

## Day Care Ear Surgery: Our Experience of 4 Years

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**Abstract** Day care surgery is gaining wide popularity not only in the West, but also in our country. We present our experience of 4 years of day care surgery in otological practice. To identify the scope of day care ear surgery in our rural setup and to determine the rate of complications, if any, of day care ear surgery. A prospective study of major ear cases operated in M.I.M.E.R. Medical College and Sushrut ENT Hospital was carried out from January 2005 to December 2008 with a minimum follow up of 2 years. In the period from 2005 to 2008, a total of 527 major ear cases were operated. There was re-admission of 5 operated patients (0.94%). The acceptance of day care ear surgery is enormous in our rural setup due to its obvious advantages.

**Keywords** Day care · Ear · Surgery

### Introduction

The concept of day care surgery is not a new one. It can be dated back to the early 1900s, when an American Anesthesiologist, Ralph Waters opened an Out Patient Anesthesia Clinic in Sioux City, Iowa. This facility, which provided care for dental and minor surgery cases, is regarded as the prototype for the modern free standing ambulatory anesthesia and day care surgery [1]. And since then, the range of surgeries as day care procedures continues to expand.

Day care surgery is defined as surgical or invasive diagnostic procedures performed by surgeons in a surgical

suite or specialized area with pre procedural and immediate post procedural care on the same day without hospitalization [2]. Day care surgery is now an integral part of otolaryngology. Apart from the obvious benefits to the patients in terms of minimal disruption of their activities, day care surgery is highly cost effective to the concerned organization. This is not only in terms of cost reduction, but also in terms of optimal utilization of available manpower, bed occupancy and resources [3, 4]. Many patients, especially those at the extremes of age, prefer to have their surgical procedures performed as outpatients because it decreases separation from their familiar home environment [1].

The growth of day care surgery would not have been possible without the development of improved anesthetic and surgical techniques. The availability of rapid, short acting anesthetic, analgesic, and muscle relaxant drugs has clearly facilitated the recovery process and allowed more extensive procedures to be performed on an ambulatory basis, irrespective of preexisting medical conditions [1].

In the recent years the obvious advantages of day care surgery have resulted in many otorhinolaryngological procedures to be operated as day care surgeries. Admission to hospital after day case surgery may be due to anesthetic/surgical or social grounds. However the overall incidence of unplanned inpatient admission should be less than 2–3% [5].

We present our experience of 4 years in day care ear surgery. The aim of the study is to identify the scope of day care ear surgery in our rural setup and also to determine the rate of complications, if any, in day care ear surgery.

### Materials and Methods

A Prospective study was carried out of Ear Surgeries operated by both the authors in M.I.M.E.R. Medical

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College and Sushrut ENT Hospital from January 2005 to December 2008.

### Study Population

All patients advised ear surgeries for chronic ear disease (Chronic Suppurative Otitis Media—Safe, Otosclerosis, Cholesteatoma, and Adhesive Otitis Media) in M.I.M.E.R. Medical College and Sushrut ENT Hospital from January 2005 to December 2008 was included in the study. The total number of ear cases advised surgery on a day care basis was 558. However 31 patients refused surgery on a day care basis, hence the number of patients included in the study was 527. Patients with intracranial and extra-temporal complications and those staying alone were excluded from the study.

### Surgical Procedures

The ear surgeries included in the study were tympanoplasty, cortical mastoidectomy, modified radical mastoidectomy (MRM), stapedectomy, and attico-antroscopy.

Minor surgeries such as ear lobe repair, grommet insertion and foreign body ear were excluded from the study.

### Preoperative Assessment

All patients were assessed preoperatively by an anesthesiologist and were fit for surgery under ASA (American Society of Anesthesiologists) Grade I or II. Preoperatively all patients had routine blood investigations including hemogram, bleeding and clotting time, blood sugar (fasting and post prandial), HIV test and Hepatitis B surface antigen test. Hearing was assessed with tuning fork test and with Pure Tone audiometry. For patients above 40 years of age, electrocardiogram and chest X-ray were done. All details of the patients including name, age, sex, address, phone number, preoperative findings and pure tone audiogram were entered in case sheets. Otomicroscopic examination was done in all patients. Pre and post operative video-oto-endoscopic recording was done for documentation. All patients were explained about the operative procedure, failure rates along with the postoperative care to be taken at home after discharge. Written consent was taken in all patients undergoing surgery. Factors such as distances involved from the centre and residence of the patient and transport availability were considered during case selection. It was ensured that at least one responsible adult was available at home during the immediate two post operative days.

All patients were operated in the morning after overnight fasting at home. Oral alprazolam 0.25 mg per was advised to be taken at home in the night prior to surgery.

### Anesthesia

All patients were operated under local anesthesia with adequate sedation except children and uncooperative patients who were operated under general anesthesia.

Pre medication included Pentazocine lactate injection IP (Indian Pharmacopoeia) 30 mg and Midazolam injection BP (British Pharmacopoeia) 1 mg/ml. In patients, who were operated under general anesthesia, tracheal intubation was done. Umbo ventilation was preferred to nitrous oxide and halothane. PONV (postoperative nausea vomiting) was prevented by use of ondansetron (4 mg stat intravenous slowly). Diclofenac suppositories (1 mg/kg) were used for pain relief peri-operatively.

### Infiltration

2% lidocaine with 1:2,00,000 Adrenaline (Astra Company, India) was used.

### Surgical Technique

All cases were operated using an Endaural incision. Standard surgical techniques were used in all cases. Meatal pack was placed and mastoid bandage tied.

### Immediate Postoperative monitoring

Post operatively, all patients were monitored for vital parameters minimum for 4–6 h. Patients were encouraged to eat by lunchtime.

After discharge, all patients were contacted on telephone/mobile the same evening for any complaints and to assess their general well being. All patients were put on prophylactic broad spectrum oral antibiotics (amoxicillin + clavulanic acid) and analgesics (ibuprofen + paracetamol) for 7 days postoperatively.

### Follow up Protocol

First post operative visit is after 48 h for meatal pack and mastoid bandage removal. Patient is advised about ear care and use of topical antibiotic-steroid ear drops (neomycin + polymyxin B + hydrocortisone). Subsequent post-operative visits are at weekly intervals for 1 month and thereafter monthly for 6 months. At the end of 3 months, pure tone audiometry (average threshold at 500, 1000, 2000, and 3000 Hz) is done to evaluate air bone gap (ABG) closure. Patients are evaluated functionally at the end of 6 months, 1 year, and 2 years.

All the patients filled in a questionnaire at the first operative visit. Patient satisfaction was enquired with regards to post operative pain relief, overall satisfaction

about outpatient services, admission procedure, day-surgery services, preoperative and postoperative information, and suitability of the day care surgery and postoperative experience at home and in the clinic.

## Results

The data of the operated patients is tabulated as follows

In our hospitals, 527 ears were operated on a day care surgery basis during the period of January 2005 to December 2008 (details of the operative procedure in the Table 1). The number of males was 294 and females were 233 (Table 2). The patients in the study group ranged from 8 to 57 years (Table 3). 412 patients were operated under local anesthesia supplemented with intravenous sedation, rest were operated under general anesthesia.

The post operative readmissions in our study were 5, which included one for giddiness, one for severe post-operative pain, one for pain due to tight bandage and two for mastoid bandage soakage (Table 4). The incidence of readmission for pain due to tight bandage was subsequently

**Table 1** Operative procedures during 2005–2008

Operation	2005	2006	2007	2008	Total
Tympanoplasty	20	39	47	53	159
Attico-antrostomy	19	22	32	35	108
MRM	24	43	44	42	153
Cortical mastoidectomy	12	21	19	20	72
Stapedectomy	05	09	10	11	35
Total	80	134	152	161	527

**Table 2** Gender distribution of patients

Gender	2005	2006	2007	2008	Total
Male	37	75	87	95	294
Female	43	59	65	66	233
Total	80	134	152	161	527

**Table 3** Age distribution of patients

Age (years)	2005	2006	2007	2008
<10	5	9	17	13
11–25	31	40	43	32
26–40	29	41	35	48
41–55	13	36	41	53
>55	2	8	16	15
Total	80	134	152	161

decreased by applying adequate pressure bandage. The patient with giddiness was started on prochlorperazine 5 mg orally. None of the patients were re-admitted for nausea or vomiting. Out of 153 patients operated for MRM, 3 required re-admission, which was 1.96% re-admission rate for MRM (Table 5). Whereas readmission rates for tympanoplasty and stapedectomy were 0.62 and 2.85% respectively. Overall re-admission rate for day care ear surgery was 0.94%.

## Discussion

The principal objectives of day care surgery are that an effective and safe surgical service is provided with minimal postoperative morbidity, low unplanned hospital admission rates and high patient level of satisfaction.

In our hospitals, 527 ears were operated on a day care surgery basis during the period of January 2005 to December 2008. 412 patients were operated under local anesthesia supplemented with intravenous sedation and 115 were operated under general anesthesia. Midazolam pre-medication not only decreased preoperative anxiety but was also associated with a reduction in postoperative pain. Proper use of the premedication may actually facilitate the discharge process as a result of its ability to decrease postoperative side effects [1]. Ondansetron blocks both central and peripheral 5-HT<sub>3</sub> receptors and is effective in preventing emesis after day care surgery. Because ondansetron has a short elimination half-life, it is more effective in reducing the need for rescue antiemetics in the recovery room when it is administered at the end of longer surgical procedures [1]. All the patients had a good control of postoperative pain with oral analgesics (paracetamol and ibuprofen). Analgesics used in day care surgery should be such that it increases comfort with adequate control of pain, and cause no sedation and PONV. All patients were discharged within 6–8 h of surgery.

The post operative readmissions in our study were 5, which included one for giddiness, one for severe post-operative pain, one for pain due to tight bandage and two for mastoid bandage soakage. None of the patients were re-admitted for nausea or vomiting. Out of 153 patients operated for MRM, 3 required re-admission, which was 1.96% re-admission rate for MRM (Table 5). Whereas readmission rates for tympanoplasty and stapedectomy were 0.62 and 2.85% respectively. Overall re-admission rate for day care ear surgery was 0.94%.

In a study by Karkanvetos, De, Srinivasan et al., the total number of patients who had myringoplasty as a day case was 144. Their ages ranged from four to 74 years (mean = 31 years). The overnight stay rate was 2.7% and this was for immediate post-operative problems such as

**Table 4** Complaints and procedures resulting in re-admissions during 2005–2008

	2005	2006	2007	2008	Total
Pain due to tight bandage	1 (Tympanoplasty)	–	–	–	1
Giddiness	–	–	–	1 (Stapedectomy)	1
Mastoid bandage soakage	1 (MRM)	–	1 (MRM)	–	2
Post-operative pain		1 (MRM)			1
Total	2	1	1	1	5

**Table 5** Re-admissions during 2005–2008

Operation	Re-admission
Tympanoplasty	1
MRM	3
Stapedectomy	1
Total	5

nausea and bleeding from the wound. The readmission rate for post-operative complications was 2.1% [6]. Whereas in a study by Rowlands et al. [7], the unplanned admission rate for surgery, excluding mastoid surgery, was 6.7% and they opined that procedures such as myringoplasty, ossiculoplasty, bilateral pinnoplasty, meatoplasty and tympanotomy with excision of cholesteatoma, were eminently suitable for day surgery.

In a prospective study of 52 consecutive children undergoing tympanomastoid surgery by Powell, Rowlands [8], all patients were discharged on day of surgery despite of minor post operative problems including pain, bleeding, nausea vomiting.

The so called PADS (postanesthesia discharge scoring) system is a simple cumulative index that measures the patient's home readiness; it is based on five major criteria [1].

- (1) Stable vital signs
- (2) Ambulation and mental status
- (3) Pain and PONV
- (4) Surgical bleeding
- (5) Fluid intake/output

All the patients and their relatives were satisfied and impressed with the day care ear surgery. The degree of satisfaction was assessed by the questionnaire filled at the first post operative visit at 2 days. Overall satisfaction following day care ear surgery was very high. Almost all the patients (99.05%) favoured day care surgery as it did not affect their routine daily activities to a great extent. Most of the patients with bilateral ear disease, preferred to opt for the operation of their other ear also on a day care basis. These patients also were willing to get their friends and relatives who were

affected by similar ailments also to be operated on a day care basis. The number of patients operated on day care basis has gradually increased from 80 in 2005 to 161 in 2008 showing the increasing acceptance of the day care ear surgery in the local population. This high level of patient satisfaction is similar to study by Singh and Kalra of 93.5% [9].

To achieve a high level of patient satisfaction following day care surgery requires careful selection of patients and good preoperative preparation of the patient and the relatives, proper postoperative advice and a patient-friendly and safe medical environment with a well-trained staff.

Lt. Col. Singh and Kalra [9] have listed certain selection and exclusion criteria for patient selection for day care surgery.

- (1) *Simplicity of the procedures*: The procedures should be relatively of short duration.
- (2) *Incidence of post operative complications*: The potential incidence of post operative complications should be low and recovery period minimal.
- (3) *General good health of the patient*: The patient should be in good health on have a systemic disease which is under good control.
- (4) *Patient reliability*: Patient should understand and be willing to follow post operative instructions.
- (5) *Home situation of the patient*: Patients should have someone to take care of them at home postoperatively.

Benefits of day care surgery [1]:

- (1) Patient preference, especially children and the elderly
- (2) Lack of dependence on the availability of hospital beds
- (3) Greater flexibility in scheduling operations
- (4) Low morbidity and mortality
- (5) Lower incidence of infection
- (6) Lower incidence of respiratory complications
- (7) Higher volume of patients (greater efficiency)
- (8) Shorter surgical waiting lists
- (9) Lower overall procedural costs
- (10) Less preoperative testing and postoperative medication

Greater level of patient comfort and low re-admission rates in our study can be attributed to a number of reasons:

- (1) Careful selection of patients
- (2) Proper counseling and detail explanation of the procedures, post operative care to be taken at home
- (3) Meticulous surgical techniques
- (4) Strict asepsis of the operation theatre and instruments

The fact that the majority of the subjects eligible for enrolment participated in the study is a direct indication of the popularity of day care ear surgery.

### Conclusion

The careful patient selection of patients and meticulous operative techniques have resulted in high level of patient satisfaction, opening up possibilities for other otorhinolaryngological surgeries also to be operated on a day care basis in our set up. Day care surgery is not only cost effective to patient and the hospital, but also increases patient comfort due to their postoperative care in their familiar home environment.

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**Conflict of Interest** None.

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