0.05 was considered significant.
Results: Two hundred and eighty-four patients underwent 308 neck dissections. Submandibular salivary gland was found to contain metastatic tumor deposits in 13 (4.6%) of these patients. The association between the advanced stage and the involvement of the submandibular gland by the tumor was statistically significant ($p = 0.001$). The incidence of involvement of the submandibular gland by the tumor was significantly greater when level 1b nodes were clinically palpable or histopathologically found to harbor metastatic disease ($p = 0.003$; $p <<<$, respectively). There was a significant correlation between clinically palpable and pathologically involved level 1b nodes ($p < <<$).
Conclusions: Submandibular salivary gland is rarely involved with metastatic tumor deposits in the patient with head and neck cancers. The gland may be preserved in early head and neck cancers with clinically node negative neck.

PP018
Cervical lymph node skip metastases from cancer of the buccal mucosa: a retrospective study of 10 years

Ananda Rao, Gabriel Rodrigues, Rajgopal Shenoy
Department of Surgery, Kasturba Medical College, Manipal University, Manipal, Karnataka, India

Purpose: Metastases to neck nodes from cancer of the buccal mucosa are well documented. Skip metastases in neck nodes usually occur in tongue cancer but not common to carcinoma of the buccal mucosa. An attempt has been made to study this rare event in carcinoma of the buccal mucosa.
Materials and methods: Though a total of 192 patients were treated for carcinoma of the buccal mucosa, only 52 patients were diagnosed to have skip metastases and were included in the study. Special attention was paid to treatment modalities and survival.
Results: Of the 52 patients, 6 had bilateral nodes, which were found to be positive on FNAC. All the 52 patients underwent neck dissections. 32 require adjuvant therapy (chemoradiation). All patients have been followed up and remain symptom free till date.
Conclusion: Carcinoma of buccal mucosa rarely spreads to bilateral cervical nodes and skip metastasizes but should be sought for when patient presents with bilateral neck nodes and skip metastases, as the approach to treatment changes drastically. The data analyses will be presented at the conference.

PP019
Factors affecting outcomes and morbidity in neck dissections

Gabriel Rodrigues, Ananda Rao, Rajgopal Shenoy
Department of Surgery, Kasturba Medical College, Manipal University, Manipal, Karnataka, India

Aims: To study factors affecting morbidity and outcomes following neck dissections at a tertiary referral centre.
Materials and methods: This prospective study included 128 patients who underwent unilateral or bilateral neck dissections in a period between September 2005 and October 2008. Relationship between various demographic and clinicopathological factors and morbidity have been sought. Outcomes measured in disease-free survival, local recurrence, distant metastases and factors affecting these have been studied.
Results: Data are being actively collected. The findings will be analyzed and presented at the conference.

PP020
Evaluation of neck dissections in squamous cell cancer of head and neck: a 10-year follow up

Martin Lanzer, Sabine Reinisch, **Heinz Stammberger**
Ent-Depatrment, University Hospital Graz, Graz, Austria

Background and aim of study: Head and neck cancer is the sixth most common cancer worldwide. The type, grade, site and stage of the primary tumor determine the risk of cervical metastases and hence the type of treatment. Considering the morbidity and recurrences after tumor resection including the neck, dimension of the neck dissection remains a controversial discussion. The purpose of this study is to evaluate the incidence of recurrences in the neck in patients with squamous cell carcinoma (SCC) of the head and neck according to the extent of neck dissection treated in the ENT-department of the University of Graz.
Patients and methods: Nearly 500 study subjects were selected from the ENT-Department, Medical University Hospital Graz undergoing surgical treatment because of squamous cell carcinoma of the head and neck region within the years 1999–2009. All patients were initially treated with operation of the primary tumor and consequently neck dissection. Diagnosis and treatment plan were made by the interdisciplinary oncologic team located at the Medical University Hospital Graz. Criteria for including patients to the analysis were histologically confirmed squamous cell carcinoma of the oral cavity, oropharynx, nasopharynx, hypopharynx and larynx. Patients were treated with surgical resection alone or with an additive postoperative radiotherapy or combined radiochemotherapy. Study groups evolved from patient data, comparing tumor entity and tumor progression with different treatment plans within the study and with the literature.
Objectives: (1) To propose a recommendation, to what extent neck dissection is necessary considering the primary tumor. (2) To question the benefit of bilateral neck dissection in oropharyngeal tumors. (3) To clarify the need and extent of neck dissection in a clinical N0-neck.
Results: Data will be presented at the 4th European Conference on Head and Neck Oncology.

PP021
Ipsilateral vs. bilateral neck dissection in patients with unilateral oral cancer: results from 1986 to 2006

Andre M. Eckardt[1], Gerd Wegener[2], Horst Kokemueller[1], Gregor Diebler[1], Sandra Muscia[2], Nils-Claudius Gellrich[1]
[1]*Department of Oral and Maxillofacial Surgery,* [2]*Tumour Registry, Hannover Medical School, Hannover, Germany*

Background: Neck metastases in oral cancer are relevant prognostic factors. Although neck dissection is an accepted surgical procedure, there are some controversial discussions whether a bilateral neck dissection might be indicated in unilateral oral cancer.
Methods: The present retrospective data analysis included all patient with unilateral oral cancer ($n = 1{,}042$) diagnosed from 1986 to 2006. A descriptive data analysis was performed, and overall survival and tumor-specific survival were calculated according to Kaplan−Meier method. A multivariate Cox regression analysis was performed to assess for possible risk factors.
Results: Overall survival and tumor-specific survival were significantly prolonged in patients without palpable neck nodes and unilateral neck dissection compared to patients with contralateral or bilateral neck dissection ($p = 0.040/p = 0.029$). Overall survival and tumor-specific survival were significantly prolonged in patients who had ipsilateral neck metastases and bilateral neck dissection compared to unilateral neck dissection alone ($p = 0.027/p = 0.025$). However, the subsequent multivariate regression analysis could not demonstrate that the surgical procedure of the neck is an independent risk factor.
Conclusion: Based on the present analysis, a general recommendation for bilateral neck dissection in patients with unilateral oral cancer cannot be made.

PP022
A wound care protocol to aid the management of complex wounds following head and neck cancer surgery

Alistair Balfour, Sarah Masterson, Jean-Pierre Jeannon, Ricard Simo
Department of ENT-Head and Neck Surgery, Guy's and St Thomas' NHS Foundation Trust, London, UK

Introduction: Head and Neck cancer patients who undergo major surgical resections often have complex wounds with salivary fistulae and the risk of airway contamination. These patients are at greater risk of wound complications because of systemic factors such as poor nutrition and local factors such as previous radiotherapy. A wide range of wound treatments are available and we have developed a protocol to standardise the treatment of these wounds.
Purpose: To describe our protocol of management of complex wound following head and neck surgery and highlight the advantages of having an standardised protocol.
Methods: A multidisciplinary team of Head and Neck surgeons and tissue viability nurse specialists developed a wound care protocol through open fora and one to one discussions. To standardise treatment, a classification system was developed for the different types of wound.
Results: A flow chart was developed and implemented for the management of our head and neck patients.
Conclusions: The head and neck wound care protocol has been helpful in classifying and standardizing treatment of complex head and neck wounds.

PP023
The elective neck dissection in patients with tongue cancer

Ilya Romanov, Liliya Iakovleva, Sevil Alieva, Ruzanna Galdiyanz
Blokhin's Cancer Research Center, Moscow, Russia

Aim: The question about prophylactic treatment of zones of regional lymph node metastasis in patient with oral cancer had the very long history, but this question is opened now. The aim of our research is the estimation of the different types of treatment of the patients with

tongue cancer without clinical evidence of metastasis in the cervical lymph nodes (cN0).
Materials and methods: 238 patients with tongue squamous cell carcinoma without clinical evidence of metastasis in the neck lymph nodes (cN0) had treated at our clinic since 1980–2006. There were male 164 (68.9%) and 74 (31.1%) female, mean age is 53.7 years. 12 patients had T1 tumor (5%), 121, T2 (50.8%); 94, T3 (39.5%) and 11, T4 (4.7%). 67 patients (28.4%) had radiotherapy on the regional neck lymph nodes. In 47 (19.8%) cases, prophylactic neck dissection was performed, and 50 patients (21%) had combined treatment on neck lymph nodes–radiotherapy and surgery. 73 patients (30.8%) without treatment on neck ("watch and see").
Results: The estimation of distant results show the next dates: the frequency of appearance of the regional neck metastasis in the "watch and see" group consists of 43.4%. These dates in group with elective radiotherapy are 34% and in the prophylactic neck dissection group is 17%. The patients with combined treatment: radiotherapy and surgery are 5.6%.
Conclusion: These dates show that elective combined treatment of the cN0 is recommended as perfect method of therapy, but "watch and see" tactic is absolutely inadmissible in these cases.

PP024
Economic impact of oral cancer: duration of hospitalisation and ambulatory follow-up after complete resection of oral squamous cell carcinoma in 63 patients

Johann Beck-Mannagetta, Markus Höpflinger, David Kummer
Clinic of Oral and Maxillofacial Surgery Medical Graduate Paracelsus Medical University, Salzburg, Austria

*Backgroun*d: Oral cancer is a debilitating disease. Therefore, every effort should be made to minimize the consequences of therapy and to keep the patient socially acceptable. This can lead to rather long hospitalisation and frequent follow-up visits.
Our aim was to investigate the economic aspects of hospital care of patients who had undergone primary radical resection of their tumor until death.
Methods: Between 1991 and 2008, 201 patients underwent radical resection for oral squamous cell carcinoma (OSCC). Of these, 63 patients had died. The medical records of the latter group were retrospectively reviewed.
Results: The mean duration of hospitalisation was 66 days, in some cases including periods for intensive care, tracheostomy, reconstructive procedures, radio- and/or chemotherapy or complications (e.g. flap failure and kachexia). The mean number of post-op follow-up visits was 31, including visits for prosthodontic rehabilitation. Although a number of variables were examined, only tumour size, tumour recurrence and tobacco and alcohol consumption showed significant differences. The overall cost of a patient with OSCC was appr. €24.000 from the beginning of therapy until death after 48 months.
Conclusions: OSCC oftentimes necessitate numerous therapeutic interventions and supportive care by hospital specialists. This will be reflected in the costs of hospital care.
Because OSCC severely affects the quality of life (facial appearance, speech, mastication, deglutition, dentition, smell, taste, sensitivity, etc.), it is our obligation to ameliorate these deficits as much as possible. Considering the fact that OSCC is in the majority of cases a preventable disease, every effort should be made for prophylaxis and early detection.

PP025
Flexible carbon dioxide laser in surgical treatment of oral cavity cancer

Gianluca Bellocchi, Valerio Damiani, Alberto Rocco
ENT Department, San Camillo-Forlanini Hospital, Rome, Italy

Introduction: Carbon dioxide (CO_2) lasers have become one of the most common surgical lasers due to excellent tissue interaction properties that offer precise control of cutting and ablation depth, minimal thermal damage to surrounding tissue, and good hemostasis. However, in many minimally invasive surgical procedures, use of CO_2 lasers has been significantly negatively affected by the absence of reliable, flexible fiber laser beam delivery systems. Recently, novel optical fibers for CO_2 lasers were developed that offer high flexibility and mechanical robustness.
Materials and methods: The authors present their experience in patients affected by oral cavity cancer submitted to minimally invasive surgical demolition using flexible CO_2 laser. In these patients, we specifically analysed the presence of postoperative pain, the degree of scar retraction, and the speech and swallowing functional results.
Results: All primary tumors were completely resected, with negative margins, confirmed by intraoperatory and definite pathology. None of the patients required tracheotomy or placement of a percutaneous endoscopic gastrostomy tube. We obtained a significantly reduced postoperative pain and significantly reduce postoperative scar retraction with flexible CO_2 laser, compared with monopolar pencils. Moreover, it allows to minimize the functional sequelae in terms of speech and swallowing impairment.
Conclusions: In our experience, the use of this recently developed flexible CO_2 laser allows surgeons to perform delicate and precise laser surgery procedures in a minimally invasive manner.

PP026
The new endoscopic treatment for the superficial squamous cell carcinoma of the haed and neck region (SHNSCC)

Tai Omori[1], Yasuo Satou, Hirobumi Kawakubo, Yasutomo Araki, Satoko Yoshida, Takashi Ando, Kousuke Uno, Akira Yokoyama[2]
[1]*Kawasaki Municipal Kawasaki Hospital, Kawasaki, Japan,*
[2]*National Hospital Organization Kurihama Alcoholism Center, Kurihama, Japan*[2]

Introduction: The early diagnosis and treatment is the best strategy to improve the HNSCC patients' survival. Recently, we can find the superficial HNSCC(SHNSCC) by NBI-magnifying endoscopy. We supposed that we could expect to get a good prognosis by the endoscpic treatment (EMRC: Endoscopic Mucosal Resection by Cap/ ELPS: Endoscopic Laryngo-Pharyngeal Surgery) which is low invasive in comparison with the conventional treatment.
Purpose: The purpose of this study is to examine the usefulness and effectiveness of endoscopic treatment for the SHNSCC

Materials and methods: The SHNSCC means that the depth of cancer invasion is within the subepithelial layer. The endoscopic treatment (EMRC/ELPS) will be the first treatment for the SHMSCC with no lymphnode metastasis. For those treatment cases, we report the method of treatment, complication, pathological diagnosis and prognosis.
Result: We have 211 patients (373 lesions) of the superficial HNSCC from January 2000 to September 2009. The endoscopic treatment cases were 159 (296 lesions). Of the 296 lesions, 90 had been treated by EMRC, 131 by ELPS. EMRC is good for small lesion (less than 10 mm in diameter). ELPS is suitable for large lesion. There was no fatal complication in both treatments. Of the 159 patients, 132 are alive, 27 had been dead. We lost 2 in a cancer, and other 25 were lost in other disease. The 5-year survival rate of Kaplan–Meier analysis is 100% in EP cancer, and 94.2% in SEP cancer.
Conclusion: The result of our trail indicated the usefulness and the effectiveness of endoscopic treatment for improving the prognosis of HNSCC.

PP027
Trans oral laser resection versus lip-split mandibulotomy in the treatment of oropharyngeal squamous cell carcinoma

Stephen G. Derbyshire[1], Clare Williams[1], Andrew J. Kinshuck[1], Jeffrey Lancaster[1], Nicholas J. Roland[1], Shaun R. Jackson[1], Terence M. Jones[1,2]
[1]*Department of Otolaryngology and Head and Neck Surgery, University Hospital Aintree, Liverpool, UK,* [2]*Division of Surgery and Oncology, School of Cancer Studies, University of Liverpool, Liverpool, UK*

Introduction: Squamous cell carcinoma (SCC) of the oropharynx accounts for approximately 25% of head and neck SCC malignancies. The use of laser has enabled the removal of tumours that previously required lip split mandibulotomy.
Purpose: The aim of this study is to compare, in terms of function and cost-effectiveness, trans-oral laser resection (TOLR) and lip split mandibulotomy (LSM) in the surgical management of oropharyngeal SCC.
Materials: The Head and Neck database in University Hospital Aintree was used to source and match patient groups. Individual case notes were reviewed for detailed clinical information.
Methods: 25 TOLR patients were matched by tumour T stage, age and sex with 25 LSM patients. Comparisons relating to function and cost-effectiveness were then made between the groups.
Results: Hospital stay (9 vs. 18.6 days), tracheostomy rate (40 vs. 100%), post-operative time to swallow (4.4 vs. 10.6 days) and gastrostomy feeding tube prevalence on discharge (8 vs. 20%) were all lower in the group having TOLR. Histopathology showed 16% of the TOLR group had positive marginal biopsies compared to a 44% involved margin rate for the LSM group. Furthermore, the average cost of TOLR was £5,637 compared to £11,312 for LSM.
Conclusion: In the surgical treatment of oropharyngeal SCC, TOLR offers superior tumour resection with the added benefits of a reduced need for tracheostomy, improved swallowing function, a reduced hospital stay and enhanced cost effectiveness.

PP028
Survival following primary surgery for oral SCC at UH Leuven

Olivier Lenssen, Maarten Van Genechten, Michel Bila, Philippe Vuylsteke, Joseph Schoenaers
Department of Oral and Maxillofacial Surgery, Leuvens Kanker Instituut, University Hospitals Leuven, Leuven, Belgium

Introduction: Survival figures of oral SCC have been improving because of advances in ablative and reconstructive surgery, adjuvant therapies and an evolution in the composition of the patient group. It is legitimate to update literature in this respect.
Objectives: To summarize treatment and quantify survival of surgically treated patients with oral SCC at the University Hospitals in Leuven.
Materials and methods: A retrospective cohort study was carried out of patients primarily treated in our service with curative intent with an oral SSC between 1998 and 2008. Data included site, tumour size, nodal status, clinical and pathological staging, treatment, tumour recurrence, and metastasis. Overall and disease-specific survival (OS/DSS) rates were calculated.
Results: During this period 204 patients with a SCC were treated in our department. For these patients, 43% surgery was the sole treatment modality, while 42% underwent adjuvant therapy; 7% received radiotherapy and 5% chemoradiotherapy as a primary treatment. 176 patients underwent surgical resection. The 5-year DSS for pT1/T2/T3/T4 was 84/90/83/71%; the 5-year OS was 71/89/83/52%.
Conclusion: Primary surgery of the tumour and neck with adjuvant therapy, if indicated, proves to provide good local and locoregional control of oral SCC, even in advanced stages. This results in a markedly improved DSS compared to a previously reported outcomes from our department and the literature.

PP029
Critical appraisal of nasolabial flap for reconstruction of oral cavity defects in cancer patients

Aly H. Mebed, Hisham Anwar, **Tarek Khairy Saber**
Department of Surgical Oncology, National Cancer Institute, Cairo University, Giza, Egypt

Purpose: Re-evaluation of nasolabial flap in lip and oral cavity reconstruction and role of each of its variants in reconstructing various intermediate size defects.
Patients and methods: Prospective case-series study conducted in National Cancer Institute, Cairo University over period from July 2005 till January 2009 on 23 patients with clinically T-1 N0, T-2 N0 invasive squamous cell carcinoma of buccal mucosa and the vermilion border of the lower lip. Immediately after surgical excision, one stage defect reconstruction was done using a type of the nasolabial flap. All patients were followed and the median follow-up period was 7.5 months.
Results: 12 patients with lower lip carcinoma and 11 patients with carcinoma of buccal mucosa underwent surgical excision under frozen section control. 19 fasciocutaneous nasolabial flap, 4 facial artery musculomucosal flaps were used for reconstruction. Minor wound

complications occurred in 2 flaps and 1 patient required secondary suture. Flap viability was reliable which was not affected by the performance of synchronous neck dissection. Functional results were satisfactory, cosmetic results were good in most of the patients and excellent when facial artery musculomucosal flap was used.
Conclusion: The nasolabial flap is a reliable and minimally traumatic local flap for one stage reconstruction of medium size oral cavity defects. Its abundant blood supply allowed its modification in order to cover larger defects or to obtain better cosmetic results. This versatility makes it more widely used, thus minimizing the use of local tongue flaps and split thickness grafts for covering these medium size defects in cases of buccal mucosa cancer or affecting the other lip or commissure in cases of lip cancer. It has a high viability rate, low complication rate; it is quick and easy to perform in addition to its satisfactory functional and cosmetic results.

PP030
A new surgical approach to reduce anchyloglossia after oncology surgery

Jorge Marinho
Oncology surgery Department, Surgery and Prosthesis Rehabilitation Unit, Stomatology Service, Portuguese Oncology Institute, Oporto, Portugal

Introduction: The rehabilitation of the patient with oral cancer is one of the greatest aims of modern surgery. After cancer excision, the tongue is usually harvested affected in mobility and volume; these aspects are severe impairments in speech and mastication capabilities, so the relief of those aspects can make the difference on social and family reinsertion.
Methods: We selected patients with oral cancer excised at least more than 3 years ago, with no irradiation on the last 18th months. They were performed with free hole skin flap from the supraclavicular region, in reconstruction the tongue contour. The fixation of the new tissue is assured with the aid of custom made hard acrylic fertilisation devices perforated and anchored with nylon surgery wire.
Results: The almost "restitutio ad integro", the gain of physiologic space and the great improvement on tongue mobility allow the patients to use dental prosthesis in order to get more gain on speech, chew, swallowing and aesthetic functions.
Discussion: The free vascularised flap of muscle and skin tissue usually used on floor reconstruction of the mouth has a serious problem of volume compatibility that in most cases contraindicate the use of prosthesis especially for the mandible. The new and simple technique, as the great virtue of less post surgical rest, and more rapid dental rehabilitation.

PP031
Free supraclavicular transverse cervical artery perforator (STCAP) flap for head and neck reconstruction: a new option in reconstructive armamentarium

Cesare Piazza, Johnny Cappiello, Francesca Del Bon, Stefano Mangili, Piero Nicolai
Department of Otorhinolaryngology-Head and Neck Surgery, University of Brescia, Brescia, Italy

Introduction: The free STCAP flap has been recently introduced as an innovative option for facial and oral reconstruction. It is based on perforators coming from the transverse cervical artery (TCA) vascularizing the skin of the posterior triangle of the neck. Drainage is ensured by the superficial cervical and external jugular (EJV) veins.
Purpose: To describe harvesting technique, complication rate, and functional outcomes of this flap.
Materials and nethods: Between December 2007 and October 2008, we applied the free STCAP flap for reconstruction of 6 head and neck cancer patients (4 males, 2 females; age range 51–75 years): 4 oral cavities (3 floor of the mouth and 1 hemi-mobile tongue) and 2 external ears and skin of the parotid region. None of them had been previously treated by radiotherapy (RT) and all were cN0.
Results: Flap harvesting mean time was 40 min. Mean size of the skin paddle was 6 × 8 cm and every donor site was closed primarily. Mean length of pedicle was 8 cm (vessels caliber of 2 mm for TCA and 5 mm for EJV). One patient developed an oral fistula managed under local anesthesia. No flap failure occurred.
Conclusions: Texture and pliability of this flap render it an ideal reconstructive option for middle-sized oral and facial defects. Essential prerequisites are no previous neck dissection of level III–V or RT. In the hands of experienced head and neck surgeons, it represents an expeditious, reliable, and safe procedure. No donor site morbidity has been observed.

PP032
Microdialysis in postoperative monitoring of free microvascular flaps

Björn Möller, **Nicolai Marius Purcz**, Jörg Wiltfang
Department of Oral and Maxillofacial Surgery, University Hospital Schleswig-Holstein, Campus Kiel, Schleswig-Holstein, Germany

Introduction: Reconstruction with free flaps has become a usual practice in maxillofacial surgery. Clinical examination is still the gold standard of post-operative follow up but can be difficult or impossible with intraoral situated or buried flaps. Microdialysis is a sampling technique which offers the possibility to monitor the metabolism of flaps continuously. It is a reliable method for early diagnosis of ischemia.
Purpose: Microdialysis of free flaps is a feasible way to monitor their metabolism so that surgical revision can be undertaken before clinical alteration takes place.
Materials: 21 free microvascular flaps carried out following oral cancer resection were monitored (6 osteocutaneous fibula flap, 10 fasciocutaneous radial flap, 2 myocutaneous latissimus dorsi flap, and 3 osteocutaneous scapula flap).
Methods: A microdialysis catheter was placed in the flap and glucose, lactate and lactate/pyruvate ratio was monitored using a bedside analyser.
Results: Of the 21 microvascular free flaps, 15 were uneventful with normal postoperative metabolism. 6 flaps showed abnormal metabolism during monitoring in the first 12 h before showing clinical signs. Repositioning of the head lead to normalisation of the metabolism in 4 flaps. 2 flaps were reoperated for anastomosis thrombosis successfully. The mean glucose was 6.1 mmol/L, mean lactate was 2.4. The lactate/pyruvate ratio never exceeded 24. All thromboses were clearly recognized via metabolic changes.
Conclusion: Postoperative monitoring of free flaps using microdialysis allows early diagnosis of anastomotic complications. It is a clinically feasible and sensitive monitoring method for microvascular flaps.

PP033

Clinical and pathomorphological results of 30 patients with head and neck reconstructions using microvascular flaps and bone grafts

Anna Kazanceva[1], J. Tars[1], E. Kornevs[1], J. Sokolovs[1], K. Pastars[2], V. Groma[3]
[1]*Oncology Center of Latvia Riga East University Hospital, Department of Head and Neck Surgery, Riga, Latvia,* [2]*Center of the Reconstructive, Plastic and Microsurgery Riga East University Hospital, Riga, Latvia,* [3]*Riga Stradins University, Institute of Anatomy and Anthropology, Riga, Latvia*

Purpose: Sufficient reconstruction ensures primary wound closure and healing. Problems and limitations in head and neck reconstruction are irradiated tissue, functional sensibility, cosmetic deformation, patient physiologic status, donor side defect and color match.
Aim: To analyze the clinical results; to evaluate the local effects of postoperative radiation therapy on the microvascular flaps; to estimate the histological appearance and degree of osteointegration and vascular supply using TGF-β, CD34 immunohistochemistry was performed.
Materials and methods: 30 patients with varios histologically confirmed head and neck malignancies were used in this study. Immunohistochemistry was applied to the bone graft biopsy specimens.
Results: Wide surgical excision is the primary treatment approach. Advanced nonmelanoma skin cancer required en-bloc resection of tumor and invaded structures, many patients required neck dissection. Indications for adjuvant post-operative radiotherapy: close or positive margins, perineural invasion, two or more positive nodes, extracapsular spread, nodes >3 cm, parotid nodal metastases, and poorly differentiated tumor. TGF-β expression was related to the osteoblastic cell lineage, CD34, in turn, to the vascular beds.
Conclusion: Complications and success of mandibular reconstructions depend on: the type of the malignancy, immediate reconstructions, radiotherapy, location of the defect, surgical approach and method of the graft fixation as also dental/functional rehabilitation. The bone graft osteointegration is completed in 6 months after surgery. TGF-β is involved in early stages of bone development as well as in bone repair and remodelating after trauma. Vascular supply is essential for bone graft healing and clinical outcome.

PP034

Combined reconstructive surgery in patients with head and neck tumors

M. Kropotov, A. Taneeva, V. Dobrokhotova
Blokhin's Russian Cancer Research Center, Moscow, Russia

Aims: Patients with locally advanced head and neck cancer have to undergo aggressive surgery. Postoperative defects impede social adaptation. As result, such patients require combined plastic involving two or more types of reconstructions.
Materials and methods: Combined reconstruction in patients with oropharyngeal tumors (43 patients) as well as in patients with tumors of paranasal sinuses and calvarial soft tissues (8 patients) has undergone combined plastics. Sarcomas were registered in 6 cases, while the rest of the cases were diagnosed as SCC. According to the types of defect, all patients were classified into three groups: (1) bone and mucosa (35 patients), (2) mucosa and skin (8 patients), (3) bone and skin (8 patients).
Results: In the first group, the combination of reconstructive plate and musculocutaneous flap was used either with pectoral muscle (26 patients) or with SCM muscle (9 patients). Plastics in the second group involved musculocutaneous flap in combination with iliac graft (5 patients) or fibular graft (3 patients). 8 patients of third group received allotransplant combined with autografts (thoracodorsalis, radial, and omentum majus). The complication of reconstructive plate with pedicled flap caused the greatest number of complications up to 37.3%, while the use of pedicled and free flaps resulted in 25% of complications. Total necrosis of the plastic material developed in four patients (7.8%). Relapse of tumor was diagnosed in 25 cases (49%) within 2 years after the operation, irrelevant of its localization. Relapse of tumor observed mostly after treatment of residual disease [19 of 31 cases (61.3%)].
Conclusions: The choice of reconstructive strategy is made individually and depends on a number of factors. Microsurgical reconstruction proves to be expending the range of options in radical surgery. Allotransplants are the most effective means of reconstructing bone defects of the upper and middle face zones.

PP035

Functional and sensitive assessment of tongue reconstruction: about 30 cases

Celia Guerin[1], Yann Mallet[1], Valérie Lambour[1], Charles Fournier[2], Sophie El Bedoui[1], Jean Ton Van[1], Dominique Chevalier[3], Jean Louis Lefebvre[1]
[1]*Head and Neck Department, Centre Oscar Lambret, Lille, France,* [2]*Biostatistic Department, Centre Oscar Lambret, Lille, France,* [3]*Otolaryngology and Head and Neck Surgery Department, Hôpital Claude Huriez, CHRU, Lille, France*

Introduction: Few studies reported both functional and sensitive long-term evaluation after tongue reconstruction.
Purpose: The aim of this study was to assess functional and sensitive recovery after tongue reconstruction with fasciocutaneous free flap (FCFF) or musculocutaneaous pedicled flap (MCPF).
Materials: We enrolled the 30 patients alive and without recurrence from a consecutive series of 70 tongue reconstructions as part of a cancer treatment.
Methods: All patients were interviewed and submitted functional and sensitivity tests. The functional study included intelligibility, food and swallowing scores. Flap sensibility to touch, sharp versus dull, warm and cold, and two-point discrimination were evaluated too.
Results: Male-to-female sex ratio was 6.5 with a mean age of 52 years. The lesions were mainly advanced (T3-T4 73%). A hemiglossectomy or more was carried out in 43% of cases and resection was limited to the oral tongue for 53%. Swallowing (slightly impaired 63%), food (normal 40%) and intelligibility (excellent 77%) assessment were satisfactories. Spontaneous sensibility recovery was regularly observed (mean response 62%). The 2 subgroups FCFF and MCPF were similar in regard to epidemiologic data. Functional results were higher in case of FCFF (food score $p = 0.05$; intelligibility $p = 0.04$). No difference was observed on sensitive recovery.
Conclusions: This study underlined good functional results either for swallowing or intelligibility, with higher scores for the FCFF, strengthening the opinion that FCFF is the best choice for tongue reconstruction.

PP036
Aesthetic and functional assessment in case of mandibular reconstructive surgery: about a series of 23 patients

Pedro Milet[1,2], Emmanuel Bartaire[1], Yann Mallet[1], François Mouawad[1], Sophie El Bedoui[1], Jean Ton Van[1], Dominique Chevalier[3], Jean Louis Lefebvre[1]
[1]Head and Neck Department, Centre Oscar Lambret, Lille, France, [2]Head and Neck Surgery Department, National Institute of Cancer INCA, Rio de Janeiro, Brazil, [3]Otolaryngology and Head and Neck Surgery Department, Hôpital Claude Huriez, CHRU, Lille, France

Introduction: Free fibula flaps are now considered as a gold standard for mandibular reconstruction. But very few data on aesthetic and functional results are available.
Purpose: The aim of this study was to assess functional and aesthetic results following mandibular reconstruction.
Materials: We enrolled the 23 patients alive and without recurrence from a consecutive series of 49 mandibular reconstructions as part of a cancer treatment.
Methods: All patients were interviewed and accepted functional tests. Aesthetic outcomes were extracted from an expert and patient valuation. Functional outcomes were extracted from an expert valuation of the donor site.
Results: The patient aesthetic score were, respectively, 73 and 70% of good results for the recipient and the donor sites. No significant difference was observed between both patient and expert valuation. Risk factor of aesthetic recipient site's dissatisfaction were a weight loss >5% before surgery (patient valuation $p = 0.012$/expert valuation $p = 0.046$). Cutaneous graft was identified as a risk factor of donor site's dissatisfaction (patient valuation $p = 0.04$/expert valuation $p = 0.035$). Main dysfunctions of the leg were a partial lost of the ankle's amplitude (43%), a declined strength in flexion (39%), and a reduced capacity to run (35%).
Conclusion: Aesthetic scores are fair good in case of mandibular reconstruction with a fibula, but sequelae of the donor site should not be neglected.

PP037
The factors in prediction of fistula following radial forearm free flap reconstruction for head and neck cancer

Young-Hoon Joo, Dong-Il Sun, Jun-Ook Park, Kwang-Jae Cho, Byung-Jun Chun, Jung-Hae Cho, Min-Sik Kim
Department of Otolaryngology-Head and Neck Surgery, College of Medicine, The Catholic University of Korea, Seoul, Korea

Introduction: After flap reconstruction for head and neck surgical defect, fistula can lead to significant morbidity. There has been no report regarding the frequency and etiology of postoperative fistula associated with perioperative risk factors in patients undergoing head and neck cancer surgery followed by RFFF reconstruction.
Purpose: To evaluate the relationship between postoperative fistula and perioperative risk factors after radial forearm free flap (RFFF) reconstruction for head and neck cancer.
Materials and methods: A total of 180 patients underwent RFFF reconstruction after head and neck ablative surgery from October 1993 to July 2009. Age, gender, systemic disease, smoking status, tumor stage, preoperative radiotherapy, reconstruction site, concurrent neck dissection, flap shape and size, and partial or complete flap necrosis were recorded as the prognostic variables.
Results: Twenty one (11.7%) of the 180 patients developed fistula. Significant correlations were found between diabetes mellitus ($p = 0.015$), preoperative radiotherapy ($p = 0.029$) and fistula. Reconstruction of hypopharynx influenced fistula with borderline significance ($p = 0.057$). The multivariate analysis showed a significant association of the fistula with diabetes mellitus (odds ratio = 5.4 [95% CI 1.0–27.6]) and preoperative radiotherapy (odds ratio = 5.9 [95% CI 1.1–32.6]). Spontaneous closure was noted in 10 patients, whereas a surgical closure with a local flap or pectoralis major myocutaneous flap was necessary in 11 patients.
Conclusions: Diabetes mellitus, preoperative radiotherapy were risk factors for fistula in patients undergoing RFFF reconstruction for head and neck cancer.

PP038
Forearm flap vs. primary closure vs. split skin graft for the reconstruction of defects of the tongue and floor of mouth

Barbara Muller, Ronald Koole, **Ellen Van Cann**
Department of Oral and Maxillofacial Surgery, University Medical Centre Utrecht, Utrecht, The Netherlands

Introduction: The first choice treatment of oral squamous cell carcinoma is local resection usually combined with a neck dissection. Especially larger oral defects can lead to substantial loss of function and health related quality of life (HrQOL). It is often assumed that reconstruction with forearm free flap (FFF) results in better oral function and HrQOL compared to primary closure or split skin graft.
Purpose: To compare HrQOL after reconstruction with FFF versus primary closure versus split skin graft for the reconstruction of defects of the tongue and floor of mouth.
Materials: Patients ($n = 109$) were included with primary, unilateral squamous cell carcinoma of the tongue or floor of mouth, operated between 1998 and 2008, who remained free of recurrences and metastases.
Methods: HrQOL was assessed with EORTC-questionnaires. Correlation analyses were used to determine the relationship between method of reconstruction and HrQOL.
Results: Reconstruction with FFF does not lead to better HrQOL per se.
Conclusion: Multiple factors may play a role in the choice for the method of reconstruction.

PP039
Our experience in facial middle third reconstruction using fibula free flap

Alberto Rocco[1], Bruno Pesucci[2], Giovanni Montemari[3], Gianluca Bellocchi[1]
[1]ENT Department, San Camillo-Forlanini Hospital, Rome, Italy, [2]Maxillo-facial Surgery Department, San Camillo-Forlanini Hospital, Rome, Italy, [3]Plastic Surgery Department, San Camillo-Forlanini Hospital, Rome, Italy

Introduction: The reconstruction of maxillary defects after oncologic surgery always represents a problem of not easy resolution. The use of free flaps represents the best solution in the facial middle third reconstruction, with bone, skin and mucosa defects, in patients already treated with radiotherapy and in case of a large cranial base communication. The objectives for an adequate astethic-functional reconstruction are: separation between oral cavity and nasal region, orbaital cavity support, prosthetic-dental rehabilitation, facial soft tissue and profile projection.
Materials and methods: The authors present some cases treated with this modality. Particularly one was a case of a large demolition of orbit-ethmoid-sphenoid-maxillary region reconstructed with two flaps: rectus abdominis and fibula flap.
Results: This reconstruction requires a good precision to obtain a valid middle third morphology, with a correct dento-skeletal relation between maxilla and mandible, so to achieve a normal and functional occlusion. The flap can be osteotomized into many segments for his double vascolarization so to reconstruct in three-dimensional way the orbital region, the zygomatic buttress and the alveolar ridge, so to permit a secondary application of fixture for a complete prosthetic rehabilitation.
Conclusions: In our experience, fibula free flap represents an excellent choice for a functional and aesthetically adequate reconstruction of facial middle third in oncologic surgery of the oral cavity.

PP040
Anatomical and functional aspects in the reconstruction of the oral cavity

Alberto Rocco[1], Bruno Pesucci[2], Giovanni Montemari[3], **Valerio Damiani**[1], Gianluca Bellocchi[1]
[1]ENT Department, San Camillo-Forlanini Hospital, Rome, Italy, [2]Maxillo-facial surgery Department, San Camillo-Forlanini Hospital, Rome, Italy, [3]Plastic surgery Department, San Camillo-Forlanini Hospital, Rome, Italy

Introduction: Reconstructions of the oral cavity are designed to reproduce the original structures to allow a resumption of feeding and phonation functions to which this area is deputed. The choice between different methods is conditioned by the entity, the form and function of the section, considering the need of bone or soft tissue reconstruction or the filler purposes of reconstruction.
Materials and methods: The authors present some cases of patients affected by oral cavity cancer submitted to surgical demolition and reconstruction with free microvascular flaps. Specifically, flaps used were: anterolateral tight flap, radial forearm free flap, rectus adbominis free flap and fibula free flap.
Results: Bearing in mind the division of the oral cavity in two functional areas, one set of tissues with high motility and one set of tissue with low motility, and evaluating the specific characteristic of the four flaps we used, in terms of availability of donor soft tissue or bone, of reliability of vascularization and of possibility of following implants, we obtained optimal aesthetic and functional results in all patients.
Conclusions: In our experience, the use of just four free flaps allows to cover any reconstructive needs after demolitive surgery of oral cavity.

PP041
Systemic inflammatory response syndrome and complication rate in early postoperative period after free flap head and neck reconstruction

Bagrat Lalabekyan, Colin Liew, Colin Hopper, Nicholas Kalavrezos
Head and Neck Surgery Department, University College London Hospital, London, UK

Background: The aim of this study is to report the role of systemic inflammatory response syndrome (SIRS) in early postoperative period after free flap reconstruction of head and neck defects.
Patients and methods: Records of patients who had free flap reconstruction following major ablative surgery in head and neck in period from March 2005 to December 2008 in University College Hospital. In total, 86 patients had 88 different free flaps for the reconstruction of defects after major ablative surgery in head and neck. All flaps were classified into three groups. Flaps harvested in ischemic conditions on upper limb (i.e. radial forearm flap), flaps harvested in ischemic condition in lower limb (i.e. osteocutaneous fibula flap) and flaps harvested in normal conditions (i.e. descending circumflex iliac artery flap). The incidence of systemic inflammatory response syndrome in early postoperative period and role of it in the development of complications were assessed.
Results: Three patients were excluded from this study because systemic inflammatory response syndrome in these patients resolved within first postoperative day. Surgical complications were observed in 23.50% in all groups, while incidence of medical complications was 38.80% in all groups. Systemic inflammatory response syndrome was documented in 34.10% of cases within first 8 days. Highest rate of systemic inflammatory response syndrome was documented in patients who had flap harvested in ischemic condition in lower limb 58.30% ($p < 0.05$).
Conclusions: Flap harvesting technique may affect postoperative morbidity, but it does not contribute to higher rate of postoperative surgical complications. Incidence of systemic inflammatory response syndrome was higher in patients who had longer ischemia time, but this needs further prospective research and analysis.

PP042

Treatment impact, and the influence of flap choice on oral and oropharyngeal function following ablative surgery in head and neck cancer

Colin Liew, Kostanstinos Karavidas, Bagrat Lalabekayan, Satesh Bala, Andrew Schache, Nicholas Kalavrezos
Head and Neck Cancer and Maxillofacial Services, University College London Hospitals, London, UK

Ablative surgery may impact significantly on the anatomy and function of the oral cavity and oropharynx. Contemporary reconstructive methods with free tissue transfer aims to restore form and to minimise functional deficits.
Purpose: This is a retrospective descriptive study of a cohort of patients who had major ablative and reconstructive surgery. An assessment protocol provides qualitative and quantitative evaluation of swallow and speech and is undertaken prior to surgery, and is repeated at predetermined intervals afterwards.
We propose to describe the impact of surgery on function with particular reference to site, to elucidate the predictive factors on outcome and to rationalise an algorithm for treatment and flap selection.
Methods: Patients who had surgery for Stages III and IV disease were identified and notes retrieved to determine site, stage and surgery specifics. Records detailing the assessments were accessed and the information collated.
Results are presented descriptively and associations and correlations examined using SPSS, applying Fishers exact test.
Results: 86 patients underwent major ablative and reconstructive surgery for Stages III and IV in the period 2005 to 2009. Swallow function appears to correlate to site, but flap choice does not relate significantly to function. Central defects correlated strongly with poor swallowing outcomes. Adjuvant radiotherapy does not appear to impact adversely on function.
Conclusion: These results illustrate the utility of free flaps in restoring the anatomy required to maintain swallowing function, and support microvascular reconstruction as standard of care following ablative surgery.

PP043

Reconstruction of the mandible with free vascularised fibular flap: functional outcome and donor site morbidity

Joeri Meyns[1], Joseph Schoenaers[1], Jan Vranckx[2]
[1]*Department of Oral and Maxillofacial surgery, University Hospital Leuven, Leuven, Belgium,* [2]*Department of Plastic, Reconstructive and Aesthetic Surgery, University Hospital Leuven, Leuven, Belgium*

Introduction: Defects of the lower jaw can have a profound impact on the quality of life (QOL). Assessment of the QOL can be useful in counselling and preparing the patient and improving functional outcome.
Purpose: To evaluate the capability of restoring the patients' QOL with a fibular free flap as a reconstructive means for segmental mandibular defect.
Materials and methods: A retrospective survey of 44 consecutive patients reconstructed with a fibular flap was carried out. Indications, resection-characteristics, success-rate, reconstructive parameters and complications were reviewed. Functional evaluation was based on the University of Washington Questionnaire (UWQ). Each patient also completed the American Orthopaedic Foot and Ankle Society Score (AOFAS) to evaluate donor site morbidity.
Results: 29 male and 15 female patients were comprised in the study, with a mean age of 54.8 years. Flap survival was 93.8%. Squamous-cell carcinoma constituted 47%. A total of 20 patients were identified to complete the UWQ and AOFAS-score. The mean total score for the UWQ-questionnaire was 71/100 good scores were obtained in all, but 3 sub-domains: chewing, taste and saliva. Influence of radiation therapy was clearly demonstrated. The impact of flap prelevation on ankle-function was measured using the AOFAS-score. A mean overall score of 88 (on 100) was obtained.
Conclusions: A series of 46 consecutive fibular flaps again show that it is possible to restore the patients' Quality of life, with no significant donor-site morbidity. The influence of radiation therapy is an important factor in restoring pre-operative oral function and Quality of Life.

PP044

The pectoralis major myocutaneous flap for head and neck reconstruction: analysis of pedicle length and flap reaching—a cadaveric anatomic study

Christiana Maria Ribeiro Salles Vanni[1], Fábio Roberto Pinto[2], Leandro Luongo de Matos[1], Alexandre Bezerra dos Santos[1], Jossi Ledo Kanda[2]
[1]*Disciplina de Cirurgia de Cabeça,* [2]*Pescoço da Faculdade de Medicina do ABC, Hospital de Ensino, São Bernardo do Campo, Brazil*

Purpose: To evaluate if the length of the pedicle of pectoralis major myocutaneous flap (PMMCF) and its reaching is influenced by anthropometric data.
Materials: Fifty PMMCF were studied in 25 adult fresh cadavers.
Methods: Pedicle of the PMMCF length was measured. The reaching of the skin island was tested to: laryngeal prominence, menton, jaw angle, external auditive canal and orbit. Results were compared to the anthropometric data.
Results: The average length was 17.67 ± 2.24 cm, showing statistical significant relationship with the ratio between the mastoids-suprasternal notch distance by the interacromion distance ($P = 0.049$; multivariate analysis − linear regression), and the lowest was this ratio value the greater was the pedicle length. All flaps reached all studied sites, with an exception to the orbit, reached in 20 cases (40%). Ratio between the mastoids-suprasternal notch distance by the acromion–trochanter distance was determinant to the flap reaching to the orbit in multivariate analysis, logistic regression (cut value < 0.3; odds ratio $= 4.34$; 95% confidence interval: 1.01–18.95; $P = 0.050$). When this ratio were inferior to 0.28, the flaps always reached the orbit (specificity $= 100\%$; PPV $= 100\%$; accuracy $= 66\%$).
Conclusions: Pedicle length of PMMCF is negatively influenced by the ratio between the mastoids and suprasternal notch distance and the interacromion distance. The reaching to the orbit is determined by the value of the ratio between the mastoids and suprasternal notch distance by the acromion–trochanter distance. These results suggest that through the patient's anthropometric analysis the reaching of the pectoralis major flap could be predict.

PP045

Rapid prototyped individual orbital wall implant: preliminary process description of individual orbital wall reconstruction using 3D-CAD—rapid prototyping (RP) techniques

Risto Kontio
Department of Maxillofacial Surgery, Helsinki University Hospital (HUS), 00029, Helsinki Finland

Surgical repair of three-dimensional structure defect in facial skeleton is remarkable difficult and unpredictable. Particularly, complex bone defects are difficult to reconstruct accurately.

Traditional reconstruction of bone defect in the facial skeleton involves harvesting of free bone flap. This causes considerable donor site morbidity. Complications both in the donor site and reconstruction area are common. To avoid above, particularly in midface area, bone defect is often repaired using alloplastic implant. Numerous implants are available with different shapes and made out of different materials. However, several surgical problems exist. The exact positioning of the implant is difficult. Another difficulty is to mimic the shape and thickness of the implant to restore the volume and complex 3D shape of original anatomic structure.

Reconstructive surgery should be evolved into a multidisciplinary field where surgeon works in collaboration with scientists and engineers. One such new field is individual CAD CAM rapid prototyping. The process can be divided into four stages. The image of the anatomic site of defect is first created using CT 2D, the data are then converted into CAD software to develop a 3D digital model. Digital implant is designed onto above digital model (virtual defect site) and finally the precise and equivalent solid implant is fabricated out of digital implant using rapid prototyping (RP) technique.

Several RP techniques are available at the present. Rapid prototyped implant will fit accurately onto the defect. The dimensions can be determined and the implant can be manufactured accurately to restore original volume as well as the original complex shape.

In the present report, a new concept is introduced: orbital walls are reconstructed in three patients using combined CAD CAM rapid prototyping, bone defect is repaired and the bony continuity restored with individual titanium orbital onlay implant.

PP046

Microsurgical reconstruction without the classic microsurgery team

Marco Antonio Scirea Tesseroli, Alexandre Medeiros, Maurício Spagnol, Andreza Lima de Almeida
Hospital Regional do Oeste, Chapecó, Santa Catarina, Brazil

Introduction: Reconstructive microsurgery has been done for more than 4 decades; however, until today many hospitals that offer a Head&Neck team not offers the possibility to microsurgery reconstruction. The biggest difficulty to create a microsurgical team in small medical centers is the absence of a surgeon with specific training, often a plastic surgeon.
Purpose: To demonstrate the feasibility to do microsurgical reconstructions also by medical teams without a plastic surgeon or a surgeon with specific training, achieving good results comparable as that presented by traditional worldwide microsurgery departments.
Materials: Are presented 15 patients undergone to head and neck oncologic resections, in a general hospital in a 5-month period. In all cases were used 3.5 magnifying glass during the anastomose, prolene 7.0 and/or nylon 8-0.
Methods: Prospective analysis of tumor localization, the kind of free flap, the kind of anastomose, the surgical time, and complicacies. Patients who should be undergone to myocutaneous or fasciocutaneous flap reconstructions were studied with pre-operative Doppler. All free flaps were done by the H&N surgeon and all the microanastomoses were done by a vascular surgeon without previous microsurgery training.
Results: Were done 7 lateral thigh flaps, 4 jejunal and 4 antebrachial flaps. There was only 1 total loss (antebrachial flap) reaching a 93.3% success rate.
Conclusions: Our success rates are comparable with other reports. We believe that microsurgical reconstruction in head neck cancer can be done for inexperienced surgical teams with good results, given the opportunity to propagate this technique also to small medical centers.

PP047

Use of porcine dermal collagen (Permacol) IV the surgery of bisphosphonate: induced osteonecrosis of the jaws

Aris Ntomouchtsis, Konstantinos Paraskevopoulos, Georgios Koloutsos, Stavroula Soldatou, Anestis Stefanidis, Konstantinos Vahtsevanos, Doxa Mangoudi
Department of Oral and Maxillofacial Surgery, Theagenion Oncological Hospital, Thessaloniki, Greece

Introduction: Porcine dermal collagen has successfully been used as an alloplastic material in diverse surgical fields. Use of Permacol in the Head and Neck area surgery has a limited experience, since there are only a few reports in the literature and mainly for aesthetical reasons. Permacol is a strong biological, non-absorbable implant with natural properties that make it suitable for use in the maxillofacial region.
Materials and methods: We describe our experience over a time period of 3 years, from 2006 to 2008, in a retrospective analysis of selective cases in which porcine dermal collagen had been used in the surgery of bisphosphonate-induced osteonecrosis of the jaws.
Results: 26 patients with osteonecrosis of the jaws were surgically treated and necrotic bone was removed. Permacol was used with the hope that the alloplastic material would act as a barrier between bone and the overlying mucosa.
Discussion: Permacol Surgical Implant (Tissue Science Laboratories, UK) is a sterile, off-white, moist, tough and flexible fibrous flat sheet of acellular porcine dermal collagen and its constituent elastin fibres. It is biocompatible and not allergenic. It is intended for permanent implantation in humans and is indicated for the reconstruction, recontouring and reformation of human soft connective tissue, particularly where loss of dermis has occurred, and as a supporting tissue in various surgical procedures. It is the first time that Permacol has been used in surgery of bisphosphonate-induced osteonecrosis of the jaws. All our patients had malignancies. Most of them had multiple myeloma (42.3%), followed by breast cancer (30.7%) and 27% of the patients had some other form of malignancy with bone metastasis, which were treated by bisphosphonates. In all patients that we intervened surgically, we observed no improvement in clinical signs with conservative treatment for more than 6 months preoperatively. In the last 4 years of use of this alloplastic material, we had the opportunity to have a follow up from 11 to 39 months (mean 26 months). In four patients, we observed a postoperative break down

of the surgical trauma, but in 3 of them there was no bone exposure. Five patients underwent hyperbaric oxygen therapy mainly because of the size of the lesions. No allergic reaction, extrusion, migration or other potential complications for implants or alloplastic or heterologous materials were observed.

PP048

Recurrent oral squamous cell carcinoma after resection and mandibular implant rehabilitation: a preliminary report of 8 cases

J. Beck-Mannagetta, **G. Eirisch**, M. Etzelsdorfer
Clinic of Oral and Maxillofacial Surgery, Paracelsus Medical University, Salzburg, Austria

Introduction: Restoration of function by dental implants following complete tumor removal has high priority in tumor surgery. Recurrent squamous cell carcinoma (SCC) after this procedure led us to search for possible causes.
Methods: 16 patients with primary oral SCC had undergone resection, postop. radiotherapy, various reconstructive procedures and functional rehabilitation by endosseous mandibular implants. In 8 patients a recurrence was observed. The charts of these patients were examined for possible causal factors.
Results: The primary SCC had always been located in the floor of the mouth and/or the mandibular alveolar process, and had been removed with sound margins. The time interval between primary resection and the placement of implants was 18–118 months (mean 43 months). The recurrent SCC occurred in a similar area 1–69 months (mean 34 months) after implantation. This area was again resected in 7 patients 23–95 months after the first resection (mean 65 months). Three patients died within 2–17 months (mean 7 months) due to tumor progression. One patient died after 4 months because of pulmonary embolism. The follow-up period of the other 4 patients (3 tumor-free, 1 alive with disease) was 6–38 months (mean 26 months).
Discussion: In our opinion, the following factors may play a role: close resection margins with remaining epithelial dysplasia, field cancerization, chronic inflammation due to poor oral hygiene, passive smoking, loss of sensitivity in the mandible after continuity resection, clinical misinterpretation of SCC as "granulation tissue", HPV infection, etc. The low number of patients does not allow unequivocal conclusions. We recommend a small mucosal biopsy at the time of implant placement. Symptoms of periimplantitis in former tumor patients should be considered as a serious sign. Short-term controls are mandatory as patients may not suffer from discomfort due to the loss of sensitivity.

PP049

The role of the Saudi Cancer Society in oral cancer awareness: an observational study

Khalifa S. Al-Khalifa
Dental Public Health Department of Preventive Dental Sciences, College of Dentistry, King Faisal University, Saudi Arabia

Introduction: The prevalence of oral cancer in Saudi Arabia has declined in recent years; however, it is still considered a public health problem in certain regions of the country, namely Jizan region. Shammah and Alqat are local snuffs used in Jizan region, which produces lesions at the site where Shammah is held. Cause and effect are suggested by the fact that lesions may resolve following cessation of the tobacco habit. Awareness programs tailored for communities with high prevalence of oral cancer are scarce and when available function on a very limited scale. In an attempt to increase oral cancer awareness among communities in Jizan region, an awareness campaign was held under the sponsorship of the Saudi Cancer Society.
Purpose: The purpose of this study was to assess the effectiveness of an oral cancer awareness campaign.
Materials and methods: An oral cancer campaign was designed with lectures and workshops including the distribution of educational pamphlets. Pre- and post-workshop questionnaires were distributed to assess knowledge of cancer symptoms, risk factors and attitudes the use of Shamma and Alqat.
Results: The majority of study participants demonstrated fair basic background knowledge on oral cancer, risk factors and methods of prevention. In addition, they found the educational material provided by the Saudi Cancer Society very beneficial.
Conclusion: Oral cancer programs should be structured and targeted towards high-risk communities. The Saudi Cancer Society has a major role in conveying the message to these communities by enhancing the awareness and the importance of prevention of oral cancer.

PP050

Radiographic study of two different types of attachments of implant supported obturator

Abd El Aziz A. Nasser, Aboul Ella E. Alaa, Abd El Salam M. Zainab, Ibrahim M. Amal
Advanced Medical and Dental Institute, University Sains Malaysia, Cairo University, Cairo, Egypt

Objectives: This study is designed to evaluate clinically maxillary obturator supported by osseointegrated implants retained by either a magnetic or ball and socket type of precision attachments.
Methods: Ten male patients were selected. All the cases were completely edentulous and had maxillary defects not crossing the midline of the palate. The patients were randomly divided into two equal groups each contains five patients. Group one has maxillary obturator prosthesis retained to the implants by ball and socket attachment. Group two has removable maxillary obturator prosthesis retained to the implants by magnet system.
Results: In both ball and socket and magnet groups all placed implants showed radiographic evidence of bone integration but with different degrees. Comparison of the increase of bone density around the implants of the two groups with different types of attachments found that the changes around the implants of the ball and socket group were significantly increased than that of magnetic group ($P < 0.05$).
Conclusion: The difference between the two groups is related to the difference of the attachments which influence force transmission to the implants and the movements of the maxillary obturator under load. The selection of suitable type of attachment is important to increase the survival rate of the implants.

PP051
Middle face rehabilitation after 35 years of oncology surgery excision. A case report

Jorge Marinho
Surgery and Prosthesis Rehabilitation Unit, Stomatology Service, Portuguese Oncology Institute, Oporto, Portugal

Introduction: The special needs for rehabilitation are the every day challenge for a oral and maxillo-facial surgery and rehabilitation unit. This case is a an example of how to handle and solve the problems presented by a multidisciplinary patient.
Methods: On this patient, we planned a surgery for implant delivery on a software platform of 3D Tac Scan image. As this patient had no palate, it was difficult to plane the occlusion and the phonetic environment as well as the dental prosthesis that should be relatively well anchored on the other components of the facial part.
Results: A relatively well designed and performed Prosthetic Device was compound of 3 parts: facial prosthesis, hard palate substitute, and the dental prosthesis. By mean of this rehabilitation, the patient could finally socialize being more independent on his every day life.
Discussion: This rehabilitation has more advantages in spite of the extensive free flap surgery usually less tolerated by the patient, and usually with very less functional and aesthetic results. These complex anatomic substitute structures had the advantage of good functional and aesthetic adaptation, specially on a older patient, that could not have no other clinical nor surgical solution for his severe handicap.

PP052
Prosthetic approach after total glossectomy

J. Bémer, G. Dolivet, M. L. Lacave, F. Maire
Centre Alexis Vautrin, Nancy, France

The oral carcinoma often affects the tongue, floor of mouth and the base of the mandible. Tongue is one of the entities anatomicophysiological major performing essential functions such as swallowing, speech. Postoperatively, patients with a total glossectomy have difficulty or inability to control these functions and a prognosis sufficiently compromised. A surgical reconstruction associated with prosthetic rehabilitation and speech therapy approach can reduce these functional problems, but remains a challenge.

The design of a tongue prosthesis in this context depends on the patient's needs (food and phonation). It is more difficult in the edentulous patient. An artificial language prosthetic silicone, with or without a prosthesis to lower the palace can be considered. A follow-lingual coming in contact with the flap reconstruction of floor of mouth and base of tongue can also be designed. It helps guide the food to the back of the mouth. Dental implants can help stabilize the device. Three clinical cases have these options after prosthetic total glossectomy. These toothless patients, partial or total treated for squamous cell carcinoma of floor of mouth by surgery and radiotherapy.

The prosthetic design after total glossectomy stays a very difficult aspect of the maxillofacial prosthesis. The combination of the prosthesis to the advancement of reconstructive surgery, providing improved swallowing and speech, oral feeding is facilitated, the tissues are protected. Finally, the quality of life of the patient improved, but needs to be evaluated more objectively.

PP053
A novel concept in implant utility

Jorge Marinho
Oncology Surgery Department, Surgery and Prosthesis Rehabilitation Unit, Stomatology Service, Portuguese Oncology Institute, Oporto, Portugal

Purpose: Deliver to the brain, the sharp well-defined mastication sensitivity, lost after dental decay and implant rehabilitation
Methods: We concept and designed a bionic electronic device based on a dental implant abutment that it can stimulate the late nervous terminations of the V2 and V3 branches of the sensitive trigemium.
Results: Based on rehabilitation experience with many prosthetic devices anchored on implant-binded structures, we performed some limited in vivo experience that encouraged to develop and patent the concept.
Conclusions: The mastication sensitivity is a very important function of the stomatognathic complex apparatus and it seems to be very important for the maintenance of important functions such as equilibrium and walking.

PP054
Risk factors and oral precancer: developing a high/low risk profiling system

Ameena Diajil, Michaela Goodson, Peter Thomson
Oral and Maxillofacial Surgery, School of Dental Sciences, Newcastle University, Newcastle, UK

Introduction: Oral squamous cell carcinoma (OSCC) remains a lethal and deforming disease, with significant mortality and a rising incidence in younger and female patients. Recent studies suggest up to 50% of OSCC cases may not have been exposed to the major identifiable carcinogens tobacco and alcohol. It is thus imperative to determine the significance of other potential risk factors for oral carcinogenesis.
Purpose: To identify potential risk factors for OSCC and oral precancer and to design an accurate data collection tool to try to identify patients at high risk of OSCC development.
Materials and methods: 226 papers on risks factors for oral cancer and precancer were reviewed and identifiable factors classified into high and low risk categories dependent upon clinicopathological evidence.

Results: 15 factors consistently associated with the pathogenesis of OSCC and precancers were identified: 8 high risk (including tobacco, alcohol, genetic factors, age and diet) and 7 low risk (such as oral health, socioeconomic status, and diabetes) were stratified according to severity of risk.

Conclusions: Understanding the significance of various risk factors in oral carcinogenesis helps stratify patients, especially those with precancer, into high and low risk categories. Early recognition of disease susceptibility helps to direct interventional treatments.

PP055
Comparison of who and binary systems for inter-rater reliability in oral dysplasia

Paul Nankivell[1], Hazel Williams[2], David Snead[2], Paul Matthews[2], Christopher McConkey[3], Hisham Mehanna[1]
[1]*Institute of Head and Neck Studies and Education (InHANSE), University Hospital Coventry and Warwick, Coventry, UK,* [2]*Department of Pathology, University Hospital Coventry and Warwick, Coventry, UK,* [3]*Clinical Trials Unit, Health Sciences Research Institute, University of Warwick, Coventry, UK*

Introduction: Histological grading systems are the current gold standard for predicting which oral dysplastic lesions will progress to invasive disease. The WHO system is most widely used, but a newer Binary system has been proposed. It is suggested that this new system may help separate the cases graded as moderate (which pose a particular clinical dilemma) in to high and low risk groups. This new system has not yet been validated.
Purpose: To assess differences in inter-observer variability using the WHO and Binary systems. To validate the Binary system as a means of better separating the moderate dysplasia cases.
Materials: 68 archived oral dysplasia slides of varying grades.
Methods: 3 pathologists (2 head and neck specialists) blinded to the initial grade and clinical outcome independently assessed each slide. Grades were assigned using the WHO and Binary criteria. Variability was assessed using Kappa correlations.
Results: The Binary system showed better agreement than WHO (Multi-rater kappas 0.65 vs. 0.38). There was a higher agreement between the 2 specialist pathologists than between either of them and the non-specialist for the binary system (0.74 vs. 0.62 or 0.59). There was no clear difference for the WHO system. Of the 25 cases graded moderate by WHO, 12 were graded low and 13 as high risk on binary grading. 3 from each group progressed to malignant disease.
Conclusions: The Binary system shows less inter-observer variability than the WHO system. However, it does not appear to offer an advantage in better stratifying the clinically difficult 'moderate' cases.

PP056
Inter-observer variability for individual features of two oral dysplasia grading systems

Paul Nankivell[1], Hazel Williams[2], David Snead[2], Paul Matthews[2], Christopher McConkey[3], Hisham Mehanna[1]
[1]*Institute of Head and Neck Studies and Education (InHANSE), University Hospital Coventry and Warwick, Coventry, UK,* [2]*Department of Pathology, University Hospital Coventry and Warwick, Coventry, UK,* [3]*Clinical Trials Unit, Health Sciences Research Institute, University of Warwick, Coventry, UK*

Introduction: Oral dysplasia has a malignant potential. Being able to predict which lesions will transform is important. Histological grading is the gold standard, but is known to suffer from inter-observer variability. The degree of agreement on the individual architectural and cytological features used in these systems has not been characterised. If certain features show poor agreement, this may explain the overall variability of the systems. Attempts to improve agreement for these features may improve the reliability and accuracy of these systems.
Purpose: To investigate the inter-rater variability for each individual feature used in the WHO and Binary grading systems for oral dysplasia.
Materials: 68 archived oral dysplasia slides of varying grades.
Methods: 3 pathologists (2 head and neck specialists) blinded to the initial grade and clinical outcome independently assessed each slide. Architectural and cytological features, as used in the WHO classification, were marked as present or absent. Variability was assessed using pairwise percentage agreements and Kappa correlations.
Results: Kappa scores ranged from −0.03 to 0.61 for the individual features. Multi-rater kappas showed agreements ranging from −0.07 to 0.45. Agreement between raters for each individual feature was lower than their overall agreement for grade. There was a better agreement between the head and neck pathologists than between them and the general pathologist.
Conclusions: Certain histological features show more inter-rater variability than others. These features may be the reason for the overall variability in dysplasia grading. A focus on improving these features may increase the reliability and accuracy of these grading systems.

PP057
Objective assessment of swallowing function after concomitant chemo-radiation in head and neck cancer

Jaiprakash Agarwal[1], Debnarayan Dutta[1], Vijay Palwe[1], Tejpal Gupta[1], Sarbani Ghosh Laskar[1], Ashwini Buddrukar[1], Vedang Murthy[1], Pankaj Chaturvedi[2], Prathemesh Pai[2], Devendra Chaukar[2], A. K. D'Cruz[2], Suyesh Kulkarni[3], Aniruddh Kulkarni[3], Gurmit Baccher[4], Shyam Kishor Shrivastava[1]
[1]*Department of Radiation Oncology,* [2]*Department of Surgical Oncology,* [3]*Department of Interventional Radiology,* [4]*Department of Speech Therapy, Tata Memorial Hospital, Mumbai, India*

Purpose: Objective assessment of swallowing function after radical chemo-radiotherapy (CRT) and assessment of impact of various patient related factors.
Materials and methods: Forty seven loco-regionally advanced (T1-4 N0-2 M0) non-nasopharyngeal head and neck squamous cell carcinoma patients accrued and prospective swallowing function evaluation done with objective methods [modified barium swallow (MBS)] at pre-CRT, CRT completion and at subsequent follow ups. Scoring of MBS was done using penetration aspiration (PAS) scale.
Results: Among 47 evaluable patients (40 males, 7 females; mean age 53 years; 53% oropharyngeal cancer, 72% smoker), 9 (19%), 11 (23%), 10 (21%), 5 (10%) and 11 (29%), 11 (29%), 12 (32%), 10 (26%) had aspiration, residual, postural change and regurgitation at pre-CRT and 6-month post-CRT, respectively. At pre-CRT, 14 (29%) patients had grade 3–6 (PAS score) dysphagia and had increased to 37% at 6-month evaluation. Among patients ($n = 34$) without severe dysphagia (PAS score 0–2) at pre-CRT evaluation had severe dysphagia (PAS score 3–6) at 2-, 6- and 12-month evaluation in 53, 46 and 72% patients, respectively. At pre-CRT, primary tumour size ($p = 0.059$) and patients with high subjective dysphagia scores ($p = 0.004$) had significantly higher objective dysphagia scores on MBS evaluation. At post-CRT MBS evaluation, residue (44%) was maximum affected followed by aspiration (18%). Patients with hypopharyngeal tumor and large primary

tumour size had higher impairment of swallowing function at post-CRT evaluation.
Conclusion: Large proportion of patients treated with CRT had severe swallowing dysfunction on objective assessment with MBS. Residue and aspiration were significantly present after CRT.

PP058
Improvement of the status of a feeding for the compare percutaneous endoscopically guided gastrostomy or surgical gastrostomy in patients with head and neck cancer

I. V. Reshetov, V. I. Chissov, V. V. Sokolov, S. A. Kravtsov, P. V. Pavlov, M. V. Ratushniy
P.A. Hertzen Moscow Cancer Research Institute, Moscow, Russia

Background: One of the key problems at conducting patients with oropharyngeal tumors is the problem of a high-grade food. For providing access to a stomach for the purpose of multimonthly and even long-term probe a food in these cases, percutaneous endoscopically guided gastrostomy (PEG) can be used, which has a number of advantages before nasal-gastric a probe and surgical gastrostoma. Long use nasal-gastric, a probe almost inevitably leads to the development of inflammatory changes in nasal courses and additional bosoms of a nose, pharynx and esophageal, to occurrence necrosis on a probe course, can become the reason gastroesophageal a reflux and aspiration. Method application PEG excludes development of these complications. PEG is carried out faster, than surgical gastrostoma, and does not demand deep anesthesia.
Methods: In our clinic experience, more than 40 gastrostomies at patients with the oropharyngeal tumors of oncological treatment are stored. For 20 and 20 patients, surgical gastrostomy and PEG are performed, respectively. The PEG techniques consisted of following stages: (1) a choice of the best place of a puncture: after introduction, endoscope in a stomach and sufficient introduction air with the help of diaphanoscopical illumination, the suitable place for a puncture is defined. The control of correctness of a choice of a place of a puncture is made by means of pressing by a finger outside, thus endoscopically the place of this pressing is clearly visible; (2) a stomach puncture: after processing of the chosen place of a puncture and local anaesthesia the skin cut, width 4–5 mm is made. Puncture a tube under endoscopically the control it is entered into a stomach. The puncture needle leaves from tube; (3) loop–conductor introduction through tube in a stomach and its extraction with the help of endoscope through a oral outside; (4). probe fixing to a loop–conductor; (5) installation gastrostomy tubes and endoscopically acknowledgement of correctness of its position; (6) fixing gastrostomy tubes and installation of external accessories. The techniques of surgical gastrostomy were standard and were carried out under the general anaesthesia.
Results: In all cases by the patient, high-grade food that promoted the fastest healing of wounds in the postoperative period at the weakened oncological patients has been restored. A number of advantages of PEG before surgical gastrostomy are noted: a food is fast restored, there is an activation of the patient, less a painful syndrome faster, it is less than complications, is more economic to apply PEG in comparison with surgical gastrostomy in the ratio 3:1.
Conclusion: The method of PEG is easily realizable and is widely used in clinical practice. The main indication is swallowing infringement at the oropharyngeal tumors and necessity of maintenance of a food during oncological treatment.

PP059
Anxiety and depression in head and neck outpatients

Vikrant Veer, **Sanam Kia**, Michael Papesch
ENT Department, Queens Hospital, Romford, London, UK

Introduction: It is well known that patients with cancer suffer from psychological distress. However, we sought to investigate how much distress was experienced by patients in various stages of investigation and treatment in a head and neck outpatient clinic.
Purpose: We considered that our department may not be fully catering for the psychological distress that patient may be suffering during their journey through the clinic system.
Materials: The HAD score was used to assess anxiety and depression.
Methods: Each patient attending a busy head and neck clinic was asked to fill in the HAD score. Each patient was divided into first attendance, awaiting results for investigations, awaiting treatment, and post-treatment.
Results: There are significant levels of anxiety and depression found in patients attending the clinic in question. A clear trend of rising anxiety was seen and 10–15% was scored in the most severe category.
Conclusions: A better service should be provided to meet the needs of patients who may be suffering from psychological distress. We advocate a member of the head and neck MDT, who should be trained to spot and appropriately refer patients who require psychological support/management.

PP060
Functional endoscopic evaluation vs. Evan's blue dye test for swallowing assessment of tracheostomised patients

Kynigou Maria, Aggeli Dimitra, Stefanidis Anestis, Triaridis Athanasios, Chatziavramidis Aggelos, Thomaidis Ioannis
ENT Department, Theagenion Anticancer Hospital, Thessaloniki, Greece

Introduction: Aspiration is usual in tracheostomised patients. Evan's blue dye test is being used for detection of aspiration in those patients. A new procedure that has been introduced is the use of flexible endoscopy for swallowing assessment: Fiberoptic Endoscopic Evaluation of Swallowing (FEES).
Purpose: We correlate this bedside method of evaluating swallowing with the classic Evan's blue dye test used for clinical detection of aspiration in patients with tracheostomy.
Materials: 41 patients with tracheostomy performed for several reasons were evaluated for possible detection of aspiration with the simple and modified Evan's blue dye test. Within 24 h, all of the patients were also evaluated by a functional endoscopic swallowing evaluation.
Methods: Fiberoptic endoscopic evaluation of swallowing (FEES) involves passing transnasally a fiberoptic laryngoscope in order to visualize the hypopharynx, larynx and proximal trachea for the purpose of assessing swallowing function.
Various food and/or liquid consistencies were dyed blue and during endoscopy attention was paid to their management throughout the pharyngeal stage of swallowing.

Simple Evan's blue dye test involves applying 4 drops of methylene blue to the mouth of the patient and checking for the next hours

if his trachea secretions turn blue. Modified is the same test using blue dyed food of various consistency.
Results: Evan's blue dye test in comparison to FEES showed 78% sensitivity and 75% specificity. Positive prognostic value was 96.6% and negative prognostic value 27.3%.
Conclusions: Evan's blue dye test is a usual and easy way of testing aspiration in tracheostomised patients. Functional endoscopic evaluation of swallowing is a simple and safe alternative which gives us more accurate information. This is mandatory for feeding and decannulating the patients.

PP061
Quality of life assessment in patients after oral cancer treatment on the basis of self designed questionnaire

Bogusława Manowska, **Marta Tyndorf**, Piotr Arkuszewski, Ewelina Gaszynska
Department of Cranio-Maxillofacial Surgery Medical University of Lodz, Lodz, Poland

The aim of the study was to assess the quality of life in patients undergoing surgical therapy for tumors within maxillofacial region. A short questionnaire self-completed by the patient was sent. Finally, 60 patients with tumors of similar pathology were enrolled into the study. The age range was 49–82 years, 26 were males. All included patients were treated by primary surgery in a similar manner in Cranio-Maxillofacial Surgery Department Medical University in Lodz from 2000 to 2008. Adjuvant radiotherapy was required by 40 patients. The questionnaire contains specific questions of functional outcome (swallowing and speech) and questions relating to depression, physical and mental well-being and ability to work. Each questionnaire was scored on a 3-point scale (0–2). There were no differences between male and female group. Younger patients tended to be less satisfied and reported worse functional outcome of treatment. In conclusion, alleviating impairments in patients following oral cancer therapy is very important especially in younger group. Quality of life should be considered as an essential part of therapy in patients with oral cancer.

PP062
Korean validation of the University of Washington quality of life questionnaire for patients with head and neck cancer

Moon Young Chang, Dong-Whan Roh, Ik Joon Choi, J. Hun Hah, Myung-Whun Sung, Kwang Hyun Kim, Tack-Kyun Kwon
Department of Otorhinolaryngology, Seoul National University College of Medicine, Seoul National University Hospital, Seoul Yongon-dong, Chongno-gu, Korea

Introduction: The University of Washington Quality of Life questionnaire (UW-QOL) is one of the most commonly used measures in clinical practice. However, this is an English-language survey instrument. So, to be used in other cultures, translation and psychometric validation in other languages are required.
Purpose: The objective of this study is to perform the translation and psychometric validation of the UWQOL questionnaire into Korean.
Materials: Fifty-six patients with at least 1 year of disease-free survival after treatment for head and neck cancer were enrolled in this study.
Methods: The UW-QOL questionnaire was translated into colloquial Korean and adapted culturally according to established international guidelines. The psychometric validation was performed using a prospective study of patients. Patients completed the Korean version of the UW-QOL questionnaire during routine clinical consultation. They also completed a validated Korean version of the WHOQOL (World Health Organization Quality of Life)-BREF, an abbreviated version of the WHOQOL-100 and a questionnaire to evaluate anxiety and depression symptoms (Beck Depression Inventory).
Results: The Korean version of the UW-QOL questionnaire demonstrated good internal consistency (Cronbach's alpha of 0.725). It also had good construct validity, as physical and social function score correlated strongly with Global question of the UW-QOL, N stage, cancer stage, the Beck Depression Inventory questionnaire and physical health, psychological and social relationships domain of the WHOQOL-BREF.
Conclusions: These results suggest that the Korean version of the UWQOL questionnaire is reliable and culturally valid.

PP063
Quality of life in oral cancer patients: effects of mandible resection and sociocultural aspects

Stephan T. Becker[1], **Marc Menzebach**[1], Thomas Küchler[2], Katrin Hertrampf[1], Hans-Jürgen Wenz[3], Jörg Wiltfang[1]
[1]Department of Maxillofacial Surgery, Christian, Albrechts Universität Kiel, Kiel, Germany, [2]Reference Center on Quality of Life in Oncology (RZLQ), University Hospital SH, Campus Kiel, Kiel, Germany, [3]Department of Prosthodontics, Propaedeutics and Dental Materials, Christian-Albrechts-University Kiel, Kiel, Germany

Introduction and purpose: The goal of this study was to assess the postoperative quality of life in oral cancer patients with different types of mandible resection and to collect information about their socio-cultural situation.
Materials and methods: In this cross-sectional study, patients with oral cancer treated with different types of mandible resection in the Clinic of Oral and Maxillofacial Surgery at the University of Kiel between 1997 and 2007 were included. Quality of life was assessed using the EORTC QLQ-C30 and H&N 35 questionnaires. Furthermore, a questionnaire about the socio-cultural background of the patients was applied. To be included, at least 1 year had to be passed after tumor resection.
Results: 111 of 235 questionnaires were returned (47%). Significant differences in quality of life were found between patients with soft tissue resections and bone resections. There were significant worse values for continuity resections compared to only partial resections. 67 patients (60.4%) had only a junior high school certificate (Hauptschule) as the highest school graduation certificate, four patients (3%) had no school leaving certificate.
Conclusions: The postoperative quality of life in our patients was significantly influenced by the extent of bone resection. This should be considered for surgical planning. The socio-cultural data showed a rather low education level for the majority of the patients.

PP064
Squamous cell carcinoma of the tongue, HPV negative, with very aggressive behaviour in a 23-year-old man

Aris Ntomouchtsis, Konstantinos Paraskevopoulos, Anestis Stefanidis, Dimitra Aggeli, Stavroula Soldatou, Konstantinos Vahtsevanos, Doxa Mangoudi
Department of Oral and Maxillofacial Surgery, Theagenio Anticancer Hospital, Thessaloniki, Greece

Introduction: Cancer of the tongue in young adults is particularly aggressive and carries a poor prognosis. It usually occurs in males after decades of exposure to smoking and alcohol abuse. The incidence of SCC of the oral cavity in adults less than 40 years of age ranges between 0.4 and 3.6%.
Materials and methods: A 23-year-old man, presented with an exophytic lesion of the left lateral tongue, 2 × 2 cm in size, classified as T1, with a clinical and CT nodal status N0. The tumor extension was close to the midline, and for that reason a bilateral selective neck dissection was planned. The medical history of the patient was insignificant, but he mentioned smoking from the age of 12 years and the casual use of heroin. Biopsy confirmed the malignant nature of the lesion,
Results: We performed an extensive resection of the squamous cell carcinoma with free margins of 1.5 cm, simultaneously performed bilateral selective neck dissection. Since there were no metastases of the regional lymph nodes of the neck, close follow-up was decided. The lesion was HPV negative. 15 months later, a supraclavicular inflation appeared, which was confirmed to be regional recurrency. After 2 cycles of chemotherapy, a modified radical neck through a sternotomy, including levels VI and VII, was performed, followed by simultaneously chemotherapy and external radiotherapy. Brachytherapy was applied with an Ir 192 wire and a total dose of 12 Gy was given. Six months later, the patient was under close follow-up.
Discussion: The possibility of the existence of a carcinogenic effect of tobacco and alcohol in young patients is low, because they are probably less exposed to carcinogens that lead to a malignant transformation. Thus, other factors should be investigated in order to explain the etiology of SCC in young patients.
We present this case in order to show that although our treatment was aggressive with wide and extensive resections, tumor showed high malignant potential, which is difficult to control.

PP065
Primary extranodal nasal NK/T-cell lymphoma presenting as nasal polyp: a diagnostic challenge

Aris Manganaris[1], Evangelia Tsakiropoulou[1], Aphroditi Pantzaki[2], Georgios Kontzoglou[1]
[1]*ENT Department, Hippokrateio General Hospital, Thessaloniki, Greece,* [2]*Pathology Department, Hippokrateio General Hospital, Thessaloniki, Greece*

Introduction: Peripheral NK/T-cell lymphomas account for only 10–15% of non-Hodgkin's lymphomas and are currently classified as "cutaneous T-cell and NK cell lymphomas". Amongst these, extranodal nasal NK/T-cell lymphomas are a rare variety seen mainly in Asia.
Case presentation: We report a case of a 63-year-old patient with an 8-month history of intense nasal obstruction, purulent rhinorrhea and decreased sense of smell. He additionally reported night sweats, evening fevers and weight loss. The patient was previously diagnosed with unilateral, left-sided nasal polyposis and sinusitis and received medical treatment without any improvement. The clinical evaluation revealed a mass originating from the left inferior turbinate obstructing the left nasal cavity and protruding from the nasal vestibule. No palpable cervical lymph nodes were identified. MRI of head and neck confirmed the presence of a solid mass in the left nasal cavity with inflammation of the left-sided paranasal sinuses. Imaging studies also included a full body computer tomography scan and ^{99m}-Tc bone scintigraphy, which failed to identify any disease. Histopathological examination of the biopsy specimen from the left inferior turbinate suggested an extranodal NK-T cell lymphoma. Immunohistochemical findings confirmed the diagnosis, with cells positive for CD3, TIA1, and UCHL-1. Virology profile of the patient revealed increased Ig-G antibodies for rubella, CMV and Ebstein-Barr virus. The patient received chemotherapy but succumbed to the disease 3 months later.
Conclusion: Primary nasal lymphoma is an uncommon malignancy. Due to the aggressiveness of the disease it is challenging to early recognize lesions mimicking nasal polyps.

PP066
Successful surgical management of cervical chyle leakage after neck dissection: a case report and a review of the literature

Antoine Digonnet, Esther Willemse, Guy Andry
Department of thoracic and head and neck surgery, Jules Bordet Institute, Free University of Brussels, Brussels, Belgium

Lymphatic duct injury is an infrequent (1–2.5%) but severe complication after neck dissection, leading to nutritional, metabolic, immunologic deficiencies, skin flap necrosis and carotid blowout. The treatment of those patients remains unclear and surgical identification of the leak is known to be often impossible. We report a case of a 57-year-old patient who underwent total thyroidectomy and a right neck dissection (area 3, 4, 6) for a papillary carcinoma of the thyroid gland. The days after surgery, he presented a chyle leakage which progressively increased up to 1 l in 24 h despite the use of total parenteral nutrition and somatostatin.

Four days after surgery, we re-operated the patient. We instillated methylene blue in the gastric pouch before the procedure. During the procedure, we isolated three slightly blue colored chyle fistulas which were closed by direct stitches covered by sterno cleido muscle flap. The evolution was uneventful and he was discharged at day 8.

Major lymphatic duct injuries usually manifest after the operation with a chylous drainage, lymphocele is rare. Different management strategies have been advocated according to the institution experience, including nutrition, surgical, and pharmacological therapies. Although there is no consensus in terms of management, in several papers it appears that uncontrolled chyle leakage (>1 L/24 h) may lead to surgery. In these circumstances, we believe that methylene blue may be useful to identify the fistula.

PP067

XX.-a tedious battle of survival of a patient presenting ARDS and pulmonary fibrosis after major head and neck surgery

Esther Willemse[1], Maurice Lipszyc[2], Frederic Urbain[3], Guy Andry[1]
[1]Department of Head and Neck Surgery, [2]Department of Anaesthesiology, [3]Department of Plastic and Reconstructive Surgery, Jules Bordet Institute, ULB, Brussels, Belgium

Introduction and purpose: Oncological head and neck surgery is often accompanied by important morbidity. If the patient presents heavy complications after surgery, the battle of survival can be extremely wearisome. This case shows how we can prevail.
Materials and methods: This case report concerns a 61-year-old man presenting important co-morbidities including alcoholism and smoking. At 58 years of age, he underwent surgery followed by Currie-therapy for an invasive epithelial carcinoma of the oral floor. Two years later, a similar treatment was applied for carcinoma of the oral pharynx. After 20 months disease-free interval, osteoradionecrosis of the mandibula was diagnosed and a pelvigingivomandibulectomy with immediate reconstruction (free osteocutaneous fibula flap) was performed. In the days that followed, he contracted two consecutive bronchopneumonias, MRSA septicaemia and ARDS, followed by bilateral pneumothorax and acute renal insufficiency requiring dialysis. Imaging showed pulmonary fibrosis. Mechanical ventilation was stopped at day 69 after surgery. Chest-tubes were removed and the patient recovered very gradually with a small relapse due to an aspiration pneumonia after removal of his laryngeal canula. The patient was finally discharged at day 170. At 18 months, the patient is in good condition, his flap is viable.
Conclusion: Oncological H&N surgery is often correlated to important morbidity which may reduce chances of survival, consequently there is a tendency to adapt treatment but intensive though tedious medical and human investment may lead to favourable outcome.

PP068

Laser partial glossectomy for squamous cell carcinoma of the tongue: a case report

Antigoni Kaprana, Efklidis Proimos, Theognosia S. Chimona, Debora Kiagiadaki, George Perogamvrakis, Chariton E. Papadakis
ENT Department, Chania General Hospital, Chania, Crete, Greece

Introduction: Oral cancer represents about 3% of all cancers. More than 90% of cancers of the oral cavity and oropharynx are squamous cell carcinomas. The incidence of tongue cancer varies among countries from 2.5 to 9 cases per 100,000 per year. The two highest risk factors for tongue malignancies are use of tobacco products and alcohol consumption.
Case report: A 78-year-old man presented with a tumor on the right side of the mobile tongue anterior to the circumvallate papilla. Biopsy showed a low-to-median-differentiated squamous cell carcinoma. The extent of spread of the disease was evaluated with CT, MRI scans and ultrasound of upper abdomen (T2N0M1-bone metastasis). The patient finally underwent a total body PET/CT scan in order to be restaged (down-staged to T2N0M0). A laser partial anterior glossectomy was performed and the patient was discharged the 9th day of his hospitalization in good health.
Conclusion: Treatments for tongue cancer are based on the location extent and stage of the disease and may involve surgery, radiation therapy and chemotherapy. Laser partial anterior glossectomy is a reliable surgical approach that prevents the intraoperative spread of the disease, controls bleeding and reduces postoperative pain and edema because of minimal damage to adjacent tissues.

PP069

Schwannoma of the lower lip: report of a case and review of the literature

Constantinos Mourouzis, **Panagiotis Dais**, George Gkinis, Panagiotis Stathopoulos, George Rallis
Department of Oral and Maxillofacial Surgery, General Hospital of Attika "KAT", Athens, Greece

Introduction: Schwannomas are neurogenic tumors that arise from the Schwann cells of the nerve sheath. They are benign, usually solitary, and encapsulated neoplasms. The most common intraoral site of occurrence is the tongue, followed by the palate and the buccal mucosa, with the lip being an extremely rare site.
Case report: We report such a case of a 16-year-old male patient with schwannoma of the lower lip. Complete excision of the tumour and reconstruction with local advancement mucosa flap led to cure without any aesthetic deficit. Histological examination and immunohistochemical staining are used for the diagnosis.
Conclusions: Even though, based on the literature review, schwannoma of the lip is a clinical rarity, it should be taken into consideration in the differential diagnosis of a lower lip mass.

PP070

Massive bleeding due to maxillary artery aneurysm treated with endovascular coils in a terminal patient with head and neck cancer. case report

A. Diaz-Carandell[1], J. Molina[1], J. Branera[2], M. J. Escobar[4], O. Escuder[3]
[1]Oral and Maxillofacial Department Staff, Hospital Parc Taulí. Sabadell, Catalonia, Spain, [2]Interventional Radiology Department, Hospital Parc Taulí, Sabadell, Catalonia, Spain, [3]Chief of Oral and Maxillofacial Department, Hospital Parc Taulí, Sabadell, Catalonia, Spain, [4]Anesthesiology Department Staff, Hospital Parc Taulí, Sabadell, Catalonia, Spain

Introduction: Massive hemorrage in terminal patients with head and neck cancer is a frequent complication. Many times patient dies in a terrible manner.
Materials and methods: We present a case report with a 62-year-old patient that was not treated in our hospital and came to the emergency room with a massive intraoral bleeding.
Results: After we performed a tracheostomy, a arteriography was made and identified two maxillary artery aneurysms. Embolization with intraaneurysm coils was performed and bleeding completely stopped.
Conclusions: As far as we know this is the first case reported of a maxillary aneurysm treated with coils embolization. We present the

case report, and how that treatment could give the patient a more worthy death.

PP071
Schwannoma of the tongue

H. Salina[1], M. Y. Mohd Razif[1], R. Ramli[2], **S. H. A. Primuharsa Putra**[3]
[1]*Department of Otorhinolaryngology-Head and Neck Surgery,* [2]*Department of Oral and Maxillofacial Surgery, National University of Malaysia Medical Centre, Kuala Lumpur, Malaysia,* [3]*Ear, Nose and Throat-Head and Neck Consultant Clinic, KPJ Seremban Specialist Hospital, Seremban, Negeri Sembilan, Malaysia*

Introduction: A schwannoma is a benign, encapsulated, slow growing tumor, arising from the neural sheath's Schwann cells of the peripheral, cranial or autonomic nerves. Approximately 25–48% of these tumors occur in the head and neck region, with only 1% occurring in the mouth.
Case report: A 10-year-old girl presented with a slow-growing, painless swelling on the left side of the tongue for 6 months duration. It was associated with disturbance to mastication and phonation.
Result: Examination revealed a 5 cm × 4 cm, globular left tongue mass which is mobile with smooth surface. There was no neurological deficit and no neck nodes palpable. She underwent excision of the mass under general anaesthesia. Complete enucleation with primary closure was carried out. The patient had an uneventful postoperative recovery and histological evaluation was consistent with schwannoma. There was no recurrence noted following tumour extirpation.
Conclusion: The diagnosis of schwannoma is usually made post-operatively by histological identification although modern imaging techniques can provide useful indications. The treatment is exclusively surgical and recurrence is uncommon.

PP072
A case report: choriocarcinoma metastasis to the maxillary

Rifqah Nordin[1], Nazimi Abdul Jabar[1], Siti Salmiah Mohd Yunus[2], Mohd Razif Mohamad Yunus[3]
[1]*Oral Maxillofacial Surgeon, Department of Oral and Maxillofacial Surgery, UKM Medical Centre, Malaysia,* [2]*Trainee Lecturer, Department of Oral and Maxillofacial Surgery, UKM Medical Centre, Malaysia,* [3]*Head and Neck Surgeon, Department of Otolaryngology, UKM Medical Centre, Malaysia*

Introduction: Choriocarcinoma is an aggressive malignant tumor arising from trophoblastic cells and is often marked by elevation of human chorionic gonadotropin (HCGs). Choriocarcinomas disseminate rapidly through the hematogenous route whereby the lungs are most frequently affected. Although rare, metastases to the brain and skin have been reported but to date very few papers have reported metastasis to the gingiva.
Case report: A 22-year-old female was referred to our department for persistent bleeding from the upper left gum for a few days. She is a known case of uterine choriocarcinoma treated with chemotherapy in 2008. She came to the Emergency Department in June 2009 with complaint of vomiting, headaches and abdominal pain. Further investigations revealed metastasis to the lungs, brain, liver and kidney. On intraoral examination, oral hygiene was poor with multiple decayed teeth. Area of complaint was left maxillary quadrant whereby a 1 cm × 0.5 cm hyperplastic swelling which resembles pyogenic granuloma or peripheral giant cell lesions or fibrous epulis was noted around the buccal and palatal aspect of teeth 23, 24, 25 and 26 with moderate oozing. Blood investigations showed raised INR and APTT with low haemoglobin and platelet levels. Following transfusion, incisional biopsy with Biolase Waterlase dental laser was performed and HPE result came back as metastasic choriocarcinoma to the gingiva. Dental laser was used to minimize and arrest bleeding as adrenaline packing and tranexamic mouthwash failed to do so.
Conclusion: This emphasizes the fact that suspicious gingival lesion should be investigated thoroughly for the presence of an underlying malignancy.

PP073
Myiasis infestation over ulcerated carcinoma in the face: two cases

Elias Papadopoulos[1], **Angelos Chatziavramidis**[2], Aris Ntomouchtsis[3], Moisis Tanasidis[2], Anestis Stefanidis[2], Athanasios Triaridis[2], Thomas Sidiras[2]
[1]*Laboratory of Parasitology and Parasitic Diseases, Veterinary Faculty, Aristotle University, Thessaloniki, Greece,*
[2]*ENT Oncologic Department, "Theageneio" Hospital, Thessaloniki, Greece,*
[3]*Department of Oral and Maxillofacial Surgery, "Theageneio" Hospital, Thessaloniki, Greece*

Introduction: Myiasis is the infestation of live human and vertebrate animals with larvae of flies (Diptera), which at least for a certain period, feed on the host's dead or living tissue and liquid body-substances. Myiasis is common in animals; however, it has been very rarely reported in humans in Greece.
Purpose: Herein, two cases of traumatic myiasis are presented, one in a 81-year-old female patient suffering from SCC and the other in one 71-year-old male patient suffering from BCC presented in Theagenion hospital in Thessaloniki, in August and September of this year. Both patients had progressive, not controlled after surgery and radiotherapy, ulcerative face cancer infested with larvae.
Materials and methods: The larvae of the flies were collected directly from the infested areas, washed with sterile saline and placed into vials containing 90° alcohol in order to preserve them.
Results: The larvae were identified morphologically, according to taxonomic keys, in both cases to be *Wohlfahrtia magnifica*. They were of 2nd and 3rd larval stages. The spinules on the body were strong, well pigmented and numerous. The posterior peritremes were characteristic.
Conclusions: *W. magnifica* is widely distributed over the warmer parts of the Palaearctic region, being the most common agent of animal traumatic myiasis in Greece. Adult flies are most active during summer and they are diurnal, favouring the hot hours of the day. They give birth to very mobile larvae of the first stage near skin lesions, which grow rapidly into the trauma. It is recommended first to remove the larvae mechanically and then to wash it with a mixture of saline and insecticide before covering the wound with paraffin cream. Massive killing of larvae into the human tissues may cause severe allergic reaction. Since myiasis occurs in humans, it is suggested to take measurements to avoid it in such cases.

PP074
An unusual presentation of breast metastases

Bethan Jones, Elgan Davies, Simon Walker, Gerhard Bockeler
Otolaryngology, Head and Neck, Ophthalmology and Radiology Departments, Leighton Hospital, Crewe, Cheshire, UK

Introduction: Breast metastases presenting within the head and neck are relatively rare. We present a case of a 50-year-old lady with periorbital oedema and acute visual deterioration. She was diagnosed with orbital metastases spreading into the sphenoid sinus 10 years following treatment for breast carcinoma.
Purpose: To report and review the presentation and management of metastatic breast carcinoma within the head and neck.
Materials and methods: A case report and literature search using OVID and MEDLINE.
Results: Through improved oncological treatments, the incidence of orbital metastases has increased. Most commonly, the primary sites are from the breast, prostate, lung and skin melanoma. Typically, the clinical features of presentation include orbital pain, proptosis and restriction of ocular motility.
Paranasal sinus metastases are rare and give rise to symptoms of headache, facial pain, visual disturbances and cranial neuropathies. Renal cell carcinoma and bronchogenic carcinomas are the commonest primary tumours.

Furthermore, the symptoms relating to the metastases are often the first clinical manifestation of the disease, reported as high as 19%. In 10% of cases, the primary site is not found.

The long-term prognosis is poor with an overall mean survival of 15 months. Management options are palliative and include radiotherapy, chemotherapy, hormonal treatment or a combination of these modalities.
Conclusions: Breast cancer remains the commonest primary tumour giving rise to orbital metastases and has an overall poor prognosis. Commonly patients present with ocular motility restriction, while periorbital oedema and acute visual deterioration are not frequently reported clinical features.

PP075
Metastatic leiomyosarcoma in the oral cavity: protein expression profiles

Soung Min Kims, Hoon Myoung, Pill Hoon Choung, Myung Jin Kim, Suk Keun Lee, Jong Ho Lee
Department of Oral and Maxillofacial Surgery, School of Dentistry Seoul National University, Seoul, Korea

Leiomyosarcoma (LMS) is a relatively uncommon malignant tumour derived from smooth muscle cells that rapidly metastasizes to distant regions. It rarely reaches oral tissues in which smooth muscle tissues are absent. We report the case of a 56-year-old woman who presented with LMS in the maxilla that had metastasized from a primary tumour in her uterus, received a total hysterectomy with bilateral salpingo-oophorectomy 9 months earlier. To reveal the poor prognosis of metastatic LMS, a total of 26 antibodies against different factors related to the proliferation, apoptosis, necrosis, and angiogenesis were simultaneously applied on the immunohistochemistry and immunoblot detection in order to screen for expression of different proteins in the metastatic LMS. Compared with the immunoreactions of primary uterine LMS, the different antibodies for cellular proliferation, i.e., PCNA, MPN-2, Max, p21, CDK4, p53, Rb-1, Bad, Bcl-2, EGF-R, HGF, C-erbb2, Maspin, and DMBT-1, and those for angiogenesis, i.e., vWF, CD31, and angiogenin, were more intensely expressed, while Bax, p16, Wnt-1, E-cadherin, and APC were relatively weakly expressed. Beta-catenin was densely localized to the nuclei of tumour cells. These data suggest that rapid proliferation of the tumour cells is related to over-expression of different oncogenes, and that the infiltrative growth and early distant metastasis of these tumour cells are related to over-expression of angiogenesis factors. A total of seven cases of metastatic LMS to the oral cavity that had been published in the English literature were reviewed, and the reason for the poor prognosis in the metastatic LMS is suggested.

PP076
Reconstruction after surgical treatment of head and neck cancer

Pavlos Maragoudakis, Panagiotis Gerbesiotis, Nikos Papadimitriou, Dimitrios Iosif, Thomais Mandrali, Thomas Nikolopoulos
2nd University Department of Otorhinolaryngology, Head and Neck Surgery, Attikon Hospital, Athens, Greece

Introduction: The surgical treatment of the head and neck cancer is a challenging procedure concerning not only a radical excision, but foremost the achievement of a satisfactory functional and aesthetic result.
Purpose: We present two patients with squamous cell carcinoma at the preauricular area and on the temple.
Materials: We analyse their surgical treatment using radical excision and appropriate flap/graft for reconstruction. The first patient had extensive parotid tissue malignancy secondary to a scalp carcinoma and the second one a large tumor of the skin on the temple. The physical findings of the first patient included facial nerve paralysis, fixation to surrounding tissue and associated cervical lymphadenopathy.
Methods: A radical en bloc resection of the parotid gland was decided to be the appropriate treatment for the first patient. Modified neck dissection was considered essential in this case because of the cervical lymphadenopathy and the high-grade malignancy and was performed at the same setting as the parotidectomy. The second patient underwent a radical resection of the skin to the scalp and face area where the tumor extended. The soft tissue defects were covered with regional flap (a large rotation flap from scalp skin). The secondary defect created during rotation of this large flap was covered by a split-thickness skin graft.
Results: We had no postoperative complications, such as surgical site infections, hematoma, necrosis of flaps and grafts or an open wound. Bleeding was minimized by intraoperative hemostasis and a well-placed dressing that applied pressure over the wound and undermined areas.
Conclusion: Even though squamous cell carcinoma is associated with a significant risk for metastases, the goal of surgery is still complete removal with negative surgical margins. Each defect is unique and each has its own challenges. Full rotation flaps provide good results and can be managed successfully by an experienced otolaryngologist.

PP077

Ameloblastoma: report on a case and mandibular reconstruction using stereolithographic modeling

F. Lorenzo Franco, S. Sironvalle Soliva, I. Vázquez Mahía, J. L. López-Cedrún
Department of Oral and Maxillofacial Surgery, Complejo Hospitalario Universitario A Coruña (CHUAC), A Coruña, Spain

Introduction: The ameloblastoma is a benign odontogenic tumour that is locally aggressive and tends to recur following treatment. Solid type of tumours should be approached with radical surgical treatment, while conservative measure can be applied selectively to unicystic type. Mandibular reconstruction can be challenging for the surgeon wishing to restore its unique geometry.
Objective: The aim is to present a case with giant mandibular ameloblastoma and use a prefabricated 3D model for planning surgery.
Case report: We present a case of a male with giant mandibular ameloblastoma. Two prefabricated 3D stereolithographic models are achieved, one made from the 3D CT and the other in which the side not affected by the lesion is duplicated mirror-like, in order to assist in the accurate contouring of plate and planning of fibula graft harvest geometry before surgery.
Conclusions: The 3D technology provided a precise, fast, and cheap mandibular reconstruction, which aids in shortened operation time (and therefore decreased exposure time to general anesthesia, decreased blood loss, and shorter wound exposure time) and easier surgical procedure.
Incorporation of the bone graft into the mandible provides continuity and strength required for proper esthetics and function and permitting dental implant rehabilitation.

PP078

Central giant cell granuloma (CGCG) of the mandible as first symptom of a carcinoma of the parathyroid gland (case report)

M. Etzelsdorfer[1], **J. Beck-Mannagetta**[1], R. Triessnig[1], P. Sungler[2], M. Hager[3]
[1]Clinic of Oral and Maxillofacial Surgery, [2]Clinic of Surgery, [3]Institute of Pathology, Paracelsus Medical University, Salzburg, Austria

Introduction: Increased levels of calcium and parathyroid hormone (PTH) in a patient with central giant cell granuloma (CGCG) are indicative of primary hyperparathyroidism. In most instances the underlying cause for primary hyperparathyroidism is a benign adenoma of a parathyroid gland.
This case is reported because an infiltrating and regionally metastasizing carcinoma of a parathyroid gland was detected.
Case report: A 51-year-old man had been referred for the treatment of what was believed to present a cystic lesion in the mandible. Histopathology after curettage revealed a central giant cell granuloma. Markedly elevated serum levels of calcium (3.5 mmol/l) and parathyroid hormone (PTH 1,433 pg/ml) were diagnostic for primary hyperparathyroidism. During surgery, an extensive carcinoma of the parathyroid gland was found. Therefore, the tumor was resected together with the regional lymph nodes, the ipsilateral portion of the thyroid gland and parts of the muscle layer of the upper esophagus. Immediately after surgery, serum values dropped to normal. Healing of the osteolytic lesion in the mandible was uneventful. Laboratory values of calcium and parathyroid hormone were determined at regular intervals. Rising levels of both parameters indicated a recurrence. 29 months after the first operation, a more extensive local resection and a neck dissection, including the infiltrated N. laryngeus recurrens, was performed. 42 months later, a second recurrence was found and again locally resected.
Discussion and conclusion: Parathyroid hormone stimulates the activity of osteoclasts, accelerates bone turnover and—when produced in excessive amounts—may give rise to so-called "brown tumors of hyperparathyroidism". Frequently, symptoms such as nausea, pain, kidney stones or gastric ulcers are due to hypercalcemia. As central giant cell granuloma (CGCG) is both clinically and histopathologically indistinguishable from the brown tumor, determination of the serum levels of calcium and parathyroid hormone (PTH) in every patient with CGCG is mandatory. Our case emphasizes the importance to investigate the underlying disease for possibly increased serum levels of calcium and PTH once the diagnosis of a CGCG has been firmly established. Moderately elevated serum levels usually hint at a benign adenoma whereas very high levels are more indicative of a carcinoma of the parathyroid gland. Therapy consists of surgical resection with healthy margins. In our case radiotherapy was deferred as recurrence was expected and indeed occurred. For early detection of a recurrence, long-term monitoring of the laboratory levels (calcium and PTH) is strongly recommended.

PP079

Carcinoma cuniculatum arising in the tongue

Selvam Thavaraj[1], Amrita Jay[1], Alistair Cobb[2], Timothy Beale[3], Donald Murray Walker[1], Nicholas Kalavrezos[2]
[1]Department of Histopathology, University College London Hospitals NHS Foundation Trust, Rockefeller Building, University Street, London WC1E 6JJ, UK, [2]Head and Neck Centre, University College London Hospitals NHS Foundation Trust, 1st Floor East Wing, 250 Euston Road, London NW1 2PG, UK, [3]Department of Radiology, University College Hospital, 235 Euston Road, London NW1 2BU, UK

Introduction: Carcinoma cuniculatum is a rare, distinct clinico-pathological variant of squamous cell carcinoma that is characterised histologically by a defining infiltrative pattern of deep, broad and complex proliferation of stratified squamous epithelium with keratin cores and keratin-filled crypts.
Purpose, materials and methods: We briefly review the world literature and present a case report of carcinoma cuniculatum of the oral tongue.
Results: A 61-year-old male presented with a biopsy-proven cT4N0M0 carcinoma cuniculatum of the oral tongue. The ablative procedure comprised a sub-total glossectomy via a cervical visor approach followed by reconstruction with an anterolateral thigh microvascular flap. Histologically, the tumour was composed of a complex network of stratified squamous epithelium with keratin-filled cores and crypts. Immunohistochemically, tumour cells were positive for p53 but negative for HPV. Image-based ploidy analysis revealed the tumour to be diploid. The patient remains disease-free at 18 months with no aspiration during swallowing.
Conclusion: To our knowledge, this is the first documented case of carcinoma cuniculatum of the tongue to be reported in the English literature. We draw attention to its distinct clinico-pathological features and highlight that awareness of this entity and its clinical behaviour facilitates its correct management.

PP080
Relationship between clinical appearance and histopathologic findings of oropharyngeal cancer

Jiannis Hajiioannou[1], **Panagiotis Kousoulis**[1], David Owens[2], Efstratios Moschovakis[1]
[1]Department of Otolaryngology, General Hospital of Nikea-Piraeus "Agios Panteleimon", Greece, [2]Department of Otolaryngology, Singleton Hospital, Swansea, UK

Introduction and Purpose: Oropharyngeal cancer may present with a variety of clinical forms and pathologic findings. Three cases with a special interest concerning the relationship between morphology and pathology are presented.
Materials and methods: The first patient was a 32-year-old male who presented with a slowly growing ulcerated and localized soft palatine mass, with a size of 4 cm. The histopathologic diagnosis was salivary gland malignant tumor. The differential diagnosis was polymorphous, low-grade adenocarcinoma and invasive mixed tumor.
The second patient was a 33-year-old female who presented with a unilateral ulcerated enlargement of the left tonsil, noticed 1 month ago. The tumor extended from the nasopharynx to the hypopharynx, infiltrating the ipsilateral submandibular gland. Ipsilateral neck metastases were also present at the time of diagnosis. The histopathologic diagnosis was invasive, moderately differentiated squamous call carcinoma.

The third patient was a 53-year-old male complaining of altered voice for the past 6 months, and clinically macroscopic erosion of the pillars and soft palate. Computed tomography imaging showed that the lesion extended from the left anterior and posterior pillars, to the soft palate, the right pillars and the right hypopharynx. Histopathology showed moderately differentiated squamous call carcinoma.
Results and conclusions: Squamous cell carcinoma of the oropharynx may morphologically present as a subclinical mucosal lesion, as a localized mass or as an extended erosive lesion. Malignant tumors of different histological origin may have similar morphologic appearance. The mismatch between morphologic and histopathologic presentation mandates the use of all available diagnostic modalities in every patient, in order to ensure a precise diagnosis, which will indicate the proper treatment and patient consultation and guidance.

PP081
Plexiform schwannoma of the intraparotid facial nerve: missed diagnosis

Muhammad Shakeel, **Aaron Trinidade**, Penny Gravill, Chapman Andrea, Akhtar Hussain
Department of Otolaryngology-Head and Neck Surgery, University of Aberdeen, Aberdeen, UK

Introduction: Plexiform schwannoma of the intraparotid facial nerve are extremely rare benign tumours. These are slow growing, usually painless and sometime present with facial disability. Surgical removal of this benign tumour leads to facial paralysis.
Purpose: To raise awareness about this rare clinical entity, to highlight the difficulty to diagnose this condition pre-operatively, and to discuss the management options and elaborate the role of speech and language therapist in the rehabilitation of the post-operative paralysed face.
Materials: Case report with world literature review.
Methods: A 21-year-old Caucasian male presented with painless lumps in his right parotid gland which clinically appeared to be benign salivary gland tumour. The fine needle aspiration cytology was inclusive. MRI scan merely confirmed an intraparotid mass. Decision was taken to intervene surgically.
Results: The patient underwent extra capsular parotidectomy via face lift approach. Intra-operatively, the facial nerve was not identified but multiple nodules were excised. Unfortunately, the patient woke up with a complete paralysis of his right face. In the immediate post-operative period, the facial paralysis was managed conservatively. Subsequently, the patient underwent intense therapy by our speech and language therapist. 1 year later, the patient has improved significantly to HB grade III. The formal pathology revealed plexiform schwannoma. A literature review on various aspects of this condition will be presented.
Conclusions: Plexiform schwannoma of the facial nerve is an extremely rare benign tumour. Every effort should be made to diagnose this condition pre-operatively if serious outcome is to be avoided.

PP082
A case report of malignant hidradenoma

Ioannis Bardanis
ENT Department, General Hospital of Ikaria, Ikaria, Greece

Introduction: This paper is a case report of a malignant sweat gland tumor.
Case report: A 78-year-old female patient visited the outpatient ward of our department complaining of a skin tumor located in the suboccipital area. The tumor was expanding, multinodular, not that hard, measuring about 16 mm in diameter. According to the woman's medical history, there was an injury in the site of the tumor 8 years ago. In the site of the injury a rather hard scar had remained. This scar had turned into the above-described tumor through the last 3 months. The tumor en block with surrounding skin and deeper connective tissue was excised. The histological examination of the specimen showed that it was a malignant hidradenoma. The margins of the excision were clear.
Discussion: Sweat gland carcinomas represent a medical rarity. Certain authors describe a potential of infiltration in deeper tissues, as well as metastases both to lymph nodes and distal sites. The above-described patient is been followed-up, and at least up to now no recurrence or distal metastasis has been observed.

PP083
Adenoid cystic carcinoma of the nasopharynx: case report and review of the literature

Minas Artopoulos[1], Stamatia Vlachou[1], Angelos Karageorgopoulos[1], Vasileios Bakas[1], Magdalini Tsamouri[2], George Papazoglou[1]
[1]ENT-Head and Neck Department, Korgialeneio-Mpenakeio "Red Cross" Hospital, Athens, Greece, [2]Histopathology Department, Korgialeneio-Mpenakeio "Red Cross" Hospital, Athens, Greece

Introduction: Adenoid cystic carcinoma (ACC) is an uncommon type of tumor arising from glands of the upper respiratory track. The tumor has an unpredictable behavior, including slow growth, low nodule metastases rate and perineural invasion.
Purpose: We present a rare case of ACC of the nasopharynx diagnosed in our department.
Materials and methods: The patient was a 52-year-old man who was referred to us because of mild respiratory distress and diplopia. The clinical examination (direct nasopharyngoscopy) revealed a

cauliflower, exophytic tumor in the nasopharynx and a paresis of the VIth cranial nerve ipsilateraly. The rest of the examination was unremarkable. The MRI of the brain showed a nasopharyngeal tumor, extending to the skull base, invading the adjacent structures. A tumor biopsy was taken under local anesthesia and the histopathological examination set the diagnosis of an ACC of the nasopharynx.
Results: The patient was referred for oncological evaluation and treatment, with a combination of radio and chemotherapy, due to the extent of the disease.
Conclusion: The treatment of ACC is mainly surgical, provided that the site and extent of the tumor allows for it. Radiotherapy may be used both pre- and post-operatively, while chemotherapy is of little therapeutic help. The prognosis is related to the stage of the disease, the type of treatment, the site of involvement, but there is a high tendency for late recurrence, even after a long disease-free period. This is why a long-term follow-up is mandatory for the patients suffering from the disease.

PP084
Plasmablastic lymphoma of oral mucosa type in an AIDS patient

Karin Cunha[1,2], Karla Bianca Fontes[1,2], Adrianna Milagres[1], Andrea Pires[1], Silvia Alfaro[1], Simone Lourenço[1], Eliane Dias[1]
[1]*Postgraduate Program of Pathology, Medicine School, Universidade Federal Fluminense, Niteroí, RJ, Brazil*
[2]*Dentistry School, Nova Friburgo University Pole, Universidade Federal Fluminense , Nova Friburgo, RJ, Brazil*

Introduction: The prevalence of non-Hodgkin lymphomas (NHLs) in AIDS, although declined after use of highly active antiretroviral therapy, is still 80- to 200-fold above expected rates in general population. Plasmablastic lymphoma (PBL) is usually detected in people with AIDS and has a predilection for oral cavity with poor prognosis.
Purpose: Report a case of oral PBL in an AIDS patient.
Materials and methods: A HIV positive 33-year-old white man presented to our clinic with a palate mass of 4 months duration. He had used antiretroviral therapy for 4 years and had interrupted the treatment for 1 year. Physical examination demonstrated a violaceous exophytic lesion at hard palate measuring 5.0 cm; clinically diagnosed as a Kaposi sarcoma.
Results: An incisional biopsy revealed a solid diffuse cellular neoplasm with focal starry-sky pattern. Neoplastic cells were large, with a central or eccentric nucleus, single central nucleolus or several peripheral smaller nucleoli, abundant basophilic cytoplasm and high mitotic index. Immunohistochemical study showed no reactivity for CD20 and CD3 and reactivity for CD45, CD10, Kappa, CD138, EMA and LMP-1. Polymerase chain reaction revealed positivity for Epstein-Barr virus and negativity for HHV-8. The diagnosis of oral plasmablastic lymphoma was established. The patient was in clinical stage IEA and received six cycles of CHOP chemotherapy. Nevertheless, the patient died 2 months later.
Conclusion: We described a case of PBL of oral mucosa type similar to the first description, presenting immunoblastic morphology with a plasma cells immunophenotype profile, EBV infection and association with HIV.

PP085
Pseudotumors of posterior pharyngeal wall

I. Vasileiadis[1], M. Tsitskari[2], S. Terzenidis[2], I. Skandalidis[2], G. Kougioumtzidis[1], R. Goulimari[2]
[1]*ENT Department General Hospital of Xanthi, Thrace, Greece,*
[2]*Department of Radiology General Hospital of Xanthi, Thrace, Greece*

Introduction: The retropharyngeal space is a distinct space located at midline of posterior pharyngeal wall. Bounded by the buccopharyngeal fascia anteriorly and the alar fascia posteriorly, this space is limited above by the base of the skull, and below where the alar fascia fuses with the buccopharyngeal fascia at about the level of T4 and the carina. Normally, lymph nodes and fat are found. In literature rarely are mentioned pseudotumors of retropharyngeal space such as anatomical variants of the carotid artery or internal jugular vein and degenerative alterations or anatomical variations of regional bone structures and damages of muscle such as hypertrophy of the levator scapulae muscle and fibrosis of sternocleidomastoeid muscle.
Materials and methods: We report two cases of elderly patients of ENT department with pseudotumor of retropharyngeal space that caused dysphagia for solid foods. Orall examination revealed in both cases, a bulge in the posterior pharyngeal wall without mucosa's lesions and in the second a smooth displacement of the left palatine tonsile to the midline. To exclude a retropharyngeal mass, a spiral computed tomography of patient's neck was obtained which revealed in first case a giant anterior cervical osteophyte at the C4 level and in second case a giant fusiform aneurysm of extracranial carotid artery.
Conclusions: Radiographic findings are pathognomonics for the concise diagnosis and determinative to the further treatment. The diagnosis requires a high index of suspicion for these lesions and careful clinical and radiologic evaluation.

PP086
Metastatic papillary thyroid carcinoma presenting as solid/cystic neck lumps with clinically normal thyroid glands

Prince Modayil[1], Anna Leslie[2], Anthony Jacob[1]
[1]*Department of ENT and Head and Neck Surgery, University Hospital Lewisham, London, UK,* [2]*Department of Radiology, University Hospital Lewisham, London, UK*

Introduction: Papillary thyroid carcinoma accounts for 80% of all cases of thyroid malignancy. In approximately 5–14% of cases, the thyroid gland is clinically normal, and the first sign is the appearance of a single lateral cervical mass.
Case presentation: A 63-year-old man (Case A) presented with a 4 cm diameter lump in the right upper part of his neck. A 43-year-old woman (Case B) presented with an ill defined swelling of the left side of the neck that had been present for 6 months. Both the above patients were totally asymptomatic. A thorough ENT examination including flexible nasolaryngoscopy did not reveal any abnormality in both cases.
Results: Ultrasonogram in case A revealed multiple enlarged nodes on the left side of the neck along the jugular chain with punctuate calcification and a 11 mm nodule on the ipsilateral (left) thyroid lobe

with microcalcification. Ultrasonogram in Case B demonstrated a very unusual cystic swelling measuring 64 × 23 × 19 mm in dimensions and vascularity within the septae. It also revealed a 5 × 5 mm nodule in the left lobe of the thyroid gland with punctuate calcification. Both the above lesions were histologically diagnosed as metastatic papillary carcinoma of thyroid.
Conclusion: In summary, one should have a low threshold to consider metastatic papillary thyroid carcinoma in patients presenting with nodal disease and should always scan the thyroid thoroughly and any suspicious thyroid lesion should be investigated by fine needle aspiration.

PP087
A case of primary thyroid tuberculosis

Prince Modayil[1], Anna Leslie[2], Anthony Jacob[1]
[1]*Department of ENT and Head and Neck Surgery, University Hospital Lewisham, London, UK,* [2]*Department of Radiology, University Hospital Lewisham, London, UK*

Introduction: Tuberculosis of thyroid gland is extremely uncommon. Ultrasound-guided fine needle aspiration cytology (FNAC) of the lesion forms an important mode of investigation in its diagnosis. Recognition of this condition can avoid surgery, as the main mode of treatment is medical.
Case presentation: We present the case of a 26-year-old woman who presented with a non-tender firm to hard lump in the right thyroid lobe, measuring 4 × 4 cm. The rest of the ENT examination including flexible nasolaryngoscopy was normal.
Results of investigation: Ultrasound examination of the neck revealed a 35 × 18 mm cystic mass in the lower pole of the right thyroid lobe. An ultrasound-guided FNA of the above mass revealed 10 cc of frank pus. Microbiological analysis and subsequent culture was positive for mycobacterium tuberculosis. She had a mantoux reading of 34 mm and a normal chest X-ray. This patient was referred to the chest physicians and was started on standard antituberculous quadruple therapy. She was seen recently approximately 12 months post-treatment and has responded well to treatment and her neck swelling has disappeared.
Conclusion: A possible differential diagnosis of thyroid tuberculosis should be borne in mind while treating patients with thyroid lumps. Ultrasound-guided fine needle aspiration cytology (FNAC) is a useful diagnostic method in the diagnostic work up of all neck lumps and as demonstrated here helped to avoid unnecessary surgery.

PP088
Malignant melanoma of the nasal cavity and paranasal sinuses

Constantinos Evaggelopoulos, Eleftheria Gletsou, Evaggelos Theos, Constantinos Gantas, Vasileios Lachanas, Evdoxia Gerostergiou, Maria Apostolidou, John Bizakis
Otorhinolaryngology-Head and Neck Surgery Department, University of Thessaly, School of Medicine, Larissa, Greece

Introduction: Malignant melanoma of the nose and paranasal sinuses is typically presenting at an advanced stage, with a 5-year survival rate ranging between 20 and 30%. It is an uncommon process, often misdiagnosed both clinically and pathologically.
Purpose: We report two cases of malignant melanoma of the nasal cavity and paranasal sinuses.
Materials: A 51-year-old man had a 5-month history of progressively worsening left-sided epistaxis and nasal obstruction. The second case of a 78-year-old man with unilateral nasal obstruction whom the symptoms were difficult to assess accurately but varied from 1 month to 2 years.
Methods: Clinical examination including endoscopy, as well as imaging studies revealed a soft tissue mass in the left maxillary sinus and nasal cavity for the first case and in the right for the second one resembling massive nasal polyposis.
Results: Surgical exhision of the mass was conducted. The final pathologic diagnosis was malignant melanoma. Adjuvant chemotherapy followed and the patients survived for 4 years after the initial treatment.
Conclusions: Mucosal melanomas of the head and neck region are uncommon lesions and they follow an inexorably aggressive course. Experience with these tumors is, necessarily, limited. At present, surgical excision remains the mainstay of treatment.
However, anatomical complexities within the region can hamper attempts of complete excision. Radiotherapy has not been traditionally relied on for routine treatment of mucosal melanomas and chemotherapy is principally employed in the treatment of disseminated disease or for palliation.

PP089
Sinonasal haemangiopericytoma: a case report

Evaggelos Theos, Vasileios Lachanas, Evdoxia Gerostergiou, Constantinos Evaggelopoulos, Eleftheria Gletsou, Maria Apostolidou, Constantinos Gantas, John Bizakis
Otorhinolaryngology, Head and Neck Surgery Department, School of Medicine, University of Thessaly, Larissa, Greece

Introduction: Hemangiopericytoma (HP) is a rare mesenchymal tumour, first described by Stout and Murray in 1942. HPs represent about 1% of all vascular tumours and are derived from extracapillary cells called pericytes, which surround the tumour's normal vascular channels. Sinonasal haemangiopericytoma is generally benign, with a low potential for local recurrence or metastasis. The nature of the tumour, whether it is malignant or benign, is controversial. The HPC histopathologic pattern has not yet been clearly defined.
Purpose: We report a case of a 63-year-old woman with a sinonasal mass histologically proven to be a true haemangiopericytoma.
Materials: The patient was examined at our outpatient clinic for impaired nasal breathing and headache.
Methods: Clinical examination revealed a polypoid mass, occupying the right nasal fossa.
Computed tomography of the paranasal sinuses showed a soft-tissue lesion involving the right middle turbinate, without signs of bony erosion.
Results: A biopsy was made, confirming the presence of a HPC neoplasm. Under general anaesthesia, the tumour was resected via a lateral rhinotomy approach. No signs of recurrence are observed in the 6-month follow-up with CTs and endoscopic examination.
Conclusions: Hemangiopericytoma (HP) is a rare mesenchymal tumour, with a low potential for local recurrence or metastasis. Treatment of choice is surgical removal via endoscopy or open

approach. In our case, the HPC located in the middle turbinate was surgically removed via an open rhinotomy approach.

PP090
Postirradiation sarcoma of the parotid gland following radiotherapy for nasopharyngeal carcinoma: a case report

Constantinos Evaggelopoulos, Eleftheria Gletsou, Maria Apostolidou, Evdoxia Gerostergiou, Vasileios Lachanas, Constantinos Gantas, Evaggelos Theos, John Bizakis
Otorhinolaryngology, Head and Neck Surgery Department, School of Medicine, University of Thessaly, Larissa, Greece

Introduction: The development of secondary tumours as a result of radiation therapy is a rare but serious complication. Many patients with nasopharyngeal carcinoma have a long-term survival, so are at risk of developing delayed radiation effects. The sarcoma or the parotid gland is one of the rarest postirradiation sarcomas.
Purpose: To present a case of an 82-year-old male patient, who developed parotid sarcoma after radiotherapy for nasopharyngeal carcinoma.
Materials: A male patient presented with a painless, hard consistent, fixated to the deep structures mass, 3 × 2 cm, at the left parotid area free of the overlying skin. 10 years ago, he was treated with radiotherapy (70 Gy) for stage T2N0M0 nasopharyngeal carcinoma.
Methods: In the patient endoscopy of the nasal cavity and the nasopharynx and also CT scan of the splachnic scull, neck, chest and abdomen were performed. Secondly a total lateral lobectomy of the left parotid gland was performed.
Results: Biopsy of the mass revealed undifferentiated sarcoma of the parotid.
Conclusions: Radiation-induced neoplasms are rare, but patients irradiated for NPC receive a dose that is sufficient to cause these tumours. Squamous cell carcinoma is the most frequent histological type. Radiation-induced sarcomas tend to occur 10–20 years after treatment. Published reports on postirradiation sarcomas have indicated a cumulative incidence of 0.03 to 0.08%. Postirradiation sarcomas of the parotid gland after radiation therapy for nasopharyngeal carcinoma are very rare and there was no previously reported case.

PP091
Burkitt's lymphoma of the tonsil

H. Salina[1], M. Y. Mohd Razif[1], **S. H. A. Primuharsa Putra**[2]
[1]*Department of Otorhinolaryngology-Head and Neck Surgery, National University of Malaysia Medical Centre, Kuala Lumpur, Malaysia,* [2]*Ear, Nose and Throat-Head and Neck Consultant Clinic, KPJ Seremban Specialist Hospital, Seremban, Malaysia*

Introduction: Burkitt's lymphoma is an aggressive non-Hodgkin large B cell lymphoma which can be classified into endemic, sporadic, and immunodeficiency variants. Burkitt's lymphoma was first discovered in Africa, where it is the most common type of childhood cancer. It accounts for 1–2% of lymphoma in adults and up to 40% of childhood lymphoma in the US and Western Europe.
Case report: A 70-year-old man presented with throat discomfort and snoring of 6 weeks duration. There was no history of frequent sore throat, dysphagia, shortness of breath, loss of appetite or loss of weight.
Result: Examination revealed a marked tonsillar asymmetry, with enlargement of the left tonsil, measuring 5 × 4 cm and obstructing the oropharynx. The tonsillar surface was normal. The right tonsil was of normal size and appearance. There was no neck nodes palpable. Computed tomography showed homogenously enhancing mass in the left pharyngeal wall which protrudes into the oropharynx. There was no evidence of distant metastases. He underwent diagnostic tonsillectomy under general anaesthesia. The patient had an uneventful postoperative recovery and histological evaluation of the excised specimen was consistent with Burkitt's lymphoma. Immunohistochemical testing was positive for LCA, B cells and Ki67, and negative for T cells, CD30 and BCL2. He was then referred to the haematologist for chemotherapy.
Conclusion: Tonsillar lymphomas affect a wide age range and should be in the differential diagnoses of tonsillar masses regardless of age. Histopathological examination and immunohistochemical testing remain the only definitive methods of diagnosis.

PP092
Desmoplastic fibroblastoma of the neck and nape: a report of four cases

Caiping Huang, Yu Wang, Qinghai Ji, Hong-fen LU, Yi Wu, Yongxue Zhu, Ling Zhang
Department of Head and Neck Surgery, Cancer Hospital, Fudan University, Shanghai, China Department of Oncology, Shanghai Medical College, Fudan University, Shanghai, China

Objective: To describe the clinical, CT, MRI imaging, pathological characteristics of desmoplastic fibroblastoma (DF) and to discuss the diagnosis and treatment.
Subjects and methods: We studied the clinical, pathological details, treatment and outcome data on 4 patients treated at our institution for a desmoplastic fibroblastoma and compared the results with the published cases.
Results: CT, MR imaging and intraoperative exploration revealed the well-defined margined tumors without infiltration in compartment of muscles. Case 4 was the only one diagnosed as DF preoperatively, according to the CT and MR imaging which may represent the areas of low cellularity and abundant collagen content. In all cases, the tumors were removed by conservative excision. After a mean follow-up of 49.5 months, all patients were alive with no evidence of recurrence.
Conclusions: DF is a benign fibroblastic neoplasm with distinctive clinical, CT or MR imaging and pathological characteristics. CT and MR imaging might help to diagnose preoperatively. Optimal management is conservative excision with functional preservation.

PP093
Primary papillary carcinoma arising in a thyroglossal duct cyst: case report and review of the literature

Angeliki Papadopoulou[1], Minas Artopoulos[1], Eleni Mourtzoukou[2], Stilianos Triantos[1], Dionisios Louverdis[1], Georgios Papazoglou[1]
[1]*ENT Department, Red Cross Hospital, Athens, Greece,* [2]*Histopathology Department, Red Cross Hospital, Athens, Greece*

Introduction: Carcinomas arising from thyroglossal duct cyst are extremely rare (about 1%), diagnosed incidentally after surgical excision. Papillary carcinoma is the most common malignancy, accounting approximately 80% of the cases.
Purpose: We present a rare case and a review of the English literature.
Materials: A primary papillary carcinoma of thyroglossal duct cyst in a 50-year-old female was incidentally diagnosed on histopathological examination. The patient had a 3-month history of an anterior midline neck mass, but without any other symptoms.
Methods: The patient underwent a cervical ultrasound with the physical findings of thyroglossal duct cyst. A Sistrunk procedure was performed at the patient to remove the thyroglossal duct cyst.
Results: Histopathological examination of the specimen revealed a papillary carcinoma of the thyroid tissue of the thyroglossal cyst. The tumor was judged to be a primary lesion on the basis of normal clinically and radiologically thyroid gland. The follow up of the patient for 1 year showed no further evidence of disease.
Conclusion: Reviewing the literature, we consider that the prognosis of primary thyroglossal duct cyst carcinoma without any clinical or radiological evidence of malignancy is good, regarding total thyroidectomy unnecessary under the condition of regular follow up. We also discuss further therapeutic modalities.

PP094
Transition from laryngeal papillomatosis to squamous cell carcinoma and metachronous cervical carcinoma, both associated with HPV16

Georgios Tzamalis[1], Andreas E. Albers[1], Tanja Fromm[1], Malgorzata Lanowska[3], Michael Hummel[2], Andreas M. Kaufmann[3]
[1]ENT-Department, Charite Benjamin Franklin, Berlin, Germany, [2]Institute for Histopathology, Charite Benjamin Franklin, Berlin, Germany, [3]Department of Gynecology and Obstetrics, Charite Benjamin Franklin, Berlin, Germany

Introduction: We describe the concurrent incidence of a laryngeal squamous cell carcinoma and a cervical carcinoma, both HPV16-associated.
Purpose: By means of pathological and immunological analysis, we try to focus on that rare case of tumour transition from an adult laryngeal papillomatosis and to point out at a possible therapeutical benefit of an adjuvant HPV-vaccination.
Materials: We report of the rare case of a 35-year-old female who was diagnosed 5 years ago with a laryngeal papillomatosis untypically positive for the high-risk HPV type16 and carcinoma in situ of the vocal cord that progressed within 3 years to a multilocular carcinoma in situ and subsequently to a cT3cN2cM0 laryngeal carcinoma. The patient refused operative treatment and was therefore treated with a novel neoadjuvant chemotherapy regimen followed by combined radiochemotherapy. Two years later she was diagnosed with cervical cancer (pT1a2, L0,V0,M0) also associated with HPV16. After operation she was electively treated with a prophylactic HPV-vaccine.
Results: Diagnostic and therapeutic strategies are described and molecular patterns of the tumour are detailed together with analysis of immunologic reactivity towards HPV. The rationale for post-therapeutic prophylactic HPV-vaccination is discussed.

PP095
The role of combined endoscopic surgery in treatment of sinonasal inverted papillomas. our experience from Chania general hospital

Debora Kiagiadaki, Efklidis Proimos, Theognosia S. Chimona, Michail G. Tzanakakis, Charalabos E. Skoulakis, Chariton E. Papadakis
ENT Department, Chania General Hospital, Chania, Crete, Greece

Introduction: Inverted papillomas represent a group of relatively uncommon, benign lesions that arise from the mucosa of sinonasal tract. Their destructive capacity to surrounding structures, their tendency to recur and the predisposition to malignancy require aggressive surgical management.
Purpose: The presentation of three cases of inverted papillomas, treated with combined endoscopic surgery in Chania General Hospital.
Materials and methods: A female patient aged 57, a male patient aged 44 and a male patient aged 50, presented to our ENT department complaining of nasal obstruction. Clinical examination revealed a unilateral, verrucous, polypoidal mass, filling the nasal cavity. CT scan and MRI of nose and sinuses were followed by biopsies from the mass and the diagnosis of inverted papilloma was confirmed. The tumors were Krouse stage II, I and II, accordingly and they were treated with medial maxillectomy via lateral rhinotomy, assisted endoscopically.
Results: No early or late complications were observed. All patients were followed postoperatively for a 1 year and the overall symptomatic success rate was 100%.
Conclusions: Endoscopic approach for the treatment of sinonasal papillomas combined or not with open surgical techniques has been preferred, particularly for Krouse I and II tumors. According to our experience and the related literature, the combined approach provides adequate view of the surgical field so that complete excision of tumor is achieved, as well as, minimization of cosmetic deformities and functional disabilities.

PP096
Evaluation of hand circulation before radial forearm free flap surgery

Afroze S. Khan[1,*], John M. D. Henton[2,*], Titus S. T. Adams[2], Raghav C. Dwivedi[1], Paul A. Harris[2]
**Joint Authors, [1]Head-Neck Unit, Royal Marsden Hospital, London, UK, [2]Plastic Surgery Unit, Royal Marsden Hospital, London UK*

Introduction: The radial forearm free flap is a common vehicle in head and neck reconstructive surgery. However, its profligate use must be tempered by the possible complication of hand ischaemia resulting from a radial artery dominant circulation. Circulatory assessment using the modified Allen's test suffers from unreliability and poor inter-observer consistency. A new method to evaluate hand circulation before flap harvest is proposed.
Purpose: To propose a new method of evaluating hand circulation prior to radial forearm free flap surgery, that is cheap, reliable and easy to use even in an outpatient setting.
Materials and methods: A patient requiring a pharyngoplasty procedure was seen in the plastics surgery clinic for the assessment of free flap surgical reconstruction for subglottic stenosis. A stand alone DINAMAP pulse oximeter with plethysmography was used to assess

hand circulation. The probe was attached to her index finger and a baseline waveform and saturation was established. Then firm compression was applied to the radial artery with two fingers whilst observing the waveform and saturation. Within 1–2 min, the saturation began to fall steadily reaching 49% in 2 min and became undetectable in 3 min with the waveform flat lining. Release of compression resulted in the wave form and saturation being restored to pre-procedure levels in 1–2 min. The patient was thus consented for an alternative (antero-lateral thigh) flap reconstruction.
Conclusion: We suggest that the use of a pulse oximeter to assess both the pulse waveform and the saturation of the index finger is a very useful, easy and cost neutral investigation and should be considered as part of a routine pre-operative/intra-operative work up.

PP097
Melanotic neuroectodermal tumor (melanotic progonoma) in 3-month-old infant (case report)

Gábor Pintér[1], László Seres[2], László Kaiser[3], Katalin Nagy[1] József Piffkó[2]
[1]*Department of Dentoalveolar Surgery of Szeged University,*
[2]*Department of Maxillofacial Surgery of Szeged University,*
[3]*Department of Pathology of Szeged University, Szeged, Hungary*

Introduction: So far, only a few hundred melanotic neuroectodermal tumors have been reported in the medical literature. These are usually fast-growing, pigmented neoplasm in the anterior maxillary region with relatively benign behaviour, first described by Krompecher in 1918. The tumor affects mostly newborns and infants. Systemic metastases were reported in 5–10% and locally around 50%.
Materials and methods: We present the case of a 3-month-old girl referred to our department with the diagnosis of a gingival inflammation. On examination, an approximately 2 cm in diameter, bluish–grayish in color mass was found in the anterior maxillary region. CT scan revealed bone erosion and the radiology report suspected malignant tumor. The histological diagnosis was melanotic progonoma.
Results: At surgery, the mass was removed in toto but the developing tooth buds were saved. Bone augmentation was not performed as the remaining bone gave reliable support to the soft tissues.
Conclusion: In our presentation, the diagnostic, pathologic, clinical and follow-up views together with the literature are discussed.

PP098
Ossifying fibromyxoid tumor of the head and neck region: report of a case and systematic review of the literature

Athena Kondylidou, **Athassios Kyrgidis**, Paulos Andreadis, Vasilis Antoniades, Konstantinos Antoniades
Department of Oral and Maxillofacial Surgery, Aristotle University of Thessaloniki, Thessaloniki, Greece

Introduction and Purpose: Ossifying fibromyxoid tumor (OFT) is a rare mesenchymal neoplasm, which was first described before 20 years. On the occasion of a case which presented in a young colleague, we review the literature and summarize the published ossifying fibromyxoid tumors which have been reported to arise in the head and neck region.
Materials and methods: Further to the presented case, we systematically searched Medline and Embase for studies describing ossifying fibromyxoid tumor of soft parts in the head and neck region.
Results: A 23-year-old male presented to our clinic with a painless mass on the left side of his face, which had been slowly enlarging for approximately 1 year. The tumor measured 5.5 cm in diameter. Immunohistochemical investigation confirmed that tumor cells were positive to a-smooth muscle actin, glial fibrillary acidic protein, vimentin and S-100 protein and negative to CD34, CD56 and desmin. Out of over 220 OFTs which have been reported in the literature since 1989, 71 were located in the head and neck. Mean age of patients is 46.8 years; 44 (62%) lesions occurred in males while 28 (38%) in females. S-100 protein and vimentin are the most reliable immunohistochemical markers to enhance diagnosis. There were 15 tumors, which reoccurred at least once, while confirmed metastatic lesions were reported in three patients of whom, two died from the disease.
Conclusions: There are probably a large number of non-published tumors. Keen reporting of new tumors is justified to further clarify the clinical behavior of the neoplasm and elucidate its aetiopathogenesis.

PP099
Case report regarding oncocytoma of the middle turbinate: a cause of refractory epistaxis

Reena Dwivedi[1], Ravinder Natt, V. R. Srinivasan
ENT department, University Hospital Aintree, Liverpool, UK, [1]*ENT department, Wirral University Teaching Hospital, Wirral, UK*

Introduction: Oncocytomas are rare tumours, usually involving the major salivary glands. Although involvement is documented at sites within the head and neck, they are extremely rare within the nasal cavity.
Purpose: Within the nasal cavity and nasopharynx, there have only been a few published reports of oncocytoma in the English literature. Oncocytoma involving the inferior turbinate, nasal septum, lateral wall of the nasal cavity and nasopharynx, have been reported.
Methods: We describe a case of oncocytoma in an 85-year-old male, who presented with refractory epistaxis. Inspection revealed a mass in the right nostril at the site of bleeding. An urgent computed tomography scan revealed a 3 cm round lesion in the middle turbinate on the right side. There was no evidence of invasion of adjacent structures or bony destruction.
Results: The tumour was completely excised with wide local clearance, using endoscopic technique.
Conclusion: This case report highlights an interesting and rare nasal tumour, which has been effectively managed using endoscopic surgical excision.
A review of the literature has been conducted and the discussion has focused on the diagnosis and management, including the role of endoscopic surgical treatment of this rare tumour.

PP100
The use of a modified cervicopectoral flap for functional and aesthetic reconstruction of upper third facial ablative defects: a case report

Ioannis Michaelidis, **Ioannis Hatzistefanou**, Orestis Tselkas
Department of Oral and Maxillofacial Surgery, 401 Army Hospital, Athens, Greece

Purpose: Aesthetically and functional reconstruction of anatomic defects following head and neck ablative surgery is crucial for the success of surgical treatment and presents a challenge for current maxillofacial surgery. The purpose of this article is to describe a modified technique of cervicopectoral flap for the reconstruction of extensive ablative defects extending to the upper third face region.
Materials and methods: The case of a patient with metastatic parotid tumour is presented, which involved the skin of the preauricular and anterior temporal region and the cartilage portion of the ipsilateral external auditory meatus. A cervicopectoral fasciocutaneous flap was used for the successful restoration of the 9 × 6 cm sized facial defect, after wide tumour excision.
Results: The functional and aesthetic reconstructive results were excellent, as the cervicopectoral flap provided good colour, texture, thickness and hearbearing characteristic match with surrounding tissues.
Conclusion: The modified cervicopectoral fasciocutaneous flap is a reliable, technically easy and anatomically sound technique, which can be performed for covering soft tissue facial defects, extending above the zygomatic arche. It is thus a valuable alternative to more complex and extensive reconstructive procedures, such as free vascularized flaps.

PP101
Effective novel approaches to the management of benign hypopharyngeal strictures and occlusion

Mohammed Miah[1], Ian Zealley[2], Suresh Mahendran[1]
[1]*Departments of Otolaryngology,* [2]*Radiology, Ninewells Hospital and Medical School, Dundee, UK*

Introduction: Hypopharyngeal and cervical oesophageal strictures are common after radiation therapy for head and neck cancers. As a consequence, patients develop dysphagia, aspiration and dependency on gastrostomy feeding. Strictures may also occur after major head and neck surgery, corrosive ingestion and sepsis. Current methods of balloon and bougie dilation, stricturoplasty, expandable stents and local antimetabolite application are often unsuccessful. Surgical resection and reconstruction carry significant risks of serious complications.
Purpose and methods: We report two cases of severe hypopharyngeal stenosis and one case of complete hypopharyngeal occlusion with different clinical histories treated between 2006 and 2009. We present our experience of translating two recently developed techniques from interventional radiology to the management of these conditions. The techniques described are used in percutaneous management of bile duct strictures and in the "sharp recanalisation" procedure for occluded mediastinal great veins. In the case of complete occlusion, a mini-laparotomy (gastrostomy) was performed and a puncture through the occlusion made with radiological and endoscopic guidance.
Results: Pharyngeal–oesophageal passage was re-established in all cases with evidence of sizeable oesophageal lumen through the strictures on contrast swallow tests. No complications occurred as a result of the procedures. In two of the patients near normal diet is now established with no further requirement for gastrostomy feeding.
Conclusion: Translation of interventional radiological techniques to pharyngo-oesophageal strictures appears to present an effective and durable alternative to balloon or bougie dilation in challenging cases. In these cases this approach has eliminated the need for gastrostomy feeding without recourse to major surgical reconstruction.

PP102
The role of PET/CT scan in diagnosis and staging head and neck cancer

Antigoni Kaprana, Efklidis Proimos, Michail G. Tzanakakis, Theognosia S. Chimona, Emanuela Theodoraki, Charalabos E. Skoulakis, Chariton E. Papadakis.
ENT Department, Chania General Hospital, Chania, Crete, Greece

Introduction: CT scan is the cornerstone of oncologic imaging, being the easiest and highest-resolution tomography modality to integrate into PET imaging, which has incomparable abilities to determine the metabolic activity of tissues. The combination of both offers the best in an integrated data set and thus improves diagnostic accuracy and topography.
Purpose: To present our experience of PET/CT in diagnosis, staging and follow-up head and neck cancer.
Materials and methods: Thirteen patients with head and neck cancer underwent a total body PET/CT scan, each one for different purpose. In 4 patients with unknown primary site of origin, PET/CT scan was used for diagnostic reasons. In 5 patients it was used for restaging and finally, in 4 patients it was used for follow-up.
Results: PET/CT scan was not diagnostic because no primary site of origin was revealed in the first 4 patients. In contrary, 5 patients were restaged after the examination and finally, in the last 4 patients, PET/CT scan was proved to be the most reliable method for follow-up.
Conclusion: PET/CT scan improves in distinguishing of malignant lesions and targeting of biopsy, staging and customization of therapy, especially for extranodal disease, better follow-up of sentinel lesions and greater confidence in interpretation. Studies up-to-date show a 4–15% improvement in overall accuracy of staging/restaging and a 30–50% improvement in the confidence of lesion localization.

PP103
Metastatic tumors to the oral cavity and gastrointestinal tract

Mara Piagkou, Giannoulis Piagkos, Dimitris Lappas, Vangelis Kotsiomitis, Panagiotis Skandalakis
Department of Anatomy, Medical School, University of Athens, Athens, Greece

Introduction: Metastatic tumors to the oral region are uncommon and most are located in the mandible, with only a few in the soft oral tissues. Oral metastases are located in the mandible 80–90% on average, the maxilla location being rarer. The prevalent primary sites are the liver, the colon, the stomach and the esophagus. In all cases the diseases had disseminated when the gingival metastases were diagnosed. Metastatic disease of the jaws is unusual and accounts for 1–4% of oral cavity malignancies. Jaw metastases from the gastro-

intestinal tract usually evolve from adenocarcinoma of the esophagus, colon, and rectum. Gastrointestinal stromal tumors are the most common mesenchymal tumors. Metastasis to the mandible from adenocarcinoma of the colon is very unusual and rarely reported.
Purpose: The purpose of this study is to emphasize in the sites of oral metastases of all gastrointestinal carcinomas.
Methods: All bibliographical data are reviewed.
Results: Metastases to the gingiva of the mandible from stomach cancers are most unusual. The metastatic lesions that occurred in the mandible were located more often in the molar regions. The primary symptoms of the metastases are swelling, mass, and pain. Pathologically verified metastases to the mouth were classified as follows: adenocarcinoma, undifferentiated carcinoma, and squamous cell carcinoma. Regional metastasis of hepatocellular carcinoma to the mandible is rare. The longest survival time is only 4 months. The prognosis for such cases is poor, but early diagnosis and treatment are essential in order to prevent the pain and discomfort associated with the ulceration, the infection, and the local tissue destruction by the lesions.
Conclusions: The intraoral spread of a disseminated neoplasm is generally a sign of bad prognosis, although a longer survival can be expected if a radical surgical treatment of a solitary metastasis is carried out.

PP104
Marketing promotion of skin carcinomas prevention

Alek J. Racic[1], Nebojsa Toskovic[2]
[1]Clinical Centre of Serbia, Belgrade, Serbia, [2]JoeNeb Cosmetics Enterprise, Toronto, Canada

Subject of this paper is the analysis of marketing promotion process in order to prevent skin carcinoma. This paper presents key steps in process of successfully marketing promotion planning of skin carcinoma prevention.

General goal of this research is planning and choosing strategies of marketing promotion in health care institutions which is based on two-way communications with patients.
Subgoals: Development of communication strategies and building relationship between health care institutions and patients. Identification of segment population which is our audience for marketing promotion. Development of marketing promotion process in prevention of skin carcinoma.
In this work, authors present and discuss the expected effects and results.

PP105
Surgical approaches to the lateral pharyngeal space

Nikolaos Papadogeorgakis, **Vassilis Petsinis**, Christos Perisanidis, Constantinos Alexandridis
Oral and Maxillofacial Surgery Department, "Evangelismos" Hospital, Dental School, University of Athens, Athens, Greece

Introduction: Tumors originating in the lateral pharyngeal space are very rare as they comprise approximately 0.5% of the head and neck tumors. The majority of them are benign and the most frequent origins are salivary and neurogenic. Various surgical techniques have been used for the surgical removal of tumors originating from this area.
Purpose: The aim of this study is to present the surgical procedures used for the treatment of patients suffering from lateral pharyngeal space tumors.
Materials: This study included patients suffering from lateral pharyngeal space tumors surgically treated. The majority of these tumors were benign and the most frequent was pleomorphic adenoma. The following surgical approaches were used: intraoral, transcervical and transmandibular, with different types and numbers of mandible osteotomies.
Methods: The type of surgical approach was dictated by the type of the lesion (malignant or benign), the exact location, the size, the vascularity and the relationship of the tumor to the neck neurovascular bundle.
Results: In all cases the selected surgical approach allowed the complete excision of the tumor, obtaining clear margins in cases of malignancy. The choice of the approach type was also made in order to remove the lesion safely without adding to the patient's preoperative morbidity.
Conclusions: It was concluded that the surgical approach of the lateral pharyngeal space tumors must be adjusted to the tumor characteristics and must be as wide as is necessary to achieve its complete removal with safety.

PP106
Use of porcine dermal collagen (Permacol) in the parotid surgery

Aris Ntomouchtsis, Konstantinos Paraskevopoulos, Georgios Koloutsos, Dimitra Aggeli, Stavroula Soldatou, Anestis Stefanidis, Konstantinos Vahtsevanos, Doxa Mangoudi
Department of Oral and Maxillofacial Surgery, Theageneion Anticancer Hospital, Thessaloniki, Greece

Introduction: Porcine dermal collagen has successfully been used as an alloplastic material in diverse surgical fields. Use of Permacol in the Head and Neck Surgery has a limited experience, since there are only a few reports in the literature and mainly for aesthetical reasons. Permacol is a strong biological, non-absorbable implant with natural properties that make it suitable for use in the maxillofacial region.
Materials and methods: We describe our experience over a time period of 3 years, from 2006 to 2008, in a retrospective analysis of cases in which porcine dermal collagen had been used in the parotid surgery.
Results: In 38 patients, porcine dermal collagen was used after removing parotid tumours. There were 18 men and 20 women, with a mean age of 55.8 years (range from 24 to 81 years). Over 80% of the cases were benign tumours, and only 4 patients underwent total parotidectomy due to malignancy. Permacol was used to protect facial nerve, to prevent Frey's syndrome and to achieve better aesthetical results.
Discussion: Permacol Surgical Implant (Tissue Science Laboratories, UK) is a sterile, off-white, moist, tough and flexible fibrous flat sheet of acellular porcine dermal collagen and its constituent elastin fibres. It is biocompatible and not allergenic. It is intended for permanent implantation in humans and is indicated for the reconstruction, recontouring and reformation of human soft connective tissue. Complication rate was very low (5.2%). We observed only one case with Frey's syndrome and in one patient we had to remove the Permacol due to extensive postsurgical haematoma and the risk of infection. No allergic reaction, extrusion, migration or other potential complications for implants or alloplastic or heterologous materials were observed.

PP107
The use of continuous intraoperative facial nerve monitoring during parotid surgery: is it a substitute for surgical experience?

Skouras Athanasios, Manganaris Argyrios, Argyriou Nektarios, **Chouridis Pantelis**, Benis Nikolaos, Kontzoglou Georgios
ENT Department, Hippokratio General Hospital, Thessaloniki, Greece

Introduction: The primary surgical goals of parotid surgery include total tumor removal and absence of major neurological deficits. Intraoperative monitoring of neurophysiological function has gradually evolved as an integral adjunct during parotid surgery to reduce the incidence of neurological deficits. The goals of facial nerve monitoring are early identification of the nerve, warning the surgeon of any unexpected stimulation, mapping the course of the nerve, reducing trauma to the nerve during dissection, and evaluation and prognosis of facial nerve function at the conclusion of surgery.
Purpose: To assess the reliability of continuous intraoperative facial nerve monitoring during primary surgery for superficial parotid lesions.
Materials and methods: Over the last 3 years, the facial nerve of 35 consecutive patients undergoing parotid surgery was stimulated intraoperatively using an electromyograph-based intraoperative facial nerve monitoring. Facial nerve paralysis was estimated using the House-Brackmann grading scale. Immediate post-operative facial paralysis was documented in 11 patients. None of them had permanent paralysis after 6 months of follow-up.
Results: Intraoperative facial nerve monitoring failed to timely identify and confirm the facial nerve trunk in six operations despite anatomical and visual confirmation by the surgeon. The facial nerve probe was therefore replaced and in five cases this resulted in electromyograph-based confirmation. However, in one case despite replacing all connections as well as the probe, the operation was completed without monitoring.
Conclusions: Unquestionably, continuous facial nerve monitoring can facilitate the identification and preservation of all facial nerve branches. However, sound knowledge of the surgical anatomy and experience remain the foundation of parotid surgery.

PP108
Cryotherapy for nose skin cancer

Dmitry Stelmakh, Rinat Hasanov, Anna Epikhina
N. N. Blokhin Russian Cancer Research Center, Moscow, Russia

Purpose: To define effectiveness of cryotherapy for primary and recurrence nose skin cancer; to clarify the possibility of cryotherapy for elderly patients; to assess cosmetic effect and long-term results.
Patients and methods: A total of 131 patients with nose skin neoplasm were analyzed. Cryotherapy was performed in 84 patients with basal cell carcinoma and in 47 patients with squamous cell carcinoma of nose skin between 1973 and 2001 years. Histopathologic examination of tumor was performed for all patients. Of all patients, 82.7% were elder than 50 years old. Of all patients, 66% were suffered from concomitant diseases of different severity. Allocation of patients according to TNM classification was: T1N0M0 ($n = 38$), T1N1M0 ($n = 2$), T2N0M0 ($n = 8$), T2N1M0 ($n = 1$), T3N0M0 ($n = 5$), T4N0M0 ($n = 11$), T4N1M0 ($n = 4$), T4N0M1 ($n = 1$). Local and advanced recurrences were appeared in 22 and 40 patients, respectively.
Results: Recurrences of skin carcinoma was obtained in 2 (3%) of 71 followed up patients with stage T1–2N0M0 and local recurrences after different initial therapy. Deformation external nose was avoided due to cryotherapy in patient with restricted primary and recurrence tumors. Recurrence rate was 46% in patients with advanced recurrences and T3-4N0-1M0-1. Death rate was 32%. Unfavorable prognostic factors were associated with distant metastases, 8 of 11 patients died for metastases at 1 year. Different external nose defects were formed after cryotherapy for vast tumors. Plastic reconstruction and prosthetics were needed in 11 patients. Patients with concomitant diseases tolerate cryotherapy very good.
Conclusion: Cryotherapy for skin carcinoma was effective in patients with early stages and restricted recurrences of basal cell carcinoma and squamous cell carcinoma of nose skin. It allows keeping integrity of skin and achieved excellent cosmetic effect and long-term results in most cases. Cryotherapy does not deteriorate general condition in elderly patients with concomitant diseases.

PP109
Advanced basal cell carcinoma and squamous cell skin carcinoma of head and neck: the development of principles of management

Ilya N. Pustynskiy, Alexandr I. Paches, Sergey I. Tkachev, Michail A. Kropotov
The N. N. Blokhin Cancer Research Center, Moscow, Russia

Purpose: The improvement of the results of treatment of patients with advanced basal cell carcinoma and squamous cell carcinoma of the skin in head and neck region.
Materials and methods: Between 1997 and 2007, 112 patients with locally advanced (T_3, 50; T_4, 62) basal cell carcinoma (78) and squamous cell carcinoma (34) of the skin in head and neck region were treated. The majority of the tumors involved many structures of the face, metastases in regional lymphatic glands were detected in 7 (20.6%) patients with squamous cell carcinoma. We used surgery (26), combined treatment (8), cryosurgery (20) and cryo-radiotherapy (58) for treatment of the patients. Cryosurgery was used in cases without deep cancer infiltration of tissue. Cryosurgery technique included 3 cycles of tumors freezing–thawing to achieve necrosis in all tumors tissue and in tissue around the tumor. Cryo-radiotherapy was used in cases with deep cancer infiltration. We perform tumors freezing without damage of normal tissue every time a few minutes before radiotherapy in dose 2–3 Gy till complete tumors regression. The total dose was 60–70 Gy. Surgical operation was performed in cases, when the tumor size and location makes it possible to perform wide surgical removal of the tumor with effective reconstruction of the site of surgery.
Results: Follow-up ranged from 2 to 11 years. No mortality rate due to treatment complications was noted. Recurrence rate was 14.3% (16 patients). Using cryosurgery and cryo-radiotherapy, the individual anatomy and functions of the face structures were saved with good rehabilitation.
Conclusion: Cryosurgery and cryo-radiotherapy are effective methods of skin cancer treatment with good aesthetic and functional results. The development of principles of skin cancer treatment with the use of cryogen techniques can help to improve the results of treatment of patients with advanced skin cancer of the head and neck.

PP110
Actin expression and vasculogenesis in salivary gland pleomorphic adenoma and some malignant tumors

A. Kazanceva[1], V. Groma[2], E. Kornevs[1], I. Bagante[1], L. Smane[2]
[1]*Riga Stradins University, Department of Maxillofacial Surgery; Riga East University Hospital Oncology Center of Latvia, Department of Head and Neck Surgery, Riga, Latvia,* [2]*Riga Stradins University, Institute of Anatomy and Anthropology, Riga, Latvia*

Purpose: Pleomorphic adenoma is the most common benign salivary gland tumor. The essential components of the tumor are the epithelial and stromal elements. Because the malignacy is correlated with the duration of pleomorphic adenoma, the risk of developing malignancy is only about 1.5% for a duration of <5 years, but increases to 9.5% for a duration of >15 years. Carcinoma ex pleomorphic adenoma is believed to evolve from a pre-existing benign adenoma. It accounts for 3.6% (range 0.9–14%) of all salivary neoplasms and for 11.7% (range 2.8–42.4%) of salivary malignancies. The increase of tumor vascularisation plays an important role in tumor malignant transformation.
Aim: To evaluate the vasculogenesis in the stromal and epithelial component of salivary gland tumors and compare it with the clinical data.
Materials and methods: Patients with salivary gland tumors were operated and clinically analyzed in Riga East University Hospital department of head and neck surgery. Immunohistochemistry was applied for primary pleomorphic adenoma, recurrent tumors and malignant parotid tumors in order to determine vasculogenesis and compare with the normal salivary gland tissue.
Results: The actin expression was different in stromal and epithelial components of salivary gland tumors and normal salivary gland tissue. In cases of pleomorphic adenoma, the differences of actin expression were determined in primary and recurrent tumors especially in stromal part of the tumors.
Conclusion: Tumor vascularisation increases in recurrent pleomorphic adenoma in stromal component and may be responsible for tumor clinical behaviour.

PP111
Preoperative embolization of carotid body tumors using PVA microspheres

Ihar Belotsarkouski[1], Uladzimir Akinfeyeu[2]
[1]*Department of Head and Neck tumors,* [2]*Department of Radiology, N. N. Alexandrov National Cancer Centre of Belarus, Minsk, Belarus*

Introduction: Preoperative embolization has been widely used to reduce intraoperative blood loss during excision of the carotid body tumors. Different materials are used as embolic agents.
Purpose: To report our experience with preoperative embolization in the management of patients with carotid body tumors.
Materials and methods: Ten patients (9 women, 1 man) aged 37–60 years with carotid body tumors underwent selective ascending pharyngeal artery embolization to decrease operative blood loss. PVA microspheres (BeadBlock™, Biocompatibles) size ranges 100–300, 300–500 and 500–700 μm were used. The mean amount of introduced microspheres was 2.14 ml. Microcatheter was applied in 3 cases. Subadventitial tumor resection was performed in 3–15 days after embolization.
Results: The embolization was successful in all cases. One patient underwent two embolizations. Subtotal tumor devascularisation on completion angiogram was achieved in 6 cases and total in 1 case. The delivery of microspheres through microcatheter was easy and no clogging occurred. No complications of embolization were encountered. The mean operative blood loss was 138.6 ± 14 ml. Deep penetration of particles into the tumor vasculature was noticed on microscopy in all resected specimens.
Conclusion: Preoperative embolization utilizing Bead Block microspheres is safe and efficacious for decreasing operative blood loss in patients with carotid body tumors.

PP112
A modified parotidectomy for benign tumor of parotid gland

Wenhao Ren, **Keqian Zhi**, Lu Zhao, Lin Gao, Fang Guo, Chengqun Hou
Department of Oral and Maxillofacial Surgery, Hospital of Stomatology, Xi'an Jiaotong University, China

Introduction: Although standard superficial or total parotidectomy is used as a common surgery for benign tumor of parotid, there are many complications which are facial paresis or facial nerve injure, Frey's syndrome and sensory deficit of ear lobule. Modification techniques including subtotal parotidectomy, partial superficial parotidectomy, extracapsular lumpectomy, or extracapsular excision have been introduced. We suggest a modified parotidectomy to prevent the complications.
Purpose: In recent decades the treatment of benign tumor of parotid has shifted from superficial or total parotidectomy to partial parotidectomy. This study examined whether the modified parotidectomy reduces the complications after surgery for benign tumor of parotid.
Methods: One hundred and ten patients were assigned to the modified parotidectomy (group 1 $n = 55$) or the standard superficial or total parotidectomy (group 2, $n = 55$). The modified parotidectomy consisted of greater auricular nerve preservation, partial parotidectomy and coverage with the parotid fascia.
Results: The mean volume of hemorrhage was significantly smaller ($P < 0.01$), and mean operation time was significantly shorter ($P < 0.001$) than that in group 2. In group 1, the auricular nerve sensory recovery rate was high, and transient facial paralysis and Frey's syndrome were infrequent (12 and 6%, respectively) than that in group 2. There was no significant difference in tumor recurrence, comparing two groups during a mean follow-up of 4 years.
Conclusion: Compared with the standard superficial and total protidectomy, the modified parotidectomy for benign parotid tumors improved cosmetic, sensory and reduced the duration of surgery and Frey's syndrome.

PP113
Clinical study on 55 cases of adenoid cystic carcinoma of head and neck: a 8-year study

Houda Mouzounts[1], Wafa Allam[1], Amina Taleb[1], Ibrahim Alkhalil Elgueddari[2], Hassan Errihani[1]
[1]*National Institute of Oncology, Department of Medical Oncology,* [2]*Department of Radiation Oncology, Rabat, Morocco*

Objective: To study the clinical characters, diagnosis and prognosis of patients with adenoid cystic carcinoma of head and neck (HN).

Methods: The data were analyzed retrospectively for 55 patients with adenoid cystic carcinoma of HN, to evaluate the clinical characters, diagnostic and therapeutical aspects and the contribution of every factor influencing the survival. Survival analysis was performed by Kaplan–Meier method, comparison among/between groups was performed using log-rank test, and multivariate analysis.
Results: There were 38 patients in stages III and IV. Most of them received surgical operation combined with radiotherapy. 45.5% received surgery and radiotherapy, 18% received radiotherapy and 16.3% received surgery. 14% of patients had metastases and were treated by chemotherapy, and 14% of patients were not treated. The 5-year survival rates were 31%. Patients who received surgery combined with radiotherapy had higher survival than those how received surgery or radiotherapy alone.
Conclusions: Surgery is preferable for primary and recurrent adenoid cystic carcinoma of the head and neck. Advanced adenoid cystic carcinoma should be treated by combined surgical operation and radiotherapy. Stage and treatment approach are the independent factors affecting the prognoses. Chemotherapy may benefit quality of life but not survival in patients with distant metastases due to adenoid cystic carcinoma of the HN.

PP114
Cutaneous squamous cell carcinoma metastatic to parotid lymph nodes

Richard Kuan
Department of Radiation Oncology, Sir Charles Gairdner Hospital, Nedlands, Australia

Introduction: Australia has the highest per capita incidence of cutaneous squamous cell carcinomas (cSCC) in the world, with a rate in excess of 300 per 100,000 per annum. Lymph node metastasis from cSCC is relatively uncommon, occurring in 2–4%, depending on site (being commoner in head and neck sites). Whilst cSCCs are considered a relatively benign disease with excellent outcomes, once lymph node metastasis are present the prognosis is significantly impaired.
Material and methods: We report on a prospective series of 32 consecutive patients with metastatic cSCC to the parotid lymph nodes treated at Sir Charles Gairdner Hospital, a tertiary teaching hospital in Western Australia over a 5-year period from January 2000 to December 2004. All patients were treated with curative intent, with surgery followed by postoperative high dose external beam radiotherapy.
Results: With a median follow up of 75 months (range 48–112 months), the locoregional control rate was 91%, cancer-specific survival was 74% and overall survival 54% at 5 years.
Conclusions: We conclude that surgery plus radiotherapy achieves excellent locoregional control, but deaths from metastatic disease remain a problem. Better systemic therapies are required to address this problem.

P115
Chondrosarcoma of the head and neck: a review of the literature

Mara Piagkou, Giannoulis Piagkos, Dionysis Venieratos, Vangelis Kotsiomitis, Panagiotis Skandalakis
Department of Anatomy, Medical School, University of Athens, Athens, Greece

Introduction: Chondrosarcoma is a malignant mesenchymal tumor characterized by the formation of cartilage, but not bone, by tumor cells. Only 5–10% of chondrosarcomas occur in the head and neck, representing 0.1% of all head and neck neoplasms, with the larynx and the maxillo-nasal region being the most common sites. Chondrosarcomas are slow-growing tumours with low malignancy rate and unclear histopathogenesis. They arise from cartilaginous remnants in the petro-clival, spheno-occipital and fronto-nasal synchondroses.
Purpose, materials and methods: In this study, we reviewed chondrosarcoma cases experienced during the last 30 years to investigate its clinical characteristics and treatment outcome.
Results: Histologic types included conventional, myxoid and mesenchymal. The mesenchymal and myxoid subtypes were rare among white patients and more common among African-American and Hispanic patients. Treatment was most commonly surgery alone and surgery with irradiation. Disease-specific survival was 87.2% at 5 years and 70.6% at 10 years. Worse 5-year survival was associated with higher grade, regional or distant spread and the myxoid or mesenchymal subtypes. Grade was the most important prognostic factor. Tumor size and completeness of surgical resection were also important prognostic factors.
The primary sites were sinus, mastoid, jugular foramen and thyroid cartilage. Specific sites included the larynx, trachea, petrous apex, skull base, cervical spine, clivus and cavernous sinus region.
Conclusions: Early diagnosis and adequate surgical resection are important to get better survival rates.
Treatment should be aimed at complete surgical resection with the option of postoperative radiotherapy. Treatment with partial excision is preferable due to intracranial involvement of the internal carotid artery. High-grade lesions should be treated aggressively. The most common cause of death was uncontrollable local disease.

PP116
Sociodemographic and etiologic features of orofacial adenoid cystic carcinoma in Morroco

Houda Mouzount[1],Wafa Allam[1], Amina Taleb[1], Ibrahim Alkhalil Elgueddari[2], Hassan Errihani[1]
[1]National Institute of Oncology, Department of Medical Oncology, Rabat, Morocco, [2]Department of Radiation Oncology, Rabat, Morocco

Introduction: Orofacial tumors are the sixth most common malignancy in the world, and there is a recent trend of rising incidence of these tumors in young patients. Adenoid cystic carcinoma (ACC) of the head and neck is a rare malignancy of salivary gland origin.
Purpose: Few epidemiologic studies exist assessing the incidence of this tumour. The aim of this study was to compare demographic and etiologic data from young and old patients with orofacial ACC.
Materials and methods: Data were obtained by retrospective analysis of files of patients with malignant orofacial ACC.
Results: Patients were categorized into 2 groups: the young group ($\leq$40 years old) and the older group (>60 years old). There was no predilection of sex in both younger and older groups (male–female ratio was 0.98). Consumption of tobacco and alcohol was reported by 10% of young patients and by 25% of older patients. Palate was the most common site for older group (29%), whereas that for the younger group was the parotid (12.7%). We found that these tumors can occur in patients who report no tobacco or alcohol use.

Conclusions: Adenoid cystic carcinoma of the head and neck are nowadays arising in young group.

PP117
Epidemiology and treatment outcomes of nasopharyngeal non-Hodgkin lymphoma in the National Institute of Oncology of Rabat: a Morroccan experience between 1997 and 2008

Wafa Allam, Houda Mouzount, Hassan Errihani
National Institute of Oncology, Medical Oncology Department, Rabat, Morocco

Background: Nasopharyngeal non-Hodgkin lymphomas (NNHL) are extremely rare. In this study, we will report the progress achieved in the management of this disease in our institute.
Methods: We retrospectively reviewed the records of 26 patients having primary NNHL who were managed between January 1997 and December 2008, to evaluate and compare their clinical characteristics and treatment outcome. Clinical variables, including age, sex, stage, and treatment modality, were assessed.
Results: Median age of our patients was 52.7 years. Nasal obstruction, nasal discharge and epistaxis were the frequent symptoms in NNHL patients. Histology of NNHL were mainly large B-cell and follicular lymphoma. Four patients (15.4%) were at stage I, 15 (57.6%) at stage II, and 7 (27%) were at stage III/IV. The patients were treated with chemotherapy alone (27%) or chemotherapy plus radiotherapy (73%). At early stage (stage I/II), the patients were managed with chemo-radiotherapy. When the whole treatment was completed, 18 patients (69.2%) achieved complete response and remained disease free. After 25.9 months, median follow-up, overall survival at 1 year was 87% and disease-free survival at 1 year was 71%. The difference in term of overall and disease free survival between stage I, II, III and IV was significant (log rank test: $p = 0.02$ for overall survival and $p = 0.01$ for disease-free survival).
Conclusion: From our study, we conclude that histological characteristics, principle of treatment and outcome of primary NNHL patients are particular and more studies have to be directed.

PP118
Pattern of parotid gland tumors on Thessaly, Greece: a retrospective study of 74 cases

Maria Apostolidou, Eleftheria Gletsou, Constantinos Evaggelopoulos, Evaggelos Theos, Constantinos Gantas, Evdoxia Gerostergiou, Vasileios Lachanas, John Bizakis
Otorhinolaryngology-Head and Neck Surgery Department, University of Thessaly, School of Medicine, Larissa, Greece

Introduction: Salivary gland tumors are uncommon, corresponding to approximately 3–10% of neoplasms of the head and neck region. They may arise from the major salivary glands (parotid, submandibular, and sublingual) or the minor salivary glands, located beneath the mucosal lining of the upper aero-digestive tract. Parotid gland tumors are divided into benign and malignant and the last one in primary and secondary.
Purpose: To define the pattern of parotid gland neoplasms in Thessaly over a 6-year period from 2003 until today.
Materials: Hospital records of 74 patients with salivary gland tumors who underwent parotidectomy in the Otorhinolaryngology Department of the University hospital of Larissa were reviewed.
Methods: The patients were analyzed according to gender, age, size, location, histopathology of the tumor and postoperative complications.
Results: There were (72.9%) benign parotid gland tumors and (27%) of malignant ones. The most common benign tumor was pleomorphic adenoma (66.6%), while the most common malignant tumor was mucoepidermoid carcinoma (70%). The female-to-male ratio was 1.2/0.8. Median age was 52.2 years (range 19–78 years) in patients with benign tumors and 61.2 years (range 10–92 years) in patients with malignancy. After superficial parotidectomy, the most common postoperative complication was Frey syndrome (21.4%) while after total parotidectomy the most frequent complication was transient facial nerve palsy (25%).
Conclusions: In Thessaly parotid gland, tumors show epidemiological characteristics similar to studies worldwide. The most common benign parotid gland tumor was pleomorphic adenoma, while the most frequent malignant tumor was mucoepidermoid carcinoma. Future research needs to be done to better define the epidemiology of these tumors among the Greek population.

PP119
Imaging diagnosis of acoustic neurinoma-some aspects: a radiological study

Nikolaos Syrmos, George Gavridakis
Neurosurgical Unit-CT Unit, Venizeleio General Hospital, Heraklion, Crete, Greece

Acoustic neurinoma is a benign tumor that may develop on the hearing and balance nerves near the inner ear. The tumor results from an overproduction of Schwann cells—small, sheet-like cells that normally wrap around nerve fibers like onion skin and help support the nerves. When growth is abnormally excessive, Schwann cells bunch together, pressing against the hearing and balance nerves, often causing gradual hearing loss, tinnitus (ringing in the ears), and dizziness. If the tumor becomes large, it can interfere with the facial nerve, causing partial paralysis, and eventually pressing against brain structures, becoming life-threatening. There are two types of acoustic neurinomas: unilateral and bilateral. Unilateral neurinomas affect only one ear and account for approximately 8% of tumors inside the skull. Symptoms may develop at any age, but usually occur between the ages of 30 and 60 years. Bilateral acoustic neurinomas, which affect both ears, are hereditary. Inherited from one's parents, this tumor results from a genetic disorder known as neurofibromatosis-2 (NF2). Affected individuals have a 50% chance of passing this disorder on to their children. Unlike those with a unilateral acoustic neurinoma, individuals with NF2 usually develop symptoms in their teens or early adulthood. Because NF2 patients usually have multiple tumors, the surgical procedure is more complicated than the removal of a unilateral acoustic neurinoma. Scientists believe that both types of acoustic neurinoma form following a loss of the function of a gene on chromosome 22. Early diagnosis of an acoustic neurinoma is a key to prevent its serious consequences. Unfortunately, early detection of the tumor is sometimes difficult, because the symptoms may be subtle and may not appear in the beginning stages of growth. Also, hearing loss, dizziness, and tinnitus are common symptoms of any middle and inner ear problems. Therefore, once the symptoms appear, a thorough ear

examination and hearing test are essential for proper diagnosis. CT and MRI are helpful in determining the location and size of a tumor and also in planning its removal. MRI examinations were performed in 10 patients with 11 acoustic neuromas, and the results were compared with conventional tomography of the internal auditory canals, contrast-enhanced computed tomography (CT), and air CT cisternography. All tumors were identified with MRI. The 5 largest tumors looked similar to the tumors seen on CT scans, although the extent of the tumor was better seen with MRI in 2 cases. The 6 small cerebellopontine angle and intracanalicular tumors were well seen with MRI, with appearances corresponding to those seen with air CT cisternography. Side effects were encountered with the MRI examinations. MRI is an accurate, noninvasive alternative to contrast-enhanced CT and air CT cisternography in the diagnosis of acoustic neuromas. Measurements of the maximal tumour diameter along the pyramid showed good concordance. We conclude that measurement of the size of acoustic neuromas is reproducible with MRI and the measurement of the maximal tumour diameter is in practice, a better parameter for comparison than calculation of real volume.

PP120
The natural history of globus pharyngeus

X. Kohilas[1,2], V. Papanikolaou[1,2], Tony O'Connor[1,2], I. Keogh[1,2]
[1]*Academic Department of Oto-Rhino-Laryngology. National University of Ireland, Newcastle Road, Galway, Ireland,* [2]*Department of Otolaryngology, Head and Neck Surgery, Galway University Hospitals, Galway, Ireland*

Introduction: Globus pharyngeus (GP) is a common condition for the Otorhinolaryngologist accounting up to 4% of all new outpatient referrals. The pathogenesis remains elusive and is probably multifactorial. Investigations mainly aim to exclude the presence of malignancy; however, there is no standard protocol.
Purpose: The evaluation of the natural history of GP.
Patients and methods: We identified 50 consecutive patients, with a diagnosis of GP made in 2004. A self-addressed stamped questionnaire was sent to these patients by post, in order to identify the course of their symptoms.
Results: Fifty patients (21 males, 29 females) with a diagnosis of GP. Mean age in 2004 was 55.5 years (range 14–89 years). Presenting symptoms: dysphonia (42%), throat discomfort (26%), heartburn (20%), foreign body sensation (18%), lump in the throat (12%) and irritating cough (10%). Thirty-two percent presented an abnormal fibreoptic nasopharyngoscopy, usually with signs of laryngopharyngeal reflux.
To date, 20 patients have returned their questionnaires. None developed any malignancy in the upper aerodigestive tract, although 40% of them are smokers and have regular alcohol intake. The majority (60%) reported occasional symptoms, 20% reported complete resolution of symptoms, while 20% reported persistent symptoms. Foreign body sensation (80%) irritating cough (60%) and heartburn/indigestion (40%) were the commonest.
Conclusions: Although our study is still in progress it outlines the natural history of GP. Over a period of 5 years, only a minority of patients report complete resolution of symptoms, whereas the majority report persistent or intermittent symptoms. No patient has presented any signs of upper aerodigestive tract malignancy, despite the high incidence of tobacco and alcohol consumption.

PP121
Esthesioneuroblastoma: a single institution experience

Leif Bäcks[1], Minna Oinas[2], Petra Pietarinen-Runtti[1], Kauko Saarilahti[3], Jaana Hagström[4], Ilmo Leivo[4], Jyrki Vuola[5], Riste Saat[6], Antti A. Mäkitie[1]
[1]*Departments of Otorhinolaryngology-Head and Neck Surgery,* [2]*Neurosurgery,* [3]*Oncology,* [4]*Pathology,* [5]*Plastic Surgery,* [6]*Radiology, Helsinki University Central Hospital, Helsinki, Finland*

Background: Esthesioneuroblastoma (ENB) is a rare tumour arising from the olfactory neuroepithelium in the olfactory rim of the nasal cavity and accounts for about 3–6% of all intranasal tumours. The clinical diagnosis and operative management of ENB represent a major challenge in head and neck surgery.
Methods: This is a retrospective review of all ENB:s diagnosed and managed at our tertiary referral centre and academic institution during the period 1990–2008. Data on age, sex, symptoms, tumour location, histopathological characteristics, imaging, management, and outcome were recorded.
Results: There were 17 cases, 8 males and 9 females, median age 53 years (range 20–75 years). The presenting symptom, diagnostic imaging, staging and final histopathology are presented. Fifteen patients were treated with a curative intent, all with primary surgery and postoperative radiotherapy ($n = 7$) and chemotherapy ($n = 1$). Two patients were managed with palliative surgery and radiotherapy. The treatment modalities and the clinical outcome are discussed in the light of current literature.
Conclusion: ENB presents a varying biological activity ranging from indolent growth with patients surviving with a known tumour for more than 20 years, to a highly aggressive neoplasm and capable of widespread metastases with survival limited to a few months. Difficulties in diagnosis, the variety of treatment modalities in the current management algorithm, and possible post-treatment sequelae are divisive features for this tumour entity.

PP122
Prognostic factors and treatment strategies for adult head and neck soft tissue sarcoma: experience at an oncological center

Rogelio González González[1], Ronell Bologna Molina[2], Juan Manuel Takane Torres[1], Hugo R. Domínguez Malagon[3]
[1]*Centro de Investigación Universidad de Cuautitlan Izcalli (CIUCI),* [2]*Centro Universitario de Ciencias de la Salud, Universidad de Guadalajara, México,* [3]*Departamento de Patología Quirúrgica, Instituto Nacional de Cancerología, México*

Introduction: Adult Head and Neck Soft Tissue Sarcomas are rare and comprised a variety of histological types, clinical characteristics and mortality risk; the purpose of the study was to examine all patients treated at the National Institute of Cancerology. México (INCan) for Head and Neck Sarcoma during a 5-year period.
Materials and methods: A total of 51 adult patients were examined and treated for head and neck sarcoma during the period 2002–2007. The 51 tumors were histologically reevaluated by expert pathologists and were classified as low, intermediate and high grade sarcomas. A multivariate

analysis was performed to evaluate the surgical margins, the histological grade and the clinical stage as prognostic factors for the disease.
Results: A total of 51 patients with head and neck sarcomas were admitted at the INCan, The most frequent location sites were: scalp and face. The most frequent histological type was the malignant peripheral nerve sheath tumor. The initial treatment consisted of surgery and radiotherapy. Multivariate analysis was performed; the factors that influence the disease-free period and global survival are: histological grade ($p = 0.001$), clinical stadium ($p < 0.001$) and surgical margins ($p = 0.02$ and $p = 0.03$, correspondingly), hematogenous and lymphatic metastasis ($p < 0.001$).
Conclusions: Adult Head and Neck Soft Tissue Sarcomas are rare; the prognosis for these patients is bad, especially so when they are in the clinical stages III and IV, and their average survival rate after 2 years is of 45%; the vast majority of these patients die due to the progression of the disease and metastasis.

PP123
The role of fine needle aspiration cytology in the management of acinic cell carcinoma of parotid salivary gland

Prince Modayil[1], Martin S. F. Chong[2], Jonathan Williams[3], Michael S. W. Lee[1]
[1] *Department of Otorhinolaryngology, Thomas Tatum Head and Neck Surgery Centre, St George's Hospital, London, UK,* [2] *Medical Student, St George's University of London, London, UK,* [3] *Department of Cellular Pathology, St George's Hospital, London, UK*

Introduction: Although fine needle aspiration cytology (FNAC) is a useful preoperative diagnostic test for parotid mass lesions, it is not well established how accurate they are in diagnosis of parotid acinic cell carcinomas (ACC). Most of the published literature studied the accuracy of FNAC in benign and malignant salivary gland lesions together.
Purpose: The aim is to study the accuracy of FNAC in diagnosis of acinic cell carcinoma of parotid salivary gland.
Materials: Review of patients who were diagnosed with parotid acinic cell carcinoma during the period 1999–2009 in a tertiary referral hospital. The data were retrieved from the pathology database.
Methods: Retrospective case note review.
Results: There were 21 cases of histologically confirmed parotid ACC. We categorized the results into true positive (14) true negative (0) false positive (0) and false negative (7). The accuracy of FNAC in diagnosis of parotid ACC was 66.7%. The false negative rate was 50%. The seven false negative FNAC results comprised 3 pleomorphic adenomas, 2 sialadenitis and one each of oncocytic lesion and Warthins tumour.
Conclusion: FNAC has a low accuracy in the diagnosis of parotid ACC as it has a high false negative rate of 50% among other parotid malignancies. The cytological picture of parotid ACC resembles either normal or benign tumours including pleomorphic adenomas. Therefore, FNAC results should be interpreted in conjunction with clinical and radiological findings in the management of parotid ACC.

PP124
A tumour map for parotid surgery

Prince Modayil, Daniel Tweedie, Anthony Jacob
Department of ENT and Head and Neck Surgery, University Hospital Lewisham, London, UK

Introduction: Parotid surgery is bedevilled by an array of surgical terminology that has evolved over the last century, with often confusing and ambiguous interpretations. Limited excision techniques, with partial dissection of the facial nerve, have become increasingly popular alternatives to complete superficial or total parotidectomy, where all named branches of the nerve are routinely dissected. In this context, accurate surgical records of precise operative findings and the extent of excision have assumed increasing importance, with the objectives of improving communication between surgeons, facilitating audit and research, and informing revision surgery and future developments in this field.
Purpose: To create a standardised parotid template for the recording of parotid surgery.
Materials and methods: A standardised three-dimensional diagrammatic template of the parotid gland and its relation to the facial nerve was created using adobe software. 20 parotidectomy operations were recorded using this template and have been collected prospectively.
Results: The template has been piloted in our unit and feedback from those surgeons using has been overwhelmingly positive. Comments included that the template was user-friendly and improved operation note documentation when used as an adjunct to traditionally hand written notes. It was also found to be quick and easy to complete. No revision surgery has been required at this stage, but we anticipate that these records would prove extremely useful in the future event of such a scenario.
Conclusion: In an area where the potential morbidity of revision surgery is high we would encourage the use of a standardised parotid tumour map in combination with written operative notes. This will improve the quality and accuracy of recording parotid surgery for teaching, audit, research and future surgery.

PP125
Squamous cell carcinoma of the parotid gland: a single institute experience

Lavanya Varatharajan[1], Prince Modayil[2], Jonathan Williams[3], Michael S. W. Lee[2]
[1]*4th Year Medical Student, St George's University of London, UK,* [2]*Department of Otorhinolaryngology, Thomas Tatum Head and Neck Surgery Centre, St George's Hospital, London, UK,* [3]*Department of Pathology, St George's Hospital, London, UK*

Introduction: Squamous cell carcinoma (SCC) of parotid salivary gland is rare. According to the literature, metastatic SCC to the parotid gland from cutaneous head and neck malignancies are more common than primary disease.
Purpose: Review the management of patients with primary and metastatic SCC of the parotid gland.
Materials: 15 cases of parotid SCC treated during the period 1989–2009 in a tertiary referral hospital.
Methods: Retrospective case review.
Results: There were 11 males (73%) and 4 females (27%). Mean age at diagnosis was 78 years (range 64–87 years). 10 patients (67%) had primary parotid SCC and 6 patients (40%) had metastasis from a known primary site. Facial nerve palsy was noted in 5 patients (33%). 6 patients (40%) had early (T2) and 9 patients (60%) had late (T3 and T4) stage disease. Regional lymph node metastasis was noted in 5 patients (33%) and no patient had distant metastasis. All patients underwent parotidectomy and 11 patients (73%) had simultaneous neck dissection. 12 patients (80%) had post-operative radiotherapy.

The average follow-up period was 21 months. Disease recurrence occurred in 3 patients (20%) and 7 patients (47%) have died. Overall, 2- and 5-year survival rates are 87 and 53%, respectively.
Conclusions: Primary SCC is more common than metastatic SCC of the parotid gland, in our study. Nearly half of our patient cohort has died and the high mortality rate reflects the highly malignant potential of this disease. Parotidectomy with neck dissection and postoperative radiotherapy remains the mainstay of treatment.

PP126
The management of acinic cell carcinoma of salivary glands

Michael S. W. Lee[1], Martin S. F. Chong[2], Ahmed Sweed[1], Prince Modayil[1], Jonanthan Williams[3]
[1]Department of Otorhinolaryngology, Thomas Tatum Head and Neck Surgery Centre, St George's Hospital, London, UK, [2]Medical Student, St George's University of London, London, UK, [3]Department of Pathology, St George's Hospital, London, UK

Introduction: Acinic cell carcinoma (ACC) is a rare malignant salivary gland neoplasm. They may recur locally if they are incompletely excised and have the ability to metastasize.
Purpose: The aim of this study was to evaluate the clinical, prognostic features and management strategies influencing the survival rates in patients with ACC of the salivary glands.
Materials: Review of all the patients diagnosed with ACC presenting to our tertiary referral hospital from 1997 to 2008.
Methods: Retrospective case notes review.
Results: There were 28 cases of histologically confirmed salivary gland ACC (10 males and 18 females). The mean age was 50.4 years. 23 cases were found in parotid gland and 5 in minor salivary glands. 3 patients presented with local invasion, and none with facial nerve dysfunction or palpable cervical lymphadenopathy. 26 patients underwent surgical excision and 7 had neck dissection, of which 16 had postoperative radiotherapy. The mean follow-up period was 2.6 years (ranged 0.1–6.7 years). Three patients had died, of which one died from ACC and two from unrelated illness. Local recurrence, cervical nodal metastases and distant metastases rates were, respectively, 4, 0 and 4%. 1- and 5-year overall survival rates were 95 and 71%, respectively. Univariate analysis of prognostic factors on survival rates found presenting symptoms, local invasion and tumour stage to be statistically significant variables.
Conclusion: ACC uncommonly metastasizes to cervical lymph nodes. Surgery with or without post-operative adjuvant radiotherapy is the treatment of choice. Elective neck dissection in the treatment of ACC may not be necessary.

PP127
Prognostic factors in salivary gland carcinoma of the oral cavity and oropharynx

José F. Carrillos[1], Juan G. Gómez Pizano[1], Carlos Melo[1], Margarita C. Ramirez-Ortega[4], José G. Chanona[3], Luis F. Oñate Ocaña[2]
[1]Head and Neck Department, Instituto Nacional de Cancerología (INCan), Mexico City, Mexico, [2]Division of Surgery, Instituto Nacional de Cancerología (INCan), Mexico City, Mexico, [3]Pathology Department, Instituto Nacional de Cancerologia(INCan), México City, Mexico, [4]Instituto Nacional de Cardiologia. Ignacio Chavez. (INCICH), Mexico City, Mexico

Introduction: Salivary gland carcinoma (MSGC) of oral cavity (OC) and oropharynx (OP) is an infrequent neoplasm with different biologic behavior from squamous cell carcinoma.
Purpose: This study was performed to define factors related with prognosis and management of these malignancies.
Methods: Retrospective analyses of patients with salivary gland carcinoma of oral cavity (OC) or oropharynx (OP), treated with surgery, radiation therapy, or a combination of both in the 1989–2008 period. Two pathologists established the final diagnosis by consensus. End points were disease-free survival (DFS) and recurrence rate. Statistics included bivariate analyses with Chi-square and log rank tests to identify potential prognostic factors associated to DFS. A multivariate analyses model was constructed by Cox's method.
Results: Seventy seven patients constituted our cohort. Median follow-up time was 3.84 years. Most frequent histology was adenoid cystic carcinoma (45% of cases) followed by mucoepidermoid carcinoma (29.8%). Significant prognostic factors regarding DFS in bivariate analyses comprised tumor size, surgical margins, grade, lymph node status, Karnofsky and T stage. A multivariate model identified tumor size, grade, surgical margins and lymph node status significant regarding DFS.
Conclusion: MSGC of OC and OP in early and intermediate stages and low grade tumors could be managed with surgery alone when negative surgical margins are obtained. Intermediate and advanced stages with intermediate- and high-grade lesions require combined treatment. Unresectable lesions or medically unfit patients should receive radiotherapy upfront with surgery reserved for salvage.

PP128
Parotid gland surgery: the experience of the Otorhinolaryngology Department of the University Hospital of Heraklion

Irene Panagiotaki, Vasilios Nikolaou, George Lagoudianakis, Stilianos Velegrakis, Alexander Karatzanis, George Velegrakis
Otorhinolaryngology Department of the University Hospital of Heraklion, Heraklion, Greece

Objective: To report our experience on parotid gland surgery in the Otorhinolaryngology Department of the University Hospital of Heraklion over the last 10 years. We also report our experience on parotid gland surgery with the use of Ligasuretrade mark Vessel Sealing System (LVSS), which is used over the last 5 years.
Study design: A retrospective study was conducted on 150 patients who underwent superficial and total parotidectomy due to parotid tumors. The demographics of patients, as well as the location, size and histopathology of the tumours are also analysed.
Results: From the 150 parotid tumours which were reviewed, 113 (75.3%) were benign and 37 (24.6%) were malignant. Pleomorphic adenoma was the most common benign tumor (45.13%) and mucoepidermoid carcinoma the most common malignant tumor (8.1%). The most frequent post-operative complications were transient facial nerve paresis (38.6%), seroma (10.6%), salivary fistula (6.6%) and Frey syndrome (4%), which were successfully treated.
Conclusions: Parotid gland surgery is a very challenging issue, as it demands high surgical skills and experience. The use of LVSS as the primary means of ligation has proved to be a safe device for parotid gland surgery, providing sufficient hemostasis and reducing the operative time.

PP129
Bisphosphonate-related osteonecrosis of the jaws: a longitudinal cohort study of risk-factors in cancer patients

Kostas Vahtsevanos[1], **Athanassios Kyrgidis**[1], Eugenia Verrou[2], Eririni Katodritou[2], Stefanos Triaridis[3], Charalambos Andreadis[4], Ioannis Boukovinas[5], Georgios Koloutsos[1], Zisis Teleioudis[1], Kyriaki Kitikidou[6], Panagiotis Paraskevopoulos[7], Kostas Zervas[2], Kostas Antoniades[8]

[1]Department of Oral Maxillofacial Surgery, Theagenio Cancer Hospital, Thessaloniki, Greece, [2]Department of Haematology, Theagenio Cancer Hospital, Thessaloniki, Greece, [3]1st University Department of Otolaryngology, Aristotle University, AHEPA Hospital, Thessaloniki, Greece, [4]3rd Department of Clinical Oncology, Theagenio Cancer Hospital, Thessaloniki, Greece, [5]2rd Department of Clinical Oncology, Theagenio Cancer Hospital, Thessaloniki, Greece, [6]Department of Forestry and Management of the Environment and Natural Resources, Laboratory of Forest Biometry, Dimokritos University of Thrace, Orestias, Greece, [7]1st Department of Clinical Oncology, Theagenio Cancer Hospital, Thessaloniki, Greece, [8]University Department of Oral and Maxillofacial Surgery, School of Dentistry, G. Papanikolaou General Hospital, Aristotle University of Thessaloniki, Greece

Introduction and Purpose: The reported incidence of osteonecrosis of the jaws (ONJ) ranges from 0.94 to 18.6%. This cohort study aims to calculate the incidence of and identify the risk-factors for ONJ in cancer patients treated with intravenous zoldendronate, ibandronate and pamidronate.

Patients and methods:Data analyzed included age, sex, smoking habit, underlying disease, medical, dental history, bisphosphonates (BP) type and doses-administered. Relative risks, crude and adjusted odds ratios (aOR) and cumulative hazard for ONJ development were calculated.

Results: We included 1,621 patients who received 29,006 intravenous doses of BP, given monthly. Crude ONJ incidence was 8.5, 3.1, and 4.9% in multiple-myeloma, breast and prostate-cancer patients, respectively. Breast-cancer patients demonstrated a reduced risk for ONJ development which turned to be non-significant after adjustment for other variables. Multivariate analysis demonstrated that use of dentures (aOR = 2.02; 96%CI:1.03-3.96), history of dental extraction (aOR = 32.97;96%CI: 18.02–60.31), having ever received zoledronate (aOR = 28.09; 96% CI: 5.74–137.43) and each zoledronate dose (aOR = 2.02; 96% CI: 1.15–3.56) were associated with increased risk for ONJ development. Smoking, periodontitis and root-canal-treatment did not increase hazard for ONJ in patients receiving BP.

Conclusions: The conclusions of this study validated dental extractions and use of dentures as risk-factors for ONJ development. Ibandronate and pamidronate at the dosages and frequency used in this study appear to exhibit a safer drug profile concerning ONJ complication, when compared to zoledronate; however, randomized controlled trials are needed to validate these results. Prior to initiation of a bisphosphonate, patients should have a comprehensive dental examination. Patients with a challenging dental situation should have dental care attended to prior to initiation of these drugs.

PP130
Osteosarcoma (OS) of the head and neck

M. A. Kropotov, A. M. Mudunov

Blokhin's Cancer Research Center, Moscow, Russia

Aims: The main primary tumor of the bone is osteosarcoma (20% of all bone neoplasms). 6.5% of all OS localized in the head and neck. The main features of head and neck OS distinct from the extremities OS are: the onset of disease is 1–2 decades later, rare distant metastases, chemotherapy is rarely effective, local recurrence is the main cause of death.

Materials and methods: 59 patients (pt) with OS of head and neck were treated from 1965 to 2007 years. OS arise in mandible more often 28 pt (47.5%), maxilla 19 pt (32.2%), skull base 10 pt (17%) and OS of soft tissues of the neck 2 pt (3.4%). 41 pt (69.5%) did not had any treatment earlier and 18 pt (30.5%) had recurrences of OS after different types of treatment. Local spread tumor take a place in all pt. Surgery is the one method of treatment in 43 pt (72.9%), chemotherapy + surgery in 16 pt (27.1%).

Results: We observed that chemotherapy (2–3 course of adr + Pt) leads only to stable disease and low grade of pathomorphological remission. Extended surgery is the only one factor that improve follow-up of osteosarcoma of the head and neck.

PP131
Pleomorphic adenoma in childhood: report of a case

Evangelia Tsakiropoulou, **Aris Manganaris**, Georgios Kontzoglou

ENT Department, Hippokrateio General Hospital, Thessaloniki, Greece

Introduction: Primary lesions arising from salivary glands are considered extremely rare in children. Most commonly they are inflammatory or vascular abnormalities. Pleomorphic adenomas are extremely rare in children and require special considerations.

Case presentation: We report a case of an 11-year-old male patient, who presented with a 7-month history of a solitary, slowly enlarging mass in the right parotid area. The clinical evaluation revealed a firm, painless mass. Facial nerve function was normal.

Radiographic assessment by magnetic resonance imaging confirmed the presence of a solid mass in the right superficial lobe of the parotid gland. Ultrasound-guided fine needle aspiration biopsy was suggestive of pleomorphic adenoma. Surgical treatment included a complete excision of the tumor with a safe margin of healthy tissue. The facial nerve was identified and preserved. The surgical specimen measured $3 \times 2 \times 1.5$ cm. The histopathological study confirmed the diagnosis of pleomorphic adenoma.

Conclusions: Salivary gland neoplasms in the paediatric age group despite being rare should always be considered in the differential diagnosis of parotid lesions. Surgery of pleomorphic adenoma in childhood should be conservative superficial parotidectomy with avoidance of tumor manipulation in order to reduce the likelihood of recurrence.

PP132
Cancer of the thyroid gland in children and adolescents after the chernobyl accident

A. F. Romanchishen, A. V. Gostimsky, A. A. Bogatikov
Saint Petersburg State Pediatric Medical Academy, Saint Petersburg, Russia

Background: After Chernobyl accident, the character of thyroid cancer (TC) has changed significantly.
Objectives: To choose the rationale volume of TC children and adolescents surgical treatment.
Methods: The study included 1,942 operated patients. In 1st group, 105 sporadic TC patients (St. Petersburg) were included, in 2nd, 160 patients from the iodine-deficit regions (Chelyabinsk), in 3rd, 30 children of the other iodine-deficit zone (Archangelsk), in 4th, 346 cases (Ukraine) and in 5th, 1,301 children and adolescents (Belarus) with radio-induced TC.
Average age made 16.0 ± 0.3.
Results: Regional metastasis was found in 1,188 (61.1%) cases: in 1st group 44 (53.0%), 2nd 42 (28.2%), 3rd 10 (33.3%), 4th 211 (61.0%), 5th 881 (67.7%). Extracapsular tumor growth was found in 347 (17.8%) patients: in 8 (7.6%) of 1st, in 8 (5.3%) of 2nd, in 121 (35.0%) of 4th, in 210 (16.1%) of 5th. The patients from 3rd group showed no cases of this type. Multicentric growth was seen in 379 (19.9%) patients: in 1st–5th group in 7 (8.5%), 18 (12.1%), 6 (20.0%), 112 (32.4%), 236 (18.1%) cases, respectively. Distant metastases were found in 232 (11.9%) cases: in 1st–5th group in 8 (9.6%), 2 (1.3%), 1 (3.3%), 182 (14.0%), 39 (11.3%) cases, respectively.
Organ-saving operations in the 1st–5th groups were performed in 64.2, 87.2, 93.3, 35.0, 13.9% of cases. No local relapses were registered in the 1st and 2nd groups but in radioinduced TC patients in 2.3, 0.7% cases. Repeated metastases were determined in 8.6, 5.0, 10.3, 7.0, 15.2% of cases. The common histological form of TC was papillary type (90.1%).
Conclusions: Aggressiveness of TC in children and adolescents has arise in row iodine-deficient, sporadic, radio-induced TC. That causes the necessity of thyroidectomy and radioiodine therapy (if necessary) in radio-induced TC patients.

PP133
Epidemiological, histological and immunohistochemical analysis of head and neck rhabdomyosarcoma in children

Hind Charhi, Amal Harmouch, Meryem Taleb, Salima Touri, Mustapha Maher, Sanae Sefiani
Oto-Neuro-Ophthalmology Pathological Laboratory, Rabat, Morocco

Introduction: Rhabdomyosarcoma is the most common soft-tissue malignancy in the pediatric head and neck tumors. The objectives of this study were to determine the epidemiological and pathological patterns of head and neck RMS in children in a Moroccan oto-neuro-ophthalmology pathological laboratory.
Materials and methods: The study population consisted of patients who presented with head and neck tumors at the oto-neuro-ophtalmology pathological laboratory of Rabat Morocco over a 10-year period (1999–2008).
Results: Twenty-eight patients were identified for the study period among 364 head and neck tumors. The youngest case was 7 months old and the oldest was 14 years old; the median age was 5.39 years. 20 patients were male (71.42%) with a male-to-female ratio of 5:2. The most affected localisations were the orbit in 10 cases (35.71%), the cheek in 4 cases (14.28%), the maxilla and nasopharynx in 3 cases (10.71%) each. Histologically, 24 cases (85.71%) were embryonal and 4 cases (14.29%) were alveolar. Immunohistochemical findings were positivity of desmine (64.28%), smooth muscle actin (57.89%) and myogenin (90%).
Conclusion: This large study about one institution can pretend to reflect the real incidence of rhabdomyosarcoma of head and neck in children in Morocco. The results obtained in our study are similar to those related in the literature.

PP134
Cryptosporidiosis and immunological status among children with malignant diseases

Nadham K. Mahdi[1], Maysloon Abdul Hamed[1], Jenan C. Hassan[2]
[1]Department of Microbiology, [2]Department of Paediatrics, College of Medicine, University of Basrah, Basrah, Iraq

Objective: To investigate the relationship of *Cryptosporidium* and immunological parameters among children with malignant diseases.
Methods: Stool samples were collected from 101 children with malignant disease and 107 apparently healthy children. Direct smear method and then formalin–ether sedimentation method were done for all stool samples to identify intestinal parasites. Fecal smears were prepared from the sediment and stained by the modified Ziehl-Neelsen method for the recovery of acid-fast oocysts of *Cryptosporidium*. Phagocytic activity, complement C3 and C4 estimation, immunoglobulin levels and CD3, CD4, CD8, CD19 marking and phenotyping were carried out for 30 patients and 20 control groups.
Results: ALL was the major type (47.52%) of malignant cases in the studied subjects. The other type ranged from 0.99 to 10.9%. Out of the 101 patients, 50 (49.5%) were found to be positive for intestinal parasites compared to 13 (12.15%) of the control group ($P < 0.01$). *Cryptosporidium* oocysts were found to be excreted by 10 (9.0%) patients and 1 (0.93%) of the control group ($P < 0.01$). The phagocytic activity, levels of IgM, IgA, IgG and CD3, CD4 cell numbers were lower in patients than in control group while higher in case of C3, C4, CD8 and CD19.
Conclusion: Children with malignancy are immunocompromised. Therefore, *Cryptosporidium* and other intestinal parasites must be considered in the differential diagnosis in this risky group in order to reduce the suffering often faced by those children.

PP135
Temporomandibular joint, skull base and mandibular ramus functional reconstruction with homologous bank tissue and free flap: a case report with 30-month follow-up

Massimo Maranzano[1], Roberto Rizzo[1], Alessandro Cicognini[1], Renzo Sorato[1], Guglielmo Recchia[1], Raffaella De Grazia[2], Francesco Di Paola[3], Adolfo Paolin[4], Giovanni Mazzoleni[1]
[1]Maxillo Facial Unit, ULSS 9 "Ca' Foncello" Regional Hospital Trust, Treviso, Italy, [2]ICU, ULSS 9 "Ca' Foncello" Regional Hospital Trust, Treviso, Italy, [3]Radiological Unit-Neuroradiology,

ULSS 9 "Ca' Foncello" Regional Hospital Trust, Treviso, Italy, [4]Tissue Bank, ULSS 9 "Ca' Foncello" Regional Hospital Trust, Treviso, Italy

Big craniofacial resections for highly invasive malignant neoplasm, including skull base and maxillary bones, always represent a difficult chance for the reconstructive surgeon. In these cases it is not easy to restore anatomy and function simultaneously even adopting complex microsurgical techniques. In maxillofacial and oral surgery, simple bone homotransplantation for small bone segments reconstruction has been developing as popular technique and tissue banks offer not only bone segments but also many different tissues including complex body parts.

In this paper, we present a case report of an homotransplantation of a complete temporomandibular joint (TMJ) together with a portion of the medial skull base and mandibular ramus folded with an anti-brachial fascio-periosteal free flap as secondary reconstruction after nearly 5 years from the removal of a sarcoma of the tempor-omandibular joint involving the skull base and a follow up of more than 30 months.

PP136
HPV incidence in squamous cell carcinoma of the tongue

José Antonio García de Marcos[1], Susana Arroyo Rodríguez[1], Ángel Amador[2], María Galdeano Arenas[1], Javier Calderón Polanco[3], Enrique Poblet[4]

[1]Oral and maxillofacial surgeon, Albacete University Hospital, Albacete, Spain, [2]Biologist, Albacete University Hospital, Albacete, Spain, [3]Oral and maxillofacial surgeon, Private Practice, Madrid, Spain, [4]Pathologist, Albacete University Hospital and Medical School of Albacete, Albacete, Spain

Introduction: Factors related to the development of squamous cell carcinoma of the tongue (SCCT) are alcohol consumption, tobacco smoking and the presence of premalignant lesions. The World Health Organization (WHO) regards HPV (human papillomavirus) as a carcinogen. However, the association between HPV and squamous cell carcinoma of oral cavity is unclear and the findings on this association have been conflicting.

Materials and methods: We present a retrospective study of all SCCT diagnosed and/or treated at our department of Oral and Maxillofacial Surgery, between 2002 and 2007.

We compared the sensitivity of HPV detection using PCR with three sets of consensus primers: GP5+/GP6+, SPF10 and My09/My11. We also determined the incidence of HPV in squamous cell carcinoma of the tongue in our population. Genotyping of positive cases was performed by LIPA sequencing.

Results: From 52 patients studied, 36 patients were male and 16 women. The mean age at diagnosis was 61.7 years. 67.5% of patients were smokers, 36.8% drank alcohol excessively and 26.31% were occasional drinkers. The three primers were used in 17 cases, being the SPF 10 primer (7 cases HPV+) much more sensitive than GP5+/GP6+ and My09/My11 that failed to show any positive case. In the remaining cases we used only the SPF10 primer. From the 52 cases studied, 16 (30.7%) were positive for HPV, being HPV 56 the most frequent genotype, followed by HPV 18.

Conclusions: The incidence of HPV in SCCT was 30.7%. SPF10 was the most sensitive primer for PCR-HPV detection. HPV56 was the most prevalent HPV genotype.

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PP137
Relationship between primary tumour depth of invasion and nodal metastasis in oropharyngeal, laryngeal and hypopharyngeal squamous cell carcinoma

Paul Goodyear[1,2], Andrew Kinshuck[1,2], Jeff Lancaster[1], Nicholas Roland[1], Sean Jackson[1], Andrew Jones[2], John Sheard[3], Terry Jones[1,2], Nazia Munir[1,2]

[1]Department of Otolaryngology/Head Neck surgery, University Hospital Aintree, Liverpool, UK, [2]School of Cancer Studies, University of Liverpool, Liverpool, UK, [3]Department of Histopathology, University Hospital Aintree, Liverpool, UK

Introduction: Neck node metastasis is the single most important prognostic factor in squamous cell carcinoma of the head and neck (SCCHN). Whilst T stage of the primary tumour is known to correlate with the incidence of nodal metastasis, its relationship is imprecise. We propose that the depth of primary tumour invasion may be a better predictor of nodal metastasis.

Purpose: The aim of this study was to investigate the association of primary tumour depth of invasion with the presence of pathologically confirmed neck node metastases for tumours of the oropharynx, larynx and hypopharynx.

Materials: Clinical details, including survival and histopathological findings of tumours from 203 patients with SCCHN treated in our institution between 1997 and 2008, were collated.

Methods: Maximum depth of invasion was measured in millimetres on serial H&E sections of the primary tumour. The distribution of tumour depth of invasion was compared statistically between groups known to be N0 or N+ using the Mann–Whitney *U* test.

Results: 71 oropharyngeal, 104 laryngeal and 28 hypopharyngeal previously untreated squamous cell carcinomas (SCC) were included in our study. A significant difference in depth of invasion was demonstrated between groups of patients with N+ and N0 necks for laryngeal and hypopharyngeal cancers ($p = 0.0001$ and $p = 0.028$, respectively). However, no significant difference in depth of tumour invasion between N0 and N+ groups for patients with oropharyngeal SCC was demonstrated.

Conclusions: Increasing depth of invasion may be a reliable parameter for prediction of neck node metastasis in laryngeal and hypopharyngeal SCC.

PP138
The method and the results of treatment of the malignant tumours of the jaw and the maxillary sinus region in the material from the department of cranio-maxillo-facial surgery from the Medical University in Lodz

Bogna Zielińska-Kaźmierska, Joanna Grodecka, **Alicja Plewińska**

Department of Cranio-Maxillofacial Surgery, Medical University, Lodz, Poland

The aim of work: The purpose of this paper is to show retrospective analysis of methods and the results of patients' treatments with malignant tumours of the jaw and the maxillary sinus. The analysis of factors influences on results of the treatment.
Methods: A retrospective analysis of 39 patient with malignant tumors of the jaw and maxillary sinus was undertaken. All these patients were treated in the Department of Cranio-Maxillo-Facial Surgery in Lodz between 1997 and 2007 and they possessed full medical records (at the time of diagnosis). A total of 39 cases were identified and of these, 22 occurred in women and 17 occurred in men between age from 19 to 79. The degree (level) of clinical advancement of disease was valued on the basis of TNM (was staged according to the TNM) at the moment of starting the treatment. In a series of 39 cases, 30 were recognized (diagnosis) as oral squamous cell carcinoma (SCC), in five cases malignant tumours arising from the salivary glands were identified, in two mucosal malignant melanoma and in two malignant no epithelial tumors (mesenchymal). The majority of these tumors were high grade according to the World Health Organization.
Results: The obtained ratio of 5-year survival for patients being observed at least 5 years after operation was 72%. Two persons with diagnosed sarcoma disease died within 6 months counting from a moment of diagnosis and treatment start. It turned out that the most effective practice was to radical surgical treatment complemented with post-operative radiotherapy and/or sometimes chemical therapy. The factor that mostly influenced the effectiveness of therapy was advancement of disease at the time of diagnosis as well as the state of regional lymph nodes.
Conclusions: The unfavourable results of treatment of malignant tumours of the jaw and maxillary sinus are mainly caused by a fact that patients consult practitioner too late what results in their diseases being highly advanced. Such late consultation is probably cased by asymptomatic growth of tumour in its initial phase. Another reason could, unfortunately be negligence from side of the dentists or first contact doctors, what can effectively delay correct diagnosis.

PP139
Survival in young patients with squamous cell carcinoma of the oral tongue

Hyang Ae Shin[1], Ha Min Jeong[1], So Yoon Lee[1], Hyun Jun Hong[2], Seung Jae Baek[3], Jae Wook Kim[4], Eun Chang Choi[1]
[1]*Department of Otorhinolaryngology, Yonsei University College of Medicine, Seoul, Korea,* [2]*Department of Otorhinolaryngology, National Health Insurance Corporation Ilsan Hospital, Goyang, Korea,* [3]*Department of Otorhinolaryngology, Kwandong University College of Medicine, Goyang,* [4]*Department of Otolaryngology-Head and Neck Surgery, Soonchunhyang University College of Medicine, Bucheon Hospital, Bucheon, Korea*

Background and objectives: Controversy exists regarding prognosis of young patients with squamous cell carcinoma (SCC) of the oral tongue. The aim of this study was to compare the oncologic outcomes of surgically treated oral tongue SCC patients under 45 years of age to those of patients older than 45 years.
Subjects and methods: A retrospective review of 140 previously untreated oral tongue SCC patients who underwent primary surgery at our institute from December 1991 to July 2007 was performed. Forty patients (28.6%) were under 45 years of age and 100 patients (71.4%) were older than 45 years. There was no statistical significance of sex, overall tumor stage, nodal stage and treatment modalities between two groups.
Results: The 5-year overall survival rate, disease-specific survival rate, and recurrence-free survival rate in young patients were 69.9, 69.9, and 62.5%, respectively, and in older patients, 63.1, 70.9, and 64.8%, respectively ($p > 0.05$). Locoregional recurrence and distant metastasis were similar in two groups ($P > 0.05$). Sex, pathologic nodal stage, treatment modality, and histologic differentiation were found to be significant prognostic factors in young patients, compared to older patients in which clinical tumor stage, clinical AJCC stage, pathologic tumor, nodal, and AJCC stage, treatment modality, and histologic differentiation were found to be significant.
Conclusion: Young patients with SCC of the oral tongue have a similar prognosis to older patients.

PP140
Head and neck squamous cell carcinoma in patients under 40 years: a case–control study

Alexandre Santos, Pedro Michaluarte, Elaine Stabenow, Raquel Moyses, Eloiza Tajara, Victor Wunch, Lenine Brandao, GENCAPO
Department of Head and Neck Surgery of the University of São Paulo, GENCAPO group, Brazil

Introduction: The HNSCC among young patients have prognosis and overall survive still unclear.
Purpose: To describe a group of young patients, and to compare with older patients in recurrence, overall survive, site of presentation, and tobacco and alcohol (T/A) use.
Materials: Between 2002 and 2009, the GENCAPO analyzed 1,794 cases of HNSCC, and 54 cases (3%) occurred in patients under 40 years. Of these cases, 36 were included.
Methods: A questionnaire was used, with information regarding demographic data, gender, age, T/A use, sites and staging of the tumor, and outcome. Each case was compared to other 2 cases, with identical staging, of patients older than 40 years. Statistical analysis was performed according to Fisher's exact test and Chi-square methods.
Results: There were 29 males (79%) and 7 females (21%), median age 37.5 years (21–39 years), and 25 (69%) reported T/A use. Distribution by site was: oral cavity ($N = 22/61\%$), oropharynx ($N = 7/19\%$), larynx ($N = 6/17\%$), hypopharynx ($N = 1/3\%$). TNM staging was: 9 T1 (25%); 9 T2 (25%); 2 T3 (6%); and 16 T4 (44%). Half of patients (18) were N+, and half were N−. No distant metastasis. Comparing the two groups, the T/A use was similar ($P = 0.156$), as well as the site of the tumor ($P = 0.999$). The rate of recurrence of the young patients was 52.6% ($P = 0.205$) and the death rate was 34.3% ($P = 0.530$).
Conclusions: Patients under 40 years (3%) with HNSCC had similar prognosis, compared to older patients.

PP141
Lack of awareness of head and neck cancer among the general public

V. Papanikolaou[1,2], Tony O'Connor[1,2], X. Kochilas[1,2], I. Keogh[1,2]
[1]*Academic Department of Oto-Rhino-Laryngology, National University of Ireland, Newcastle Road, Galway, Ireland,* [2]*Department of Otolaryngology, Head and Neck Surgery, Galway University Hospitals, Galway, Ireland*

Introduction: Head and Neck Cancer (HNC) has a high rate of morbidity and mortality, causing 200,000 deaths annually. It would be expected that, owing to the prominent position of the Head and Neck region and the impact of HNC on basic functions such as breathing, swallowing and speech, patients would seek medical help in the early stages of the disease. However, up to 60% of patients present with advanced HNC, leading to very taxing treatment regimes and low overall survival rates.
Purpose: To evaluate the level of knowledge and awareness regarding HNC.
Methods: An open survey of the general public was performed. A structured questionnaire was used in order to assess specific topics: awareness of the disease, knowledge of risk factors, symptoms and associated disease morbidity.
Results: 200 questionnaires were completed. 83% reported little or no knowledge about HNC, 52% would not be concerned about persistent hoarseness, 56% would not be concerned about a non-healing tongue ulcer, 34% would not be alarmed by a persistent neck lump and 73% failed to identify alcohol as a risk factor for HNC. The results show a very low level of knowledge and awareness.
Conclusion: The majority of HNC patients present with advanced disease. Late presentation is directly related to unfavourable prognosis. This delayed diagnosis appears to be associated with a lack of knowledge and awareness regarding HNC and its symptoms. Therefore, there is an urgent need for the education of the general public in order to achieve early diagnosis and improved survival rates.

PP142
Age-standardized incidence rates of oral and pharyngeal cancer subtypes in Puerto Rico and among non-hispanic whites, non-hispanic blacks, and hispanics in the United States

Erick Suárez[1], William A. Calo[2], Marievelisse Soto-Salgado[2], Nayda R. Figueroa[4], Ana P. Ortiz[1,3]
[1]*Department of Biostatistics and Epidemiology, School of Public Health, Medical Sciences Campus, University of Puerto Rico, San Juan, Puerto Rico, USA,* [2]*Puerto Rico Cancer Center, Medical Sciences Campus, University of Puerto Rico, San Juan, Puerto Rico, USA,* [3]*Cancer Control and Population Sciences Program, University of Puerto Rico Comprehensive Cancer Center, San Juan, Puerto Rico, USA,* [4]*Puerto Rico Central Cancer Registry, University of Puerto Rico Comprehensive Cancer Center, San Juan, Puerto Rico, USA*

Introduction: High incidence of oral and pharyngeal cancer (OPC) has been reported in Puerto Rico (PR). The age-standardized incidence (ASI) in Puerto Rican men had approximately twofold increased incidence (est. SRR = 1.96, 95% CI 1.96, 2.22) when compared with Hispanic men in United States (US). These differences have never been assessed by OPC subtype.
Purpose: The aim of this study was to compare the ASI for each OPC subtype between PR and the following groups: US Hispanics (USH), non-Hispanic Whites (NHW), and non-Hispanic Blacks (NHB).
Methods: ASIs ($\times$100,000) were calculated using the direct method with the world standard population for 1998–2002. The ratio of two ASIs was estimated with 95% confidence intervals to determine the excess of risk between PR and other racial/ethnic groups.
Results: PR men showed the highest ASI in tongue (4.1), gum (3.5), and nasopharynx (0.8). Men in PR had a significant excess ($p < 0.05$) of lip cancer (84%) when compared to NHB; also significant excess in men ($p < 0.05$) was found for tongue (54%), floor of mouth (54%), gum (69%), tonsil (43%), oropharynx (64%), and hypopharynx (44%) when compared to USH; as well, significant excess in men ($p < 0.05$) was found for Puerto Ricans in nasopharynx (54%), oropharynx (52%), and hypopharynx (48%) when compared to NHW. Among women, PR showed a significant excess ($p < 0.05$) only for gum (42%) as compared to USH.
Conclusions: Differences in the incidence of OPC subtypes among PR, USH, NHW, and NHB exist. Future research is warranted to elucidate the effect of risk factors, such smoking, alcohol use, and genetic predisposition, for each OPC subtype among Puerto Ricans.

PP143
Head and neck cancer among patients hospitalized in the district hospital in Poland (2002–2006)

Dorota Polz[1], Małgorzata Polz-Dacewicz[1], Wojciech Chlebny[2]
[1]*Department of Virology, Medical University, Lublin, Poland,* [2]*The ENT Departament of The District Hospital in Radom, Poland*

Introduction: Malignant tumors of head and neck have the sixth highest morbidity rate registered all over the world. Every year there are about 500,000 new cases of this disease reported. In Poland, malignant tumors of head and neck are the fifth most frequent disease. The aim of this study is an attempt to determine the influence of environmental and demographic factors on the development of tumors of head and neck. The study has also undertaken an effort to answer questions concerning the reasons for delays in the diagnosis of the tumors of head and neck.
Materials and methods: The material of the study is consisting of a group of 527 ill persons aged between 7 and 93 (average age 59.9) who were diagnosed with the tumor of the head and neck region for the first time. The information has been gathered from the medical documentation of patients treated at The ENT Department of The District Hospital in Radom during years 2002–2006. The analysis of this group of patients has included social-demographic data such as: age, sex, place of residence, occupation, presence of addictions (tobacco smoking and alcohol drinking), presence of coexisting diseases, and the fact of suffering from any disease in the past. In addition, the following information concerning the tumorous disease has been gathered: location of the change, notified complaints, time duration of the disease with a division into stages—from the appearance of the first disease symptoms until the first visit to the family doctor, from the first visit to the family doctor until the first visit to the specialist, from the first visit to the specialist to the first stay at the hospital the setting of the clinical diagnosis and the initiation of a proper treatment. The advancement of the tumorous process is defined in the study according to the TNM system. The data received have been recorded in a form of self-made questionnaire.
Results: The analyzed material constitutes mostly of males (71.9%) in the fifth and seventh life-decade (30.5 and 24.3%, respectively). Changes concerning non-malignant tumors were most often located in salivary glands (23.1%) and changes related to malignant tumors were located in larynx and lower throat (50.4%). Among malignant tumors, the squamous cell carcinoma predominated in majority of cases (84.9%). The research results have shown a significant influence of

tobacco smoking and alcohol overuse in the occurrence of malignant tumors of head and neck. The analysis of all stages of the patient diagnosis has demonstrated the fact that students and persons with a university educations, living in a large town, were the quickest to visit a medical practitioner after the occurrence of the first disease symptoms. Furthermore, the study has demonstrated the substantial deficiency in health awareness of patients, who reported themselves to the medical practitioner too late after noticing the first symptoms of the tumorous disease (105.3 days on average). The study has also revealed the inappropriate treatment of the ill by medical practitioners of the elementary medical care, who often waited too long before sending patients to a specialized laryngologist. The consequence of these decisions was too long a time span for setting the proper diagnosis confirmed by the histopathological examination—144.7 days on average.

Conclusions

- In studied group, squamous cell carcinoma more often was detected.
- Malignant tumors were localized more often in larynx.

PP144
Frequency and pattern of oral and maxillofacial pathologies at Mayo Hospital Lahore during 2008

Asifa Ahsan, Ayyaz Khalil, Riaz Ahmed Warraich, Mulazim Hussain Bhukhari
King Edward Medical University, Lahore, Pakistan

Background: Oral and maxillofacial pathologies have diverse nature of origin resulting in anatomical and physiological impairment of individuals. Geographically Pakistan is in higher oral cancer incidence region but reported studies about the frequency and pattern of oral and maxillofacial pathologies in Pakistan are not substantial.
Purpose: To have knowledge of oral and maxillofacial pathologies especially malignancies in Mayo Hospital Lahore.
Materials and methods: In this study, frequency and pattern of maxillofacial pathologies presented at one of the oldest and largest tertiary care centre of the country King Edward Medical University/ Mayo Hospital Lahore during 1 year that is 2008 are analyzed.
Results: We found that 76% (200 out of 276) were neoplastic 39.2% (109 /276) of total were malignant. Epithelial origin was 33.7% (93 out of 276) Mesenchymal origin 25.4% (70 out of 276), Odontogenic 12% (33 out of 276), Salivary 10.1% (28 out of 276), infectious 11.2% (31 out of 276). 82.8% (77/276) of malignancies were squamous call carcinoma. Primary site of squamous cell carcinoma was cheek 26%, tongue 19.5%, mandible 14.3%, maxilla 10.4%. Histopathological well-differentiated squamous call carcinoma was 46.8%(36/77) Moderately differentiated squamous cell carcinoma was 27.3% (21/77). Age range for squamous cell carcinoma was 17–97 years most common in 60 years 13/77, 12/77 were of 50 years. 28.6% (22/77) patients were up to 40 years of age. Pathologies of odontogenic origin were 33 of total 276 including ameloblastomas 14 in no, odontogenic cyst 16 in no. There was also rare odontogenic tumour calcifying epithelial odontogenic tumour of mandible ramus area patient being male 28 years of age. One case of adenomatoid odontogenic tumour was also diagnosed.
Conclusion: Due to higher incidence and late reporting of oral and maxillofacial pathologies, there is need for improving the awareness, diagnosis, treatment and post-operative care in Mayo Hospital Lahore, Pakistan.

PP145
Recurrence and prognostic analysis of squamous cell carcinoma of the oral cavity

I. Vázquez Mahía, S. Sironvalle Soliva, F. Lorenzo Franco, J. L. Lopez-Cedrún
Department of Oral and Maxillofacial Surgery, Complejo Hospitalario Universitario A Coruña (CHUAC), A Coruña, Spain

Introduction: Oral cancer is the sixth most common cancer worldwide. Surgery is the most well-established mode of initial definitive treatment for a majority of oral cancers. Management should be planned according to the tumor's characteristics, patient factors and expertise of the medical team.
Objective: The aim of this article is to report the recurrence and survival of a group of patients with epidermoide oral carcinoma that were treated surgically, by local resection, neck dissection and with adjuvant post-operative radiotherapy.
Materials and methods: The study included a group of patients with the diagnosis of squamous cell carcinoma in the oral cavity. These patients were treated in our hospital (CHUAC, Spain) from 1998 to 2008. All the patients were treated surgically by local resection and neck dissection. In advanced stages use post-operative radiotherapy. We studied age, sex, clinical stage, surgical treatment, recurrence and survival.
Results: Early stages (stages I and II) were managed with a single modality, and advanced tumours (stages III and IV) with multimodality therapy. The greater percentage was male patients, advanced age, and stages III and IV. The survival of the patients who integrate our study is 60%.
Discussion: Over the course of the past 30 years, there has been improvement in the overall survival of patients with oral carcinoma largely due to the improved understanding of the biology of local progression, early identification and treatment of metastatic lymph nodes in the neck, and employment of adjuvant post-operative radiotherapy or chemoradiotherapy. Development of contemporary surgical techniques and reconstructive means will help improve the quality of life of patients and prolong survival.

PP146
Intensity modulated radiotherapy (imrt) vs. three dimensional conformal radiotherapy (3dcrt) in head and neck cancer patients

Miltiadis Trichas[1], **Ioannis Georgakopoulos**[1], Ilias Athanasiadis[2], Adamantia Nikolaidou[3], Spyridon Papageorgiou[1], Ioannis Vamvakas[1], Alexander D. Rapidis[4]
[1]Iaso Hospital Radiotherapy Department, Athens, Greece, [2]Euro clinic Hospital, Athens, Greece, [3]6th Ika Hospital, Athens, Greece, [4]St. Savvas Anticancer Institute, Athens, Greece

Background and purpose: IMRT has become the standard of care for many head and neck cancer patients treated with radiotherapy with or without chemotherapy as it increases the therapeutic ratio by means of adequate tumor coverage while sparing organs at risk. This paper aims to summarize our center's recent experience about the advantages of IMRT over 3DCRT analyzing technical and dosimetric factors.
Materials and methods: Four head and neck cancer patients were treated with IMRT. For each one an IMRT plan was performed and compared to a multifield 3DCRT plan using the exact target volume

contours and constraints in general. The plans were calculated using a Pinnacle ver. 7.4 f, Adacs Philips system. Treatments were performed with static step and shoot protocol on a Electa Precise linac accelerator equipped with ivew GT.
Results: In all four patients it became apparent that IMRT is superior to 3DCRT by means of increased V_{95}, reduced D_{max} to spinal cord and reduced D_{mean} to parotids. In addition, a significant improvement in conformity index and in homogeneity was observed.

PP147

Professional burnout. The syndrome of physical and psycological exhaustion that is found among those who have a relationship with other people on a professional basis in a national health system

Anestis Stefanidis[1], Dimitra Aggeli[1], **Athanasios Triaridis[1]**, Maria Kynigou[1], Ioannis Thomaidis[1], Aggelos Chatziavramidis[2], Stavroula Soldatou[1], Natalia Mpania[3], Thomas Sidiras[1]
[1]ENT Department, Theagenio Cancer Hospital, Thessaloniki, Greece, [2]ENT Department, Papageorgiou General Hospital, Thessaloniki, Greece, [3]Internal Medicine Department, Lamia General Hospital, Greece

Introduction: Professional burnout is defined as the syndrome of physical and psychological exhaustion that is found among those who have a relationship with other people on a professional basis. It is particularly high to the health field professionals, especially among male and female nurses due to the difficult working conditions and is considered as the outcome of perpetual stress that has been accumulated and overwhelms the person working in this field who feels that, psychologically, cannot cope with the pressure of the workplace.
Purpose : The aims of this project is to record, using questionnaires, the rate of professional burnout that resident doctors working in a big oncological hospital (Theagenio) experience and to suggest ways for the prevention or the treatment of this phenomenon and support resident doctors.
Materials and methods: The research part of this project was carried out with the critical use of questionnaires (M.B.I., A.W.Q.) in 35 resident doctors. The three main factors that characterize professional burn out are: (a) sentimental exhaustion, (b) depersonalization, and (c) lack of personal realisations. The stages of Professional burn out and the indications that lead to its ascertainment are (a) the stage of enthusiasm, (b) the stage of doubt and inactivity, (c) the stage of disappointment and cancellation and (d) the stage of apathy.
Results and conclusions: The repercussions of professional burn out in the work are related with high percentages of absences, delayed arrivals, sabotages and resignations. Also stress, places at risk the faculty of professional to provide high quality care in the patients while simultaneously it downgrades also his own personal quality of life.

PP148

Immune-privileged field(s): looking local recurrence and second primary tumors in head and neck cancer from a different viewpoint

Stergios Doumas, Alexander Kolokotronis
Dental School, Aristotle University of Thessaloniki, Thessaloniki, Greece

Introduction: Head and neck cancer represents the 8th most common cause of cancer-related death worldwide. Local recurrence and second primary tumors account for the majority of deaths. "Field cancerization" and "second field tumor" were coined in an effort to explain these calamities. However, the establishment of tumor-driven immunosuppressive network during malignant progression is now appreciated. Developing tumors do not need to create tolerance systematically local immune privilege will suffice. The key first step, however, is local suppression of tumor-specific immune responses.
Materials and methods: Interplay between an early lesion (premalignant or even a chronic inflammation) and its draining lymph node(s) results in the foundation of a local tolerance state both in the primary site and the DLNs, prior to node metastasis. It is also known that suppression is encountered in metastasized nodes as well as in adjacent nodes.
In addition, recent SLNB studies in oral and oropharyngeal squamous cell carcinomas revealed that: (a) tumors (especially midline, even T1) drain bilaterally, and (b) some tumors drain outside the "traditional" basin. It seems that factors such as chemokines and VEGF-C play a significant role in lympagiogenesis apart from the mechanistic model of lymph flow. Also, HPV-positive oropharyngeal cancer, while metastasizing early, have better prognosis, and even if multiple primaries occur, there is lack of field cancerization. These properties may be due to specific genetic alterations and tropism seen in this particular group, but robust immune response against this virally induced tumor has a major contribution.
Hypothesis: We hypothesize that DLNs immunosuppression renders areas in continuity to primary tumor or seemingly distant, but with shared DLNs, unable to relay "danger" signals and generate immune response. These locales are more vulnerable to a local recurrence or second tumor and thus appear to be immune-privileged.

PP149

Cutaneous squamous cell carcinoma (SCC) of the head and neck: predictors of overall and recurrence-free survival

Athanassios Kyrgidis[1], Thrasivoulos-George Tzellos[2], Nikos Kechagias[1], Anna Patrikidou[1], Persa Xirou[3], Eleni Bourlidou[4], Doxa Mangoudi[1], Kostas Vahtsevanos[1], Kostas Antoniades[1]
[1]Department of Oral and Maxillofacial Surgery, Theagenio Cancer Hospital, Thessaloniki, Greece, [2]Department of Pharmacology, Medical School, Aristotle University of Thessaloniki, [3]Department of Pathology, Theagenio Cancer Hospital, Thessaloniki, Greece, [4]Department of Otorhinolaryncology, Eyaggelismos General Hospital, Athens

Introduction: Head and neck cutaneous squamous cell carcinoma (HNCSCC) although rarely fatal has significant adverse public health effects due to high medical costs and, in advanced or aggressive cases, compromised quality of life from devastating aesthetic and psychosocial sequelae, functional impairment, and other serious consequences.
Purpose: The present longitudinal cohort study of HNCSCC was designed to determine whether certain clinical-pathologic features of HNCSCC are associated with reduced overall and recurrence-free survival, as suggested by previous data.
Materials and methods: The cohort sample consisted of 315 consecutive patients presenting with primary only HNCSCC of the head and neck. Life table analysis and Kaplan–Meier survival analysis were

performed. Multivariate Cox's proportional hazards regression models were used to assess the effects of covariates on the length of the interval.
Results: There were 145 males and 170 females Caucasian patients. At the time of analysis, 222 patients were alive. The mean follow-up time of a patient after enrolment has been 46.1 months (range 12–115 months). Broder's differentiation grade, perineural involvement, presence of inflammation and T stage were independent adjusted predictors for overall survival. pT and N stage, inflammation and perineural involvement were significant predictors for recurrence-free survival while adjuvant irradiation was associated with a 92% reduced risk for recurrence. Life table analysis showed that 87 and 69% study patients were free from recurrence at years 3 and 5, respectively.
Conclusions: Patients with cutaneous HNCSCC should be enrolled in a long-term follow-up protocol. After excision in negative margins, patients with HNCSCC should be referred to specialized multidisciplinary oncology clinics for counseling on adjuvant radiotherapy and follow-up programming.

PP150
Squamous cell carcinoma of tongue: evaluation of risk factors and outcome at Mayo Hospital Lahore Pakistan 1999–2009

Riaz Ahmed Warraich, Asifa Ahsan, Ehsan-ul Haq

Introduction: Incidence of oral cancer in Pakistan is higher than western World .Because of lack of awareness, late reporting of the disease complicates the treatment and outcome.
Method: Retrospectively data collected and its analysis of patients of OSCC of tongue from 1999 to 2009 presented for the diagnosis and management of the disease are studied. Follow-up of 3–5 years was analyzed by Kaplan Meier analysis.
Results: A total of 274 patients met the inclusion criteria. Patient age range was 16–87 years with mean of 55 years. 46.2% were female and 53.8% male.
Previous premalignant lesion was in 15.8%. History of smoking was positive in 30.6 %, Betel nut chewing in 50.6%, alcohol intake in 9.2%.

81.75% (224) presented with primary disease.18.25% (50) presented with recurrent or second primary lesion.

T1 lesion was 7.2% (20), T2 4.7% (13), T3 52.18% (143), T4 39.4% (108). Well differentiated histo-pathological variant was in 96 patients, moderaterately differentiated in 102, poorly differentiated in 40, verrucous variety in 36 patients.

Par operatively frozen sections of surgical margins of 70.2% patients were done. 32.6% had positive margins while 67.4% had negative margins.

Hemmiglossectomy reconstructed by deltopectoral flap in 65.2%, 31.7% by radial free flap were done. Total glossectomy reconstructed by rectus abdominus in 3.1% was done.

Functional neck dissection in 44.4% and radical neck dissection in 55.6% were done.

Neo adjuvant chemotherapy in 37.9% and adjuvant chemotherapy in 62.1% were done. While all patients were subjected to post-operative radiotherapy.

Disease-free survival was up to 5 years was recorded in 65%. In 21%, second primary was observed in 10–22 months. 14% had recurrent lesion. Mortality due to disease was in 15%. 5% had immediate post-operative mortality.

In recurrent patients, age range was 25–65 years, primary lesion was T2 2.1%, T3 was in 37.6% .T4 was in 60.3%. Continuation of habit in recurrent patient was observed in 84.5% patients.

Conclusion: T1 and T2 have good results while T3 and rT4 are associated higher recurrent or secondary lesion.

PP151
Primary tumor detection with NBI endoscopy in primary unknown cervical lymph node metastasis

Yasuo Satou, Tai Omori, Yasutomo Araki, Satoko Yoshida, Kousuke Uno
Kawasaki Municipal Kawasaki Hospital, Kawasaki, Japan

Introduction and purpose: In cases of primary unknown cervical metastasis (PUCM) of squamous cell carcinomas (SCCs), small primary lesions may lie hidden in laryngo-pharyngeal mucosa. NBI (Narrow Band Imaging) endoscopy system is reported that it has efficacy in diagnosis of early stage of SCCs such as superficial carcinoma. We evaluated the efficacy of NBI system for diagnosis of the primary lesions in cases of PUCM.
Patients: In this presentation, after elaborate examination of head and neck more than 3 times with transnasal endoscopy and naked eye by more than two ENT doctors, 11 cases were diagnosed as PUCM. In all of them, primary lesions could not be detected with gastrointestinal endoscopy, CT scanning of head, neck, and lung, and Ga scintigram or PET.
Result: In 7 cases out of 11, SCCs that seemed to be primary lesions were detected. In 5 cases out of the 7, the primary lesions were detected with NBI endoscopy. In 2 cases out of the 5, the primary lesions were recognized as increase of abnormal vessels. In the rest of 3 cases, the lesions were recognized as sub-epithelial tumors.
Conclusion: In PUCM of SCCs, findings of sub-epithelial tumors must not be overlooked. NBI endoscopy seems to be effective to detect primary lesions in cases of PUCM.

PP152
Role of panendoscopy and biopsy in occult primary of the head and neck cancer

I. Azlan Iskandar[1], **M. Y. Mohd Razif**[1], A. Mazita[1], S. H. A. Primuharsa Putra[2]
[1]*Department of Otorhinolaryngology-Head and Neck surgery, Universiti Kebangsaan Malaysia Medical Center, Kuala Lumpur, Malaysia,* [2]*Ear, Nose and Throat-Head and Neck Consultant Clinic, KPJ Seremban Specialist Hospital, Seremban, Malaysia*

Purpose: The aim of this study was to evaluate the role of panendoscopy and biopsy in diagnosing occult primary site of cancer in the head and neck region.
Materials: Clinical records of patient with cervical lymph nodes metastasis with an unknown primary, who underwent panendoscopy and biopsy of the upper aerodigestive tract in an academic tertiary center over 5 years from March 2003 to July 2008 were reviewed.
Results: Six patients had undifferentiated carcinoma and 5 patients had SCC of the cervical lymph nodes (N1-2; N2-4; N3-5). Nine patients underwent computed tomography (CT) scan of the head and neck and 1 had a positron emission tomography (PET) scan. One patient had no radiological imaging done. None of these studies were able to locate a primary tumour. Random biopsies from sites of possible origin of the primary tumour with tonsillectomies confirmed the primary site in 10 patients; 3 had nasopharyngeal carcinoma (NPC), 4 had SCC of the tonsils with 3 patients with unilateral and 1

with bilateral involvement, one each with SCC of the base of tongue, SCC of both vocal cord and non-Hodgkin's lymphoma of bilateral tonsils. In 1 patient, no site of origin of the primary tumour was identified in the head and neck region.
Conclusion: Panendoscopy and biopsies had a significant role in arriving at a conclusive diagnosis as compared to imaging studies.

PP153
A 2 years clinicopathological study of intra-oral lesions

X. Kochilas[1,2], V. Papanikolaou[1,2], S. Ullah[1,2], **Tony O'Connor**[1,2], I. Keogh[1,2]
[1]Academic Department of Oto-Rhino-Laryngology, National University of Ireland, Newcastle Road, Galway, Ireland, [2]Department of Otolaryngology, Head and Neck Surgery, Galway University Hospitals, Galway, Ireland

Introduction: Intra-oral lesions are frequently encountered by the otolaryngolgist. They represent a wide range of pathologies. However, despite their frequency, epidemiology is poorly described.
Aim: To assess the incidence and clinical presentation of all intra-oral lesions. And further to evaluate histopathologic diagnosis and clearance margins.
Methods: Two year retrospective chart review (January 2007–December 2008).
Results: 106 cases were evaluated, 88.7% benign and 11.3% malignant, 52.8% male and 47.2% female. 67.9% of patients were above 40 years of age. The three commonest benign lesions encountered were chronic inflammation (18.8%), papillomata (17.9%), fibroepithelial polyps (8.4%). The commonest malignant lesion was moderately differentiated SCC of the lateral border of the tongue (7.5%). More than 50% of the histology reports had no comment on excision margins.
Conclusions: Oral lesions are quite common and patients are usually referred with painless intra-oral lesions. However, otolaryngologists should be vigilant as more than one in ten are malignant.

PP154
A review of modern methods for the early diagnosis of oral cancer

Maryam Yazdizadeh
Oral Medicine Department, Dental Faculty, Qazvin University of Medical Sciences, Qazvin, Iran

Introduction: Oral cancer is the eight most common cancer world wide and if detected at an early stage, survival is better than 90% at 5 years, so there are a lot of tries to diagnose it as soon as possible.
Purpose: This article is a review of new devices and methods to help dentists identify abnormal changes in the mucous membranes of the oral cavity.
Materials and methods: Vizilite plus (zila pharmaceuticals) is a combination device that uses fluorescent light and toluidine blue tissue staining. The toluidine blue marking system was cleared for inclusion in 2005. The hypericin fluorescence imaging has the potential to be used for the clinical diagnosis of oral cancer. Blood samples of oral cancer patients were analyzed using nuclear magnetic resonance spectroscopy to derive a metabolic signature for oral cancer. Cancer-related changes in salivary tumour markers may be used as a diagnostic tool for diagnosis, prognosis and post-operative monitoring. Detection of some markers like surviving (an inhibitor of apoptosis) and p53 are helpful. Semiautomated multimodal cell analysis (MMCA) of brush biopsies is a novel technique for the early detection of cancer.
Micro-RNA alterations, identified in head and neck/oral cancer are discussed. Exfoliative cytology and autofluorescence imaging are promising technology in screening for oral neoplasia.
Conclusions: To aid in screening and decreasing morbidity and mortality from oral cancer, a variety of techniques have been developed. These techniques show promise but they require additional investigations to determine their usefulness in oral cancer detection.

PP155
Sentinel lymph node biopsy in oral cavity cancer

A. Aliyev, I. Alizadeh, S. Goyushova, G. Rzayeva
Central Hospital of Oil Explorers, Baku, Azerbaijan

Management of the N_0 neck in oral cavity cancers still remains as a controversial issue. Different methods were proposed for determining metastatic lymph nodes. Among these methods, sentinel lymph node biopsy has found its place in an increasing manner in recent years. In our Department between November 2008 and September 2009, 9 neck dissection materials of patients with T_1-T_2 oral cavity cancer who were clinically N_0 but elected for neck dissection were included in the study for detection of possible metastatic lymph nodes. Sentinel lymph nodes were sent for frozen section examination and either a selective or a comprehensive neck dissection was performed for each neck according to the results. After final histopathologic examination of the specimens, the negative predictive value, the positive predictive value, the accuracy of the sentinel lymph node biopsy and frozen section accuracy were 100%. As a conclusion, sentinel lymph node biopsy was found to be an efficient method in pathological staging and management of N_0 neck early T-stage oral cavity cancers.

PP156
Diagnostic accuracy of fine needle aspiration biopsy in the diagnosis and management of cervical masses. Our experience

Argyrios Manganaris, Ilias Karasmanis, **Nektarios Argyriou** , Aikaterini Kioutsouki, Athanasios Skouras, Georgios Kontzoglou
ENT Department, Hippokratio General Hospital, Thessaloniki, Greece

Introduction: Fine needle aspiration biopsy (FNAB) is a universally accepted method for the initial evaluation of cervical masses. It is a fast, easy to perform and safe procedure. According to published reports, the diagnostic accuracy of FNAB reaches 90% for benign and 75% for malignant lesions.
Purpose: The aim of this study is to establish the sensitivity and diagnostic accuracy of FNAB, comparing the cytology reports with the histopathology reports following open biopsy or complete resection of the investigated cervical masses. Furthermore, we evaluate whether management decisions for surgical or non-surgical treatment can be safely based on FNAB.

Materials and methods: Fifty-seven FNAB were undertaken between 2007 and 2009 in 57 patients presenting with cervical masses. FNAB was performed using 21–24 G needle. Smears were stained by Giemsa and Paps stain and special stains were carried out as and when required. Clinically and radiologically, 29 lesions were salivary gland tumors, 19 were enlarged lymph nodes and 9 were cystic. Five reports were inconclusive due to insufficient biopsy specimens.
Results: No procedure related complications were encountered in this series. The histopathology reports confirmed the initial diagnoses in 39 cases. The cytology reports revealed 15 malignant lesions (5 malignant salivary gland tumors and 10 metastatic lymphnodes). Twenty-four patients were diagnosed with benign salivary gland tumors and 7 with reactive lymphadenopathy. However, 3 cases were false negative, all of which were proven lymphomas.
Conclusions: FNAB is a relatively simple, time-saving and cost-effective procedure, which can be recommended as a first line of investigation in the diagnosis of cervical masses.

PP157
Is sentinel lymphatic node biopsy a reliable surgical technique in head and neck cutaneous melanoma?

Alvaro García-Rozado, Carmen Peña, Isabel Uriarte, Ramón Luaces, Jorge Arenaz, José Luis López-Cedrun

Background: The significance of sentinel lymph node biopsy (SLNB) in diagnostic and therapeutic management of head and neck cutaneous melanoma remains controversial. In the last few years, this procedure has revealed as a diagnostic tool that allows for important prognostic information, guidelines for therapeutic management, and reduces considerably morbidity related to parotid and cervical treatment.

Purpose: This study was designed to determine the role of SLNB in head and neck cutaneous melanoma therapeutic management. With that aim, our personal experience with SLNB in those cases was review.
Materials: SLNB was performed in 46 adequately selected cases of head and neck cutaneous melanoma since 2003. The criteria to indicate SLNB were those widely accepted in international protocols for managing cutaneous melanoma.
Methods: Sentinel lymph node was detected using lymphoscintigraphy and surgical gamma-probe. Lymphoscintigraphy using technetium-99 was underwent the same day of the scheduled surgery.

Results: Sentinel lymph node was encountered in 42 cases (91.3%), with a total amount of 76 nodes detected (mean of 1.76 nodes per patient). Most frequent location was level II of the neck. Three patients (6.5%) resulted in infiltrated sentinel node, and radical treatment was developed. Residual morbidity secondary to SLNB was uneventful.
Conclusions: Despite the controversy, our results suggest that SLNB is a reliable and predictable technique to find out the expected behaviour of adequately selected cases of head and neck cutaneous melanoma. Moreover, the morbidity rate of the procedure in experienced hands in cervical surgery is reduced enough to widely recommend the biopsy when indicated.

PP158
Velscope®: an effective tool for diagnosis and follow up of oral precancer patients

Michaela Goodson, Ameena Diajil, Philip Sloan, Peter Thomson
Oral and Maxillofacial Sciences, Newcastle University, Framlington Place, UK

Introduction: The light-based detection system, Velscope® is marketed to facilitate more accurate clinical diagnosis of oral cancer and precancer. Velscope® reveals mucosal areas suspicious for dysplastic or neoplastic change and may help direct diagnostic biopsies to the most appropriate sites.
Purpose: To document our use, to date, of Velscope® as an additional clinical tool in our dysplasia clinics and to propose a new Velscope® grading system.
Methods: 100 consecutive patients attending Maxillofacial Dysplasia Clinics at our Institution between April to June 2009 were, in addition to their normal clinical examination examined by Velscope® (Optident, UK).
In order to objectively describe severity of dysplasia, a grading system for Velscope® was devised and, where clinically indicated, incisional biopsies of lesions carried out to determine the presence and severity of dysplasia.
Results: 43 new and 57 follow-up patients were examined. Statistical comparisons between Velscope® grade and worsening dysplasia for 43 new patients revealed Pearson correlation coefficient of $r = 0.669$. 15 out of 18 hyperkeratotic lesions were Velscope® = 1 and 19 out of 20 mildly dysplastic lesions were Velscope® = 2. Only 5 patients with moderate or severe dysplasia were seen in this patient cohort. Of the 57 follow up patients, 34 had false positive results with Velscope®.
Conclusion: Preliminary data show Velscope® used with a severity grading system is helpful in assisting oral precancer diagnosis, but further work is required to define a role in monitoring patients following previous surgery.

PP159
Methods for early detection of nasopharyngeal carcinoma (NPC)

S. Tiong
Department of Surgery, UNIMAS, Kuching, Malaysia

Introduction: Our country has no NPC screening programme though Hong Kong (HK) has, using EBV serology. Nasopharyngeal cytology method seems an alternative. This method was studied locally for its effectiveness. Moreover, NPC patients were interviewed for factors of late presentation.
Materials and methods: After patient informed consent, sterile swab was inserted along nasal floor until it reaches nasopharynx. The swab was twisted clockwise 3× on gentle push. It was then withdrawn and smeared on 4 glass slides, two air-dried and two 90% alcohol-fixed, for Papanicolaou-staining and cytology examination. This was followed by nasopharyngeal forceps biopsy for haematoxylin–eosin staining and histology examination. The method was used in 217 high risk patients 2004–2008. Meantime, all patients were interviewed personally for factors of late NPC presentation and results were qualitatively analyzed.
Results: 97.4% of the patients had the swabbing and biopsy done without local anaesthesia and the cytology's sensitivity, specificity, positive and negative predictive values were 77.3, 100, 100, and 65.7%, respectively. These are comparable with those of EBV EA IgA serology of HK. All patients tolerated the swabbing and biopsy with minimal discomfort or pain. The patients' interviews identified many factors of late diagnosis, including patients' unawareness of NPC seriousness and painless nature, initially time wasted traditional medicine treatment, patients' financial burden and traveling distance seeking specialists.
Conclusions: This study shows relative effectiveness of nasopharyngeal cytology method in NPC screening and, by public awareness

education of the factors of late NPC presentation, the method is further enhanced for patients to seek early NPC detection.

PP160

18FDG PET/CT-based BTV delineation in squamous cell carcinoma of the head and neck, and the impact on dose escalation strategies

Russell Norman Moules[1], Irfan Kayani[2], John Dickson[2], Kathleen Goodchild[3], Catherine Lemon[3], Michele Iris Saunders[1]

[1]Department of Oncology, University College Hospitals NHS Foundation Trust, London, UK, [2]Department of Oncology, Mount Vernon Cancer Centre, Rickmansworth Road, Northwood, Middlesex, UK, [3]Department of Nuclear Medicine, University College Hospitals NHS Foundation Trust, London, UK

Purpose: ^{18}FDG BTV delineation methods in SCCHN have no agreed consensus. We assessed the impact of SUV Cut Off (SUVCO), percentage threshold of the SUVMax (PTSUVmax) and individualised adaptive threshold (IAT) before and during radiotherapy on BTV delineation.
Materials and methods: Ten patients were recruited (SCCHN-primary radical RT or CRT by conventional fractionation) and underwent ^{18}FDG PET/CT (in thermoplastic shell) 72 h prior to RT (0 Gy), and then at 10, 44, and 66 Gy. The BTV was automatically contoured (PETVCAR) on the PET/CT at 0 Gy (SUVCO of: 2.5, 3.0, 3.5 and 4.0 bwg/ml; PTSUVmax of: 30, 35, 40, 45, and 50%, and an IAT). This was automatically co-registered with PET/CT at 10, 44, or 66 Gy and BTV delineated.
Results: Eight patients (8 primary and 20 lymph node BTVs) were evaluated (mean age 61.9 years). The primary and lymph node volume reduced ($p = 0.01$–0.0002) at each threshold level compared to the 2.5 bwg/ml SUVCO (shown in Fig. 1) or 30% PTSUVmax at each imaging point. This was only significant at 36–50 Gy ($p = 0.01$), and 66 Gy ($p = 0.01$–0.004) for the SUVCO thresholds. The BTV delineated by PTSUVmax increased with RT dose (35.73–133.49% greater at 66 Gy compared to baseline). IAT BTV was not significantly different between imaging points. SUVmax negatively correlated (primary and LN) with radiation dose. The background SUV (1.16–1.45bwg/ml) did not vary with radiation dose.
Conclusion: PTSUVmax is susceptible to the background SUV during RT. The method of ^{18}FDG BTV delineation will influence IMRT as smaller volumes give the greatest possibility of dose escalation to improve local control.

PP161

Lapatinib increases the suppressive activity of cisplatin on colony formation of head and neck squamous cell carcinoma ex vivo

Gunnar Wichmann, Andreas Boehm, Christian Mozet, Christoph Schrader, Anett Reiche, Grit Müller, Pierre Kruber, Iris-Susanne Horn, Andreas Dietz

Department of Otolaryngology, Head and Neck Surgery, University of Leipzig, Leipzig, Germany

Introduction: Targeting of receptor tyrosine-kinases by lapatinib is introduced into multimodal therapy concepts for advanced head and neck squamous cell carcinoma (HNSCC).
Purpose: To analyze whether lapatinib combined with cisplatin exerts synergistic suppressive effects on colony formation of HNSCC ex vivo in a short-time ex vivo colony-forming assay—flavin-protecting conditions (FLAVINO).
Methods: Biopsies of 72 HNSCC were taken, minced, collagenase-digested and added into microtiterplates containing serial dilutions of lapatinib or medium plus solvent (DMSO) as control. Same lapatinib concentrations were tested also in combination with cisplatin (1.67, 3.33, or 6.67 μM, corresponding to ¼, ½, or exactly its tolerable plasma level). After 72-h incubation, wells were washed and cultures ethanol-fixed. Following pan-cytokeratin staining of epithelial cells using a fluorescent-labeled antibody, fluorescent colonies were counted.
Results: 33 (64.7%) of 51 in vitro growing HNSCC showed sufficient colony formation allowing for cut-off detection. Cut-off (complete chemotherapeutical-suppressed colony formation) was reached either by 3.33 μM cisplatin or 6.25 μM lapatinib alone only in one (3.0%), and three HNSCC (9.1%), respectively. In combination with 6.25 μM lapatinib and 3.33 μM cisplatin, the doubled number (eight HNSCC = 24.2%) reached cut-off. This synergistic inhibited colony formation is also reflected by the slope of dose–response curves and decreasing IC_{50} concentrations (50%-inhibition of colony-formation). For 20 HNSCC with at least four epithelial colonies in controls, the IC_{50} medians of lapatinib were 3.17, 3.21, 0.83, and 0.19 μM in the presence of 0.00, 1.67, 3.33, and 6.67 μM cisplatin.
Conclusions: Lapatinib in synergism with cisplatin suppresses colony formation of HNSCC ex vivo.

PP162

Induction chemotherapy with carboplatin and taxol followed by radiotherapy and concurrent weekly carboplatin + taxol in locally advanced nasopharyngeal carcinoma

Mario Airoldi[1], Anna Maria Gabriele[2], Massimiliano Garzaro[3], Luca Raimondo[3], Fulvia Pedani[1], Giancarlo Pecorari[3], Carlo Giordano[3]

[1]Department of Medical Oncology, San Giovanni Battista Hospital, Turin, Italy, [2]Radiation Therapy Division, San Giovanni Antica Sede Hospital, Turin, Italy, [3]Ist ENT Clinic, Physiopathology Department, University of Turin, Italy

Introduction: In nasopharyngeal carcinoma (NPC) the place of chemotherapy (CHT), which is not discussed in metastatic disease, remains controversial for initial management of the disease. Recent trials and meta-analyses highlight the need to associate chemotherapy with radiotherapy (RT): concomitant chemo-radiotherapy (CRT) appears to be now the standard treatment for locally advanced (T2B and more) and/or node positive (N+) patients. No phase II trials have investigated a two-drug combination during conventional, non-splitted, radiotherapy after a full course of induction chemotherapy.
Purpose: Aim of this study was the clinical evaluation of carboplatin–taxol combination in a neoadjuvant and concomitant setting with conventional radiotherapy in locoregionally advanced nasopharyngeal carcinoma (A-NPC).
Materials and methods: Thirty patients having histological confirmed NPC, stages III–IVB according to 2002 AJCC stage classification and who had received no previous CHT and/or RT were treated with

three cycles of carboplatin (AUC6) plus taxol (175 mg/m^2) on day 1 every 3 weeks, followed by weekly carboplatin (AUC1) plus Taxol (60 mg/m^2) and concomitant radiotherapy (70 Gy).
Results: The objective complete response rate was 33% (after chemotherapy) and 87% (after chemo-radiotherapy). Treatment tolerability and toxicity were controllable. Three and five years progression-free survival were 80 and 75%, respectively, and 3 and 5 years overall survival were 85 and 80% (follow-up 49.5 months). Five years loco-regional control was 90.3% and 5 years distant metastases free survival was 85%.
Conclusions: Neoadjuvant-chemotherapy with such protocol represents a feasible, efficient treatment for patients with A-NPC, ensuring excellent locoregional disease control and overall survival with low incidence of distant metastases.

PP163
Targeting and radiosensitization of cells with stem cell-like properties in HNSCC

Ildiko Csiki[1], Michael Freeman[1], David P. Carbone[2]
[1]*Department of Radiation Oncology,* [2]*Department of Medical Oncology and Cancer Biology, Vanderbilt-Ingram Cancer Center, Nashville, TN, USA*

Introduction: Cancer stem cells (CSC) harboured in tumors may be responsible for tumor maintenance and spreading. Aldehyde dehydrogenase (ALDH) positive cells in various cancers including HNSCC exhibit CSC properties. Data are emerging that sonic hedgehog (SHH) signaling pathway inhibition may deplete the tumorigenic population and may have radiosensitizing effects.
Purpose: ALDH + cells in HNSCC were evaluated using radiotherapy and chemotherapy in combination with a novel SHH inhibitor.
Materials and methods: Flow cytometric isolation of cancer cells based on enzymatic activity of ALDH was performed, cells were treated with chemotherapeutic agents, subjected to radiotherapy and treated with a novel inhibitor of the SHH pathway.
Results: In evaluating CSC-like properties of ALDH + cells in HNSCC, sorted ALDH + cells demonstrated enhanced colony formation compared to ALDH − cells. HNSCC treated with carboplatin, paclitaxel and cisplatin exhibited a two- to threefold increase in the fraction of ALDH + cells compared to untreated cells. Similarly, these cells displayed enhanced radioresistance with radiotherapy alone or in combination with chemotherapeutic agents. The SHH signaling pathway is modulated by a small molecule inhibitor of smoothened (SMO). Studies examining mechanism of radiosensitizing effects by modulation of DNA repair pathways and synergism of the inhibitor in combination with chemotherapeutic agents are currently undergoing.
Conclusions: The stem-cell like population in HNSCC is not directly targeted by standard chemotherapeutic and radiotherapeutic approaches; however, the identification and effective targeting of this tumorigenic population may contribute significantly to the development of effective therapies.

PP164
Carcinoma of the tongue. the choice of the treatment

Ilya Romanov, Liliya Iakovleva, Sevil Alieva
Blohin's Cancer Research Center, Moscow, Russia

Aim: Cancer of tongue is the mostly repeated form in the oral cancer. At the last time the significant results were attained due to active profit of the chemotherapy and radiotherapy. But the question about following of the issue of different methods of treatment is not decided.
Material and methods: 323 patients with squamous cell carcinoma of the tongue were treated by different combination of the anticancer methods at our clinic since 1980–2006: There were 226 (69.9%) male and 97 (30.1%) female. The mean age was 58. Of them, 9 patients (2.7%) had T1 tumor, 141 (43.6%) T2, 152 (47%) T3 and 21 (6.7%) T4. The metastasis in the lymph nodes (N+) had 107 patients (33%) and 216 (67%) of them had N0. Conservative chemoradiotherapy was performed in 22 (6.8%) cases. The combined therapy (radiotherapy + surgery) was issued in 208 (63.4%) cases. 26 (8%) patients had surgery with postoperative radiotherapy. 15 (4.6%) patients received the induction chemotherapy and surgery and 52 patients (16.3%) had induction chemotherapy, radiotherapy and surgery.
Results: The 5-year survival in the first group of the patients (conservative chemoradiotherapy) is consist 41.1%. In the second group (radiotherapy + surgery) 51% surgery with postoperative radiotherapy 58%. In the group of patients which had induction chemotherapy and surgery, this dates is consist 52%, induction chemotherapy, radiotherapy and surgery 40.7%.
Conclusion: On the foundation of this dates we can do conclusion the use of surgery in the first stage of the anticancer treatment of patient with tongue cancer is mostly preference.

PP165
Concurrent chemoradiotherapy in locoregionally advanced HNSCC: a single institute experience at the University of Florence

Alessio Bruni[1], Vieri Scotti[1], Fabiola Paiar[1], Calogero Saieva[2], Icro Meattini[1], Lorenzo Livi[1], Vanessa Di Cataldo[1], Silvia Bertocci[1], Giampaolo Biti[1]
[1]*Radiotherapy Department University of Florence, Florence, Italy,* [2]*Molecular and Nutritional Epidemiology Unit, ISPO, Cancer Prevention and Research Institute, Florence, Italy*

Introduction: Chemoradiotherapy represents a valid modality treatment in HNSCC, with less disability than surgical approach.
Purpose: To evaluate the role of concurrent chemoradiotherapy in HNSCC and to detect prognostic factors of locoregional control and survival.
Materials: Between 1990 and 2007, 111 patients with locoregionally advanced HNSCC (58 oropharynx, 22 oral cavity, 19 hypopharynx, and 12 larynx) have been treated.
Mean age at presentation was 59.5; PS was 0 in 36 patients, 1 in 68 and 2 in 7. All patients underwent cisplatin-based chemotherapy. Radiation fields included the primary site of disease and bilateral regional lymph node areas. Mean RT dose was 64 Gy (range 54–70 Gy) with standard fractionation.
Methods: Patients were assessed for toxicity, response, and survival. Factors including age, gender, primary site location, PS, Hb at presentation and nadir, BMI and treatment regimen parameters were evaluated to identify predictor factors of overall, disease-free survival and locoregional control.
Results: At a median follow-up of 27.3 months 49/111 patients died for disease and overall survival rate was 33%. Local control rate was 63.9%.

At univariate analysis, oropharynx as primary site location was predictive of improved overall survival ($p = 0.03$) and local control ($p < 0.0001$). The role was confirmed at multivariate analysis for local control ($p = 0.0007$).

BMI > 25 was predictive of better OS both at univariate and multivariate analyses.

DFS was influenced by PS ($p = 0.006$ at univariate and 0.009 at multivariate), Hb nadir ($p = 0.04$) and by days of interruption of radiotherapy treatment ($p = 0.04$).

Cisplatin-based monochemotherapy showed same results in terms of local control, DFS and OS of polichemotherapy ($p = 0.7$).

Conclusions: In our experience, chemoradiotherapy is a feasible treatment in HNSCC; BMI, primary site location, Hb nadir and total days of interruption are significant prognostic factors.

PP166
Neoadjuvant docetaxel/platinum/fluorouracil (TPF) chemotherapy prior to concurrent chemoradiation in locally advanced head and neck cancer: a single institution study of acute toxicity and response evaluation

Olivia Hatcher, Girija Anand, Richard Wolfe, Elika Kashef, Gita Modani, Sarah Partridge, Simon Stewart
Radiotherapy Department, Imperial College Healthcare NHS Trust, Charing Cross Hospital, London, UK

Introduction: 60% of patients with head and neck malignancy present with locally advanced disease. Phase 3 studies evaluating induction chemotherapy (IC) with TPF verses PF prior to radiotherapy have shown improved outcomes.

Purpose: To assess the toxicity, tolerability and response of induction TPF chemotherapy prior to radical concurrent chemoradiation.

Materials and methods: Data were collected on all head and neck patients at Charing Cross Hospital treated with TPF IC from January to December 2008. Patients were ECOG performance status 0/1 and had stage III/IV disease. Planned treatment consisted of 2–4, three-weekly cycles of TPF (Docetaxel 75 mg/m^2 day 1, cisplatin 75 mg/m^2 day 1 and 5 fluorouracil 750 mg/m^2 days 1–5 continuous infusion). Objective radiological response was measured following 2 cycles. 60% of patients (20/32) received prohphylactic pegylated growth colony stimulating factor and all received 500 mg ciprofloxacin bd days 5–15. Toxicities were recorded and graded using CTCAE v3.0.

Results: Of 31 patients treated (median age 59 years) episodes of grade 3/4 toxicity were: anaemia 1; neutropenia 18; thrombocytopenia 4; nausea 3; vomiting 3; diarrhoea 6; and stomatitis 2. Six patients had a decline in creatinine clearance resulting in treatment modification in 3. There was one death due to sepsis. Of 26 evaluable post-chemotherapy CT scans, there were 19 partial responses, 4 stable disease and 3 developed progressive disease.

Conclusion: Induction TPF chemotherapy has an acceptable toxicity profile and high response rates comparable with the literature. We recommend close monitoring of side effects with the routine administration of prophylactic GCSF and ciprofloxacin.

PP167
Gefitinib in combination with chemotherapy in recurrent and metastatic squamous cell carcinoma of head and neck cancer

R. Ranga Rao[1], Shehrawat[2], J. B. Sharma[1], Ruchika Khetrapal[1]
[1]*Department of Medical Oncology, Rajiv Gandhi Cancer Institute and Research Centre, Rohini, New Delhi, India,* [2]*Department of Radiation Oncology, Rajiv Gandhi Cancer Institute and Research Centre, Rohini, New Delhi, India*

Introduction: Squamous cell carcinoma of Head and Neck (SCCHN) is the 6th most frequently occurring cancer worldwide with an incidence of over 1.7 lakh in India. Management of recurrent and metastatic (R/M) SCCHN is challenging with limited therapeutic options of palliative chemotherapy. With incorporation of anti-EGFR agents (cetuximab) survival benefit has been observed [EXTREME study, overall survival (OS) time increased from 7.4 to 10.1 months and overall response rate (ORR) was 36% from 20%]. The combination of weekly paclitaxel, platinum agents and geftinib, an oral tyrosine kinase inhibitor of EGFR, has been observed to be tolerable in small pilot studies in SCCHN. Therefore, we initiated a study of gefitinib in combination with weekly paclitaxel and cisplatin/carboplatin in R/M SCCHN.

Objective: To study the efficacy and safety of gefitinib in combination with weekly chemotherapy in R/M SCCHN.

Patients and Methods: Patients of R/M SCCHN, over the age of 18 years, with performance status of 0–2, normal haematologic, cardiac and renal function were offered gefitinib in combination with chemotherapy (as below). Patients were evaluated after 2 cycles (8 weeks) clinically and radiologically. The efficacy endpoints which were used for assessment are RR (RECIST), PFS, OS (Kaplan–Meier method). The toxicities associated were documented according to the WHO Criteria.

Chemotherapy regimen

Gefitinib: 250 mg once daily throughout

$$\left.\begin{array}{l}\text{Paclitaxel} : 80\,\text{mg/m}^2 \\ \text{Cisplatin} : 40\,\text{mg/m}^2\end{array}\right\} \quad \text{Days } 1, 8, 15 \text{ every } 28 \text{ days}$$

Preliminary results: Sixty-three [male 52 (82.54%), female 11 (17.46%), median age group 49 years] patients have undergone chemotherapy in combination with gefitinib. Of the 63 patients, 24 were evaluated. 13 (54.17%) had partial response (PR), 4 (16.66%) had stable disease (SD), 3 (12.5%) showed complete response (CR), whereas 4 (16.66%) had progressive disease (PD). 39 patients are still on treatment and yet to be evaluated.

Conclusion: Preliminary analysis has indicated a good safety and efficacy of combination of gefitinib with chemotherapy.

PP168
Reversal of drug resistance by cisplatin in nasopharyngeal carcinoma through up-regulating thromspondin-1 expression

Guolin Tan, Xiao Weipeng, Wei Li
Department of Otolaryngology Head and Neck Surgery, Third Xiangya Hospital, Central South University, Changsha, Hunan, China

Drug resistance often causes failure of chemotherapy in nasopharyngeal carcinoma (NPC). It is of great important to overcome drug resistance by developing effective reversals. The purpose of this study is to examine whether cisplatin (DDP) can reverse taxol-resistant phenotype of NPC cells and evaluate the rule of TXR1/TSP1 pathway in the reversal of taxol resistance. A drug (taxol)-resistant cell line, CNE-1/Taxol, was established from a human nasopharyngeal carcinoma cell line, CNE-1. The sensitivity of both CNE-1 and CNE-1/Taxol to cisplatin or pacliatxel was detected by colony formation assay, and the effect of combination of two drugs was also analyzed. The apoptotic death was measured by flow cytometry. The expression of taxol resistant gene (TXR1) and thrombospondin (TSP1) was determined by RT-PCR and Western blot. The growth inhibition rate in CNE-1/Taxol cells in response to taxol was significantly increased when pre-treated with low-dose cisplatin. However, no change was observed in CNE-1 cells. CNE-1/Taxol cells were more sensitive to cisplatin than CNE-1 cells when exposed to 300–1,500 nM of cisplatin. The combination of cisplatin and pacliatxel exibited a synergistic effect in CNE-1/Taxol cells. An approximate sevenfold increase of RNA expression of TXR1 was observed in taxol-resistant cells compared to their parental cells. Expression level of TSP1 mRNA expression and protein in CNE-1/Taxol cells was 8.9 and 5.6-fold, respectively, lower than in CNE-1. A 8.7-fold increase in TSP1 mRNA expression was observed in CNE-1/Taxol cells exposed to 591.1 nM DDP for 24 h. An increase in TSP1 protein expression was obtained in a dose-dependent manner after CNE-1/Taxol cells exposed to cisplatin ranging from 300 to 1,500 nM. However, there was no change in TXR1 mRNA expression after both CNE-1 and CNE-1/Taxol cells were exposed to DDP. It is determined that Cisplatin reverses the drug resistance through up-regulating the TSP1 downstream of TXR1.

PP169
Evaluation of the response to cetuximab in combination with TPF (Taxotere, cis-platin and 5-fluouracil as induction therapy for HNSCC unresectable disease (phase II trial)

Manel Manos-Pujol[1], Ricard Mesía[1], Silvia Vázque[1]z, Juan Jose Grau[2], Juan Antonio García-Sáenz[3], Cristina Bayona[4], Joan Carles Galceran[5], Antoni Irigoyen[6], Alicia Lozano[1]
[1]Hospital Universitari de Bellvitge, L'Hospitalet Barcelona, Spain, [2]Hospital Clínic, Barcelona Spain, [3]Hospital Clínico San Carlos, Madrid, Spain, [4]Hospital General Yagüe, Burgos , Spain, [5]Hospital del Mar, Barcelona, Spain, [6]Hospital Virgen de las Nieves, Granada, Spain

As compared with standard regime of cisplatin (P) and 5-fluouracil (F), induction chemotherapy with the addition of docetaxel (T) improves progression-free and overall survival in patients with unresectable head and neck squamous cell carcinoma (UHNSCC). We have incorporated cetuximab for induction chemotherapy TPF to subsequent altered fractionated radiotherapy in patients with UHNSCC.

The purposes were: the objective response rate to the cetuximab/TPF combination as induction therapy chemotherapy in UHNSCC patients after 2 and 4 cycles, and also to evaluate the complete response rate and the toxicity to the combination of TPF/cetuximab as induction chemotherapy.

50 patients with stage IV UHNSCC underwent to cetuximab/TPF as induction chemotherapy.

The response rate after 2 cycles ranged from 76% up to 80% and from 78% up to 83% after 4 cycles. The main toxicity found consisted on febrile neutropenia.

The addition of cetuximab to induction chemotherapy with TPF yields a high response rate. Such response, mainly complete responses, is higher than that previously reported in phase III studies conducted in patients with unresectable SCCHN disease. Cetuximab/TPF combination should be given to patients with good PS with specialized support provided due to the high incidence of febrile neutropenia. It is a treatment sequence with good adherence. Loco-regional control and survival results may confirm the good results of cetuximab/TPF induction chemotherapy.

PP170
Interim pooled safety analysis from a phase iii trial evaluating chemotherapy with/without panitumumab in the treatment of patients with recurrent and/or metastatic squamous cell carcinoma of the head and neck (SCCHN): SPECTRUM

Jan B. Vermorken[1], Irina Davidenko[2], Eric Winquist[3], Lisa Licitra[4], Krzysztof Skladowski[5], Tudor E. Ciuleanu[6], R. Rejnish Kumar[7], Paolo Foa[8], Jennifer Gansert[9], Jan Stöhlmacher[10]
[1]Antwerp University Hospital, Edegem, Belgium, [2]Krasnodar City Oncology Center, Krasnodar, Russia, [3]London Health Sciences Center, London, ON, Canada, [4]Istituto Nazionale Tumori, Milano, Italy, [5]Instytut im. M. Sklodowskiej-Curie, Gliwice, Poland, [6]Oncology Institute "Ion Chiricuta" Cluj Napoca, Cluj Napoca, Romania, [7]Regional Cancer Centre, Medical College Campus, Trivandrum, India, [8]San Paolo Hospital, Milano, Italy, [9]Amgen Inc., Thousand Oaks, CA, USA, [10]Universitätsklinikum Carl Gustav Carus, Dresden, Germany

Introduction: The fully human monoclonal antibody, panitumumab, is directed against the epidermal growth factor receptor, a therapeutic target in the management of SCCHN.
Purpose: SPECTRUM is ongoing to evaluate safety and efficacy of panitumumab with standard platinum-based chemotherapy in patients with recurrent and/or metastatic (R/M) disease.
Materials: Ongoing, open-label, randomised, multicentre, phase III study in 658 patients receiving first-line treatment for R/M SCCHN.
Methods: Patients were randomised 1:1 to cisplatin (100 mg/m^2) IV on day 1, 5FU (1,000 mg/m^2) continuous IV daily (days 1–4) Q3W for up to 6 cycles ± panitumumab (9 mg/kg). Patients receiving panitumumab who have not progressed after 6 cycles can receive panitumumab monotherapy until disease progression. The primary endpoint is overall survival; secondary endpoints include progression-free survival, response rate and safety. An independent Data Monitoring Committee (DMC) is overseeing the trial.
Results: In this pooled interim safety analysis in the first 451 patients: 99% have received any study treatment; 86% are male; median age (range) is

58 years (26–84); ECOG PS 0/1 is 33%/67%. Median follow-up is 17.1 weeks and 85% of patients have ended chemotherapy. A total of 18 patients (4%) had a treatment-related grade 5 adverse event (AE). Most common grade 3/4 AEs were neutropenia (32%) and anaemia (14%).
Conclusions: After interim safety analysis by the DMC, SPECTRUM continues as planned.

PP171
Large facial basal cell carcinoma: treatment with imiquimod cream 5%

Anestis Stefanidis[1], Athanasios Triaridis[1], Maria Kynigou[1], Aggelos Chatziavramidis[2], Aris Ntomouchtsis[3], Ioannis Thomaidis[1]
[1]ENT Department, Theagenio Cancer Hospital, Thessaloniki, Greece, [2]ENT Department, Papageorgiou General Hospital, Thessaloniki, Greece,[3]Maxillofacial Surgery Department, Theagenio Cancer Hospital, Thessaloniki, Greece

Introduction: Imiquimod cream 5% is a topical immune response modifier that targets the toll-like receptors 7 and 8 and up-regulates inflammatory pathways targeting diseased tissue. It is a cytokine and interferon inducer. It has been shown to be effective in the treatment of superficial and nodular basal cell carcinoma.
Purpose: Case report, big facial lesion, treated preservative with imiquimod cream.
Materials: Patient 65 years old, male, shows up at the Emergency's of our hospital, because of an "enormous" facial lesion, that spreads at both sides at the cheekbones, at the nose, having the shape of a butterfly (12 cm × 4 cm). After cytologic examination, with brush, basal cell carcinoma was identified.
Methods: Therapy should have been surgical. Because of the gravity and the complexity of the operation, the many current health problems of the patient, in collaboration with the Oral and Maxillofacial Surgery Department, decided to treated preservative, with the topical use of imiquimod cream at the lesion, three times weekly, applied for 8 h—before bedtime and wash in the morning—for 8 weeks. Literature refers of five times weekly or everyday use.
Results: During the treatment, the only side effect was redness and inflammation near the area of the lesion. The follow-up examination took place after 4 weeks from the end of the treatment. The result was astonishing. The lesion had almost disappeared.
Conclusion: Imiquimod cream can be used in huge—big lesions, in high risk areas (face), with encouraging results and in smaller doses. If it will not work, surgery is always possible.

PP172
Development of topical anti-cancer medication for peri/post-operative patients with head and neck cancer

Afeef Aslam[1], Anna Behrendt[1], Joseph Backer[3], Terence M. Jones[1,2], Mark T. Boyd[1]
[1]School of Cancer Studies, The University of Liverpool, Liverpool, UK, [2]Department of Otolaryngology/Head and Neck Surgery, Aintree University Hospitals NHS Foundation Trust, Liverpool, UK, [3]SibTech Inc., SibTech, Inc., Brookfield, USA

Introduction: Up regulation of glucose-regulated protein of 78 kDa (GRP78) in head and neck cancers contributes to tumourigenesis and radio-/chemo-resistance. A novel epidermal growth factor receptor (EGFR) targeted cytotoxic drug comprising of EGF coupled to bacterial toxin SubA (EGF-SubA) is able to cleave and inactivate GRP78 thus providing a means to target EGFR positive tumour cells.
Purpose: Our long-term goal is to evaluate topical application of EGF-SubA upon residual tumour cells, peri- and/or post-operatively with the aim of reducing need for post-operative adjuvant chemo-/radio-therapy. EGF-SubA is potentially toxic and we therefore investigated the potential of cetuximab to protect cells.
Materials: A panel of 7 squamous cell carcinoma cells lines of laryngeal origin was analysed. EGF-SubA was provided by SibTech Inc.
Methods: Laryngeal squamous carcinoma cells (LSCCs) were treated in vitro with EGF-SubA to evaluate drug toxicity ± cetuximab. Cells were monitored for proliferation and cell cycle profile and apoptosis were monitored by flow cytometry.
Results: EGF-SubA inhibited growth of LSCCs at low concentrations (IC50 5–100 pM) and induced apoptosis. The application of cetuximab prior to the addition of EGF-SubA significantly improved cell survival ($P < 0.05$) completely rescuing cells from the effects of EGF-SubA.
Conclusions: In vitro EGF-SubA is highly cytotoxic to laryngeal squamous cells at picomolar concentrations. Importantly, we have demonstrated that this toxicity can be completely abrogated in vitro by low doses of cetuximab. This is an important proof of principal for a combined toxin-protectant approach that would permit safe use of a targeted tumour therapy.

PP173
The antitumor effect of cisplatin and ifosfamide on xenografted squamous cell carcinoma of the head and neck (SCCHN) is schedule dependent

Johan Wennerberg[1], Yutaka Sasaki[1,4], Elisabeth Kjellén[2], Lars Ekblad[3], Peter Wahlberg[1], Hiroyuki Mineta[4]
[1]Department of Oto-rhino-laryngology, Head and Neck Surgery, [2]Department of Oncology, [3]Kamprad Research Lab, University Hospital of Lund, Lund, Sweden, [4]Department of ORL/H&N Surgery, Hamamatsu University School of Medicine, Hamamatsu, Japan

Introduction: Chemotherapy (CHX) in SCCHN has been shown to improve survival of patients when given concomitant with radiotherapy. The benefit of CHX given as induction chemotherapy is less obvious. One way to improve induction CHX is to improve combinations and schedules for CHX. Cisplatin and ifosfamide are both active drugs for the treatment of patients with HHNSCC and are used in different combinations.
Purpose: The aim of the present study was to study the dose-schedule-dependent effects of cisplatin and ifosfamide in combination using xenografted squamous cell carcinoma of the head and neck.
Materials and methods: A poorly differentiated SCC xenograft was used. Drug efficacy was estimated as Specific Growth Delay (SGD). Drug toxicity was assessed as survival and as the change in body weight of animals surviving 21 days. Single drug administration was compared with cisplatin (2.5 mg/kg) given 1 h before ifosfamide (100 mg/kg) and ifosfamide given 1 h before cisplatin.
Results: SGD (mean) for untreated controls are 0.0, for cisplatin as single drug 1.50, for ifosfamide as single drug 0.79, for cisplatin given before ifosfamide 1.79 and for ifosfamide given before cisplatin 2.90. Max toxicity calculated as changes in median weight at day 7 showed a 9% increase in weight for untreated control, no change for ifosfamid treated, 2% loss for Cis + Ifos, 6% loss for Ifos + Cis and 8% loss for cisplatin alone.
Conclusion: The efficacy and toxicity of cisplatin and ifosfamide is schedule dependent, with ifosfamide given before cisplatin being

more efficient than cisplatin given before ifosfamide. The toxicities for both combinations were comparable.

PP174

Phase II trial of cetuximab and bevacizumab in patients with recurrent or metastatic squamous cell carcinoma of the head and neck (SCCHN)

Athanassios Argiris[1], Athanasios Kotsakis[1], Michael Gibson[1], Seungwon Kim[1], Panayiotis Savvides[2], George Blumenschein[3], Frank Worden[4], Helen Chen[5], Jennifer Grandis[1], Merrill S. Kies[3]

[1]University of Pittsburgh, Pittsburgh, PA, USA, [2]Case Western University, Cleveland, OH, USA, [3]UT MD Anderson Cancer, Houston, TX, USA, [4]University of Michigan, Ann Arbor, MI, USA, [5]National Cancer Institute, Bethesda, MD, USA

Purpose: Cetuximab, an IgG1 monoclonal antibody against EGFR, has modest single-agent activity in SCCHN. Upregulation of VEGF has been associated with cetuximab resistance; thus, combined targeting with cetuximab and bevacizumab, an anti-VEGF humanized monoclonal antibody, may enhance antitumor activity.
Materials and methods: Eligible patients have recurrent or metastatic SCCHN, measurable disease and ECOG performance status 0–2. Up to 1 prior regimen (without EGFR inhibitors) for recurrent or metastatic SCCHN and prior chemoradiotherapy with curative intent are allowed. Treatment consists of weekly cetuximab, 250 mg/m^2 (after a loading dose 400 mg/m^2) and bevacizumab, 15 mg/kg given intravenously every 21 days, until disease progression. The primary endpoint is the objective response rate with a planned sample size of 45 eligible patients.
Results: 37 patients have been enrolled (36 eligible). All patients have had prior RT and 34 had chemotherapy. Best response in 30 evaluable patients: 5 (17%) partial response, 18 (60%) stable disease, and 7 (23%) progressive disease. Grade 4 adverse events (AEs): proteinuria 1, cardiac ischemia 1. Grade 3 AEs: hypertension 2, rash 2, dysphagia 5, hemorrhage 1, infection 2 and fatigue 3. 4 patients had grade 2 hemorrhage. 1 patient died of aspiration pneumonia with associated cardiac ischemia. The median PFS and OS are 2.8 and 7.6 months, respectively.
Conclusions: Preliminary results show that cetuximab and bevacizumab are feasible and active regimen in SCCHN. Severe bleeding episodes are rare.

PP175

Cilengitide plus cisplatin, 5-FU, and cetuximab: phase I results from an open-label, randomized, controlled, phase I/II study (advantage) in recurrent/metastatic squamous cell cancer of the head and neck (SCCHN)

Tim H. Brümmendorfs[1], Joël Guigay[2], Ricardo Mesía[3], José M. Trigo[4], Ulrich Keilholz[5], Anne Kerber[6], Martin Picard[6], Jan B. Vermorken[7]

[1]Klinik für Hämatologie und Onkologie, Medizinische Klinik IV, Universitätsklinikum Aachen, Aachen, Germany, [2]Department of Medicine, Institut Gustave Roussy, Villejuif, France, [3]Department of Medical Oncology, Institut Català d'Oncologia, L'Hospitalet, Barcelona, Spain, [4]Servicio de Oncología Médica, Hospital Clinico Universitario Virgen de la Victoria, Malaga, Spain, [5]Hematology and Medical Oncology CBF, Charité, Berlin, Germany, [6]Global Clinical Development Unit Oncology, Merck KGaA, Darmstadt, Germany, [7]Department of Medical Oncology, Antwerp University Hospital, Edegem, Belgium

Introduction: Cilengitide (EMD 121974) is one of a new class of agents, the integrin inhibitors. Integrins play key roles in cell interactions. Cilengitide selectively inhibits the cell-surface integrins $\alpha V\beta_3$ and $\alpha V\beta_5$ on tumor cells and activated endothelial cells during angiogenesis.
Purpose: To investigate the safety of cilengitide plus cisplatin, 5-FU, and cetuximab in the treatment of recurrent/metastatic SCCHN.
Methods: Advantage is an ongoing, phase I/II study. Patients received cisplatin (100 mg/m^2 i.v. day 1), 5-FU (1,000 mg/m^2/day continuous i.v. days 1–4) every 3 weeks, and cetuximab once weekly (first dose 400 mg/m^2, subsequent doses 250 mg/m^2). Cilengitide was administered by 60 min i.v. infusion on days 1 and 4 each week; cohort 1: 500 mg; cohort 2: 1,000 mg; and cohort 3: 2,000 mg.
Results: In phase I, 10 patients were included: cohorts 1 and 2 (each $n = 3$), cohort 3 ($n = 4$). Six patients (60%) experienced an adverse event (AE) related to cilengitide: the most common AEs were nausea ($n = 4$), vomiting ($n = 3$), asthenia ($n = 3$), and mucosal inflammation ($n = 3$). There were no NCI-CTC grade 4 cilengitide-related AEs. Two patients (20%) in cohort 2 experienced four NCI-CTC grade 3 cilengitide-related AEs (mucosal inflammation, asthenia, nausea, and vomiting). There were no relevant differences in AE frequency/severity across the dose levels and no dose-limiting toxicities. A confirmed partial response (PR) was reported in three patients (30%) and stable disease in seven patients (70%), three of whom had an unconfirmed PR.
Conclusions: Cilengitide plus cisplatin, 5-FU, and cetuximab was well tolerated. Cilengitide 2,000 mg was the recommended dose for the phase II study.

PP176

Estimation of heat requirement and stress index in head and neck cancer patients under chemoradiation therapy

Kazuto Matsuura[1,2], Kengo Kato[2], Takenori Ogawa[2], Shigeru Saijo[1,2]

[1]Division of Head and Neck Surgery, Miyagi Cancer Center, Japan, [2]Department of Otolaryngology-Head and Neck Surgery, Tohoku University Graduate School of Medicine, Japan

Introduction and purpose: Chemoradiation therapy (CRT) is one of the key therapeutic procedures for head and neck cancer patients as well as surgical treatment. But head and neck caner patients under CRT often suffer from oropharyngeal mucositis and eating disorders. Therefore the patients cause about 10% of weight loss during hospitalization. Basal energy expenditure (BEE) calculated from Harris-Benedict equation is often multiplied by activity and stress indexes to estimate heat requirement. There are few reports about stress index of the CRT for head and neck cancer patients. So, it is difficult to estimate proper nutrition for these patients. The purpose of this study is to estimate a stress index of the chemoradiation therapy for patients with head and neck cancer.
Materials and methods: We examined ten head and neck cancer patients who irradiated to oral cavity and pharynx. Four patients received weekly CDDP with radiotherapy (wCDDP group) and six patients received TPF/FP with radiotherapy (TPF/FP group). We estimated a stress index from a total uptake calorie and weight change.

Results: Average stress index of CRT was 1.30 ± 0.13 in wCDDP group, and 1.58 ± 0.12 in TPF/FP group.
Conclusions: The patients who received CRT needed much nutrition than we expected. It is important that we give the patients appropriate nutrition using various means.

PP177
Intraoperative radiation therapy (IORT) in head and neck cancer: friend or foe?

George Kyrgias, **Stergios Doumas**, George Masouris, Maria Papagianni, Engin Kigitzi, John Skarlatos, Konstantinos Tsanadis, Manthos Papamanthos, Alexandros Kolokotronis, Alexandros Rapidis
Department of Radiotherapy, University of Thessaly Medical School and Greek Anticancer Institute, Saint Savvas Hospital, Athens, Greece

Introduction: Head and neck cancer patients usually present with locoregionally advanced disease, and even after aggressive multimodality treatment recurrence will potentially ensue. IORT has been utilized for three decades in an effort to curb or prevent disease progression. IORT offers the following advantages: (1) increased normal tissue spare, (2) killing of residual cancer cells, (3) increased biological efficacy per unit dose, and (4) decreased overall treatment time reducing cell repopulation during treatment.
Aims and methods: Reviewing all pertinent published articles and addressing issues such as efficacy, safety of IORT as therapeutic technique in conjunction with surgery, external RT (XRT) and chemotherapy. Moreover, parameters as overall survival (OS), local-locoregional failure rates, median dose of IORT, surgical margins, previous external RT, median follow-up are recorded.
Conclusions: Patient selection criteria, heterogeneity with respect to disease features, but also imbalances in clinical parameters such as performance status and extensiveness of presalvage workup, could account for the wide variation in published rates of disease control. However, it is clear that IORT is able to control local disease, easier than neck disease, when there are close surgical margins (R0) or even microscopic disease (R1), whereas high failures rates are noticed when gross disease (R2) is present. In the latter group, pain alleviation seems to be the main goal. Second, the addition of postoperative XRT and chemotherapy in selected patients confers better local control rates, reduces the rate of distant metastasis and optimizes OS. Third, IORT is safe as its complication rates are acceptable, especially when dose <20 Gy, allowing even for a free flap transfer.

PP178
Oropharyngeal mucositis prophylaxis in combined radioimmunochemotherapy with cetuximab of head and neck cancer

Wolf-Oliver Jordan[1], Ingeborg Wildfang[2], Jürgen Borghardt[3], Sepideh Fanaei[1], Hayssam Zakaria[1], Barbara Tschechne[1]
[1]*Praxis Tschechne, Luft, Jordan Onkologie, Lehrte, Germany,* [2]*Gemeinschaftspraxis für Radioonkologie und Strahlentherapie, Hannover, Germany,* [3]*AWO GSD, Abt. Onkologie, Bad Münder, Germany*

Introduction: Past experience with the treatment of head and neck cancer patients showed that nearly every patient displays strong oropharyngeal adverse reactions (grade 3/4) additional to the known skin reactions (rash) caused by cetuximab. In severe cases the mucositis leads to a therapy interruption or even to a discontinuation caused by secondary local or systemic infections with associated pain symptoms.
Purpose: To prevent or reduce the mucositis, we treated 72 patients starting in 2007 additionally with a polyvinylpyrrolidone (PVP) and sodium hyaluronate containing oral gel (Gelclair®).
Materials and methods: Beginning with radiotherapy the oral gel was applied 3 times daily as a mouth rinsing solution until 4 weeks after the end of the radiotherapy.
Results: In consequence we observed in all 72 patients only mild cases of mucositis. There were no specific side effects of the oral gel observed and all patients were compliant. No therapy had to be interrupted or stopped because of a severe mucositis. 7 patients had therapy interruptions or discontinuation for other reasons (e.g. rash).
Conclusion: A prophylactic treatment of head and neck cancer patients receiving a combined radioimmunochemotherapy with a polyvinylpyrrolidone (PVP) and sodium hyaluronate containing oral gel should therefore be considered.

PP179
Intensity-modulated radiotherapy (IMRT) for carcinoma of oropharynx and oral cavity: treatment outcome and complication

Jihye Cha, Kyung Ran Park, Woong Sub Koom, Yong Bae Kim, Ki Chang Keum, Gwi Eon Kim, **Chang Geol Lee**
Department of Radiation Oncology, Yonsei Cancer Center, Yonsei University Health System

Introduction/purpose: To assess the treatment outcomes and complications in the patients with oropharyngeal and oral cavity cancer treated with IMRT.
Materials: Nineteen patients treated with definitive IMRT between January 2002 and December 2007 were retrospectively analyzed. Among these patients, 7 patients were treated with tomotherapy. Fourteen patients received concurrent chemotherapy. The primary site was tonsil in 8, base of tongue in 8, floor of mouth in 2 and oral tongue in 1 patient. Seventeen patients were squamous cell carcinoma and 2 patients, undifferentiated carcinoma. Thirteen patients (68.4%) had stage IV, 3 patients (15.8%) had stage III, and 3 patients (15.8%) had stage II.
Methods: The median prescription dose to gross target volume was 70 (65.7–76.3) Gy, and the median daily fractional dose was 2.12 (2.12–2.35) Gy. For patients with neck node metastasis, the median involved neck dose was 59.4 (54–70) Gy. The median elective neck dose was 56.1 (51–60) Gy. The median follow-up was 29 months.
Results: Three locoregional failures and 1 distant metastasis were observed. Two patients died of disease and 2 patients died of intercurrent disease. Two-year overall survival rate was 73.7%, 2-year disease-free survival rate was 78.9% and 2-year locoregional control rate was 84.2%. Late toxicities were as follows: 7 patients with grade 1 xerostomia and 2 patients with grade 2 xerostomia and 3 patients had intolerance for spicy foods.
Conclusion: IMRT is effective and feasible for the patients with advanced oropharyngeal and oral cavity cancer as a definitive treatment modality without serious complications.

PP180

Postoperative radiotherapy after radical surgery in high risk head and neck cancer (HNC): the experience of the Isola Tiberina in Rome

Orietta Caspiani[1], Alessio Bonanni[1], Mariavittoria Leone[1], Giulio Bicciolo[2], Marco Ciaparrone[3], Palmira Caparrotti[1], Francesca Tortoreto[1], Carlo Guidi[1], Giorgio Mazzarella[1], Adelina Petrone[1], Marco Radici[2], **Luca Marmiroli**[1]

[1]Divisions of Radiation Oncology, [2]Otorhinolaryngology, [3]Medical Oncology, Ospedale Fatebenefratelli, Rome, Italy

Introduction: Patients with high risk HNC underwent postoperative radiotherapy.
Purpose: To evaluate the risk factors that most likely lead to failure in our cohort of patients.
Materials and methods: Between December 2005 and December 2008, 49 patients with squamous cell carcinoma of the HN were treated with surgery and adjuvant 3D-CRT or IMRT (60–70 Gy). 24/49 patients received concomitant chemotherapy. The site of the primary was: oral cavity in 19 patients, hypopharynx-larynx in 17, and oropharynx in 13. Three patients were stage II, 12 were stage III, and 32 were stage IVA. We evaluated the following risk factors: regional node involvement (pN1 = 21%, pN2a = 4%, pN2b = 38%, pN2c = 15%), extracapsular extension (35%), surgical margin status (infiltration = 31%, close = 14%). During follow-up, we calculated survival and disease recurrence associated with risk factors.
Results: Median follow-up was 21 months (range 3–50). Overall, 21 patients died, 6/21 from disease recurrence, 2/21 from radiation-related toxicity, and 3/21 from other causes. To date, 24/49 patients were alive and without evidence of disease (NED) and 4/49 were alive with local-regional failure. Median DFS and OS were 21 months (range 3-50). We focused on the subgroup of patients who developed failure (20/49): 11/17 patients with extracapsular extension, 6/10 were pN1, 4/7 pN2c, 9/18 pN2b, 8/15 with positive margins, and 2/7 close margins. Patients who developed local or distant recurrence were stage IVA in 16/32 cases and stage III in 4/12 cases. Primary site: hypopharynx–larynx in 8/17 and oral cavity in 8/19.
Conclusions: We confirm the importance of postoperative radiotherapy, as 57% of our high risk patients are NED. However, a prolonged follow-up is necessary to also evaluate late toxicity.

PP181

Radical radiation therapy after salvage surgery in recurrent head and neck cancer

Orietta Caspiani[1], Alessio Bonanni[1], Mariavittoria Leone[1], Giulio Bicciolo[2], Marco Ciaparrone[3], Palmira Caparrotti[1], Francesca Tortoreto[1], Carlo Guidi[1], Giorgio Mazzarella[1], Adelina Petrone[1], Marco Radici[2], **Luca Marmiroli**[1]

[1]Divisions of Radiation Oncology, [2]Otorhinolaryngology, [3]Medical Oncology, Ospedale Fatebenefratelli, Rome, Italy

Introduction: In this paper, we report our experience in the treatment of recurrent head and neck cancer with adjuvant radiotherapy after salvage surgery.
Purpose: To evaluate the impact of radiation therapy in terms of survival.
Materials and methods: Between December 2005 and December 2008, 19 patients were treated for local-regional recurrence of Head and Neck squamous cell carcinoma. The site of the primary was larynx in 11 patients and oral cavity in 8 patients. None had previously been treated with radiation therapy. Local recurrence occurred in nine patients (47%), regional failure in seven patients (37%), and three patients (16%) developed local-regional relapse. All patients underwent salvage surgery with radical intent and postoperative 3D-CRT or IMRT (60–70 Gy). Only four patients (21%) received concomitant chemotherapy due to performance status and age limit.
Results: Median follow-up was 15 months (range 5–44). One patient was lost to follow-up. Two patients (11%) died due to radiation therapy-related adverse effects, soon after treatment completion, two patients (11%) died from intercurrent disease, and three patients (17%) died from second recurrence (distant failure in one patient and local failure in two patients). To date, 11 patients (61%) are without clinical evidence of disease and median DFS and OS are 14.5 months (range 5–44).
Conclusions: Our data suggest a clear benefit in terms of survival from radiation therapy after salvage surgery in patients with recurrence of head and neck squamous cell cancer.

PP182

Tongue preservation with trimodality therapy in locally advanced squamous cell carcinoma of the oral tongue

Arif Jamshed[1], Raza Hussain[1], Samreen Jawed Chaudry[2], Amber Mansoor[2], Faiza Waheed[2]

[1]Radiation Oncology Shaukat Khanum Memorial Hospital and Research Centre, Lahore, Pakistan, [2]Fatima Jinnah Medical College, Lahore, Pakistan

Purpose: Despite dismal cure rates and major functional deficits that impact on speech, deglutition and quality of life, total or near total glossectomy with postoperative radiation is considered the standard of care in locally advanced squamous cell carcinoma of the oral tongue (LASCCOT). We report on survival and function preservation in LASCCOT treated with induction chemotherapy, limited surgery and post-operative radiotherapy/chemoradiation.
Methods: Between April 2007 and December 2008, 23 patients with LASSCOT were treated with trimodality therapy at Shaukat Khanum Memorial Cancer Hospital and Research Centre. Males 65%:Females 35%, median age 55 years. Pretreatment AJCC stage T2N0 8%, T3N0/+83%, T4N0/+8%. Induction chemotherapy; cisplatin 75 mg/m^2 and gemcitabine 1,000 mg/m^2 day 1 and 8 every 3 weeks × 2 cycles. Four to six weeks following induction chemotherapy, local excision of residual primary tumor with neck dissection was performed. Radiation dose was 60–66 Gy over 6–7 weeks. Thirteen patients (57%) received post-operative concurrent cisplatin 75 mg/m^2 on day 1, 22 and 43 and 10 patients (43%) received post-operative radiation alone.
Results: Post-induction chemotherapy pathological AJCC stage was ypT0N0 17%, ypT0N+ 4%, ypT1N0 22%, ypT1N+ 30%, ypT2N+ 22% and ypT3N+ 4%. Overall and disease free survival at 28 months was 55 and 46%. Six patients (22%) have failed treatment (5 dead and 1 alive with disease) at 7, 12, 15, 15, 16 and 21 months. Assessment of deglutition and speech at last follow up showed all patients on full oral diet and with spontaneous intelligible speech.
Conclusion: Multimodality treatment with induction chemotherapy, limited surgery and post-operative radiation/chemoradiation may

allow selected LASCCOT patients to avoid morbid surgery and preserve tongue function without compromising survival.

PP183
Comparison of IMRT and IMPT in cancer of the base of tongue

L. Cederblad, E. Klaman, S. Johansson, U. Isacsson, E. Blomquist
Department of Oncology, University Hospital of Upsala, Upsala, Sweden.

Purpose: To investigate the feasibility and to compare the target coverage and dose to Organs at Risk (OAR), in treatment of cancer of the base of tongue by Intensity Modulated Radio Therapy (IMRT) and Intensity Modulated Proton Therapy (IMPT). To calculate normal tissue complication probability (NTCP).
Materials: Eleven patients, both men and women, with advanced stage cancer of the base of tongue were chosen for the study. Age range was 44–87 years, mean age 61.2 years. Dose planning was performed for IMRT with photons and IMPT with protons, the latter derived from data from the experimental scanned beam. For each patient, 9 ports of coplanar fields with 6 MV IMRT with 140 segments, step-and-shoot technique and 3 coplanar fields for 202 MeV IMPT plans were prepared. To the PTV of adjuvant volume 50 Gy in 2-Gy fractions daily was prescribed. The PTV of tumour and engaged lymph nodes was planned with 2.4–60 Gy using a simultaneous integrated boost (SIB). Target coverage was between 95 and 110% of the prescribed dose. Tolerance dose to the parotid glands was 26 Gy and to the medulla 48 Gy. The dose to the oral cavity was minimized. Dose resolution was 3×3 mm in transversal slices; resolution in axial direction was the same as in the CT study for each patient. NTCP for the parotid glands was calculated using LKB-model with parameters $m = 0.49$, $TD50 = 27.8$, $n = 1$.
Results: Preliminary data showed that target coverage with IMPT seemed to be more conformal than with IMRT. Conformity indexes were found to be for PTV_{tot}(IMRT) = 1.97(range 1.64–2.52), PTV_{tot}(IMPT) = 1.38 (range 1.24–1.71), PTV_{boost}(IMRT) = 1.48(range 1.34–1.84), PTV_{boost}(IMPT) = 1.20 (range 1.11–1.34). Using IMPT, the prescribed doses could be kept within the planned interval in all patients, while using IMRT only in 10/11 patients. The volume of the oral cavity receiving more than 30 Gy was 17% smaller in IMPT than in IMRT plans. With IMPT, the median dose to medulla was 30.2 Gy, compared to 46.1 Gy using IMRT. NTCP for parotid glands was 11–14% lower for IMPT.
Conclusion: Both the conformity and the uniformity of target coverage were better with IMPT. Moreover, all OAR received lower doses with IMPT, thereby NTCP could be decreased. Using IMPT for treatment of patients with advanced cancer of the base of tongue seems to be encouraging.

PP184
The estimation of late radiation reaction chosen critical tissues of head and neck region after irradiation: the prospective study

M. Goleń, A. Wygoda, T. Rutkowski, W. Przeorek, B. Pilecki, M. Hutnik, K. Składowski, Z. Kolosza
I Clinic of Radiotherapy, Center of Oncology-MSC Institute, Gliwice, Poland

The purpose of this study is to estimate the late radiation reaction chosen critical tissues (salivary glands, larynx, mucosal membrane, spinal cord and skin) in patients with squamous cell cancer irradiated by conventional (3D CRT) or accelerated method (CAIR or CB).
Material and methods: In 43 patients with pharyngeal and laryngeal cancer irradiated to total dose in range 62.5–72 Gy the estimation of late radiation toxicity chosen critical tissues was provided. All patients were irradiated by conventional (3D CRT) or accelerated method (CAIR or CB). The late radiation reaction was estimated after 3, 6 and every 6 months after final treatment using two systems of classification: SOMA-LENT and CTC, version 3.0.
The non-parametric Mann–Whitney and Wilcoxon test was used for the estimation of relationships.
Results: The incidence of the late radiation toxicity was generally low for both radiation methods in two scales except salivary glands, where toxicity was higher than in other tissues (but on the similar level according to CTC and SOMA-LENT scale). We have observed the middle level of xerostomia connecting with change of amount and consistency of saliva after irradiation. The radiation doses accumulated in submandibular glands were higher than in parotids independently on method of irradiation.
Conclusions: The observed late toxicity in early post-radiation follow-up is relatively low with xerostomy as the most troublesome symptom. The radiation doses accumulated in submandibular glands much exceeded threshold dose of salivary tissue in the correlation to parotids. This prospective study is being continued.

PP185
Impact of decrease in tumor volume delineated using FDG-PET images on dose distribution in radiotherapy for head and neck tumors

Iwona Wzietek[1], Xavier Geets[2], Vincent Gregoire[2]
[1]*Department of Radiotherapy, Maria Sklodowska-Curie Memorial Cancer Center and Institute of Oncology, Gliwice Branch, Poland,* [2]*Department of Radiation Oncology, Universite Catholique de Louvain, St-Luc University Hospital, Brussels, Belgium*

Background and purpose: In this study, the impact of changes in tumor volume with the use of FDG-PET images in target volume (TV) delineation on dose distribution of Head and Neck patient (H&N) has been investigated.
Materials and methods: Fifteen patients with locally advanced (T2-T4) pharyngo-laryngeal tumor of H&N were considered for this study. The prescribed dose was 70 Gy to the tumor PTV and 50 Gy to the elective PTV in 2 Gy fractions. For each patient, two inverse IMRT plans were done using tomotherapy Hi-Art System. The first plan was prepared based on CT imaging and the second based on information about target volumes derived from FDG-PET imaging.
Results: The study demonstrated reduction of 35% of GTV-PET, 26% of the CTV-PET and 25% of the PTV-PET compared to CT-based TV. The changes in TVs impacted the dose distribution. In high dose region, FDG-PET radiotherapy planning, allowed to decrease the volumes that were encompassed by 90 and 95% isodose (16.4 and 15.7%, respectively). However, in low dose region there was no statistical difference between different modalities. The FDG-PET treatment plan did not result in reduction of mean dose and NTCP for homolateral and heterolateral parotid.
Conclusions: In spite of GTV decrease in PET-based treatment plan, the lymph node regions that require an elective dose remains similar. This explains lack of difference in mean dose and NTCP for parotids between treatment plans. The reduction of high isodose volumes in

FDG-PET-based radiotherapy may potentially improve the tolerance of treatment.
More detailed clinical and experimental studies are required to verify the real impact of these investigations in radiation treatment planning, and especially in the evaluation of NTCP and therapy response.

PP186
Ionizing radiation effects on THP-1 and blood monocytes tissue factor expression

Karim Zouaoui Boudjeltia[1], **Didier Dequanter**[2], Philippe Lothair[2], Dany Brohee[1], Philippe Cauchie[1], Pietrina Piro[1], Michel Vanhaeverbeek[1]
[1]Laboratoire de Médecine Expérimentale (ULB 222 Unit), CHU de Charleroi, Hôpital Vésale, Montigny-le-Tilleul, Belgium,
[2]Département de chirurgie maxillo-faciale, CHU de Charleroi, Hôpital Vésale, Montigny-le-Tilleul, Belgium

Introduction: Radiotherapy is associated with thrombotic events, but the exact mechanisms are still unclear. A previous work showed that human peripheral blood mononuclear cells irradiated with 20 Gy, in single dose, increased their tissue factor (TF, the primary initiator of blood coagulation).
We aim to study the effect of an irradiation dose used in therapy on TF expression by THP-1 cells line and on blood monocytes.
Materials and methods: Blood monocytes were isolated on a density gradient. Blood monocytes and THP-1 cells were irradiated with two doses of 2 and 16 Gy. Ionizing radiation was generated by a linear accelerator (Philips) with maximum photon energy of 6 MeV. TF expression was assessed by flow cytometry and by a clotting time assay (T0, T4h, T12h and T24h).
Results: On THP-1 cells, no modification of TF expression was observed in control and at 2 Gy. In contrast, a 16 Gy irradiation decreased the TF expression at 24 h ($p < 0.001$) indicating a cellular death. The clotting times were not modified. No effect was observed on blood monocytes.
Conclusion: No significant modifications of TF expression was observed after an irradiation of 2 Gy in both cellular types. 16 Gy irradiation induced a decrease expression of TF after 24 h.
The procoagulant status of blood monocytes in patients under radiotherapy should be linked to a secondary response associated to molecules released by the tissues irradiated.

PP187
Phase III trial of trolamine for the prevention of radiation dermatitis in patients with squamous cell carcinoma of the head and neck

Hamza Abbas
Department of Radiation Oncology, South Egypt Cancer Institute, Assiut University, Asyut, Egypt

Purpose: This phase III trial was designed to test trolamine compared with the usual supportive care for patients with head and neck cancer undergoing radiation therapy with concurrent chemotherapy.
Patients and methods: Patients with biopsy-proven squamous cell carcinoma of the head and neck treated with radical radiotherapy and weekly concurrent cisplatin 40 mg/m^2 were randomly assigned to one of the following: treatment group (prophylactic trolamine), or control group (best supportive care).
The primary outcome was the reduction of grade III or higher skin toxicity, as per RTOG acute radiation toxicity criteria.

Thirty patients were randomized, 15 patients applied trolamine every 8 h (4 h part from the radiotherapy session), and the other group was control group.
Results: From March 2008 to June 2009, 30 patients were entered onto the trial. The average age was 54.5 years. Patients were predominately male (83%) and most continued to use tobacco products (70%). The rate of the skin-reaction was 100% in the patients of both groups. A mild radiation reaction (grades I and II) occurred as follows: 80% (12/15 cases) in the treatment group and 46.6% (7/15 cases) in the control group. A grade III radiation reaction developed in 20% (3/15 cases) in the treatment group and 53.3% (8/15 cases) in the controls. There was a significant difference $P < 0.01$ between the two groups.
Conclusion: Trolamine cream can effectively reduce the intensity of acute dermatitis following 3D-CRT with weekly cisplatin in head and neck SCC.

PP188
Cosmetic therapy in the prevention and treatment of the cutaneous acute reactions from radiotherapy for the tumors of the head–neck

G. Assalti[1], O. Caspiani[2], C. Guidi[2], M. Ciaparrone[3], G. Bicciolo[4], F. Tortoreto[2], A. Bonanni[2], M. Leone[2], A. Petrone[2], G. Mazzarella[2], M. Radici[4], F. Tomaselli, L. Marmiroli[2]
[1]Servizio di Medicina Estetica, [2]UOC Radioterapia, [3]UOC Oncologia, [4]UOC Otorinolaringoiatria. Ospedale Generale "San G. Calibita", Fatebenefratelli, Isola Tiberina, Roma, Italy

From 2004, an outpatient Service is operating a service dedicated to the Aesthetic Medicine for the Oncology with the purpose to take in care the cutaneous lesions derives from the antiblastiche therapies, in the harmony of the total care aid of the ill population, according to the Juandedian principles.

In order not to interfere with the medical therapies, they have been used produced cosmetic preparations from primary companies and selected from an aesthetic medical doctor and a cosmetic pharmacologic.

Particular attention has been turned to the patients affected by tumors of the Head-Neck District; because of the nearness between skin and disease they are subject to serious and obvious lesions, that maximize their physical suffering and emphasize their social discomfort and consequently causing a very bad QoL.

The visible damages observable are the radiodermitis of various degrees, sometimes obligating the interruption of the therapy. The evaluation is on the basis of RTOG acute reactions scale.

Beyond the limitation of the aesthetic damage deriving from the eritrosis and more serious skin damages, our goal is to realize the radiation course according to the optimal scheduled time.

We have taken charge on 50 patients, to which we have prescribed cosmetic protector and cutaneous restoratives, beginning 1 week before the start of radiotherapy.

The prescription has been modulated on the individual reactions on the basis of a weekly monitoring, realizing continuous modulations of the prescriptions. The authors report their experience of these first 5 years.

PP189
Prognostic significance of endoglin expression in men with laryngeal squamous cell carcinoma

Elvir Zvrko[1], Anton Mikić[2], Ljiljana Vučković[3], Snežana Jančić[4], Vojko Đukić[2]
[1]*Clinic for Otorhinolaryngology and Maxillofacial Surgery, Clinical center of Montenegro, Podgorica, Montenegro,* [2]*Institute for Otorhinolaryngology and Maxillofacial Surgery, School of Medicine, University of Belgrade, Belgrade, Serbia,* [3]*Center for Pathology and Forensic Medicine, Clinical center of Montenegro, Podgorica, Montenegro,* [4]*School of Medicine, University of Kragujevac, Kragujevac, Serbia*

Introduction: Microvessel density (MVD) determined with the use of antibodies to endoglin (CD105) has been found to be an important prognostic indicator in a number of malignancies.
Purpose: The present study examined endoglin expression and its prognostic significance in male patients with laryngeal squamous cell carcinomas (LSCCs).
Materials and methods: The study sample comprised 61 male patients with LSCCs. Immunohistochemical analysis was performed with antibody of endoglin and MVD was calculated at 200× magnification. The rounded mean value of the vessel count in four fields for each case was used as the final MVD value.
Results: The mean endoglin-assessed MVD in considered patients was 12.8 (standard deviation [SD] = 4.15). MVD varied among tissue samples from 5 to 22 (median 13). The mean MVD was significantly higher in tumors with positive nodal metastasis (Mann–Whitney U test $p = 0.033$) and in patients with advanced (III and IV) clinical stage (Mann–Whitney U test $p = 0.001$). Kruskal–Wallis test showed significant relation between stage grouping and CD105-assessed MVD ($p = 0.006$). Endoglin-assessed MVD was significantly related to malignancy recurrence presence/absence (Mann–Whitney U test $p = 0.001$). Logistic regression in multivariate modality showed that a high CD105+ MVD was the only independent marker of tumour recurrence ($p = 0.021$).
Conclusion: Determination of endoglin expression levels in male patients with primary LSSCs might be useful in identifying patients with an increased risk of disease recurrence, allowing more effective treatment strategies to be implemented.

PP190
Identification of metastasis associated proteins in oropharyngeal squamous cell carcinoma using differential expression proteomics

Paul Goodyear[1,2], Mark Boyd[2], Roz Jenkins[3], Richard Shaw[2,4], Jane Hamlett[3], Neil Kitteringham[3], Andrew Kinshuck[1,2], Terry Jones[1,2]
[1]*Department of Otolaryngology/Head Neck surgery, University Hospital Aintree, Liverpool, UK,* [2]*School of Cancer Studies, University of Liverpool, Liverpool, UK,* [3]*Department of Pharmacology and Therapeutics, University of Liverpool, Liverpool, UK,* [4]*Department of Oral and Maxillofacial surgery, University Hospital Aintree, Liverpool, UK*

Introduction: Patients presenting with head and neck cancer may have no clinical or radiological evidence of cervical lymph node metastasis—the N0 neck. Despite this, histo-pathological data have confirmed the presence of occult metastases in up to 30% of N0 necks (i.e. N+), depending on the site of the primary tumour. Currently, there is no way of identifying affected individuals and consequently, 70% may be overtreated.
Purpose: Using proteomic techniques, we attempted to identify a primary tumour phenotype, which would allow the discrimination of oropharyngeal squamous cell carcinoma (OSCC) with metastatic potential.
Materials: Eight fresh frozen primary OSCC samples; 4 each from patients with a histopathologically confirmed N+ or N0 neck were used.
Methods: Following homogenization of the tumour tissue, protein separation using 2D gel electrophoresis was performed. Differences in individual protein expression between N0 and N+ groups were identified using Progenesis SameSpots® gel analysis software. Differentially expressed proteins were extracted from the gels and identification was achieved using a combination of matrix-assisted laser desorption and ionization mass spectrometry (MS) (MALDI) and liquid chromatography tandem MS (LC-MS/MS).
Results: Nineteen differentially expressed proteins were identified. Those identified included Heat Shock protein 60, Disulfide isomerise, Cornulin, Alpha Enolase, Serpin B3, Apolipoprotein A1 and S100 A7, which were up-regulated and Annexin A2 which was down-regulated in N+ samples.
Conclusions: These proteins represent potential biomarkers of metastatic potential in OSCC. Further investigation of their worth as biomarkers is necessary using, in the first instance, large sample tissue microarrays.

PP191
Oncologic and functional outcomes after endoscopic partial laryngectomy (EPL) as unimodal treatment for glottic cancer

Cesare Piazza, Francesca Del Bon, Luca Oscar Redaelli De Zinis, Stefano Mangili, Daniela Cocco, Paolo Valotti, Giorgio Peretti
Department of Otorhinolaryngology-Head and Neck Surgery, University of Brescia, Brescia, Italy

Introduction: EPL is an endoscopic procedure aimed at treatment of early (T1b) and intermediate (T2 and selected T3) glottic carcinomas.
Purpose: The end-points were: (1) the oncologic outcomes of EPL in the entire cohort; (2) the functional outcomes in a sample of patients; and (3) comparison between subjects with less or more than 70 years of age.
Materials: 165 patients treated by EPL at our Institution between 1988 and 2007.
Methods: Follow-up was completed in September 2009 and data analyzed by the SPSS package. Functional outcomes were analyzed in 30 patients by Voice Handicap Index, GRBAS scale, Multi Dimensional Voice Program, M.D. Anderson Dysphagia Inventory, videoendoscopy of swallowing, and videofluoroscopy. Data were compared between the 2 age groups.
Results: Overall, disease-specific survivals, organ preservation, and control with laser for the entire cohort were 78, 97, 93, and 82%, respectively. A statistically significant difference between the 2 age groups was found for overall survival only. Univariate analysis found a significant impact on disease-specific survival, organ preservation, and control with laser for paraglottic space involvement and pT category. Comparing the 2 age groups, significant differences on the same end-points were found for paraglottic space involvement and vertical anterior transcommissural extension. Functional outcomes comparison showed significant differences for GRBAS scale and maximum phonation time only.

Conclusions: EPL is a sound oncologic procedure even when considering patients older than 70 years. Functional outcomes are comparable in terms of voice and better for swallowing than those obtained after open-neck partial laryngectomies.

PP192
Treatment and follow-up of laryngeal dysplasia: a systematic review and meta-analysis

Paul Nankivell[1], Matthew Weller[1], Vinidh Paleri[2], Christopher McConkey[3], Hisham Mehanna[1]
[1]*Institute of Head and Neck Studies and Education (InHANSE), University Hospital Coventry and Warwick, Coventry, UK,* [2]*Department of ENT, Freeman Hospital, Newcastle upon Tyne, UK,* [3]*Clinical Trials Unit, Health Sciences Research Institute, University of Warwick, Coventry, UK*

Introduction: Laryngeal dysplasia has a malignant potential. Reported rates of transformation and time to transformation vary widely between studies. In order to develop an evidence based management and surveillance policy for laryngeal dysplasia we undertook a systematic review and meta-analysis of observational cohort and case controlled studies.
Purpose: To assess for laryngeal dysplasia, the risk of, and interval to, progression to cancer and examine the effects that histological grade, clinical risk factors and treatment strategies may have on this.
Materials: Systematic review and meta-analysis of published literature from 1966 to August 2009.
Methods: Inclusion required a histological confirmation of laryngeal dysplasia and defined follow-up of patients. Malignant transformation rate and time to malignant transformation were used as outcome measures. Subgroup analysis was performed for histological grade, clinical risk factors and treatment modality. Heterogeneity was assessed and quality assessment performed.
Results: The search yielded 996 potential studies. Review of abstracts excluded 948 of these and 48 articles were assessed in detail. 21 studies met the inclusion criteria. A meta-analysis incorporated 1,566 patients with laryngeal dysplasia with a malignant transformation rate of around 15% (range 2–73%). Analyses by grade, treatment modality and risk factors will be presented.
Conclusions: Laryngeal dysplasia carries a significant risk of malignant transformation. This risk is linked to the grade of dysplasia. There is a need for careful treatment and continued surveillance of these lesions in order to allow early detection and subsequent treatment of those lesions that undergo malignant transformation.

PP193
Correlation of endoscopic features with nasopharyngeal biopsy in nasopharyngeal carcinoma (NPC)

S. Tiong
Surgery Department, UNIMAS, Kuching, Malaysia

Introduction: In 2004–2008, studies were done in local hospitals on correlation of nasopharyngeal swab cytology with forceps biopsy in NPC with digital nasopharyngeal endoscopic recordings. These recorded images were reviewed with biopsy findings to evaluate any correlation of endoscopic features with biopsy, given that no report of such correlation was found on literature search.
Materials and methods: Based on the studies, wherein endoscopic digital images showed nasopharynx before biopsy, these images were examined and abnormal features were compared case-by-case with biopsy results. Positive correlation is when abnormal features correlate with biopsy finding of NPC, and negative correlation when abnormal features do not correlate with biopsy finding of NPC.
Results: Abnormal features were those of nasopharyngeal asymmetry, swellings (raised smooth, irregular or pedunculated), haemorrhage (spontaneous or contact), and ulceration with or without haemorrhage. 229 cases were reviewed: NPC 217, non-Hodgkin lymphoma (NHL) 5 and tuberculosis (TB) 7. All cases showed the abnormal features. Positive correlation in NPC was 217/229(94.8%) and negative correlation 12/229 (5.2%) due to other conditions of NHL and TB. These 5 NHL cases showed same abnormal features as NPCs, all without haemorrhage, and the 7 TB cases same abnormal features as NPCs, all with haemorrhage. There were 9 NPC cases (4.1%) showing only asymmetrically raised nasopharyngeal wall with normal mucosal appearance, considered as submucosal type.
Conclusions: This review shows substantially high positive correlation of endoscopic features with nasopharyngeal biopsy in NPC. Meanwhile, negative correlation due to other non-NPC conditions should be born in mind in evaluating nasopharyngeal abnormal endoscopic features.

PP194
Patient-based identification of micro-RNA alterations in oral squamous cell carcinoma

Antonia Kolokythas[1], Xiaofeng Zhou[2], Xiqiang Liu[2]
[1]*University of Illinois at Chicago, Department of Oral and Maxillofacial Surgery, Chicago, USA,* [2]*University of Illinois at Chicago, Center for Molecular Biology of Oral Diseases, Chicago, USA*

Introduction: Oral cancer is the sixth most common malignancy worldwide and histologically squamous cell carcinomas account for more than 90% of these cancers. Cancer development and progression requires inactivation of tumor suppressor genes and activation of proto-oncogenes. Expression of these genes is in part dependant on RNA and microRNA-based mechanisms. MicroRNAs are essential regulators of diverse cellular processes including proliferation, differentiation, apoptosis, survival, motility, invasion and morphogenesis. Several microRNAs have been functionally classified as proto-oncogenes or tumor suppressors and are aberrantly expressed in various cancers.
Purpose: To harness unique microRNA alterations associated with oral squamous cell carcinoma (OSCC). To attain microRNA candidates and through functional studies understand their roles in tumorigenesis of OSCC. Strategic integration of our observations at microRNA and mRNA levels will advance the overall understanding of this disease process at the system biology level.
Materials and methods: Laser capture micro-dissection was used to isolate homogenous epithelial cells from fresh frozen OSCC cases and perform microarray-based genomic analysis according to GenoExplorer microRNA Full Kit protocol. The findings were compared to those obtained from normal controls.
Results: Using these tools, we performed microRNA profiling on early stage oral tongue SCC cases and matching controls. A number of microRNAs were found to be differentially expressed between tumors and normal controls. Several of these microRNAs have already been implicated in oral cancer.
Conclusions: Our data so far confirms that microRNAs are differentially expressed in early stage OSCC, and may contribute to the initiation and progression of this disease.

PP195

Xerostomia and oral mucositis in patients with squamous cell cancer of the head and neck undergoing radiotherapy: monitoring of biomarkers in oral fluid

Sabine Reinisch[1], Reinhard Raggam[2], Gabriele Jakse[3], Harald Kessler[2], Heinz Stammberger
[1]HNO-Universitätsklinik, Graz, Austria, [2]Universitätsklinik für Hygiene, Graz, Austria USA, [3]Universitätsklinik für Strahlentherapie, Graz, Austria

Background: Both xerostomia and oral mucositis are common acute toxicities associated with radiotherapy of patients with squamous cell cancer of the head and neck occurring as biologically independent events during their initial stages.
The aim of this study is to monitor the biomarkers (secretory IgA, hormone leptin, growth factor for keratinocyte proliferation, TNF alpha, IL-6) in oral fluid of patients with squamous cell cancer of the head and neck, in order to establish a meaningful oral fluid biomarker panel for reliable determination of the grade of xerostomia and oral mucositis.

Candidiasis is a frequent diagnosis in patients with mucositis and xerostomia undergoing radiotherapy, demonstrated by previous studies which show an increasing number of Candidas species.

In a first step, oral fluid of patients with squamous cell cancer of the head and neck is collected prior and during radiotherapy and during 1 year of follow-up after end of radiotherapy. In parallel, grades of xerostomia and oral mucositis employing the OMWQ-HN questionnaire and the WHO oral toxicity scale are determined. In a second step, multi-linear regression models are calculated to evaluate correlations between grades of xerostomia/oral mucositis and the dose of irradiation received individually during radiotherapy.
Objectives and study design: In an open explorative study, supported by study participants via in- and outpatients at the Department of Otolaryngology, University Hospital Graz we collected oral fluid of patients with SCC of the head and neck, prior and during radiotherapy and 1 year of follow-up. We monitored the biomarkers like secretory IgA, hormone leptin, growth factor for keratinocyte proliferation, TNF alpha, IL-6, and determined grades of xerostomia and oral mucositis. Both, the grade of xerostomia and oral mucositis are scored by using the University of Michigan Xerostomia Questionnaire (XQ) and the WHO oral toxicity scale. Alterations in biomarkers, the grade of xerostomia and mucositis will be correlated with the dose of irradiation received individually during radiotherapy. Characterizing the microbiological oral flora, we want to correlate fungal colonization and infection to the biomarkers in the saliva.
Statistical analysis: Multiple linear regression models will be calculated using SPSS 13.0 Software.

PP196

Radiation mucositis in head and neck cancer patients: focusing on patients factors

Muhammad Shakeel, **Aaron Trinidade**, Thilanga Iddamalgoda, David Hurman, Akhtar Hussain
Department of Otolaryngology-Head and Neck Surgery, University of Aberdeen, Aberdeen, UK

Introduction: Radiation-induced mucositis (RIM) is common in head and neck cancer patients. The extent of mucositis is multifactorial with varied symptomatology. There is no universally agreed treatment for RIM.
Purpose: To investigate the incidence, symptomatology, investigations and treatment of RIM in our patients. To study any relationship between the incidence and severity of RIM with various patients factors.
Materials: All patients attending our combined head and neck oncology clinic.
Methods: Retrospective chart review over 1 year (2006). Data were collected on demographics, diagnosis, investigations, treatment of primary malignancy, incidence, severity and treatment of RIM.
Results: A total of 43 patients were identified (male 25, female 18, age range 19–82 years). Most common sites involved in malignancy were larynx, oropharynx, tongue base and nasopharynx. Fourteen patients had T4, while 12, 9 and 8 patients had T3, T2 and T1 disease, respectively. The radiotherapy (DXT) was given over 20–22 fractions (55–60 Gy). Of the 43, 32 (75%) patients experienced RIM necessitating some treatment. Commonest symptoms were odynophagia, dysphagia and dysphonia. Fifty percent (16) required hospital admission where RIM was treated with analgesia, antibiotics, antifungals, steroids, and various mouth washes. Nasogastric tube feeding was required in 18 (42%) and PEG tube was inserted in 13 (30%). Based on smoking status, the incidence of RIM was; current smokers $15/18 = 83\%$, ex-smokers $9/17 = 53\%$, non-smokers $8/8 = 100\%$.
Conclusions: There is a high incidence of RIM causing significant morbidity in our cohort. The unexpectedly high incidence of RIM in non-smokers needs further investigation.

PP197

Translocation (12;14) and other chromosome abnormalities in SCC of the tongue

Esther Manor[1], Sarit Tetro[1], **Lipa Bodner**[2]
[1]Genetic Institute, and [2]Department of Oral and Maxillofacial Surgery, Soroka University Medical Center, Faculty of Health Sciences, Ben Gurion University of the Negev, Beer Sheva, Israel

Introduction: Tongue squamous cell carcinoma (SCC) has an increasing incidence, a high morbidity rate and a 50% 5-year survival rate. The prognosis of tongue SCC is poor as compared to SCC originating at other sites of the oral cavity, because they represent different biological subentities. It has been found that multiple genetic alterations are involved in the tumorigenetic process of tongue SCC. Among these alterations are : (a) allelic loss of chromosomes 2q, 3p, 21q (b) expression of Bag-1 protein (c) expression of $p14^{ARP}$ protein (d) deletion of p53 gene at tumor interface (e) recurrent chromosomal alterations, such as i(8)(q10), i(5)(p10), del(3)(p11p12), del(5)(p11), t(1;1)(p13;q25), der (14;15)(q10;q10), are involved in the tumorigenesis of tongue SCC. We are unaware on cytogenetic reports describing t(12;14) in tongue SCC.
Purpose: Cytogenetic study of SCC of the tongue.
Materials: Tongue biopsy tissue was minced and cultured in RPMI-1640 medium, supplemented with antibiotics and glutamine and with 10% autologous human plasma and incubated at 37°C in a 5% CO_2 atmosphere. Cells were fixed after 5–11 days of culture and analyzed following standard procedures. Twenty-five metaphases were analyzed on G-banded slides and the karyotype was described for each culture, according to the ISCN guidelines.
Results: We report here on clonal t(12;14) and other random numerical chromosomal changes in a case of tongue SCC.
Conclusion: The significance of t(12;14) in diagnosis or prognosis is not clear yet and should be further examined. Karyotyping of more tongue SCC cases will expand the knowledge regarding chromosomal aberrations in SCC and thus might shed light on the significance of t(12;14), shown in this study.

PP198
Integrative genomic and proteomic study for the identification of biomarkers of oral cancer progression in clinically relevant cases

Alaoui-Jamali A. Moulay, Mlynarek M. Alex, Bijian Krikor, P. Hier, P. Michael, Black J. Martin
Departments of Medicine and Oncology, Otolaryngology-Head and Neck Surgery and Segal Cancer Center, Jewish General Hospital and McGill University, Montreal, Canada

Introduction and purpose: Oral cancer, the most common subgroup of HNSCC, is a prevalent cancer worldwide. Its 5-year survival rates seldom exceed 40%. Patients are often diagnosed at advanced stages where management requires morbid treatment, and over 20% of these develop metastases within a short time or years after the initial diagnosis. Currently, the lack of specific non-invasive biomarkers hampers identification of risk factors, early detection and treatment monitoring. This study aims to identify biomarkers of early oral cancer invasion.
Materials and methods: We have used a clinically relevant oral cancer tissue and serum bank from patients treated at our hospital. We established an orthotopic mouse model where the growth of human oral cancer is sustained into the tongue of RAG-2/γ(c) mice with histology similar to the original human oral cancer. Moreover, we established cancer cell lines from matched normal and cancer tongue tissues. We used microarray technology for transcriptional profiling of genetic changes associated with cancer progression, as well as proteomic study (using MudPIT and LC-MS/MS) on serums from mice bearing normal, non-invasive, and invasive human oral cancer and on conditioned medium from matched cancer cells. Biological relevance of selected markers was investigated in established oral cancer cells using RNA interference approach.
Results and conclusion: We identified genetic abnormalities associated with oral cancer invasiveness, as well as secreted proteins contributed by cancer cells or by the cancer tissue microenvironment, which discriminate between cancer and non-cancer tissue, or between non-invasive and invasive cancers. Biological and clinical significance of relevant biomarkers to oral cancer progression will be presented.

PP199
Heparanase expression pattern in head and neck cancer

Yoav Leiser[1,4], Imad Abu-El-Naaj[1], Edmond Sabo[3], Israel Vlodavsky[4], Micha Peled[1,2]
[1]*The Department of Oral and Maxillofacial Surgery, Rambam Medical Center, P.O.B 9602, Haifa, Israel,* [2]*The Faculty of Medicine, Technion, Haifa, Israel,* [3]*Department of Pathology, Rambam Medical Center, Haifa, Israel,* [4]*The Institute for Cancer and Vascular Research, Faculty of Medicine, Technion, Haifa, Israel*

Introduction: Metastases formation depends on the ability of tumor cells to invade basement membranes and tissue barriers in a process involving enzymes capable of degrading extracellular matrix (ECM) components. One of these enzymes is heparanase, which degrades heparan sulfate.
Purpose: Examine the expression of heparanase in oral carcinomas and establish whether its extent, intensity and cellular localization can be of prognostic value in predicting the outcome of oral cancer patients.
Methods: Biopsy specimens from 50 oral carcinoma patients were immunohistochemically analyzed for the expression and cellular localization of heparanase, also fresh biopsy specimens of primary carcinomas were harvested and analyzed for heparanase mRNA expression using real time RT-PCR.
Results: Nuclear localization of heparanase was observed in all oral verrucous carcinomas, a very well differentiated tumor that do not metastasize, as opposed to only 28% of nuclear localization detected in oral squamous cell carcinomas. Heparanase expression level also significantly correlated with the degree of tumor differentiation. Moreover, while cytoplasmic localization of heparanase was associated with high grade carcinomas, nuclear localization of the enzyme was found primarily in low grade, well differentiated tumors. Heparanase mRNA expression was higher in cancerous tumors compared with benign tumors of the oral cavity.
Conclusion: In non-metastasizing verrucous carcinomas, heparanase was expressed in the cell nucleus, as opposed to metastasizing oral squamous cell carcinomas which exhibited mostly cytoplasmic localization of the enzyme. Expression level and cellular localization of heparanase could serve as reliable predictive indicators of oral carcinoma development, metastatic potential and patient prognosis.

PP200
A study of seven apoptosis-related molecules in head and neck squamous cell carcinoma: their inter-relationship and effect on recurrence and survival

Paul Goodyear[1,2], Terry Jones[1,2], Mohammed Hafid[2], Tim Heliwell[3], Andrew Jones[2], Mark Boyd[2]
[1]*Department of Otolaryngology/Head Neck surgery, University Hospital Aintree, Liverpool, UK,* [2]*School of Cancer Studies, University of Liverpool, Liverpool, UK,* [3]*Department of Histopathology, Royal Liverpool University Hospital, Liverpool, UK*

Introduction: Apoptosis is a crucial means of balancing cell loss with cell proliferation in stable tissues. In cancer it is generally thought that a raised apoptotic rate portends a good prognosis. Non surgical treatment strategies typically aim at enhancing this process.
Purpose: The aim of this study was to correlate expression of known apoptosis related molecules with prognosis in squamous cell carcinoma of the head and neck (SCCHN) in an attempt to identify potential prognostic biomarkers.
Materials: 190 archived formalin fixed paraffin-embedded primary SCCHN tumours and lymph node metastasis samples, with matching adjacent normal tissue. The study population included 76 patients with laryngeal cancer, 47 with hypopharyngeal cancer, 26 with oropharyngeal and 41 with oral SCC.
Methods: Expression of p53, MDM2, bcl-2, BAX, survivin, hTERT and caspase was studied using immunohistochemistry. The relationship of the categorized immunohistochemical scores for all markers to recurrence and survival were investigated.
Results: The median follow-up of patients in the study was 9.7 years. There was a significant association for all head and neck tumour groups to have higher levels of all the molecules of interest than normal tissue ($p = 0.001$). Increased expression of hTERT ($p = 0.0007$) and MDM2 ($p = 0.012$) were independently associated with recurrence at the primary site. In addition, increased expression of Survivin ($p = 0.006$) and low expression of caspase ($p = 0.0376$) independently correlated with an increase risk of neck recurrence, and elevated nuclear expression of survivin, hTERT and MDM2 were all associated with a poor prognosis ($p = 0.0132$, $p = 0.0433$ and $p = 0.0355$, respectively).

Conclusions: hTERT, Survivin and MDM2 are potential tissue biomarkers for poor prognosis in head and neck SCC.

PP201
Induction chemotherapy followed by hyperfractionated radiotherapy: improvement of survival in advanced nasopharyngeal carcinoma

Manel Maños-Pujol[1], Julio Nogués[1], Ricard Mesía[2], Ramon Galiana[3], Margarita Martínez García[2], Alicia Lozano[3], Jordi Tornero[1]

[1]*Department of Otorhinolaryngology, Hospital de Bellvitge-University of Barcelona, L'Hospitalet de Llobregat, Barcelona, Spain,* [2]*Department of Medical Oncology, Institut Català de la Salut, L'Hospitalet de Llobregat, Barcelona, Spain,* [3]*Department of Radiotherapy, Institut Català de la Salut, L'Hospitalet de Llobregat, Barcelona, Spain*

Introduction and purposes: Standard treatment with concomitant chemotherapy (CT) and radiotherapy (RT) for nasopharyngeal cancer has shown rates of locoregional control of 80% and has improved the rate of 5-year survival to 67–84%. Hyperfractionated radiotherapy (HFRT) may increase locoregional control of tumors of the head and neck, but the addition of concomitant CT involves an unacceptable level of toxicity. Adding induction CT may control distant metastasis. Here, we compare the results of our protocol with induction CT followed by HFRT alone with the results obtained with concomitant treatments.
Materials and methods: Between October 1994 and May 2002, 46 patients with nasopharyngeal carcinoma were treated with HFRT. The patients with N+ or T4 lesions also received cisplatin-based induction CT (55%).
Results: The patients received a mean of 3 CT cycles (range 2–5). At 5 years, the rate of progression-free survival was 66% (range 51.3–82.1%), and the global survival rate was 75.7% (range 61.9–89.5%).
Conclusions: The use of HFRT in association with induction CT in patients with the greatest risk of metastasis may be as effective as concomitant CT-RT for treatment of nasopharyngeal cancer. Efforts should now concentrate on minimizing the acute and chronic toxicities.

PP202
Expression of Fascin and KI-67 in squamous cell carcinoma of the oral cavity: clinicopathological and prognostic significance

Yu Wang, Qinghai Ji, Hong-fen Lu, Yi Wu, Yongxue Zhu, Caipin Huang, Ling Zhang

Department of Head and Neck Surgery, Cancer Hospital, Fudan University, Shanghai, China Department of Oncology, Shanghai Medical College, Fudan University, Shanghai, China

Background: Fascin, an actin bundling protein, induces membrane protrusions and increased cell motility in various transformed cells. Overexpression of Fascin frequently occurs in various kinds of malignant tumors and is implicated in tumor progression, but the role of Fascin in oral squamous cell carcinoma (OSCC) is still unknown.
Purpose: The aim of this study was to explore the expression of Fascin and Ki67 in OSCC by tissue array analysis.
Methods: Paraffin sections using tissue microarrays of 84 patients with OSCC were investigated immunohistochemically, to determine the level of expression of Fascin and Ki-67 labelling index in tumor specimens. The role of Fascin in OSCC was evaluated by correlation with clinical–pathological parameters.
Results: Overexpression of Fascin was significantly associated with regional lymph node metastases ($P = 0.044$), advanced T stage (T1 vs. T2-4, $P = 0.046$) advanced tumor stage (I/II vs. III/IV, $P = 0.049$), Histologic grade (well vs. moderately/poorly, $P = 0.018$) and Ki67 ($P = 0.034$). In 54 tongue carcinoma overexpression of Fascin was significantly associated with muscle invasion ($P = 0.002$). The expression of Ki-67 was higher ($P = 0.017$) in tumors with poor histologic grade of differentiation. Fascin and Ki67 overexpression were all significantly associated with a poor prognosis ($P < 0.001$).
Conclusion: Expression of Fascin protein may play an important role in progression of OSCC. Overexpression of Fascin contributes to a more aggressive clinical course and suggests the potential of Fascin as a new molecular target for therapeutic intervention. Fascin and Ki-67 overexpression were positively correlated.

PP203
Initial experience of FDG-PET-CT imaging for staging and radiotherapy treatment planning of oropharyngeal cancer patients treated with tomotherapy (VORTIGERN: a RCR-UK-supported, NCRN portfolio study)

John Antony Frew[1], John Bernard Wilsdon[2], Hazel Mhairi McCallum[3], Judith Helen Mott[3], Charles Gerald Kelly[1], Werner Dobrowsky[1], Sanjoy Chatterjee[1]

[1]*Northern Centre for Cancer Care, The Freeman Hospital, Newcastle-upon-Tyne, UK,* [2]*The Department of Radiology, The Freeman Hospital, Newcastle-upon-Tyne, UK,* [3]*Regional Medical Physics Department, The Freeman Hospital, Newcastle-upon-Tyne, UK*

Introduction: Positron emission tomography (PET) is increasingly used to accurately define the tumour extent for radiotherapy planning in a number of cancer sites including head and neck cancer.
Purpose: VORTIGERN is a phase I/II trial investigating the impact of PET-CT in target volume definition and doses received by organs at risk in patients with oropharyngeal cancer being treated with Tomo-Therapy. We report our initial experience of PET-CT in staging and volume definition.
Materials: A Siemens Biograph PET-CT scanner, Prosoma (Medcom) and Masterplan (Nucletron) radiotherapy applications were used in this study.
Methods: Nine patients underwent a planning IV contrast enhanced CT and PET scan immobilised in the treatment position. The GTV and CTV were initially defined on the CT images alone before being outlined on the PET-CT scan.
Results: In 3 cases, the PET-CT defined GTV extended outside the CT based CTV indicating a possible geographical miss when planning on CT alone. The PET-CT scan did not change the TNM staging in any patient. The mean volume of the primary tumour and nodal GTV defined with CT was 44 ml (range 4.1–101.4 ml) and 30.8 ml (range 1.1–111.1 ml), respectively, compared with 22.4 mls

(range 7.3–29.4) and 23.6 mls (1.1–74.6 mls) when defined with PET-CT.
Conclusion: PET-CT scanning may improve the accuracy of radiotherapy target definition and reduce the risk of geographical miss in treating oropharngeal cancer.

PP204
Dietetic-led gastrostomy service: experience in a uk tertiary head and neck cancer centre

Rachael Donnelly[1], Lesley Freeman[1], Pippa Lowe[1], Lucy Mowatt[1], Jean-Pierre Jeannon[2], Mary O'Connell[3], Frances Calman[3], Richard Salter[4], Terry Wong[5], Azhar Ansari[5], Michelle McCarthy[5], Ricard Simo[2]
[1]Departments of Nutrition and Dietetics, [2]ENT Surgery, [3]Clinical Oncology, [4]Radiology and 5. Gastroenterology Guy's and St Thomas' NHS Foundation Trust, London, UK

Introduction: Feeding gastrostomies (FG) are well-established as a method of providing nutritional support in patients undergoing treatment for head and neck cancer (HNC). Their use is however still controversial and not without complications.
Purpose: To report our experience of establishing a dietetic-led FG service for HNC patients and to demonstrate its benefits.
Materials and methods: A 12-month review of the FG service was undertaken. This highlighted deficiencies including poor patient selection and preparation, inconsistent referrals and a high proportion of nutrition related complications during treatment. Key stakeholders were identified to develop a coordinated FG pathway. A dietetic time-in-motion study was undertaken to determine additional roles appropriate for the dietitians in order to improve the pathway. The current dietetic-led pathway includes a defined referral criteria, airway assessment protocol, nutritional assessment and management guidelines.
Results: Between 2003 and 2008, 342 FG were inserted. Of these, 283 were PEGs, 56 RIGs and 3 were surgically placed. Prior to the introduction of the dietetic-led service there was 1 death (2%) and 1 major complication (2%) out of 50 tube insertions. Since introduction of the dietetic-led service there have been no deaths and only 3 major complications (1%) out of 292 tube insertions. The number of insertions has also increased.
Conclusion: The lack of a co-ordinated FG service may lead to a higher incidence of complications. A dietetic-led service has reduced mortality and morbidity related to FG insertion, it has enhanced multi-disciplinary working and improved the patient experience. More research is needed.

PP205
Immune nutrition in head and neck cancer. a double blind randomised controlled trial of a perioperative immune enhancing feed (IMPACT) in patients with advanced head and neck cancer

Samit Ghosh[1,2], Ged Dempsey[3], Rachel Skelly[4], Nicolas Roland[1], Jeffrey Lancaster[1], Shaun Jackson[1], Simon Rogers[1,5], Derek Lowe[6], Terry Jones[1,2]
[1]Department of Otolaryngology/Head and Neck Surgery, Aintree University Hospital NHS Foundation Trust, Liverpool, Merseyside, UK, 2. School of Cancer Studies, University of Liverpool, Liverpool, Merseyside, UK, [3]Department of Anaesthesia and Critical Care, Aintree University Hospital NHS Foundation Trust, Liverpool, Merseyside, UK, [4]Department of Nutrition and Dietetics, Aintree University Hospital NHS Foundation Trust, Liverpool, Merseyside, UK, [5]Edge Hill University, Liverpool, Merseyside, UK, [6]Medical Statistician, Aintree University Hospital NHS Foundation Trust, Liverpool, Merseyside, UK

Introduction: Malnutrition may exist in up to 50% of head and neck cancer patients. Patients undergoing surgery for head and neck malignancies have a 20–50% incidence of post-operative infective complications. Traditional perioperative nutritional support has centred on correcting known nutritional deficiencies. More recently, studies assessing the prophylactic benefit of perioperative nutrition for head and neck cancer patients have attempted to evaluate the putative benefits of "immune-enhancing" formulas such as IMPACT.
Purpose: Establishment of a double-blind randomised controlled trial to assess whether perioperative feeding with IMPACT results in a reduction of postoperative infective complications in patients undergoing major surgery for SCCHN.
Materials: 65 patients (54 males:11 females, mean age 61.2 years, range 42–82 years) undergoing major surgery for SCCHN.
Methods: Patients were randomised to receive either IMPACT or an isocaloric isonitrogenous control feed for 5 days pre-surgery and 7 days post-surgery via percutaneous gastrostomy or nasogastric feeding tube. Pulmonary, gastrointestinal, haematological and urinary tract infections constituted the primary outcomes whilst neck site and wound infection, pharyngocutaneous fistula rate, and length of stay were secondary outcomes.
Results: 57 patients completed the trial (29 controls: 28 IMPACT). In the control group there were 8 (28%) primary infections and 15 (52%) secondary infections compared with. 11 (39%) primary infections and 14 (50%) secondary infections in the IMPACT group.
Conclusions: Perioperative enteral feeding with IMPACT did not demonstrate a beneficial protective effect in our small study.

PP206
The impact of neck dissection on the time that feeding gastrostomies remain in-situ after treatment of pharyngeal carcinoma

Ricard Simo[1], James R. Tysome[1], Rachael Donnelly[2], Lesley Freeman[2], Lucy Mowatt[2], Pippa Lowe[2], Alistair Balfour[1], Michael Elliott[1], Jean-Pierre Jeannon[1], Mary O'Connell[3]
[1]Head and Neck Surgery, [2]Oncology Nutrition and Dietetics, [3]Radiotherapy and Clinical Oncology Units, Guy's and St Thomas Hospital NHS Foundation Trust, London, UK

Introduction: Feeding gastrostomies (FG) are often required to provide nutritional support in patients undergoing treatment for advanced head and neck cancer.
Purpose: To assess the impact of planned neck dissections (PND) on the length of time that FG are required.
Materials and methods: Retrospective review of 63 consecutive patients who underwent FG insertion prior to treatment of SCC of the oropharynx and hypopharynx between 2004 and 2007. Patients were treated with CRT with or without staged PND. The time that FG were in-situ and the time from end of treatment to removal of FG were compared between patients with or without PND. Prism was used for statistical analysis.

Results: 34 patients met the inclusion criteria and 12 had PND. 27 males and 7 females. Age ranged between 42 and 82 years (mean 57.6 years). There was no difference ($p = 0.57$) in the mean times that FG were in-situ in patients who had a PND (mean 276 days) and those who did not (mean 302 days). The time from end of treatment to removal of FG was also not significantly different ($p = 0.25$) between patients who had PND (mean 196 days) and those who did not (mean 248 days). The number of patients who became FG dependant was not significantly different ($p = 0.44$) between the groups.
Conclusion: Patients undergoing treatment for locally advanced SCC of the head and neck with CRT required FG for a similar length of time, whether they underwent PND or not. PND does not increase the risk of FG dependency. Further research is needed.

PP207
A quality of life study of patients undergoing surgery for head and neck cancer and their primary carers

Wahid Terro[1], John Crean[2]
[1]*Consultant Oral and Maxillofacial Surgeon, Oro-Maxillofacial Surgery, Peninsula University Dental School, Beirut, Lebanon,* [2]*Honorary Consultant Oral and Maxillofacial Surgeon, Peninsula University Dental School, UK*

Introduction: The impact that current treatment options have upon patient's quality of life (QOL), in oral and head and neck cancer (H&NCa), has been well studied, but none have addressed the changes to the quality of life of patient's primary carers.
Aims: This prospective short-term study assessed quality of life changes in; (a) patients undergoing surgery for previously untreated head and neck cancer and (b) their primary carers.
Methods: 36 patients with diagnosis of head and neck cancer and 21 primary carers were recruited. Patients completed university of Washington Quality of Life Version Four (UW-QOL V4), Medical Outcomes Study-Short Form (SF-36), Hospital Anxiety and Depression Scale (HADS), and Davidson Trauma Scale (DTS), questionnaires, pre-treatment, 1 and 3 months postoperatively. The carers completed all except the UW-QOL V4.
Results: Patients recorded a significantly deterioration in psychological and physical domains at 1 month post-operatively ($p < 0.05$), returning to baseline levels by 3 months follow up stage. The carers reported a statistically significant deterioration ($p < 0.01$) in anxiety and depression domains which remained low at 3-month follow-up stage.
Conclusion: These findings highlight the need for physiological support not only for patients but also their primary carers during management of H&NCa. Further studies could highlight whether carer psychology has any detrimental effect on patient recovery.
In this presentation, results of physical, psychological, social and other domains of patients having undergone surgery for previously untreated head and neck cancer and their carers were discussed.

PP208
Endoscopic laryngo-pharyngeal surgery to pharyngeal or laryngeal cancer

Yukinori Asada[1], Kazuto Matuura[1], Kengo Katoh[1], Muneharu Yamazaki[1], Shigeru Saijo[1], Tetsuya Noguchi[2]
[1]*Department of Head and Neck, Miyagi Cancer Center, Miyagi Japan,* [2]*Department of gastroenterological medicine, Miyagi Cancer Center, Miyagi Japan*

Introduction: There was more detection of a superficial cancer of pharynx and larynx by development and spread of optical devices. Endscopic treatment is important method to treat these. Endoscopic laryngo-pharyngeal surgery (ELPS) is the procedure to use laryngeal autoscope with endoscopy to get wide working space and good sight. We have started endoscopic laryngo-pharyngeal surgery (ELPS) from June 2007.
Purpose: To figure out the current status of superficial cancer of pharynx and larynx and ELPS in Japan.
Methods: Twenty patients treated by ELPS from June 2007 to June 2009 were retrospectively analyzed. We studied about regions, pathological diagnosis, multiple cancer and airway management.
Results: Eleven patients out of 19 ones who had been suspected cancer before the operation were pathologically diagnosed carcinoma in situ or squamous cell carcinoma. Four patients were pathologically diagnosed dysplasia. The almost half of patients (9 out of 17 cases) was diagnosed by the gastroenterological endoscopy during the follow-up of the stomach or esophageal cancer. In terms of airway management of ELPS a tracheostomy was done only for the first case but the other 19 cases were extubated on the same day. Only 2 patients could not eat on the next day of the operation. The longest period was 13 days until the patient was able to take something orally.
Conclusion: More than half of the patients who was diagnosed a superficial cancer of larynx and pharynx were multiple cancer patients. We considered elps was safe and effective, but further investigation was needed.

PP209
Partial laryngectomy after failure of definitive radiotherapy for early glottic larynx cancer

Ryuichi Hayashi[1], K. Yoshino[2], Y. Hasegawa[3], N. Monden[4], M. Fujii[5], K. Nagahara[6]
[1]*Division of Head and Neck Surgery, National Cancer Center Hospital East, Chiba, Japan,* [2]*Division of Otorhinolaryngology, Osaka Medical Center for Cancer and Cardiovascular Diseases, Osaka, Japan,* [3]*Division of Head and Neck Surgery, Aichi Cancer Center Hospital, Aichi, Japan,* [4]*Division of Head and Neck Surgery, National Hospital Organization Shikoku Cancer Center, Ehime, Japan,* [5]*Division of Otorhinolaryngology, National Hospital Organization, Tokyo Medical Center, Tokyo, Japan,* [6]*Division of Head and Neck Surgery, Kusatsu General Hospital, Shiga, Japan*

Introduction: In Japan, radiotherapy is the preferred primary treatment for early-stage squamous cell carcinoma of the glottic larynx. Salvage partial laryngectomy (PL) is an effective option for patients in whom radiotherapy fails; however, total laryngectomy (TL) is usually indicated for recurrent tumor.
Purpose: To evaluate the outcome of surgical salvage for T1 or T2 squamous cell carcinoma of the glottic larynx after failure of definitive radiotherapy.
Materials and methods: Fifty patients who underwent salvage surgery following primary radiotherapy for T1N0 or T2N0 glottic larynx tumors were studied prospectively between October 2002 and September 2004. The mean radiation therapy dose was 65.3 Gy (56–70). Forty patients (80%) were suitable for PL, 36 for front-lateral resection, and 4 for cricohyoidoepiglottopexy; 10 (20%) required TL.
Results: No postoperative death occurred following salvage surgery, although 38% of the patients developed complications. The incidence of complications was not significantly different between the PL group and the TL group. The 5-year postoperative overall survival rates for the PL and TL groups were 83 and 80%, respectively. Of 40 patients requiring PL, 6 developed local recurrence and 1 required

tracheotomy. Larynx preservation was successful in 66% of all the patients, and the larynx could be preserved in 83% of the patients receiving PL.
Conclusion: PL is an effective treatment option for T1N0 or T2N0 glottic larynx tumors if radiotherapy fails.

PP210
Endoscopic CO_2 laser surgery for T2 glottic carcinomas

M. Makeieff, C. Cartier, R. Garrel, L. Crampette, B. Guerrier
Service ORL Chirurgie Cervico-Faciale, CHU Montpellier, France

Introduction: T2 glottic carcinoma can be treated either by radiation therapy or partial surgery. Open partial surgery provides long rehabilitation period for swallowing and tracheotomy is often mandatory.
Objectives: To evaluate functional and carcinologic results of endoscopic laser surgery (ELS) for selective T2 glottic carcinoma. Endoscopic procedure was complete vocal cord removal with anterior commissure.
Materials and methods: 22 patients with T2 glottic carcinoma treated by ELS where prospectively evaluated. Inclusion criteria where no radiologic cartilage and no important paraglottic space involvement, no subglottis involvement more than 5 mm. Extension of the tumor ventricle in 6 cases, anterior commissure in 8 cases, false vocal cord in 6 cases.
Results: Any patient needed tracheotomy. Swallowing began the day after surgery. Hospital stay was 2 days in all cases. 4 patients had positives margins and where successfully treated by supracricoid partial laryngectomies (2 cases) and radiation therapy (2 cases). At 3 years, 100% of patients where alive. At 5 years, carcinologic control with ELS was 78.9%. Definitive carcinologic control with organ preservation was 85.7%. Global survival rate at 5 years is 90.1%.
Conclusion: In selective cases of T2 glottic carcinoma, endoscopic CO_2 laser surgery can be an alternative to radiation therapy or open laryngeal partial surgery with similar results.

PP211
Granular cell tumor of the hypopharynx: case report

Paschalis Chlopsidis[1], Paraskevi Tsirevelou[1], Chaido Dava[1], Ifigeneia Zourou[2], **Charalampos Skoulakis**[1]
[1]*ENT Department, General Hospital of Volos, Volos, Greece,* [2]*Pathology Department, General Hospital of Volos, Greece*

Introduction: Granular cell tumor (GCT), or Abrikossoff's tumor, is an unusual lesion probably arising from Schwann cells. It is frequently found in the head and neck region, where the tongue is the most commonly affected site. Involvement of the hypopharynx is exceedingly rare because, to the best of our knowledge, only nine cases have been reported in the literature.
Materials and methods: We describe a granular cell tumor of the hypopharynx, of a 59-year-old patient who admitted the ENT Outpatient Department of General Hospital of Volos complaining of difficulty in swallowing the last 1 year. He reported that this difficulty was gradually getting worse during this period of time.
Results: Preoperative diagnostic examination including endoscopy and CT scan was suggestive of a benign lesion arising from the posterior wall of the hypopharynx, mainly on the right side, which due to its size, caused obstructive symptoms during swallowing and also a slight stenosis of the respiratory tract. Treatment included surgical excision of the lesion under microlaryngoscopy. The histopathologic study of the specimen, supported by immunohistochemical techniques, determined the lesion to be a GCT.
Conclusion: GCT should be included in the differential diagnosis of submucosal hypopharyngeal lesions. Endoscopy and radiologic imaging do not display any typical findings suggestive of the diagnosis, which can be based only on histologic findings. Radical surgical resection of the tumor is the treatment of choice because of the tendency of recurrence.

PP212
Laryngeal chondrosarcoma. A case report

Constantinos Gantas, Eleftheria Gletsou, Evdoxia Gerostergiou, Maria Apostolidou, Evaggelos Theos, Vasileios Lachanas, Constantinos Evaggelopoulos, John Bizakis
Otorhinolaryngology, Head and Neck Surgery Department, School of Medicine, University of Thessaly, Larissa, Greece

Introduction: Chondrosarcoma of the larynx is a rare tumor of the upper respiratory tract that originates from cartilaginous tissue and represents the most common sarcoma of this site. The diagnosis is not always easy, the aspecificity of the symptoms, and the low degree of malignancy often causes it to be mistaken for a chondroma.
Purpose: We report a case of a patient with a large chondrosarcoma of the larynx, and we provide an updated review of the literature.
Materials: A 55-year-old man was examined with an 18-month history of worsening dyspnea accompanied by dysphonia. Fiberoptic laryngoscopy revealed fixation of the right vocal cord along with a large neoformation, about 3 cm in diameter, in the right subglottic region, partially obstructing the respiratory space.
CT and MRI of the neck were almost superimposable and evidenced a mass of about 3 cm in diameter, with a marked reduction in the air space.
Methods: After a very difficult intubation a biopsy was taken from the neoplasm and a tracheotomy was performed. Considering the grade and size of the tumor a total laryngectomy was performed.
Results: The histological report revealed a grade II chondrosarcoma. After 6 months follow up the patient showed no sings of local recurrence or distal metastasis.
Conclusions: Chondrosarcoma of the larynx is a very rare malignant neoplasm. It is in fact a disease that requires accurate knowledge of the differential diagnosis and of the most appropriate therapy.

PP213
Trans oral robotic surgery: supraglottic hemilaringectomy

Pedro Ricardo Milet[1,2], Yann Mallet[2], Sophie El Bedoui[2], Francois Mouawad[2]. Jean-Louis Lefebvre[2]
[1]*Head and Neck Surgery Department, National Institute of Cancer INCA, Rio de Janeiro, Brazil,* [2]*Head and Neck Oncology Department, Centre Oscar Lambret, Lille, France*

Introduction: Many changes have occurred over the last 3 decades in larynx SCC management, particularly in the organ preservation era.

However surgery remains an important tool for larynx SCC treatment. Recently TORS (Trans-Oral-Robotic-Surgery) has refined the endocopic larynx surgery techniques. The reliability of this innovative technique is being assessed; however, we do not have precise/specific surgical techniques descriptions in literature.
Objective: Describe a technique of TORS Supraglottic Hemilaringectomy without epiglottis's split and discuss important issues of patient's care.
Materials: daVinci surgical robot, Valleylab ForceTriad generator, and FK retractor. Patient presented a T2N0M0 (UICC/AJCC 2007) supraglottic lesion.
Results: Total operating room time was 2 h 12 min, interval between installation and the end of the procedure was 1 h 23 min, and the duration of the procedure (incision-hemostasis) was 45 min. We kept the patient hospitalized until the 7th post-operative day, under corticoid and antibiotic therapy. He did not present any complication during this period, and no enteral feeding tube was needed. Early swallowing/speech exercises were initiated on the 3rd postoperative day and hospital discharge was made after complete oral feeding re-establishment.
Conclusion: Robotic systems are becoming great allies of the surgeons in treatment of benign and malignant diseases, including the carcinomas of the upper aerodigestive tract. The development of their integration in the surgical armamentarium is increasing fast. However, longterm data on disease control, survival and cost-effectiveness are missing for the moment and should be assessed as soon as possible in order to finetune their indications and contraindications.

PP214
The role of thyroidectomy in advanced laryngeal and pharyngolaryngeal carcinoma

Ricard Simo[1], Michael Elliott[1], Edward Odell[2], James R. Tysome[1], Steve Connor[3], Ata Siddiqui[3], Jean-Pierre Jeannon[1]
[1]*Department of Otorhinolaryngology Head and Neck Surgery,* [2]*Department of Oral Pathology,* [3]*Department of Radiology, Guy's and St Thomas' Hospital HNS Foundation Trust, London, UK*

Introduction: Total thyroidectomy (TThy) or hemithyroidectomy (HThy) together with a total laryngectomy (TL) or pharyngolaryngectomy (PL) for laryngeal cancer often renders the patient hypothyroid and commits them to life-long thyroid hormone replacement.
Purpose: To determine the incidence of thyroid gland (TG) invasion in patients undergoing TL or TPL with TThy or HThy for advanced laryngeal or hypopharyngeal cancer and to assess predicative factors.
Materials and methods: Retrospective analysis of 35 patients from 2004 to 2008. Specimens were examined to determine the incidence of TG invasion and relevant predicative factors such as histological grade and subglottic extension. Pre-operative imaging was reviewed to assess for radiological evidence of TG invasion.
Results: TL and TThy were performed in 19 patients, TL and HThy was performed in 3 patients and PL and TThy was performed in 13 patients. Surgery was performed for primary and recurrent cancer in 28 and 8 patients, respectively. Histological evidence of invasion of the TG was found in 3 patients (8.5%). No significant relationship was found between TG invasion and patient's sex, subsite of primary carcinoma, stage of primary disease at surgery, degree of differentiation and the presence of subglottic extension. A trend was found between the presence of TG invasion and surgery for recurrent disease. Definite evidence of radiological invasion of the TG was seen in only one patient.
Conclusion: Invasion of the TG in patients undergoing a TL or TPL is a rare event and limits the need for a TThy in most cases.

PP215
Pyriform sinus carcinoma of early stage treated with supracricoid hemilaryngopharyngectomy: functional results and local control of the disease in long term follow up

George Papacharalampous[1], Ioannis Yiotakis[2], Georgios Kotsis[1], Dimitrios Davilis[1], Leonidas Manolopoulos[2]
[1]*ENT Department, Elpis General Hospital of Athens, Athens, Greece,* [2]*A' ENT Department, Athens University, Medical School, Athens, Greece*

Introduction and purpose: The aim of this study is to report the functional and oncologic results of supracricoid hemilaryngopharyngectomy in our series, as well as local control of the disease.
Materials and methods: 18 selected patients with pyriform sinus cancer treated with supracricoid hemilaryngopharyngectomy and unilateral or bilateral neck dissection between 1994 and 2002 in A' ENT Department of Athens University Medical School. The patients were followed up postoperatively at least for 5 years or until their death.
Results: Functional results: no patients died in the early postoperative period. Two patients (11.1%) developed hematoma, while wound infection occurred in one patient (5.5%). Aspiration pneumonia that was confirmed radiologically, occurred in 4 patients (22.2%) and was treated conservatively. The average time until decannulation was 7 days. The average time until the removal of the nasogastric tube was 20 days.
Oncologic results, local recurrence rate: Local recurrence rate 5 years postoperatively reached 5.56%. Overall, neck recurrence occurred in three patients (16.67%). After the 3-year period, there were no more patients diagnosed with distant metastatic disease, but two more patients were diagnosed with a second primary malignancy, making an overall rate of 22.23% (4 patients) for the 5-year period.
Conclusion: The results of the long-term follow-up in our series, as well as in other surgical series of foreign institutions show that supracricoid hemipharyngolaryngectomy appears to be more effective regarding the local control of the disease, compared with radiotherapy or other conservative surgical procedures.

PP216
Stomal recurrence after laryngectomy

S. H. A. Primuharsa Putra[1], H. Salina[2], M. Y. Mohd Razif[2], M. Y. Izzuniddin[3]
[1]*Ear, Nose and Throat-Head and Neck Consultant Clinic, KPJ Seremban Specialist Hospital, Seremban, Negeri Sembilan, Malaysia,* [2]*Department of Otorhinolaryngology-Head and Neck Surgery, National University of Malaysia Medical Centre, Kuala Lumpur, Malaysia,* [3]*Department of Otorhinolaryngology-Head and Neck Surgery, Terendak Army Hospital, Malacca, Malaysia*

Introduction: Stomal recurrence following laryngectomy is a particularly ominous event with overall incidence of 6%. It is a difficult condition to manage and often ends with frustration.
Case report: A 67-year-old man who had undergone total laryngectomy two years ago presented with solid swelling just above the stoma for seven months. It was associated with dysphagia. There was no history of difficulty in breathing.
Result: Examination revealed a swelling measuring 4 × 3 cm just above the stoma. Flexible nasopharyngolaryngoscopy revealed pooling of saliva over the pharyngeal anastomosis. There was no neck nodes palpable. Computed tomography and magnetic resonance imaging showed a mass in the anterior part of the neck with esophageal involvement. The biopsy from the tumour was reported as well differentiated squamous cell carcinoma. The final diagnosis of stomal recurrence type II (Sissons) was made. He underwent tumour resection, pharyngoesophagectomy with stomach transposition and pectoralis major myocutaneous reconstruction. The margins of the resection were all clear from malignant cell. Postoperative recovery was uneventful and he was discharged on day 21 postoperative.
Conclusion: Although the surgery had high morbidity and mortality rate and does not cure the disease process, it may result in significant palliation of major symptoms and improved quality of life.

PP217
Association of tracheostomal size with clinical and demographic characteristics after total laryngectomy with primary voice reconstruction in a Philippine Tertiary Hospital

Jacqueline C. Angeles, Celso V. Ureta
Department of Otorhinolaryngology-Head and Neck Surgery, Veterans Memorial Medical Center, Diliman Quezon City, Philippines

Introduction: Tracheostomal stenosis after total laryngectomy is the most common late complication. Total laryngectomy with primary voice reconstruction using VMCU technique contributes information about its relation in the incidence of tracheostomal stenosis.
Purpose: To determine the association of tracheostomal size with clinical and demographic characteristics after total laryngectomy with primary voice reconstruction using VMCU technique.
Materials: 24 in-patients post-total laryngectomy with primary voice reconstruction using VMCU technique for laryngeal cancer from 1995 to 2008 in a tertiary hospital. Cross-sectional, retrospective study was done.
Methods: All 24 subjects answered a questionnaire with Demographic, Anthropometric and Clinical Data to complete. Pearson correlation analysis was used to associate stomal size with these factors as well as independent *t* test, one-way analysis of variance and Spearman Rank Correlation was utilized to correlate stomal size with functional ability, quality of life and tumor stage. A $p \leq 0.05$ was considered significant.
Results: No significance among the demographic characteristics like age and gender, anthropometic measurements, co-morbidities such as COPD, diabetes and goiter and clinical findings like pre-operative tumor site and stage, history of airway obstruction and tracheostomy, neck dissection, and pathologic resection. Duration of follow-up after radiotherapy and hypertension were significantly correlated with stomal size. Functional ability and perception of the quality of life were not significantly correlated to stomal size.
Conclusion: Demographic characteristics cannot be associated with stomal size. Certain clinical characteristics like history of hypertension, length of follow-up and radiotherapy can be correlated with tracheostomal stenosis.

PP218
Voice rehabilitation in a combination to microsurgical reconstruction pharynx

I. V. Reshetov, V. O. Olshanskiy, S. A. Kravtsov, M. V. Ratushnyi
P.A. Hertzen Moscow Cancer Research Institute, Moscow, Russia.

Introduction: Surgical treatment of malignant locally advanced laryngopharyngeal tumors is a challenging task in terms of obtaining good long-term oncological results, on the one hand, and providing social rehabilitation of the patients, on the other. We tried to develop a method of surgical rehabilitation after extensive resections that will not compromise oncological outcome and will improve quality of life in the given group of patients.
Materials and methods: To 9 patients with malignant locally advanced laryngopharyngeal tumors (age 40–55). Tumors were located in laryngopharynx (8 pts), and neck soft tissues (1 pts). The predominant histological type was squamous-cell carcinoma. In the primary tumors group there were 7 patients with T4 and 1 patient with T2 (sarcoma neck soft tissues) tumors; 3 patients had N1-disease. In all cases patients presented with significant cosmetic and functional defects of the upper digestive and respiratory tracts. Reconstruction pharynx was carried out with use of microsurgical flaps: gastro-omental (3), colon-omental (5) and radial flap (1). In 6 cases in one stage with pharyngolaryngectomy was performed trachea–esophageal shunting with establishing voice protez to rehabilitate the voice. The second step voice rehabilitation has been executed at 3 patients.
Results: Necrosis of the flap was not. Good functional qualities of the transplant contributed to the complete healing of salivary fistulas in 2 patients. Natural food intake was restored in all patients. All patients were dacanulates within 3 weeks after surgery. In 8 cases a voice function was applied after trachea-esophageal shunting. One patient died in the postoperative period because of arrosive bleeding from mediastinal vessels.
Discussion: Use of a method of microsurgical reconstruction after pharyngolaryngectomy at oncological patients promotes full restoration of a feed through a mouth and to restoration of voice function.

PP219
Laryngeal radionecrosis necessatating salvage laryngectomy in two patients

Muhammad Shakeel, **Aaron Trinidade**, David Hurman, Akhtar Hussain
Department of Otolaryngology, Head and Neck Surgery, University of Aberdeen, Aberdeen, UK

Introduction: Chondroradionecrosis is an uncommon but serious complication of radiotherapy (DXT) for laryngeal cancer. Clinically it is unreliable to differentiate this condition from residual or recurrent tumour. Universally accepted conservative treatment, with successful outcome, for this condition remains to be determined.

Purpose: To raise awareness about this rare clinical entity, highlight the difficulty to diagnose this condition pre-operatively, discuss the management options and to investigate any association between patients' factors and occurrence of this complication.
Materials: Case report with world literature review.
Methods: Two Caucasian males completed DXT for their early stage squamous cell carcinoma of larynx. They had a good response and remained disease free, clinically and radiologically. The two case reports are described in detail and a review of the literature addressing various aspects of chondroradionecrosis of the larynx will be presented.
Results: Within the first year of completing DXT, they developed painful throat, persistent dysphonia and dysphagia. Multiple laryngeal biopsies failed to reveal any malignancy but showed evidence of radionecrosis. They failed to improve with conservative treatment. Because of the severity of their symptomatology, non-functioning larynges and possibility of occult malignancy, they had salvage laryngectomy with good post-operative recovery. The final pathology did not reveal any residual/recurrent tumour but confirmed chondroradionecrosis.
Conclusions: Chondroradionecrosis of the larynx is an extremely difficult condition to treat and every effort should be made to prevent this complication. This possible side effect should be thoroughly explained to the patients while counseling them for DXT to treat their laryngeal cancer.

PP220
Evaluation of oxidative stress parameters in the serum of patients with laryngeal and hypopharyngeal cancer

Sever Pop[1], Adriana Muresan[2], Marcel Cosgarea[1], Ermil Tomescu[1]
[1]ENT Department, The "Iuliu Hatieganu" University of Medicine and Pharmacy Cluj-Napoca, Romania, [2]Physiology Department, The "Iuliu Hatieganu" University of Medicine and Pharmacy Cluj-Napoca, Romania

Introduction: Laryngeal and hypopharyngeal cancers are among the most frequent ENT malignancies. The hypothesis that reactive oxygen species play a role in carcinogenesis has gained support from a large number of studies.
Purpose: To evaluate the oxidative stress parameters in patients with advanced laryngeal and hypopharyngeal cancers.
Materials and methods: The research was carried out on a group of 57 patients, and compared to a control group of 30 healthy subjects. Blood was harvested from the 57 patients, the day before, or the morning before surgery (test 1). The second blood test for the same patient was harvested two weeks after the surgery (test 2). From the serum tests 1 and 2, the following determinations were made: carbonilated protein (PC), hydrogen donor capacity (DH), free malone dialdehyde (MDA) and lipid peroxides (PL).
Results: The values of the final lipid and protein peroxidation products are at significantly higher levels in the serum of patients as compared to the healthy controls. The total antioxidant capacity is significantly diminished in the serum of patients compared with healthy controls. The radical surgery determines a significant decrease of the final products of protein and lipid peroxidation, associated with a significant increase of the antioxidant capacity.
Conclusions: The data obtained confirm a characteristic oxidative pattern in patients with laryngeal and hypopharyngeal carcinoma (high values of lipid and protein peroxidation products, associated with a decrease of total antioxidant capacity).

PP221
Molecular profiling of laryngeal cancer

Antti A. Mäkitie[1], Outi Monni[2]
[1]Department of Otorhinolaryngology-Head and Neck Surgery, Helsinki University Central Hospital, Helsinki, Finland, [2]Institute of Biomedicine, Medical Biochemistry and Developmental Biology, Genome-Scale Biology Research Program, University of Helsinki, Helsinki, Finland

Laryngeal squamous cell carcinoma (LSCC) is considered to progress from dysplasia to invasive cancer through well-defined clinical and histological stages. Numerous genetic alterations have been described in LSCC, but the molecular mechanisms contributing to its initiation and to the progression from a normal cell to invasive carcinoma are still poorly known. Genomic, transcriptomic and protein alterations in LSCC progression are key areas for the current research aiming at finding instruments for classification, prognostication and patient tailored treatment. High-resolution genome-wide technologies have revealed numerous genetic alterations (both gene amplifications and deletions) that still have an unestablished correlation with gene expression and molecular consequences. A review of the current literature on the use of novel array-based technologies in revealing the molecular portrait of laryngeal cancer will be presented.

PP222
Open partial laryngectomy in cases with laryngeal cancer

Adem Limani, Qazim Hysenaj, Bajram Nuraj, Arsim Behramaj, Shkelzen Kuçi, Zgjim Limani
ENT Head and Neck Surgery Clinic, University Clinical Centre of Kosova, Prishtina, Kosova

Introduction: Open partial laryngectomy applies in cases with localized laryngeal cancer. Due to the localization and size of the laryngeal cancer there are several modalities of partial laryngectomies.
Purpose: To present the rapport between open partial laryngectomies and total laryngectomies and possibilities of preserving laryngeal functions.
Advantages and disadvantages of open partial laryngectomy, related to survival and preservation of laryngeal functions.
Materials: During the period of 2000–2008 in ENT-HNS clinic, UCC of Kosova were done 404 laryngectomies. 130 were partial laryngectomies and 274 total laryngectomies. In 98 out of 130 cases was performed Vertical Partial Laryngectomy (VPL) and in 32 Horizontal Partial Laryngectomy (HPL).
Methods: This is a retrospective and prospective study conducted at cases with laryngeal cancer.
Results: Out of 404 laryngectomies, in 130 (31.17%) was performed partial laryngectomy. VPL was performed in 98/130 (75.38%) and in 32/130 (24.61%) HPL. Out of 130 VPL in 52 (53.06%) cases was performed Chordectomy, in 6/98 (6.12%) fronto-lateral laryngectomy, in 8/98 (8.16%) cases was applied hemilaryngectomy and 32/98 (32.65%) were treated with classic VPL. Only HPL was conducted in 29/32 (90.62%) cases and in 3/32 (9.37%) cases HPL mutually with

partial pharyngectomy. In cases treated with Chordectomy, VPL and HPL laryngeal functions were reset at the end of the first week and in most cases laryngeal functions were satisfying.
Conclusions: Larynx conservative surgery intends to preserve speaking and swallowing functions with no need of permanent tracheostoma. Open techniques result with a better rate of local control, but tracheotomy is requested.

PP223
Laryngeal cancer: a 6-year experience in our clinic

Maria Apostolidou, Eleftheria Gletsou, Evaggelos Theos, Constantinos Evaggelopoulos, Constantinos Gantas, Evdoxia Gerostergiou, Vasileios Lachanas, John Bizakis
Otorhinolaryngology-Head and Neck Surgery Department, University of Thessaly, School of Medicine, Larissa, Greece

Introduction: Laryngeal cancer is the most common non-cutaneous head and neck malignancy. For classification purposes, it is divided into supraglottic, glottic and subglottic tumors. Symptoms and treatment vary according to the classification and the tumor stage. The early diagnosis is significant for the patient's prognosis.
Purpore: To investigate the outcome of surgically managed laryngeal carcinoma patients attending an outpatient clinic over a 6-year period from 2003 until today.
Materials: This was an analytical, retrospective, cross-sectional study. A total of 181 laryngeal carcinoma patients who were managed surgically with or without radiotherapy were analyzed.
Methods: They were classified according to age, sex, risk factors, location, size and degree of invasion of the tumor, the histological type and the treatment.
Results: They were 174 male and 7 female patients, who were divided into three groups according to their age: those who were younger than 45 years old, those who were between 45 and 65 years old and those who were older than 65 years old.
Conclusions: Laryngeal cancer is mainly a disease of middle-aged and elderly men. Tobacco smoking and alcohol consumption have been established as the main risk factors for laryngeal cancer. Squamous cell carcinoma (SCC) is by far the most common histological finding in laryngeal malignancy.

PP224
Carcinoma of larynx: a comprehensive 10 years review in selected malaysian hospital

S. Halimuddin[1], **M. Y. Mohd Razif**[1], M. B. Marina[1], A. Mazita[1], A. A. Muhd Azrif[1], S. H. A. Primuharsa Putra[2]
[1]Department of Otorhinolaryngology-Head and Neck Surgery, Universiti Kebangsaan Malaysia Medical Center, Kuala Lumpur, Malaysia, [2]Ear, Nose and Throat-Head and Neck Consultant Clinic, KPJ Seremban Specialist Hospital, Seremban, Malaysia

Purpose: To determine the 5-year survival rate and disease pattern in patients with carcinoma of larynx treated in Universiti Kebangsaan Malaysia Medical Center (UKMMC).
Methods: This is a retrospective review over a period of 10 years from January 1998 to December 2007 at the Universiti Kebangsaan Malaysia Medical Center (UKMMC), Kuala Lumpur. Case records of patients who had carcinoma of larynx during this period were reviewed. For survival analysis, TNM classifications was used by creating alternative groupings; early-localized disease (ELD) (T1-2, N0, M0), advanced-localized disease (ALD) (T3-4, N0, M0), and regional metastasis (RM) (T1-4, $N > 0$, M0). National registry department provided the survival status of the patients.
Results: Fifty cases were reviewed, 46 males and 4 females with a ratio of 11.5:1, age between 33 and 81 years old with median age of 64.4. Main complaints were hoarseness, hoarseness with stridor and hoarseness with neck nodes. Mean duration of complaints was 9.6 months. Mean duration from presentation to diagnosis (HPE) was 30.3 days. Mean duration from diagnosis to radiotherapy was 47.1 days and for surgery was 25 days. Twelve patients had tracheostomy performed prior to laryngectomy. Median duration from tracheostomy to definitive surgery was 28.5 days. Out of the 12 patients, 1 patient had stomal recurrence. Mean duration of follow up was 3.9 years. Eighteen patients had undergone total laryngectomy: 2 patients had primary tracheo-esophageal prosthesis (TEP) insertion, 11 patients had secondary TEP insertion, 1 patient had acquired esophageal speech and 4 patients had no voice rehabilitation. Recurrence rate for ELD and ALD were similar at 25% and for RM at 28%. Mean duration to develop recurrence was 13.1 months. Overall 5 years survival rate was 48.9, 75% for ELD, 44.4% for ELD and 27.3% for RM.
Conclusion: There was delay in starting the definitive treatment either by radiotherapy or surgery because of late presentation of patients. The duration of tracheostomy and the definitive surgery was far from ideal but the incidence of stomal recurrence was low. The survival rate for the ELD group was similar to other studies but for the ALD and RM, the survival rate in this review was lower.

PP225
Incidence trends of pharyngeal cancer in norway, 1981–2005

Jon Mork[1,2], Bjørn Møller[2], Tove Dahl[2], Freddie Bray[2]
[1]Department of Otorhinolaryngology, Oslo University Hospital, Rikshospitalet, Oslo, Norway, [2]Department of Clinical and Registry-based Research, Cancer Registry of Norway, Institute of Population-based Cancer Research, Oslo, Norway

Introduction: Incidence rates of oropharyngeal squamous cell carcinoma (SCC) have been on the increase in several countries in recent decades, with contrasting trends observed in neighboring anatomical sites. Earlier epidemiological studies indicate that they share important risk factors, including tobacco and alcohol, while a subset of more recently diagnosed cancers may be associated with oncogenic HPV types.
Purpose: To examine incidence trends in pharyngeal SCCs in Norway, and to study whether changes in disease classification systems, coding and registration practices, rather than real changes in incidence, may explain the observations.
Materials: Incident cases of pharyngeal cancer were extracted from The Cancer Registry of Norway for the period 1981–2005 ($n = 2{,}315$), including base of tongue ($n = 333$), oropharynx ($n = 999$), nasopharynx ($n = 263$) and hypopharynx ($n = 720$).
Methods: Clinical notifications for each case were abstracted and the primary site revised. Incidence counts and rates were examined before and after reabstraction, as were trends in the revised age-adjusted rates, as well as birth cohort trends, by subsite and sex.
Results: Recoding had little impact on rates or the direction and magnitude of trends by subsite or sex. Oropharyngeal SCC incidence rates were three times higher in men, with rapid annual increases in both sexes from 1981 to 2005 of 5.0% (men) and 4.2% (women). Incidence rates of cancer of the base of tongue increased in both men and women, approaching 4 and 3% annual increases. Rates of

hypopharyngeal cancer declined in men in recent years, but increased in women. Trends in oropharyngeal cancer paralleled lung cancer in women, but not in men.
Conclusions: The observed increases in incidence in oropharyngeal SCCs appear to be real. Traditional risk factors are not likely to explain trend for males, as they differ temporally with those of hypopharyngeal and lung cancer incidence.

PP226
TNM staging of nasopharyngeal carcinoma as a prognostic factor: a single institution experience

Claramae Chia, Gopalakrishna Iyer
Department of General Surgery, Singapore General Hospital, Singapore, Singapore

Nasopharyngeal carcinoma has a high incidence in Southern China and Southeast Asia. In Singapore, it is the 6th most common cancer in males and tends to affect patients between the ages of 35–55 years old. Our institution sees about 350 cases of nasopharyngeal carcinomas a year, many of which are referred from other institutions for treatment. We retrospectively selected 112 patients who were treated for nasopharyngeal carcinoma and had nasopharyngeal biopsies available to us. These patients were grouped into those who presented with early tumours, those with nodal metastases and those with distant metastases. The patient's ages ranged from 27 to 77 years old. The ratio of males to females is 4:1. The analysis of our data shows that the patients how presented with a higher group stage, higher T stage, higher N stage and distant metastasis had a poorer chance of survival. We also compared the groups to see if there was a difference between them in terms of patient characteristics. Our results clearly show a survival benefit in picking up case of nasopharyngeal carcinoma at an earlier stage.

PP227
Return of vocal cord mobility after chemoradiation in advanced laryngeal and hypopharyngeal cancer accompanying vocal cord fixation

Bo-Sung Jun, Chang Hoon Bae, **Si-Youn Song**, Yong-Dae Kim
Department of Otorhinolaryngology-Head and Neck Surgery, College of Medicine, Yeungnam University, Daegu, Republic of Korea

Introduction: For preserving larynx, non-operative modalities are using for advanced laryngeal and hypopharyngeal cancer. Even though non-operative treatment is successful, adverse effects are inevitable such as late toxicity, preservation of a dysfunctioning larynx, risk for second primary tumors and increased complication rate and reduced survival after salvage surgery.
Purpose: The purposes of this study are suggesting the factors for predicting the returning of vocal cord mobility after chemoradiation in advanced laryngeal and hypopharyngeal cancer accompanying vocal cord fixation, reducing side effects of chemoradiation and increasing success rate of salvage surgery.
Materials and methods: We undertook a retrospective study of 13 male patients treated between January 2000 and January 2008 for previously not treated T3 and T4 laryngeal and hypopharyngeal squamous cell carcinoma having vocal cord fixation by sequential chemoradiation primarily.
Result: Among 13 patients, vocal cord mobility was recovered in 8 patients (61.5%), but not recovered in 5 patients (38.5%). All patient with no recovery experienced local recur or progression of disease during treatment and died within 3 years after primary treatment. Age (over than 60 years old), T-stage 4, primary site (hypopharynx), positive neck node and cell differentiation (poorly) showed the trend of poor prognosis, but statistically not significant due to small number of patients. Return of mobility showed statistically significant good prognosis.
Conclusion: Return of vocal cord mobility after chemoradiation may be highly predictive factor for good prognosis. And failure to return of vocal cord mobility means to requirement for early changing of the treatment modality.

PP228
Long-term outcome after endoscopic resection in patients with hypopharyngeal carcinoma invading the subepithelium

Yuichi Shimizu M.D[1], Takeshi Yoshida M.D[1], Mototsugu Kato M.D[2], Shouko Ono M.D[2], Nobuhiko Oridate M.D[3], Masahiro Asaka M.D[1]
[1]Third Department of Internal Medicine, Hokkaido University School of Medicine, Kitaku, Sapporo, Japan, [2]Division of Endoscopy, Hokkaido University Hospital, Kitaku, Sapporo, Japan, [3]Department of Otolaryngology, Hokkaido University Hospital, Kitaku, Sapporo, Japan

Introduction: Recent developments in endoscopic diagnosis have enabled gastrointestinal endoscopists to detect hypopharyngeal carcinoma in an early stage. Patients with such early lesions can be treated with endoscopic resection (ER) with minimal invasiveness. However, strict indication for ER in cases of hypopharyngeal carcinoma is unclear. In this study, we evaluated long-term outcome after ER in patients with hypopharyngeal carcinoma invading the upper subepithelial layer.
Methods: From June 2003 through March 2008, 17 patients with hypopharyngeal carcinoma underwent ER at Hokkaido University Hospital. Nine of the patients had histologically confirmed shallow invasion of the subepithelium. None of those 9 patients wished to undergo open surgery or adjuvant chemoradiotherapy, and they were observed to assess the outcome. Lesion size ranged from 0.9 to 2.5 cm [mean (SD), 2.0 ± 0.5 cm]. Depth of tumor invasion in the subepithelium ranged from 300 to 720 μm [mean (SD), 480 ± 150 μm].
Results: As of March 2009, none of the 9 patients have died of recurrent hypopharyngeal carcinoma or intercurrent diseases. None of them have had local recurrence or metastasis. The median follow-up period after treatment in the 9 patients was 43 months (12–66 months). Kaplan–Meier estimates of relapse-free survival rates at 5 years in the 9 patients were 100%.
Conclusion: Although the number of patients in this study was small, the results of this study suggest that hypopharyngeal carcinoma with slight invasion to the subepithelium can be successfully treated by ER.

PP229
Postoperative diagnosis and management of aspiration

Kynigou Maria, Stefanidis Anestis, Aggeli Dimitra, Soldatou Stavroula, Chatziavramidis Aggelos, Triaridis Athanasios, Sidiras Thomas
ENT Department, Theagenion Anticancer Hospital, Thessaloniki, Greece

Introduction: Patients treated with hemilaryngectomy appear post surgically often aspiration. Endoscopic evaluation of swallowing is a valid method of assessing dysphagia, mainly aspiration.
Purpose: We present the use of functional endoscopic evaluation of swallowing for diagnosis and management of aspiration in patients after a hemilaryngectomy.
Materials: 38 consecutive patients after hemilaryngectomy.
Methods: All patients were assessed 48–72 h postopertively by functional endoscopic evaluation of swallowing. In case of an unsafe swallow, compensatory techniques were used to achieve a safe swallow.
Results: 7 out of 38 patients swallowed without any aspiration while 31 patients were aspirating and 28 of them were helped by some compensatory manoeuvre.
The most effective techniques were chin tuck and the second effective turn of the head towards to the affected site.
Conclusions: Functional endoscopic evaluation of swallowing is an easy, portable, effective means for detection of aspiration and treatment in patients treated by some kind of hemilaryngectomy.

PP230
Initial therapy of patient with regional of oropharynx, nasopharynx and hypopharynx cancer

Michael Kropotov, Sergey Tkachev, Anna Epikhina, Rinat Hasanov, Dmitry Stelmakh
N.N. Blokhin Russian Cancer Research Center, Moscow, Russia

Purpose: Oropharynx, nasopharynx, and hypopharynx cancer is associated with aggressive behavior, and frequent lymphogenic metastases. In most cases combine radiotherapy and chemotherapy enable to achieve complete response in primary tumor and perform surgery only in regional lymph nodes.
Patients and methods: A total of 130 patients with T1-4 and N1-3 pharynx cancer were analyzed (nasopharynx cancer $n = 28$; oropharynx cancer $n = 49$; hypopharynx cancer $n = 53$). The patients with complete regression in primary tumor were included in analysis. T3-T4 and T2 stage was obtained in 88 patients (67.7%) and 42 patients (32.3%), respectively. N2-N3 and N1 stage was obtained in 103 patients (79.2%) and in 27 patients (20.8%), respectively. Initial chemoradiotherapy was consisted in two cycles of chemotherapy with 5-FU and cisplatin with concomitant radiation therapy to primary tumor and neck-supraclavicular lymph nodes on both sides with dose 40 Gy (2 Gy per fraction). Once clinical response assessed as shrinking of primary tumor more than 50%, and was acquired than radiotherapy was consecutive escalated to 70 Gy.
Results: In all patients, complete response in primary tumor was achieved due to radical course of radiotherapy (70 Gy). Complete response in N1 and N2-3 stage was obtained in 23 patients (85.2%) and in 28 patients (27.2%), respectively. Partial response rate in N1 and N2-3 stage was 14.8% ($n = 4$) and 72.8% ($n = 75$), respectively. Of all patients in this group lymphodissection for regional nodes was performed. Histopathologic examination revealed IV stage of therapeutic pathomorphism in 23.8% patients.
Conclusion: Chemoradiotherapy improved primary pharynx cancer greater than regional metastases (partial response in 79 cases). Low therapy effect of chemoradiotherapy was associated with greater N. 2-year disease-free survival rate was 90.2% due to 46 alive patients with complete response for regional metastases. 2-year disease-free survival rate for patients after lymphodissection for regional lymph nodes 64.5% ($n = 51$). Surgery for neck lymph nodes significantly improved disease-free survival rate and should be mandatory in patient with advanced metastases into the neck lymph nodes (N2-3).

PP231
Ipsilateral or bilateral tonsillectomy in search of a primary carcinoma?

Aaron Trinidade, Prasad Kothari
Department of Otolaryngology, Luton and Dunstable Hospital, Luton, UK

Introduction: Cervical metastases of an unknown primary lesion accounts for 5–10% of head and neck cancers. Tonsillar carcinoma is the third most common, with an incidence of 18–47% of unknown primaries, and the likelihood of synchronous tonsillar tumour of about 5–10%. Current practice for investigating an unknown primary includes computed tomography (CT) with or without magnetic resonance imaging (MRI), and then, if necessary, 18-fluouro-deoxy-glucose positron emission tomography (FDG-PET). This is followed by panendoscopy with biopsy from the potential primary sites including tonsillar biopsy or tonsillectomy.
Purpose: To determine whether ipsilateral or bilateral tonsillectomy is better during the search for an unknown primary.
Methods: Retrospective review.
Materials: All patients within a 5-year period presenting with metastatic head and neck squamous cell carcinoma with an unknown primary.
Results: A 5-year retrospective review of our database of metastatic squamous cell carcinomas from unknown primary sites identified five patients with synchronous tonsillar tumours. All had clinically normal-looking tonsils, MRI was within normal limit and a PET-CT identified the ipsilateral tonsillar primary in three cases only. Bilateral tonsillectomy rather than a tonsillar biopsy or ipsilateral tonsillectomy in the search for an unknown primary has become standard practice in our unit.
Conclusions: Identification of a second primary dictates planning for the primary site and in the long term, influences patients' survival. We therefore recommend that bilateral tonsillectomy should be standard in the investigation of patients who present with cervical metastases from an unknown primary in the head and neck region.

PP232
Prevalence of laryngopharyngeal reflux symptoms in a random sample of primary care patients documented with the reflux symptom index (RSI)

Athanasia Printza[1], **Athanassios Kyrgidis**[2], Eleni Oikonomidou[1], Stefanos Triaridis[2]
[1]2nd University Department of Otolaryngology, Aristotle University, "G. Papageorgiou" General Hospital, Thessaloniki, Greece, [2]1st

University Department of Otolaryngology, Aristotle University, AHEPA General Hospital, Thessaloniki, Greece

Introduction and purpose: Laryncopharyngeal reflux (LPR) is described as the backflow of gastric content, up the oesophagus and into the throat. The condition is oftenly present in head and neck cancer patients. The aim of this study was to estimate the prevalence of laryncopharyngeal reflux symptoms in a random sample of patients presenting in a primary care setting.
Materials and methods: Random patients presenting at three distinct primary care centres were selected for participation in the study. The RSI is a disease-specific instrument, including nine items. The questions are rated on a five-graded Likert-type scale; the higher the value the more severe the impact on the daily functioning. Reliability and construct validity were statistically appraised.
Results: 188 randomized patients completed the RSI questionnaire. 36.3% were male. 29.6% were smokers. Mean (SD) age was 53.4(17.7) years. The instrument was able to discriminate 55 patients with LPR symptoms with a mean score of 9.6. In the present study, patients were more likely to have their lunch on a later time when compared to controls (ANOVA, $p = 0.049$). Factor analysis verified that the RSI instrument is consisted of three main components.
Conclusions: The prevalence of LPR in the general population presenting in a primary care setting was recorded to be 29%. The mean score of 9.6 is in accordance with a recently published study from Taiwan.

PP233
Long term functional results after CO_2 aser-cordectomy of vocal cord cancer

M. Csanády, J. Czigner, J. Jóri
Department of oto-Rhino-laryngology, Head and Neck Surgery University of Szeged, Lungary

Authors report their more than 20 years experience with CO_2 laser surgery of early glottic cancer. Between 1987 and 2001—during a period of 15 years, a minimum of 5 years follow up—a total of 251 laser cordectomies were performed in 224 patients with Tis-T2 vocal cord tumours as a minimally invasive, curative, laryngomicroscopic CO_2 laser resection.

Laser cordectomy was divided into 4 subgroups (due to ELS classification into 5 subgroups) in order to classify the extension of the compete resection of the tumour with adequate, clear margins.

A 5-year survival of 251 laser-cordectomies in 224 patients revealed in Tis tumours 100%, T1a 92%, T1b 77% and T2 83%, respectively.

For 87% of their patients with vocal cord tumours CO_2 laser-surgery proved a successful, primary therapeutical intervention.

The quality of the voice and closure of glottis highly depends on the extension of tumours and resection of the vocal cord.

Laser-treatment can be repeatedly performed. The voice improves during the healing (reepithelization) after laser-cordectomy in subgroups 1, 2, (3). Beside the ablative, oncological result, from functional aspect in 2/3 of the total patients after laser-cordectomy the voice is almost normal or at least relative good. There is no swallowing disorder.

PP234
Clinical outcomes of hypopharyngeal cancer after conservative laryngeal surgery

Young-Soo Rho, Jin-Hwan Kim, Hyung Ro Chu,
Department of Otorhinolarnyngology-Head and Neck Surgery, Ilsong Memorial Head and Neck Cancer Center, Hallym University Medical Center, Korea Republic

Background: This aim of the study was to report clinical outcomes of patients who underwent conservative laryngeal surgery for hypopharyngeal cancer and to analyze functional outcome.
Methods: Of 103 patients undergoing surgery for previously untreated hypopharyngeal cancer in our institution from January 1992 to August 2008, 37 were recruited in the study. 36 patients received post-operative radiotherapy. Reports of the site and extent of tumor, type of conservative laryngeal surgery and histopathologic finding were reviewed. In addition, subjective and objective evaluation of voice and swallowing and postoperative follow-up were reviewed.
Results: The site of origin was the pyriform sinus (PS) in 32, posterior pharyngeal wall (PPW) in 4 and postcricoid area (PC) in 1 case. Partial laryngopharyngectomy was performed in 10 cases, supraglottic partial laryngopharyngectomy (SPLP) in 17 cases, supracricoid hemilaryngopharyngectomy (SCHLP) in 5 cases and wide vertical hemilaryngopharyngectomy (WVHLP) in 5 cases. The 3-year disease-specific survival rate and 3-year disease-free survival rate following conservative laryngeal surgery were 75.26 and 60.82%. 34(92%) of 37 patients had successful removed tracheostomy tubes with a median time to decannulation of 23 days. Normal or soft diet swallowing and satisfactory voice quality were achieved in all cases.
Conclusions: Conservative laryngeal surgery maintains physiologic speech and swallowing in selected patients with hypopharyngeal cancer. There is a good oncologic outcome and an excellent functional recovery when strict selection criteria and various surgical methods are applied and an intensive education for swallowing rehabilitation is followed.

PP235
Results of endoscopic cancer surgery for glottic cancer

Wleslaw Gołąbek, Kamal Morshed
Department of Otolaryngology, Head and Neck Surgery, Medical University of Lublin, Poland

Introduction: Early larynx cancer might be treated with radiotherapy or endoscopic laser surgery.
Purpose: The aim of the paper was to evaluate early results and 5-year survival of endoscopic laser surgery for T1-T2 glottic cancer.
Materials and methods: The group included 158 patients treated in the years 1999–2004. 140 (88.6%) patients had T1N0 and 18 (11.4%) patients had T2N0 tumor.
Results: Three patients had bleeding 1–7 days after surgery that required laryngoscopy with coagulation. Because of positive or insufficient surgical margin in 10 (6.3%) patients excision was extended endoscopically, in two patients partial vertical and in two

patients total laryngectomy were performed. We lost follow up in 13 (8.2%) patients. 127 (87.6%) of 145 patients were alive for more than 5 years without disease. All the patients preserved voice though majority with hoarseness. 11 (7.6%) patients died because of cancer and 7 (4.8%) patients died of other reasons.
Conclusion: Endoscopic laser surgery is good treatment option for early glottic cancer.

PP236
Modern diagnostics and comparative estimation of efficiency of the treatment of laryngopharynx malignant tumor

Rais Tulebaev, Elnara Ismagulova, **Bibigul Shagataeva**
ENT-department, Medical University Astana, Kazakhstan

Purpose: The analysis of resolving possibilities of endoscopic and radiation methods of investigations and the estimation of efficiency of different methods of treatment of laryngopharynx tumor according to the nearest and distant results of chemoradiation therapy, surgical intervention are showed.
Materials and methods: We carried out the clinical examinations of 183 patients. The analysis of clinical material showed that about 96% patients with primary cancer of laryngopharynx are men. The ratio of men and women with this pathology composed 9:1. The main peak of morbidity is met at ages 41–65. The middle age of the patients fallen ill with laryngopharynx tumor composes 52.5 years old.
Results: As the absence of early clinical symptomatology, malignant tumors of laryngopharynx are diagnosed as a rule in the 3–4th stage of disease. The comparative analysis of diagnostic possibilities of fiberscopia, computed tomography scanning, magnetic resonance imaging and ultrasonic methods of investigation allowed to work out algorithm of diagnostics for timely revealing of patients with malignant neoplasms of laryngopharynx. In suspicions on malignant process of laryngopharynx it is recommended to carry out tomography in frontal projection (including Valsalva's test). The use of MTI with contrast study allowed increasing the level of early diagnostics pf primary and recurrent tumors in patients with cancer of laryngeal part of pharynx almost by 30%. More higher indices of 3–5 years survivability were noted in patients with extensive primary tumors who had got combined method of treatment.
Conclusion: The main method of treatment of tumors of laryngopharynx in the T1-T2 stages is surgical. The extensive malignant tumors of laryngopharynx with regional metastasis, the combined method with performing the operation is recommended in the1st stage. Chemotherapy in treatment of laryngopharynx is used with palliative aim in recurrence.

PP237
Management of a very large persistent papillary thyroid cancer: presentation of an interesting case

X. Kochilas[1,2], N. Manolis[3], **A. Sakellaridis**[3], S. Georgopoulos[3]
[1]Academic Department of Oto-Rhino-Laryngology, National University of Ireland, Newcastle Road, Galway, Ireland, [2]Department of Otolaryngology, Head and Neck Surgery, Galway University Hospitals, Galway, Ireland, [3]Department of Otolaryngology, Head and Neck Surgery, Agios Savvas Anticancer Hospital, Athens, Greece

Introduction: Enlargement of the thyroid is a common clinical finding that can be attributed to a variety of conditions, including neoplasia. Thyroid malignancies usually follow a typical clinical course based on their histopathological type. We would like to present a case of a papillary thyroid carcinoma that presented a very aggressive persistent clinical course.
Materials and methods: A 72-year-old female was admitted due a hemorrhagic very large papillary thyroid carcinoma extending from the lower neck to the upper mediastinum, displacing the trachea. From her past medical history, the patient reported that she had undergone thyroidectomy, radioiodine therapy and external radiotherapy four years earlier. Follow-up had reveled persistent disease and the tumor continued to grow. The patient was referred to our department due to hemorrhage from the tumour and breathing difficulties, despite the presence of a tracheostomy. A total laryngectomy and bilateral neck dissection was performed.
Conclusion: Papillary carcinoma is considered to have a favorable prognosis. However, it should be noted that occasionally disease evolution might be unpredictable. Therefore, surgeons should monitor patients and be prepared to act accordingly.

PP238
Treatment of locally advanced thyroid cancer

Young-Mo Kim
Department of Otolaryngology-Head and Neck Surgery, Inha University College of Medicine, Inchon, Korea

Thyroid carcinoma usually progresses slowly and invades surrounding tissues infrequently. About 10–20% thyroid carcinoma invades locally to larynx, pharynx, esophagus and trachea ad when it happens significant morbidity and mortality occur. The most common invasion site is recurrent laryngeal nerve and larynx. Usually total thyroidectomy may be combined with radical procedure that includes laryngectomy, pharyngectomy or conservative procedure including tracheal shaving. Precise preoperative evaluation and treatment including primary resection specific to preoperative evaluation, management of cervical lymph node metastasis and postoperative radioiodine therapy may all contribute to decreasing mortality and morbidity in locally invasive thyroid carcinoma.

PP239
Expression of syndecan-1, in thyroid papillary carcinoma with extracapsular invasion

Ronell Bologna Molina[1], **Rogelio González González**[2], Adalberto Mosqueda Taylor[3], Nelly Molina Frechero[3], Pablo Damian Matsumura[4], Hugo Dominguez Malagon[5]
[1]Centro Universitario de Ciencias de la Salud (CUCS), Universidad de Guadalajara, Jalisco, Mexico, [2]Centro Interdisciplinario Ciencias de la Salud, Unidad Santo Tomas, Instituto Politecnico Nacional (CICS–IPN), México D.F, [3]Departamento de Atención a la Salud, Universidad Autónoma Metropolitana Xochimilco, Mexico City, Mexico, [4]Departamento de Biología de la Reproducción, Universidad Autónoma Metropolitana Iztapalapa, Mexico City, Mexico,

[5]*Departamento de Patologia Quirurgica, Instituto Nacional de Cancerología, Tlalpan, Mexico City, Mexico*

Introduction: Syndecan-1 (SDC-1) is a member of the transmembrane heparan sulfate proteoglycans, which are involved in cell–cell adhesion and the interaction of cells with the extracellular matrix. Evidence suggests that loss of SDC-1 expression in several benign and malignant epithelial neoplasms is an unfavorable prognostic indicator, but its expression profile in thyroid gland neoplasms remains to be elucidated.
Purpose: The aim of this study was to evaluate SDC-1 expression in thyroid papillary carcinomas (TPC) that were both larger and smaller than 10 mm with or without extracapsular extension (TPC-E and TPC-NE).
Materials and methods: The expression of SDC-1 was studied in 62 cases of TPC-E and TPC-NE using a tissue microarrays technique (TMA). SDC-1 positivity was predominantly observed in the cytoplasm of neoplastic epithelial cells and in the stroma of the TPC.
Results: SDC-1 is expressed in both neoplastic epithelial cells and the stroma. It is more frequently expressed in TPC-E than TPC-NE ($p < 0.05$) and the stromal expression of SDC-1 is more intense in TPC-E that are >10 mm ($p < 0.05$).
Conclusions: The epithelial and stromal expression of SDC-1 observed in this series of TPC suggests that the expression of this protein may be related to extracapsular invasion.

PP240
Allelic variants of MMP-1, MMP-3, ACE-I and PAI-1 as a possible prognostic factor in patients papillary thyroid cancer of various ages

A. F. Romanchishen, A. A. Bogatikov, A. S. Kuzmichev, A. B. Chukhlovin, E. B. Morosova
St. Petersburg State Pediatric Medical Academy, and St. Petersburg State I. Pavlov Medical University, St. Petersburg, Russia

Background: Matrix metalloproteinases (MMPs) are known to control tissue remodeling and neoangiogenesis that is crucial to accelerated tumor growth, whereas plasminogen activator inhibitor type 1 (PAI-1) and angiotensin-converting enzyme (ACE-1).
Objectives: The aim of this study was to assess certain functional gene variants controlling production and activation of MMPs among the patients, searching for associations between certain gene variants and tumor growth and dissemination.
Methods: The study included 109 patients with papillary thyroid cancer. Genomic DNA for molecular biology assays was extracted from blood leukocytes, using a sorbent method. Genotyping was performed for promoter alleles of MMP-1 ($1G/2G^{-1607}$), MMP-3 ($5A/6A^{-600}$), PAI-1 ($4G/5G^{-675}$), using allele-specific PCR approach. A well-known I/D polymorphism of ACE-1 gene were assayed by a gene-specific PCR.
Results: We found association between earlier age of disease, and 5A allele of gene, i.e., the mean age of PTC manifestation was 48 versus 59 years for the patients, resp., with and without MMP3 5A genotype ($p < 0.01$). Hyperactive variant 2G of MMP-1 gene is associated with decreased risk of metastases (59% among 2G-positive cases vs. 82% of 2G-negative patients) the patients of all ages. In the group of aged patients (more 70 years), hyperactive variant DD of ACE-I gene is associated with increased risk of regional metastases PTC ($p = 0.01$).
Conclusions: When studying some common polymorphisms of genes, a sufficient informatively was revealed for hyperactive variant 2G of MMP-1, MMP3 5A and hyperactive variant DD of ACE-I gene in patients PTC. Further study of such genes will allow them to use as an additional prognostic factor in patients papillary thyroid cancer.

PP241
Sodium iodide symporter (NIS)-some aspects

Ch. Fountzilas[1], Ch. Marakaki[1], **N. Syrmos**[2]
[1]*Internal Medicine Department, Naval Hospital of Athens, Greece,* [2]*Neurosurgical Department, Venizeleio Hospital, Heraklion, Crete, Greece*

Sodium iodide symporter (NIS) is a transmembrane glucoprotein located in the basolateral membrane of the follicular thyroid cells, as well as in other normal and abnormal tissues such as the lactating mammary gland, well differentiated thyroid carcinoma and breast adenocarcinoma.

It uses the electrochemical gradient generated by the Na-K ATPase to import an iodide molecule to the intracellular space along with two sodium molecules.

The importance of NIS to diagnostic and research activities of Nuclear Medicine such as the radioiodine uptake, serum levels of TSH, TPO and TBG and thyroid diseases, especially cancer are described. NIS gene cloning in 1996 opened new prospective in diagnosis and treatment of thyroid and other diseases.

Aim of our study is to present the current concepts about sodium iodide symporter.

PP242
Hyperparathyroidism with bone tumor-like presentation, approach for diagnosis and surgical intervention

Hesham Anwar[1], Ali. H. Mebeed[1], Tarek Khairy[1], Iman Goda[2]
[1]*Department of Surgical Oncology, Cairo University, Cairo, Egypt,* [2]*Department of Surgical pathology, National Cancer Institute, Cairo University, Cairo, Egypt*

Aim of work: This work aims to find a clinical approach for diagnosis of cases with hyperparathyroidism presented with bone tumor-like condition as first and main presentation, to differentiate primary bone tumor or secondary bone metastases from different types of hyperparathyroidism, and to clear out the indications and type of surgery in such cases.
Materials and methods: This is a prospective case series study done in National Cancer Institute from April 2000 to May 2009. During this period, we followed 45 cases of hyperparathyroidism (HPT) presented with main complaint of bone tumor whether primary, single or multiple osteolytic bone lesions, maxillary swelling, mandibular swelling or multiple vertebral body osteolytic lesions. We started by clinical evaluation, laboratory investigations and radiological investigations. For preoperative localization, neck ultrasound, Tc99m Sestamibi scan, CT or MRI neck and superior mediastinum were done. Intraoperative ultrasound was used in some cases. Postoperative bone

densitometry and plain X-ray were done to follow-up bone mineral deposition
Results: We had 39 females (86.6%) and 6 male patients (13.4%) with age range 18ã 70ôyears with meanô=ô44. Preoperative diagnosis was 36/45 (80%) cases of primary hyperparathyroidism (pHPT), 7/45 (15.5%) cases of secondary hyperparathyroidism (sHPT), and 2/45 (4.5%) tertiary hyperparathyroidism (tHPT). Single benign adenoma was found in 33/45 (73.3%), diffuse hyperplasia in 4/45 cases (8.8%) and one case parathyroid carcinoma (2.2%). Neck ultrasound could localize 29 adenoma (29/38) (sensitivity of 73.3%), Sestamibi could localize 23/38 including another two cases of diffuse hyperplasia not detected by ultrasound (sensitivity of 63.8%). Total preoperative localization was 32/38 (84.2%). Intra-operative ultrasound was useful in detection of two cases in the thyroid gland. Intra-operative parathormone after 15 min dropped in 100% of cases. Recurrence of the disease occurred in 2/38 cases during follow up (5.2%). Postoperative hypocalcaemia in severe form occurred in four cases that needed longer hospitalization and longer period of oral calcium. Healing in cortical bone was faster than cancellous bone.
Conclusion: Diagnosis of hyperparathyroidism should be suspected in all cases with bone tumor-like presentation or even in earlier disease complaint of bony or muscle aches. Serum PTH and calcium (total and ionic), renal functions, 24 h urine calcium, neck ultrasonography, and Tc99m pertechnitate/Tc99m sestsmibi subtraction scan can establish the diagnosis and differentiate clinical entities. Surgical treatment with unilateral or bilateral neck exploration. Intraoperative ultrasound localization, frozen section examination and assessment of 15-PTH are very successful in more than 97% of cases with minimal rate of recurrence and complications.
Keywords: Hyperparathyroidism, bone-like tumor presentation, diagnosis, surgical approach.

PP243
Epidemiological study of cancer of the larynx

Artemis Christoforidou, Alexandros Antoniadis, Stefanos Triaridis, Konstantinos Markou, Aggelos Nikolaou, Ioannis Konstantinidis, Victor Vital
1st University Otorhinolaryngology Department, AHEPA Hospital, Thessaloniki, Greece

Introduction: Laryngeal cancer is the most common head and neck cancer (excluding skin cancer).
Objective: To review the risk factors for carcinoma of the larynx and to search for any strong relations between the way of life and the family history, with the severity as well as the prognosis of the disease.
Patients and methods: This retrospective study was carried out from 1993 to 2008. Enquiries were directed at age, histological type, tumor location, gender, occupation, smoking, alcohol consumption and family history.
Results: 1,267 patients were diagnosed with malignant tumors of the larynx. The histological type in 99% of the patients was SCC of the larynx, whereas 1% had other types of cancer. High percentage of laryngeal cancer was observed in males (96%) compared to females (4%), whereas the mean age of the patients was 62 years (range 31–90). The most common location of the tumor was the glottis (59.6%), followed by supraglottic (33.6%), transglottic (5.7%) and more rarely subglottic (1%) cancer. Increased incidence of laryngeal cancer was found in farmers (32%) and builders (27%). Smokers (86.9%) and alcohol consumers (60%) were more frequently affected by the disease. Positive family history was found in 279 patients (22%).
Conclusion: The conditions and the way of life together with the family history are very important epidemiologic factors for the laryngeal cancer. Their study and analysis are very important, in order to minimise the predisposing conditions and to make a significant prevention of the disease possible.

PP244
The impact of EGFR-signalling on chemically induced dna damage in human mucosa tissue cultures

Philipp Baumeister, Christian Welz, Maximilian Reiter, Ulrich Harréus
Clinical Experimental Oncology, Department of Otorhinolaryngology, Head and Neck Surgery, Ludwig-Maximilians-University, Munich, Germany

Introduction: The autocrine stimulation of epidermal growth factor receptor (EGFR) was shown to be of high impact in head and neck carcinogenesis. Since overexpression of EGFR and its ligand transforming growth factor alpha (TGFα) was detected in microscopically normal mucosa of head and neck squamous cell carcinoma (HNSCC) patients, this alteration is believed to be an early event in multistep field cancerization. Presuming the overexpression of both proteins long before cancer diagnosis, our study evaluates the influence of EGFR-signalling on the process of chemical carcinogenesis.
Materials and methods: Mini-organ cultures (MOC) of oropharyngeal mucosa close to negative resection margins were cultured. MOC were then stimulated with TGFα with and without prior EGFR-blockade by cetuximab, before DNA damage was induced using the metabollicaly activated carcinogen benzo(a)pyrene diol epoxide (BPDE). DNA damage was quantified by the alkaline single cell microgel electrophoresis (*Comet Assay*).
Results: In MOC of HNSCC patients, TGFα-stimulation led to a decrease of resulting DNA damage by 30.4% ($n = 15$; $p < 0.001$). Pretreatment with cetuximab abrogated this effect, whereas in controls no significant change of DNA damage was detected.
Conclusion: Our results show a strong DNA stabilizing effect of EGFR-signalling in cases. As similar results were obtained using cisplatin in place of BPDE, our study confirms the usage of cetuximab in combination with cytotoxic drugs for the treatment of locally advanced HNSCC. Furthermore, overexpression of EGFR and TGFα in early stages of carcinogenesis might be seen as a physiological reaction on carcinogen impact.

PP245
Detection of serum level of human epithelial growth factor receptor-2 in patient with head and neck squamous cell carcinoma

Bijan Khademi, Abbas Ghadri, **Seyyed Fakhroddin Hosseini**
Shiraz University of Medical Sciences, Shiraz Institute for Cancer Research, Shiraz, Iran

Background: The role of HER-2 has been shown to be a prognostic factor in many kinds of cancers, but in HNSCC is not still defined. The purpose of the current study is the investigation of the role of HER-2 in HNSCC and it's correlations to various clinicopathologic parameters.

Methods: Peripheral blood sample were obtained from 17 healthy volunteers and 69 patients with HNSCC before curative surgery. HER-2 was determined in each serum sample by ELISA. Statistical analysis involved independent *t* test, one-way Anova, Duncan procedure.
Result: The mean HER-2 serum level in patients with HNSCC was more than healthy control group although the level which was detected was not statistically significant. ($p > 0/05$). The mean level of HER-2 in patient group was 3/85 ng/ml while in healthy control group was 3/75 ng/ml. The mean HER-2 serum level in patients with lymph node involvement, metastasis, invasion, size $\geq$2 cm and stage >I, was more than patients without lymph node involvement, without invasion, size $\leq$2 cm and stage I. although from statistical it was not meaningful ($p > 0/05$).
Discussion: In this study, mean HER-2 serum level in patients with HNSCC was found to be increased in comparison with healthy control group although statistically insignificant. From result of this investigation one can conclude that in case of increasing the sample size of patients and control the level of HER-2 may rich significant. Apart from this, the role of HER-2 as a tumor marker in patient with HNSCC is still controversial and it needs more study in future to clarify the significance of this biomarker for early detection or screening of HNSCC.

PP246
Study on the related molecule expression of lymphangiogenesis in oral squamous cell carcinoma

Xie Zhijian, Gu Zhiyuan
Department of oral-maxillofacial surgery, The Affiliated Stomatological Hospital, College of Medicine, Zhejiang University, Hangzhou, China

Objective: To probe into the related mechanism of micrometastasis around the oral squamous cell carcinoma.
Methods: VEGF-C flt-4, iNOS, MMP-2mRNA expression was detected with RT-PCR method in 47 cases of oral squamous cell carcinoma and 15 cases of normal oral mucose, the microlymphatic vessel density was detected with enzyme-histochemical reaction. Lymph node micrometastasis were detected with immunohistochemical reaction in cytokeratin (CK) antibody.
Result: The percentages of tumors with higher expression compared to the mean values of normal tissues were 57.4% for VEGF-C 61.7% for VEGFR3 68.1% for iNOS, 40.4% for MMP2 ($P < 0.025$). Significant positive relationship were found between VEGF-C and MLVD, flt-4 and MLVD, iNOS and MLVD ($P < 0.001$). No significant positive relationship were found between MLVD and MMP-2, The mean MLVD was 14.04 ± 6.92 in tumor group, or 5.48 ± 2.62 in normal group. There was significant difference in two group ($P < 0.001$), it is higher than normal group. Significant positive correlation was found between VEGF-C and CK, flt-4 and CK, iNOS and CK, MMP2 and CK. The percentage of tumor with expression CK was 48.9.
Conclusion: VEGF-C flt-4 iNOS MMP-2 gene may play a key role in micrometastasis of oral squamous cell carcinoma.

PP247
Differences in expression of senescence markers $p14^{ARF,}$ $p15^{INK4b}$, $p16^{INK4a}$, $p21^{Waf1}$, hTERT and maspine related with the progression of oral leukoplakia to oral cancer

Mercedes López-Durán[1], **Julián Campo-Trapero**[1], Jorge Cano-Sánchez[1], Lydia Sánchez-Verde[2], Ana Diez-Rodriguez[2], Pablo Aguirre-Echebarria[3], Emilio Álvarez-Fernández[3], Antonio Bascones-Martínez[1]
[1]Department of Buccofacial Surgery and Medicine, Faculty of Dentistry, UCM, Madrid, Spain, [2]Inmunohistochemistry and Histology Unit, CNIO (Spanish National Cancer Centre), Madrid, Spain, [3]Department of Pathology, Hospital Gregorio Marañón, Madrid, Spain

Introduction: Oncogene-induced senescence (OIS) may be a response to oncogenic activation, acting as a natural barrier against tumorogenesis at a premalignant stage. Thus, a large number of cells enter senescence in premalignant lesions but none or few do so in malignant tumours, due to the loss of senescent pathway effectors such as p16(INK4a)-pRb or ARF-p53.
Purpose: To characterize and compare the expression of some senescent markers in oral precancer versus oral cancer tissue samples.
Materials and methods: We analyze the expression of $p14^{ARF}$, $p15^{INK4b}$, $p16^{INK4a}$, $p21^{Waf1}$, hTERT and maspine in 11 tissue samples paraffin-embedded of oral leukoplakia with dysplasia (OLD+); 14 without dysplasia (OLD−); 15 oral squamous cell carcinoma (OSSC), and 20 normal oral mucosa (NOM), by means inmunohistochemistry in tissue microarrays (TMAs).
Results: Expression of $p14^{ARF}$, hTERT and maspine revealed 95–100% levels of expression in normal tissues and OLD−; very high levels in OLD+ (90.9; 90.9 and 91%, respectively) and an almost significantly decreased in OSSC (66.6; 53.3 and 46.6%) ($p = 0.061$; $p = 0.020$ and $p = 0.036$, respectively). $p15^{INK4b}$ was found positive in 35% in NOM; 78.6% in OLD−; 90.9% in OLD+; and also decreased to 60% in OSCC samples ($p = 0.051$). Otherwise, $p16^{INK4a}$ expression was higher in OSCC samples than in oral leukoplakias with or without dysplasia. Expression of $p21^{Waf1}$ was increasing from ONM to OLD− to OLD+ (5; 71.4 and 81.8%, respectively) and was significantly reduced in OSCC samples (33.3%) ($p = 0.012$).
Conclusions: There seems to be an increased protein expression of the senescence-associated molecular markers studied in oral leukoplakia versus OSCC, with the exception of $p16^{INK4a}$, indicating that cellular senescence might play a role in oral carcinogenesis. Because $p21^{Waf1}$-positive cells were detected only in premalignant lesions and carcinomas but not in normal tissues, p21 may aid in the diagnosis of oral precancer and cancer in difficult cases.

PP248
Proteomic and transcriptomal identification of the mechanisms and consequences of P53 gain of function mutation in laryngeal squamous cell carcinoma

Anna Behrandt[1], Bryony Lloyd[1], D. Ross Sibson[1], Carlos P. Rubbi[1], Terence M. Jones[1,2], and Mark T. Boyd[1]
[1]School of Cancer Studies, The University of Liverpool, Liverpool, UK, [2]Department of Otolaryngology/Head and Neck Surgery, Aintree University Hospitals NHS Foundation Trust, Liverpool, UK

Introduction: Recent studies show that oncogenic gain-of-function (GOF) p53 mutations promote poorer prognosis and therapeutic response in squamous cell carcinomas of the head and neck (SCCHN). GOF mutants likely act through altered transcriptional activity and/or novel protein–protein interactions. To characterise these, we have performed both proteomic and transcriptomic analyses of two GOF mutants representing two distinct mutational classes; structural (p53 R175H) and contact (p53 R273H). We have focused on the most common sub-type of SCCHNs: laryngeal squamous cell carcinoma (LSCC).
Purpose: Identify the mechanism/s by which p53 GOF mutants promote disease progression.
Materials: LSCC cell lines of defined p53 status engineered to express mutant p53.
Methods: Tandem affinity chromatography, mass spectrometry and Affymetrix^{TM}-exon-array analyses. Real-time motility assays of cells.
Results: As expected, p53 GOF mutants display dominant-negative transcriptional activity. Mutant expressing cells also display increased motility-linking mutant expression with metastatic potential. Known p53-interacting proteins, such as MDM2 have been identified in the purified complexes containing mutant p53, thus validating the experimental system. Complexes have been subjected to mass spectrometry for identification. Exon array analyses have been performed on p53-null LSCC cells c.f. mutant p53 expressing cells and the transcriptomes of these cells are being analysed. These results will be presented.
Conclusions: GOF mutant p53 promotes carcinogenesis through as yet poorly defined mechanisms. We have used proteomic and transcriptomic analyses to define the mechanism/s involved in this. Since p53 GOF mutants are typically linked with poor prognosis, identification of these mechanisms may reveal important new therapeutic targets.

PP249
Snail and C-Myc in squamous cell carcinoma of the tongue

Valtteri Häyry[1,5], **Laura Mäkinen**[1], Timo Atula[1], Hannu Sariola[5], Antti Mäkitie[1], Ilmo Leivo[2], Harri Keski-Säntti[1], Johan Lundin[3], Caj Haglund[5], Jaana Hagström[3]
[1]Departments of Otorhinolaryngology-Head and Neck Surgery, [2]Pathology, [3]Oncology, [4]Surgery, Helsinki University Central Hospital, [5]Institutes of Biomedicine and Developmental Biology, Haartman Institute, University of Helsinki, Helsinki, Finland

Introduction: The behavior of a small squamous cell carcinoma of oral tongue can be unpredictable. Histopathologically only the grading system seems to have any predictive diagnostic value but it is unreliable. It would be beneficial to find prognostic markers to better adjust the treatment and survey of this cancer. The oncogene c-Myc controls cell proliferation and apoptosis, and Snail regulates epithelial to mesenchyme transition and is involved in metastatic formation. The expression of these markers has been connected with prognosis in many cancer types.
Purpose: C-Myc and Snail were studied in oral tongue carcinoma patients in order to reveal a possible prognostic value of these markers.
Materials: Our material consisted of 73 oral tongue carcinoma patients (T1-2/N0/M0) treated at the Helsinki University Central Hospital between 1992 and 2002.
Methods: Tissue array blocks were prepared from the tumor samples and immunopositivity of c-Myc and Snail were compared with clinical and histopathological parameters: degree of histological differentiation, tumor size, TNM stage, depth of invasion, and status of resection margins. In addition, survival analyses were performed comparing disease-free survival time with the registered protein expression of the markers mentioned above.
Results: Snail expression correlated with histopathological grade (Fisher's exact test $p = 0.007$) and invasion depth of the tumors (χ^2-test, $p = 0.037$). Snail and c-Myc expressions did not correlate with prognosis.
Conclusions: The high Snail expression seems to predict invasion pattern and histopathological status of oral tongue carcinoma and might help in classification of these tumors.

PP250
Transcriptional analysis of head and neck squamous cell carcinoma

Marketa Urbanova[1,2], Jan Plzak[1,3,4], Hynek Strnad[2], Martin Chovanec[1,3,4], Zdenek Cada[1,3], Michal Kolar[2], Jan Paces[2], Jana Sachova[2], Vaclav Paces[2], Karel Smetana[3,4], Cestmir Vlcek[2], Jan Betka[1]
[1]Charles University in Prague, 1st Faculty of Medicine, Department of Otorhinolaryngology, Head and Neck Surgery, [2]Institute of Molecular Genetics, Academy of Sciences of the Czech Republic, [3]Charles University in Prague, 1st Faculty of Medicine, Institute of Anatomy, [4]Centre of Cellular Therapy and Tissue Replacements, 2nd Faculty of Medicine and Faculty Hospital Motol, Prague, Czech Republic

Introduction: Head and neck squamous cell carcinoma (HNSCC) is the fifth most common cancer worldwide. Despite considerable advances in surgical and oncological treatment over the past two decades, overall disease outcome has improved only slightly. The main reason is late diagnosis of cancer. For better prognosis of patients, it is crucial to recognize the cancer in early stage.
Purpose: The aim of our project is identification of potential biomarkers involved in the process of cancerogenesis of HNSCC based on cDNA microarray analysis.
Materials and methods: Three snap-frozen samples were taken from 39 patients with head and neck squamous cell carcinomas in different clinical stages. RNA was isolated from tumour tissue, adjacent tissue and normal contralateral mucous membrane. High quality RNA (RIN > 8) was further amplified and hybridized at cDNA microarrays (Illumina WG 6 v3).
Results: We detected 1,500 differentially expressed transcripts between tumours and matched normal tissues. In particular, we observed genes related to extracellular matrix (ECM) or its remodelling (collagens, keratins and matrix metalloproteinases), specific chemokines and cytokines and several already known HNSCC-associated transcripts (PLAU, CRNN, MAL, SPINK5). We detected the following KEGG pathways as over-represented: DNA replication, cell cycle, cytokine-cytokine interaction, p53, toll-like and Jak-STAT

signalling pathways and ECM remodelling. The overall metabolism was down-regulated in the tumours.
Conclusions: The presented data of large-cohort whole-genome transcription profiling of patient-matched samples reveal several marker genes distinguishing tumour and normal tissues. According to clustering analysis we further can distinguish keratinising and non-keratinising tumours as two separate clusters.
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PP251
Genes of the WNT family and frizzled receptors: targets for the treatment of HNSCC

S. Sironvalle[1], I. Vázquez[1], F. Lorenzo[1], J. L. López-Cedrún[1], A. García-Rozado[1], J. Ferreras[1], S. Díaz Prado[2], L. M. Antón Aparicio[3,4]
[1]*Department of Oral and Maxillofacial Surgery, CHUAC,* [2]*Research Unit, CHUAC, Spain,* [3]*Medical Department, Universidad de A Coruña, A Coruña, Spain,* [4]*Department of Medical Oncology, CHUAC, Spain*

Introduction: Genes of the wingless (Wnt) and Frizzled (Fz) family play an important role in the morphogenesis and cellular differentiation. Although head and neck squamous cell carcinoma (HNSCC) may respond to radio and chemotherapy, the accuracy of the response remains uncontrolled. This is why it is of great importance that new molecular markers are identified in HNSCC in order to use them as possible targets in the treatment of cancer.
Objectives: Study Wnt genes and Fz receptors as potential tumoral markers in HNSCC by gene expression in samples of pair-matched benign and cancer tissue obtained from the same HNSCC patient. Assess possible correlation between the levels of expression and the clinicopathologic outcome.
Materials and methods: A total of 50 freezed samples obtained from 50 patients treated surgically for HNSCC were analyzed. This study examined the mRNA expression of five members of the Wnt family and two members of the Fz family in samples of HNSCC. Real time qPCR experiments were performed on a LightCycler 480. Statistical analysis was performed using SPSS 16.0 for Windows.
Results: mRNA levels of expression of the different Wnt and Fz genes were compared with clinicopathological variables (TNM, tumor localization, grade of differentiation, sex, age) by non-parametric tests.
Discussion: qPCR experiments confirmed that genes of the Wnt and Frizzled families are frequently expressed in HNSCC. Some of these genes could represent attractive targets for the treatment of these tumors.

PP252
WNT/BETA catenin signalling pathway following rat tongue carcinogenesis induced by 4-nitroquinoline 1-oxide

Daniel A. Ribeiro[1,2], Ana Carolina C. Fracalossi[1], Marcelo S. Silva[1], Celina T. F. Oshima[1]
[1]*Department of Pathology, Paulista Medical School, Federal University of Sao Paulo, UNIFESP, SP, Brazil,* [2]*Department of Biosciences, Federal University of Sao Paulo, UNIFESP, SP, Brazil*

Introduction: The Wnt/beta-catenin signaling pathway plays important role in development, tissue homeostasis, and regeneration. Inappropriate activation of the Wnt pathway is linked to a wide range of human cancers.
Purpose: The purpose of this study was to characterize the Wnt/beta-catenin signaling pathway as depicted by the expression of Wnt1, Frizzled-1, Wnt5a, Frizzled-5 and β-catenin during 4NQO-induced rat tongue carcinogenesis by immunohistochemistry.
Materials and methods: Male Wistar rats were distributed into three groups of 10 animals each and treated with 4NQO solution at 50 ppm through their drinking water for 4, 12, and 20 weeks. Ten animals were used as control group.
Results: No histopathological abnormalities were induced in the epithelium after 4 weeks of carcinogen exposure; however, an over expression of Wnt5a was noticed when compared to control group ($p < 0.05$). Wnt1 also showed positive expression, without significant differences ($p > 0.05$) in this period. The Wnt1 pointed out significant differences ($p < 0.05$) in pre-neoplastic lesions at 12 weeks following carcinogen exposure. In well-differentiated squamous cell carcinoma induced after 20 weeks of treatment with 4NQO, Wnt1 was expressed in the majority of the dysplastic cells and tumor cells being statistically significant ($p < 0.05$). No significant differences ($p > 0.05$) were found in expression of Frizzled-1, Frizzled-5 or ß-catenin following oral carcinogenesis.
Conclusion: Taken together, our results support the belief that expression of Wnt1 and Wnt5a is related to malignant transformation and conversion of the oral mucosa.

PP253
Expression profiling of cell cycle regulatory proteins in oropharyngeal carcinomas using tissue microarrays

Mariza A. Matsumoto[1], Daniel A. Ribeiro[2], Fabio D. Nascimento[3], Ana Carolina C. Fracalossi[3], Thiago S. Gomes[3], Celina T. F. Oshima[3], Marcello F. Franco[3]
[1]*Department of Dental Clinics, University of Sacred Heart, USC, Bauru, SP, Brazil,* [2]*Department of Biosciences, Federal University of Sao Paulo, UNIFESP, SP, Brazil,* [3]*Department of Pathology, Paulista Medical School, Federal University of Sao Paulo, UNIFESP, SP, Brazil*

Introduction: While incidence of head and neck squamous cell carcinoma, in general, has decreased progressively during the last two decades, an increased incidence of oral and oropharyngeal squamous cell carcinoma has been reported worldwide.
Purpose: The aim of this study was to investigate the expression of some cell cycle regulatory proteins such as p53, p16, p21, and Rb in squamous cell carcinomas of the oropharynx as well as its relation to histological differentiation, staging of disease, and prognosis.
Materials and methods: Paraffin blocks from 21 primary tumors were obtained from archives Department of Pathology, Paulista Medical School, Federal University of Sao Paulo, UNIFESP/EPM. Immunohistochemistry was used to detect the expression of p53, p16, p21, and Rb by means of tissue microarrays.
Results: Expression of p53, p21, p16 and Rb was not correlated with the stage of disease, histopathological grading or recurrence in squamous cell carcinomas of the oropharynx.
Conclusion: Taken together, our results suggest that p53, p16, p21or Rb are not reliable biomarkers for prognosis of the tumor severity or recurrence in squamous cell carcinomas of the oropharynx as depicted by tissue microarrays and immunohistochemistry.

PP254
Expression of endoglin and D2-40 in squamous cell carcinoma of the tongue

Sedigheh Rahrotaban[1], Pouria Motahhary[2], Nosratollah Eshghyar[3]
[1]*Assistant Professor Department of Oral and maxillofacial Pathology, Faculty of Dentistry, Qazvin University of Medical Sciences,* [2]*Assistant Professor Department of Oral and maxillofacial Pathology, Faculty of Dentistry, Tehran University of Medical Sciences,* [3]*Associate Professor Department of Oral and maxillofacial Pathology, Faculty of Dentistry, Tehran University of Medical Sciences, Tehran, Iran*

Introduction: Endoglin (CD105) is a powerful marker of neovascularization and D2-40 is a new indicator for identifying of lymphatic vessels. The densities of blood and lymphatic vessels have been showed that are useful in prediction of behavior of malignant tumors.
Aim: In this study, we evaluated the expression of CD105 and D2-40 in the squamous cell carcinoma (SCC) of the tongue and their correlation with lymph node metastasis and other clinicopathologic factors.
Methods: 40 patients with primary tongue SCC were selected. Microvessel and lymphatic vessel densities were determined in all cases by CD105 and D2-40 immunostaining. The relation between micro vessel density and lymphatic vessel density with lymph node involvement and other clinicopathologic factors including age, sex and histologic grading were tested statistically.
Results: In all cases, CD105 and D2-40 expression were significantly higher in neoplastic tissue than peripheral normal ones. Also, CD105 and D2-40 expression in invasive front and intratumoral areas of the tumors with lymph node metastasis were significantly higher ($p < 0.05$) than the tumors without lymph node involvement.
Conclusion: It can be concluded that CD105 and D2-40 markers may be helpful to predict the possibility of lymph node metastasis in primary squamous cell carcinoma of the tongue.

PP255
Histopathological analysis and KI-67 immunoreactivity of oral squamous cell carcinomas margins

Karla Bianca Fontes[1,2], Karin Cunha[1,2], Licínio Silva[3], Eliane Dias[1]
[1]*Post graduate program of pathology, Universidade Federal Fluminense, Niteroí, RJ, Brazil,* [2]*Oral Pathology and Stomatology, Universidade Federal Fluminense Niteroí, RJ, Brazil,* [3]*Department of Statistics, Universidade Federal Fluminense Niteroí, RJ, Brazil,*

Introduction: The number of mouth cancer cases has increased significantly and squamous cell carcinoma is one of the most representatives of all the malignancies that affect the mouth.
Purpose: This research aimed to investigate the adjacent mucosa to squamous cell carcinomas of lip and tongue, through histopathological analysis and immunoreactivity to anti-Ki-67.
Materials and methods: The sample consisted of 18 cases of patients who had, at least, one of the lateral surgical margins free of squamous cell carcinoma of lip and tongue. The lateral mucosa immediately adjacent to squamous cell carcinoma was analyzed to identify architectural and cytological changes, as well as to graduate and compare two classification systems of epithelial dysplasia (World Health Organization and binary system proposed by Kujan). The comparison of histopathological analysis with immunoreactivity to anti-ki-67 was performed.
Results: After analyses, it was observed that all mucosa samples presented dysplasia and showed variable architectural and cytological changes, suggesting association between the two grading systems. The location of immunolabeling of Ki-67 above the basal layer was directly proportional to the severity of epithelial dysplasia in both studied systems. High expression of Ki-67 was directly proportional to the location of immunolabeling as well as the two systems of histopathological grading of epithelial dysplasia.
Conclusion: The results indicate that the evaluation of Ki-67 immunolabeling presents good correlation to the architectural and cytological changes in adjacent margins of oral squamous cell carcinoma.

PP256
Expression of E-cadherin in primary oral squamous cell carcinoma and metastatic lymph nodes: an immunohistochemical study

Gabriel Rodrigues, Sunitha Carnelio
Department of Surgery, Kasturba Medical College and Department of Oral and Maxillofacial Pathology, Manipal College of Dental Sciences, Manipal University, Manipal, Karnataka, India

Background: E-cadherin plays an important role in cell-to-cell adhesion and cell motility and its loss is associated with oral squamous cell carcinoma (OSCC) progression. The aim of this study was to determine the expression of E-cadherin in various grades of OSCC and to correlate changes in the expression between these various grades and metastatic lymph nodes.
Methods: Immunohistochemistry (IHC) was used to detect E-cadherin expression in normal oral mucosa, primary OSCC ($n = 37$) and metastatic lymph nodes ($n = 10$). E-cadherin immunoreactivity was correlated with grades of differentiation and with clinicopathological features.
Results: E-cadherin immunoreactivity was found to inversely correlate with the loss of cell differentiation. The expression of E-cadherin decreased significantly in advanced cases of OSCC. However, increase in E-cadherin immunoreactivity was seen in early lesions, i.e., in well differentiated ($n = 9$) and moderately differentiated OSCC ($n = 13$). Furthermore, E-cadherin was negative in majority of metastatic lymph nodes (7/10).
Conclusions: Loss of the cell adhesion and E-cadherin plays an important role in progression of OSCC, i.e., down regulation of its expression is associated with de-differentiation and metastasis.

PP257
Association between transforming growth factor β1 genetic polymorphism and prognosis in hypopharyngeal cancer

Marie Lundberg, Mervi Pajusto, Walter J. Koskinen, Leena-Maija Aaltonen, Antti A. Makitie, Petri S. Mattila
Department of Otorhinolaryngology, Helsinki University Central Hospital, Helsinki, Finland

Introduction: Transforming growth factor β (TGFβ) is a multifunctional regulator that can both suppress and promote cancer growth and progression. A single nucleotide polymorphism (SNP) rs1982073 in the TGFβ1 gene signal sequence results in higher levels of the major

isoform TGFB1. Increased levels of TGFB1 have been linked with worse prognosis in breast cancer. TGFβ has an important role in maintaining the cancer stem cell phenotype. Cancer stem cells are the primary targets of chemoradiotherapy.
Purpose: To evaluate the influence of this SNP on the survival of patients treated for hypopharyngeal squamous cell cancer.
Materials: Thirty consecutive patients with hypopharyngeal squamous cell cancer diagnosed between 1998 and 2004 were included in the study. Patients were treated according to the standard protocol with chemoradiotherapy ($n = 27$) and salvage surgery ($n = 7$). Two patients were treated with radiotherapy and one patient only had salvage surgery. Median age of onset was 57 years (31–81 years) and average follow-up 2.4 years (0.3–7.8 years).
Methods: Peripheral blood DNA was genotyped for SNP rs1982073 with real-time PCR and fluorescent probes. Kaplan–Meier method was used for calculating survival rates.
Results: Survival table analyses revealed that the patients with the genetic polymorphism had a better overall survival ($p = 0.043$). The association was confined to patients who were treated with chemoradiotherapy ($p = 0.41$).
Conclusions: Genetic polymorphism of the gene encoding TGFB1 is associated with a better prognosis in this patient population.

PP258
In vivo near-ir imaging with quantum dots entrapped in PLGA nanospheres

Kwang Jae Cho[1], Yong-kyu Lee[2], Dong Il Sun[1], Young Hak Park[1], Min Sik Kim[1]
[1]*Department of Otolaryngology-Head and Neck Surgery, The Catholic University of Korea, Seoul, Korea,* [2]*Department of Chemical and Biological Engineering, Chungju National University, Chungju, Korea*

Introduction: Quantum dots (Nanometer-scale semiconductor nanocrystals, QDs) have attracted significant attentions during the last decades because they can dramatically improve the use of fluorescent markers in biological imaging.
Purpose: In this study, we synthesized water-soluble and biocompatible QDs nanospheres and investigated its availability for in vivo imaging.
Materials and methods: Luminescent Near-IR CdTe/CdSe QDs were synthesized and encapsulated in PLGA nanospheres to prepare water-soluble and biocompatible QDs nanospheres. QDs were encapsulated with PLGA nanospheres by a solid dispersion method and optimized to have high fluorescence intensity for in vivo imaging detection. The resultant PLGA nanospheres with QDs were characterized by various analytical techniques such as UV–vis measurement, light scattering, fluorescence spectroscopy, transmission electron microscopy (TEM) and atomic forced microscopy (AFM). Finally, we also evaluated toxicity and body distribution of QDs loaded in PLGA nanospheres in vitro and in vivo, respectively.
Results: The QDs loaded in PLGA nanospheres were spherical and showed a diameter range of 100–150 nm in size. The QD nanospheres increased their stability against photooxidation and photobleaching, which have the high potential for applications in biomedical imaging and detection. We have also attained noninvasive in vivo imaging with light photons represents an intriguing avenue for obtaining biological information by the use of Near-IR light.
Conclusions: Our results demonstrate the potential applications of QDs loaded in PLGA nanospheres for the detection of disease including tumors using in vivo imaging method.

PP259
Inhibitory effect of celecoxib on expression of MMP-2 and invasion of tongue squamous cell carcinoma cell line

Weizhong Li, Qiuju Huo, Xiaoyan Wang
Department of Stomatology, Nanfang Hospital, Southern Medical University, Guangzhou, China

Objective: To investigate the effect of celecoxib on adhesion, invasion, migration and MMP-2 expression of tongue squamous cell carcinoma cell line Tca8113 cells.
Methods: Following 24-h incubation with celecoxib, the Tca8113 cells were detected for cell adhesion and migration using cell adhesion assay and Boyden chamber invasion assay. The expression of Cox-2 protein in Tca8113 cells was detected with SP immunohistochemistry staining. The MMP-2 level in supernatant was detected with ELISA.
Results: The adhesion and Boyden chamber invasion assays showed that, after treatment with celecoxib, the ability of adhesion and migration of Tca8113 cells was significantly inhibited ($P < 0.01$). Celecoxib could decrease the expression of Cox-2 protein in Tca8113 cell and decrease the MMP-2 level in supernatant ($P < 0.01$).
Conclusion: Cox-2 inhibitor celecoxib significantly inhibit the adhesion and migration of Tca8113 cells. The inhibitory effect on adhesion and migration may be correlative with its effect on decrese of Cox-2 protein expression and secretion of MMP-2 in of Tca8113 cell.

PP260
Oro-pharyngeal squamous cell carcinoma: epigenetic and molecular characterization of tumor induced stromata (TIS) formation and its impact on tumor behavior

Wael M. Swelam, Dalal M. Al Tamimi, **Sanaa A. Saleh**, Heba Torkey
Department of Oral and Maxillofacial Pathology, College of Dentistry, Dammam University, Saudi Arabia

Oropharyngeal squamous cell carcinoma (OPSCC); OPSCC is one of the most serious malignancies worldwide. Therefore, it attracts the attention of research institutes to develop different diagnostic and prognostic biomarkers. However, the full image of this neoplasm is not yet completed. Based on studies on other tissues we assume that these epithelial tumor cells themselves not only influence the behavior of its surrounding stroma but also can actively synthesize their stroma; through which they could be able to develop their unique environment that can maintain their needs and hinder body immune mechanisms. Our aim is to elucidate that mechanism, and characterize the origin of OPSCC tumor induced stromata. Such specification of TIS can play a role in develop new strategy of SCC prognosis and treatment. To achieve our objective, our OPSCC archived cases (well, moderately, and poorly differentiating carcinomas, 30 cases for each) including primary and recurrent/metastatic lesions were subjected to immunohistochemical staining for extracellular molecules of interest [Tenascin and Heparan sulphate proteoglycan (HSPG)], endothelial cell markers (CD31 and CD34), and proliferative molecules (cyclin D1 and Ki 67). To elucidate the origin of extracellular matrix molecules we performed in situ hybridization for extracellular matrix proteins: Tenascin and HSPG. We further correlated the clinical behavior with our results to and the results were statistically analyzed, where they collectively

demonstrate the active role of different OPSCC cells to synthesis its own stroma that markedly affect tumor behavior.

PP261
RNA isolation and accurate gene expression analysis using brush cytology from oral cancer and other oral lesions

Antonia Kolokythas[1], Guy R. Adami[2], Joel L. Schwartz[2]
[1]*University of Illinois at Chicago, Department of Oral and Maxillofacial Surgery,* [2]*University of Illinois at Chicago, Department of Oral Medicine, Oral Pathology and Diagnostic Sciences, Chicago, USA*

Introduction: Tissue biopsy and histopathologic examination remain a prerequisite for diagnosis of oral lesions. While RNA expression analysis of epithelium can be used to detect various diseases, such as oral squamous cell carcinoma (OSCC), it also requires biopsy. Brush cytology currently allows for noninvasive acquisition of oral epithelial cells that can be used, to identify OSCC and other pathologic entities.
Purpose: Our goal is to demonstrate that oral epithelial cells obtained noninvasively with brush cytology can be used to isolate RNA that is suitable for accurate gene expression analysis. In addition, analysis of brush cytology obtained RNA can be used to differentiate oral diseases with similar presentation.
Materials and methods: Brush cytology samples collected in a standardized fashion from patients with biopsy proven OSCC, premalignant lesions and controls were used to isolate RNA. The cytology RNA was used to perform global gene expression analysis and determine gene expression patterns among the groups.
Results: Consistent differential expression of 3 out of 4 housekeeping genes in brush cytology samples was found among the OSCC, premalignant lesions and controls. We have previously validated the reproducibility of this technique of using cytology RNA for identification of differential gene expression in our "hamster OSCC model".
Conclusions: Consistent quality of cytology samples obtained and isolation of high quality RNA can be achieved.
Analysis of high quality brush cytology RNA can be used to differentiate oral diseases such as OSCC and pre-malignant lesions that may have similar presentation while allows for gene expression profiling of these conditions.

PP262
Heterogeneity of p53 staining in squamous cell carcinoma of the head and neck

Sankalap Tandon[1,2], Nazia Munir[1,2], Jeffery Lancaster[1], Nicholas Roland[1], Shaun Jackson[1], Tim Helliwell[3], Mark Boyd[2], Terence Jones[1,2]
[1]*Department of Otolaryngology/Head and Neck Surgery, Aintree University Hospitals NHS Foundation Trust, UK,* [2]*Division of Surgery and Oncology, School of Cancer Studies, The University of Liverpool, Liverpool, UK,* [3]*Department of Pathology, The University of Liverpool, The Duncan Building, Liverpool, UK*

Introduction: Mutation of the p53 tumour suppressor gene is important in the development of cancer. The p53 status of squamous cell carcinoma of the head and neck (SCCHN) has been investigated extensively. Immunohistochemical (IHC) analysis of cores of tumour samples, arranged in tissue microarrays (TMAs) is a commonly used technique. A common criticism of this approach is that the selected tissue cores may not be representative of the tumour as a whole.
Purpose: To investigate the degree of heterogeneity of p53 staining across whole slides of SCCHN.
Materials: Whole tissue sections from 48 resection specimens of primary SCCHN arising in the larynx, oropharynx, oral cavity and hypopharynx were studied after ethical approval was obtained.
Methods: IHC staining was performed using a monoclonal antibody to p53 (DO-7) and the avidin–biotin–peroxidase detection system. Slides were analysed, by two independent observers, for overall p53 expression and the degree of heterogeneity of expression across the whole sample. A cut-off of 10% expression was used to differentiate p53 positive samples from negative samples.
Results: 19 (40%) cases were p53 negative. 29 (60%) tumour samples were p53 positive of which 25 (86%) showed no heterogeneity.
Conclusions: Overall, 92% of samples analysed in our series showed no heterogeneity in p53 expression across the whole tumour specimen. These results indicate that TMAs can be considered to provide a reliable representative sample of tumour for IHC analysis of p53 status.

PP263
Combined P53 and MDM2 analysis identifies patients with reduced survival in squamous cell carcinomas of the head and neck (SCCHN)

Ashraf El-Fert[1], David M. Gore[1], Andy Dodson[2], Andrew S. Jones[1], **Nazia Munir**[1,3], Tim R. Helliwell[1,2], Terence M. Jones[1,3], Nikolina Vlatković[1], Mark T. Boyd[1]
[1]*School of Cancer Studies, The University of Liverpool, Daulby Street, Liverpool, UK,* [2]*Department of Pathology, Royal Liverpool University Hospital, Prescott St, Liverpool, UK,* [3]*Department of Otolaryngology/Head and Neck Surgery, Aintree University Hospitals NHS Foundation Trust, Lower Lane, Liverpool, UK*

Introduction: Genetic studies have implicated p53 mutation as a significant risk factor for therapeutic failure in SCCHN. However, in a recent meta-analysis of p53 in SCCHNs from the major anatomical sub-sites we have demonstrated that associations between patient survival and p53 status in the literature are ambiguous. Mutant p53 status can potentially be inferred with a higher degree of specificity by immunohistochemistry (IHC) for p53 in combination with MDM2 (a transcriptional target of p53) rather than p53 status in isolation. This was investigated in our study.
Purpose: To identify simple combinations of biomarkers as predictors of patient outcome and prognosis.
Materials: Tissue microarray (TMA) of 198 SCCHN samples from patients collected by the Liverpool Tissue Bank.
Methods: The TMA samples were analysed by immunohistochemistry for p53 and MDM2.
Results: Whilst, neither p53 nor MDM2 are informative alone, the inferred mutant p53 phenotype (p53 +ve, MDM2-low) is significantly associated with reduced overall survival ($P = 0.035$).
Conclusions: Loss of p53 function is a critical event in carcinogenesis. Nevertheless, despite many studies of p53 expression it remains unclear whether loss of p53 function in SCCHN is associated with adverse outcome. By combining IHC for p53 with a second p53 target gene (MDM2) as an indicator of wild-type p53 function, we find that patients with a "mutant" p53 phenotype display significantly reduced survival. Combining markers offers a simple approach to increase the specificity of IHC analysis of critical pathways in cancer samples.

PP264
Consent in ENT department in a UK hospital

Sanam Kia, Vik Veer
Queens Hospital Romford, London, UK

Introduction: As the society is moving towards the culture of litigation the importance of informed consent is becoming even more apparent. We audited the consent given to the patients prior to ENT operations in Queen's Hospital 9UK). The consent procedure is carried out by junior staff in Pre-Admission clinics. Some of the staff are new to the field of ENT.
Purpose: The consenting procedure in busy ENT departments are more frequently carried out by the most junior members of the team some of whom have no background knowledge of ENT. The purpose of the study was to evaluate how accurate where the consent procedure carried out by the junior staff.
Materials: We analyzed the quality of the consents form completed by the senior house officers for 3 months retrospectively. The template used, was the adverse side effect mentioned by ENT UK. The most common procedures consented were analysed. We provided posters and guidelines in the pre-admission clinics and audited the quality of consent forms for 3 months.
Results: We compared the most common procedures consented by the junior staff pre- and post-intervention. The difference was staggering. There was 99% compliance with the guidelines.
Conclusion: Consenting is a crucial part of every procedure. The importance of informed consent cannot be overlooked as the patient Autonomy is at stake. As the demand on NHS is growing in terms of time and productivity, consenting is left to the juniors who are frequently not trained the field. Basic teaching and visual aid, in terms of posters in Admission office can greatly improve the quality of consents and reduce the possibility of future litigations.

PP265
Partial open resection in laryngeal cancer

W. Golusinski[1,2], P. Pienkowski[1]
[1]*Department of Head and Neck Surgery, The Great Poland Cancer Centre, Poznan, Poland,* [2]*University of Medical Sciences, Poznan, Poland*

Introduction: The role of open partial surgery for laryngeal cancer has been significantly limited during the first decade of twenty-first century. Expansion of endoscopic laser approach and especially concomitant chemoradiotherapy has reduced importance of open partial resection of the laryngeal tumor. Nevertheless radical endoscopic excision of the tumor with anterior commissure involving is still controversial and concomitant chemoradiotherapy is responsible for severe late toxicity.
Purpose: This paper emphasizes value of partial open resection in organ preservation program.
Materials: 26 patients with laryngeal caner underwent partial open laryngectomy in Department of Head and Neck Surgery of Great Poland Cancer Centre from 2007 to 2008 (25 T2N0M0 cases and 1 T3N1M0 case). Surgery was the only treatment for 25 patients.
14 patients had frontolateral partial laryngectomy, 3 patients had supracricoid partial laryngectomy with CHEP, 9 patients had horizotal laryngectomy according to Calearo. One patient had adjuvant radiotherapy because of cartilage infiltration in post-operative report of the pathologist. All patients are reccurence free, breathe freely and have no swallowing disorders.
Conclusion: Open partial laryngectomy is the best choice for selected patients and open partial resection is an important part of organ preservation surgery . Every head and neck surgeon should know this procedures in detail.