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COVID-19: Preliminary recommendations from the SFORL

COVID-19 and ENT Surgery

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ABSTRACT

In Otorhinolaryngology – Head and Neck Surgery, clinical examination and invasive procedures on the respiratory tract and on airway-connected cavities, such as paranasal sinuses and the middle ear, expose people to direct transmission of SARS-CoV-2 by inhalation or ocular projection of contaminated droplets, and to indirect transmission by contact with contaminated hands, objects or surfaces. Estimating an R_0 of COVID-19 at around 3 justified postponing non-urgent face-to-face consultations and expanding the use of teleconsultation in order to limit the risks of SARS-CoV-2 infection of patients or health workers and comply with the lockdown. The health authority recommends cancellation of all medical or surgical activities, which are not urgent as long as this does not involve a loss of chance for the patient. The purpose of this cancellation is to significantly increase critical care capacity, prioritise the reception of patients with COVID-19, prioritise the allocation of staff and provision of the equipment necessary for their medical or surgical management, and contribute to the smooth running of downstream critical care within their establishment. Another goal is to reduce the risks of patient contamination within healthcare facilities. This document provides guidance on how to proceed with and adapt ENT surgery in the current pandemic context, as well as on the management of postponed operations. This best practice advice must of course be adapted in each region according to the development of the epidemic and pre-existing arrangements. Their local application can only be decided within the framework of collaboration between the ENT teams, the operational hygiene units and all the other specialties concerned.

1. Introduction

First reported in Wuhan, China, on 31 December 2019, the outbreak of coronavirus 2019 (COVID-19) constitutes the greatest public health emergency of this century. The international spread of the epidemic, mainly due to the extremely contagions nature of the SARS-CoV-2 virus, made it inevitable that the virus would actively circulate throughout France and put unprecedented pressure on health organisations. In common with many countries, one of the national health priorities has been to minimise person-to-person transmission, including among healthcare workers.

In the ENT field, clinical examination and invasive procedures on the respiratory tract and on airway-connected cavities (paranasal sinuses, middle ear) expose people to direct transmission of SARS-CoV-2 by inhalation of contaminated droplets or ocular projection, or to indirect transmission by contact with contaminated hands, surfaces or objects. Medical and surgical procedures are therefore considered to put practitioners and nursing staff at high risk

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Table 1
ENT cancer surgery: best practice advice in relation to the COVID-19 pandemic (adapted to take account of [7,8]).

Group	Pathology, symptoms	Recommended approach
Group A		
Surgery that cannot be postponed	Dyspnea Haemorrhage	Emergency treatment
Group B		
Risk of prognostic impact if treatment delayed for more than a month	Cancers in the mucus lining of the upper aerodigestive tract Progressive salivary gland cancers Progressive skin cancers	Group B1: tracheotomy ineffective Treatment without further delay All procedures and investigations (scans, dental treatment, etc.) done together during one hospital visit If the timescale cannot be adhered to, refer the patient to a referral facility Group B2: tracheotomy required If possible, postpone surgery while continuing to monitor the patient regularly or prioritise a non-surgical therapeutic alternative
Group C		
No significant prognostic impact if treatment delayed for a minimum of 6 to 8 weeks	Well-differentiated thyroid cancers Non-progressive skin cancers (e.g: basocellular carcinomas) Slow-growing salivary gland cancers Atypical nodules in the saliva glands not formally classed as malignant during the preoperative assessment Leukoplakia lesions on the vocal cords	Postpone surgery Reassess the patient after 6 to 8 weeks and adapt the treatment programme according to the course of the disease and the spread of the COVID-19 pandemic

when they come into contact with patients either confirmed or suspected to have COVID-19 [1]. In countries already affected by the pandemic, preparing for the epidemic wave or living with the virus, specific recommendations have been necessary to adapt ENT indications and medical-surgical procedures to the pandemic. In France, estimating an R_0 of COVID-19 at around 3 justified postponing non-urgent face-to-face consultations and expanding the use of teleconsultation in order to limit the risks of SARS-CoV-2 infection of patients or health workers and comply with the lockdown. In response to Early Warning and Response System (EWRS) Messages from the French Directorate-General for Health, notices issued by the French High Council for Public Health (HCSP) and the French Society for Hospital Hygiene (SF2H), the scientific committee of the French Society of Otorhinolaryngology (SFORL), the French College of Otorhinolaryngology and the French Syndicate of ENT Specialists (SNORL) issued best practice advices relating to indications and conditions for conducting specific medical and surgical treatment appropriate to the risk. Urgent ENT surgical procedures, which cannot be postponed due to the patient's state of health, should go ahead if delaying the operation involves too high a risk of loss of chance in terms of the risk-benefit balance.

This article proposes guidelines that will need to be adapted according to the region and pre-existing arrangements. ENT specialists, in collaboration with the operational hygiene teams and

Table 2
Otologic and otoneurologic surgery: best practice advice in relation to the COVID-19 pandemic (adapted to take account of [9]).

Otologic surgery		
Group	Pathology or type of procedure	Recommended approach
Group A		
Surgery that cannot be postponed	Complicated otomastoiditis (lateral sinus thrombophlebitis, neuromeningeal damage, facial paralysis, temporomandibular arthritis, etc.) Osteo-meningeal breach[a] Cochlear implant for fibrosing labyrinthitis Cholesteatoma with CSL fistula and associated symptoms that rule out surgery	Emergency treatment
Group B		
Risk of prognostic impact if treatment delayed for more than a month	Middle ear cholesteatoma with mildly symptomatic CSL fistula Osteo-meningeal breach[a]	Postpone surgery Reassess the patient after 1 month and adapt the treatment programme according to the course of the disease and the spread of the COVID-19 pandemic
Group C		
No prognostic impact if treatment delayed for a minimum of 6 to 8 weeks	Tympanoplasty for uncomplicated cholesteatomas, tympanic retraction pockets, perforated eardrums, grommet insertion, ossiculoplasty, ear implant	Postpone surgery Reassess the patient after 6 to 8 weeks and adapt the treatment programme according to the course of the disease and the spread of the COVID-19 pandemic
Otoneurologic surgery		
Group	Pathology or type of procedure	Recommended approach
Group A		
Surgery that cannot be postponed	Serious head injury in ENT-Neurosurgical joint team Malignant tumour of the temporal bone and the cerebellopontine angle (CPA) Benign tumour of the CPA with IH or fast-growing or sudden-onset functional deficit (visual problems, hemiplegia, paraplegia, etc.)	Immediate treatment For poorly-tolerated benign tumours of the CPA, a ventriculoperitoneal shunt is usually preferred to excision of the tumour
Group B		
Risk of prognostic impact if treatment delayed for more than a month	All other cases	Postpone surgery Reassess the patient after 1 month and adapt the treatment programme according to the course of the disease and the spread of the COVID-19 pandemic

[a] Degree of urgency to be discussed on a case-by-case basis.

Table 3
Endonasal surgery: best practice advice in relation to the COVID-19 pandemic.

Group	Pathology or type of procedure	Recommended approach
Group A		
Surgery that cannot be postponed	Sinusitis with complications (cavernous sinus thrombophlebitis, neuromeningeal damage) or on fragile terrain, invasive fungal sinusitis Complicated mucocoele (neurological or ophthalmic signs) Very displaced nasal fracture, foreign body in the nasal cavity Nosebleed not controlled by a balloon catheter when radioembolisation is not possible Osteo-meningeal breach[a]	Emergency treatment
Group B		
Risk of prognostic impact if treatment delayed for more than a month	Inverted papillomas Allergic fungal sinusitis in immunosuppressed patients Mucocoele without compression Osteo-meningeal breach[a]	Postpone surgery Reassess the patient after 1 month and adapt the treatment programme according to the course of the disease and the spread of the COVID-19 pandemic
Group C		
Surgery which can be postponed for a minimum of 6 to 8 weeks without significant prognostic impact	Nasosinusal polyposis Aspergillus sinusitis, oro-antral fistula Benign lesion to be removed via endonasal route Rhinoseptoplasty Dacryocystorhinostomy via endonasal route	Postpone surgery Reassess the patient after 6 to 8 weeks and adapt the treatment programme according to the course of the disease and the spread of the COVID-19 pandemic

[a] Degree of urgency to be discussed on a case-by-case basis.

all other specialties involved, should circulate these guidelines as appropriate for their organisations (dedicated treatment routes for COVID-positive patients, establishment of non-COVID-19 areas of the hospital) and adapt them as appropriate.

2. Best practice advice

2.1. General considerations

Faced with the outbreak of SARS-CoV-2 (pandemic phase of COVID-19), a recommendation was made in March 2020 to cancel all non-urgent surgical or medical ENT activity where this did not involve a loss of chance for the patient [2]. The purpose of this cancellation was to significantly increase critical care capacity, prioritise the reception of patients with COVID-19, prioritise the allocation of staff and provision of the equipment necessary for their medical or surgical management, and contribute to the smooth running of downstream critical care within their establishment or support for establishments mobilised by their territorial hospital groups (GHT) to respond to COVID-19. Another goal was to reduce the risks of patient and healthcare workers being contaminated within healthcare facilities.

Box 1: The 10 key points of ENT surgical activity during the COVID-19 pandemic.

1. Categorise procedures according to their degree of urgency.
2. Assess the risks and benefits of all ENT surgical procedures according to the prevalence of COVID-19 and regional health conditions with regard to the pandemic.
3. Defer any ENT surgical procedure whose postponement does not result in a loss of chance for the patient.
4. In cases where the decision to postpone surgery is particularly tough, this decision should ideally be made after discussion with colleagues and notified with a written report. Multidisciplinary consultation meetings to discuss cancer management should be held virtually.
5. If a procedure is postponed, carry out interim reassessments of the patient on a case-by-case basis, in particular by teleconsultation, and alter the degree of surgical urgency if necessary.
6. In cases where surgery has been postponed, CT-scan can be helpful to monitor the progress of diseases such as tumours or cholesteatomas.
7. Protect the surgeon and operating theatre staff by topping up the standard precautions with additional "air" and "contact" precautions (enhanced epidemic and biological risk (EBR) precautions), in line with the updated operational recommendations from the French Society for Hospital Hygiene (SF2H).
8. Use the COVID-19 recommendations from the French Society of Anaesthesia & Intensive Care Medicine (SFAR) during intubation and extubation, and take all perioperative precautions designed to prevent the risk of aerosolisation of viral particles.
9. For procedures deemed at high risk of contamination, favour a non-surgical therapeutic alternative if possible.
10. Adapt the precautions regarding ENT surgery to the evolution of the COVID-19 epidemic, to new scientific data concerning this infection and its treatment, to the updating of the protocols recommended by the health authorities and to the regular modifications of organisations and technical and human resources available locally.

These facilities are organised so that they can offer dedicated treatment routes for COVID-positive patients and have established non-COVID-19 areas of the hospital. In April 2020, the healthcare organisation at the French Directorate-General for Health announced that it would be relying on pathways and cooperation between existing structures (GHT, public-private partnerships, etc.) or that need to be set up (surgical team from one establishment working in another establishment) in order to [3]:

- mobilise surgical teams, both in hospitals and private practice;
- organise access to fully-equipped operating theatres and post-anesthesia care units;
- reserve post-surgical or post-anaesthetic beds, and if necessary medical beds, but also continuous monitoring, intensive care and critical care beds, follow-up and rehabilitative care or home care spaces, as appropriate depending on whether the patient's status is COVID-negative or COVID-positive.

Depending on the local context, treatment procedures adapted to available resources define the methods for conducting and returning PCR tests on patients suspected be infected [3].

We recommend continuing to hold multidisciplinary consultation meetings for ENT oncology virtually (video or teleconference) to avoid delays in treating patients and prevent participants being exposed to the risk of infection [4].

We recommend that minutes be written after a discussion with colleagues or multidisciplinary ethics committee meeting, should postponements pose complex clinical ethical questions [5]. The French National Professional ENT Council (CNPORL) intends to answer questions from healthcare teams while helping to organise consultation meetings by digital means along with its ethics committee (ceorl@sforl.org).

At this stage where we are living with SARS-Cov-2, every precaution is taken so that patients not infected with the virus are received in the best possible conditions and the risk of contamination is avoided. There must be no withdrawal of essential care and the ENT specialist should resume contact with the most vulnerable patients to ensure they continue to be monitored and detect any risk of worsening of their illness (contact with the patient by video teleconsultations or over the phone). The use of CT-scans can help monitor the evolution of pathologies such as tumours or cholesteatomas.

For a number of reasons, it is impossible to establish exhaustive lists of treatments that should be continued or postponed during the COVID-19 pandemic: varying degrees of severity for the same pathology; associated co-morbidities; the patient's wishes; local availability of operating theatres, intensive care and continuing care units, or medical and paramedical staff. Some surgical emergencies must of course be treated without delay: severe traumas, infections and abscesses that are complicated or which fail to respond to medical treatment, foreign bodies and severe obstructions of the upper airway, ingestions of caustic substances. Conversely, some procedures can be postponed, such as facial plastic surgery. Recommendations concerning scheduling timescales have been published or posted on the SFORL website regarding ENT cancer treatment [4–6], otologic and otoneurologic surgery [7] and paediatric surgery [8]. Without claiming to be exhaustive, Tables 1–3 give examples of best practice advice in relation to which specific surgical activities should go ahead or be postponed during the pandemic. In addition, the indications for tonsillectomies, which should not be postponed, are listed in the paragraph below. Finally, it should be remembered that depending on what occurs during the teleconsultation, clinical examinations in the surgery or paraclinical examinations, the ENT specialist is still the one to decide whether hospitalisation is required for medical or surgical treatment that has not been postponed.

In this ever-changing context of the COVID-19 pandemic where it is particularly difficult to take medical decisions, recommendations concerning treatments that should be continued or postponed have been published [6] or posted on the SFORL website regarding ENT cancer treatment [7,8], otologic and otoneurologic surgery [9] and paediatric surgery [10]. This advice applies to all surgical activity that is usually scheduled. Without exhaustively covering all procedures and illnesses covered by the specialty, Tables 1–3 give examples of best practice advice in relation to which specific surgical activities should go ahead or be postponed during the pandemic.

2.2. Preoperative diagnostic assessment

It is advisable to check the COVID status of the patient shortly before surgery if he has signs suggestive of this infection (fever, cough, headache, myalgia, anosmia without nasal obstruction, dysgeusia, digestive disorders) or in case of ENT operations relating to the airway or its connected cavities (middle ear, paranasal sinuses), in particular endoscopies and oral, pharyngeal, laryngotracheal, endonasal, otological and otoneurological surgical procedures. Indeed, these interventions are at high risk of contamination because they promote the aerosolisation of SARS-CoV-2 [11,12]. In the current pandemic context, untested patients should be considered infected, even in the absence of symptoms.

2.3. Precautions in the operating theatre

We recommend setting up an organisation that will marshal a limited number of health professionals to deal with patients suspected to be infected, both possible and confirmed, to minimise exposure and use of personal protection equipment (PPE).

We recommend wearing PPE whenever entering the operating theatre. Health professionals in direct contact with patients should receive local training or a refresher course in techniques for putting on and removing their PPE given by the operational hygiene team [2]. Ideally, access should be restricted to the most experienced practitioners, with minimal access by health professionals still undergoing training and medical students [2].

All surfaces of the furniture in the operating theatre should be cleaned using bleach (ready-to-use or dilutable) or using virucidal detergent/disinfectant products (standard EN 14476), to minimise virus transmission on people's hands [13].

We recommend that healthcare workers treating patients who are possibly or certainly infected with SARS-Cov-2 take additional "air" and "contact" precautions (enhanced epidemic and biological risk (EBR) precautions), as outlined below [14,15]:

- wearing respiratory protection in the form of an FFP2 (CE-marked) or N95 (US FDA-approved) mask, ensuring that it is sealed around the face. This applies to all healthcare staff before they enter the operating theatre;
- protecting their uniform with a long-sleeved single-use gown; this gown should be impervious if likely to get wet or dirty during care;
- prevention of possible splashing in the eyes by routine use of protective goggles;
- wearing headwear that completely covers the hair (mob cap, theatre hat, etc.);
- wearing single-use gloves is restricted to situations where there is contact or risk of contact with blood, biological liquids, mucus or damaged skin;
- disposal of this PPE in an infectious medical waste (IMW) receptacle before leaving the operating theatre, except for the goggles and mask which should be removed after leaving the operating theatre. If there is a shortage of FFP2 masks, they do not have to be thrown away immediately, because they are still effective for up to 8 hours provided they are not removed and then put back on the face.

In addition to the mask and protective goggles, the local operational hygiene teams can provide face shields (helmets with transparent visors) to protect wearers from droplets and aerosols produced by the patient. These shields have the advantage of being able to be removed with minimal risk of touching the face. Both sides should therefore be cleaned regularly and staff should avoid bringing their hands to their face under the visor [16].

2.3.1. ENT surgical procedures that generate aerosols

We recommend teamwork between anesthesiologists and surgeons to optimise the effectiveness of the precautions taken during airway procedures (intubation, extubation, ventilation, etc.) [12].

ENT surgical procedures on the airway and on its connected cavities (middle ear, paranasal sinuses) involve a high risk of contamination because they encourage aerosolisation of SARS-CoV-2 [11,12]. This applies particularly to endoscopies and oral, pharyngeal, laryngotracheal, endonasal, otological and otoneurological surgical procedures.

We recommend that positive-pressure ventilation and filtration in operating theatres is maintained [13].

The PPE should include: FFP2 (N95) mask, cap, eye protection (goggles and possibly helmet with transparent visor), long-sleeved impervious gown, and gloves [14].

Other specific surgical facilities (suspension of a transparent surgical drape above the patient) can be discussed with the local operational hygiene team to minimise aerosolisation of contaminated tissue micro-fragments. Until we have more specific knowledge of the risks associated with SARS-Cov-2, use of electrosurgery (monopolar, bipolar, radiofrequency, coblation) and laser surgery should be treated with caution. The aerosolisation of viral particles in the smoke plume generated by these technologies has indeed already been demonstrated [17,18].

2.3.2. Endoscopies and pharyngo-laryngotracheal surgery

It is recommended to:

- adjust the mask with both hands to minimise leaks during periods of manual ventilation [19];
- avoid using high-flow nasal oxygen and high frequency jet ventilation;
- keep the gas flow to the minimum required to maintain oxygenation or even stop ventilation temporarily while an endoscope is inserted in the larynx and trachea, or while the trachea is open;
- perform video-endoscopy to keep the surgeon at a distance from the patient during the endoscopy procedure;
- stop ventilation during extubation;
- avoid using a laser or monopolar electric scalpel, which could increase the spread of contaminated suspensions in the operating theatre.

2.3.3. Endonasal surgery [20]

It is advised to:

- use instruments that minimise the risk of aerosolisation or spray from tissue micro-fragments contaminated by the virus. Drilling and microdebriders should be avoided.
- prioritise alternatives to the endonasal approach if they allow drilling or the use of the microdebrider to be avoided: external paracanthal paralateronasal or sub-labial routes.

2.3.4. Otologic surgery [9]

It is recommended to avoid drilling as much as possible since this might elicit aerosolisation or spray from tissue micro-fragments that have been contaminated by SARS-Cov-2 [21,22].

2.3.5. Tonsillectomy and adenoidectomy (T & A) [10]

The indications to carry out T & A without delay in the current context of pandemic are enlarged tonsils and adenoids with severe obstructive sleep apnoea syndrome (OSAS). In children, an additional argument to maintain the scheduling of this operation is the existence of comorbidities such as sickle cell anaemia where there is a risk of vaso-occlusive crisis aggravated by OSAS [23]. In adults, tonsillectomy for severe OSAS can still go ahead, without prior sleep endoscopy, where there is a high probability of therapeutic success. This situation corresponds to Stage I of the Friedman classification which combines grade ¾ enlarged tonsils with a grade ½ Mallampati score, without associated hypertrophy of the base of the tongue [24]. In this specific case, surgery would be preferable to starting continuous positive airway pressure (CPAP) treatment as the latter involves a risk of spreading the virus into the surrounding air [25].

No data is currently available concerning tropism of SARS-Cov-2 for the tonsils, nor on specific contamination risks linked to the various techniques (partial or total tonsillectomy) or instruments (electrocoagulation, radiofrequency, coblation, etc.) that might be used in a tonsillectomy. We do not therefore recommend altering the usual technique for this surgery, apart from the microdebrider whose use should be avoided in line with similar recommendations for endonasal surgery.

Key points of the organisation of ENT surgical activity during the COVID-19 pandemic are summarised in Box 1.

The proposals in this notice, resulting from collaboration between SFORL, SNORL and the College are based on currently available knowledge and are likely to be amended as scientific knowledge evolves concerning spread of the COVID-19 pandemic.

Disclosure of interest

The authors declare that they have no competing interest.

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