

## Day-stay myringoplasty

R. BENSON-MITCHELL, F.R.C.S., G. S. KENYON, M.D., F.R.C.S., Q. GARDINER, F.R.C.S.

### Abstract

Grafting of the tympanic membrane (myringoplasty) has traditionally been performed as an in-patient procedure in the UK. We have performed day-stay myringoplasty on 21 consecutive patients (15 adults and six children) under general anaesthesia using an underlay temporalis fascia graft. In 18 cases there was complete healing of the tympanic membrane and in three cases the patients developed perforations at four weeks. This success rate is consistent with previously reported studies. All patients were discharged on the day of admission with no major complications.

We have compared the results with a group of patients having the same operation as an in-patient and have concluded that day-stay myringoplasty under general anaesthesia is as safe and effective as in-patient surgery for the majority of patients.

**Key words:** Day care, surgery; Myringoplasty

### Introduction

Myringoplasty, to seal chronic perforations of the tympanic membrane, is a commonly performed operation in Otolaryngology. Traditionally this procedure has been performed on an in-patient basis. This has been thought necessary as, in the majority of cases, a mastoid dressing is normally applied in the immediate post-operative period and because it has been the belief that there was a risk of post-operative bleeding and graft failure if patients are mobilized too early (Gibb and Chang, 1982).

Increasing pressures on health care resources, as well as advances in anaesthetic and surgical techniques, have led to a rapid expansion of day-stay surgery. Patients welcome this change because they are given a definite date for their procedure, which is unlikely to be cancelled, and because surgery causes minimal disruption to their working and domestic life (HMSO, 1991). This change in hospital culture has caused many procedures to be reappraised and, as a result, numerous operations which previously commanded a long hospital stay are now being performed as day cases (Kaddur, 1992; Fenton and O'Dwyer, 1994). In Otolaryngology, adenotonsillectomy has been performed on an ambulatory basis in the USA for many years and is slowly gaining popularity in the UK (Maniglia *et al.*, 1989; Leighton *et al.*, 1993). There have also been reports of submucous resections being carried out under local anaesthesia in an out-patient setting (Buckley *et al.*, 1991).

Many patients currently languish on long in-patient waiting lists for myringoplasty. Repair of

small tympanic membrane perforations under local anaesthesia or intravenous sedation has been previously reported (Kane *et al.*, 1980; Kaddur, 1992). However, myringoplasty is commonly performed under the controlled environment of a general anaesthetic and this routinely entails in-patient care.

This paper presents our experience of formal day-stay myringoplasty using an underlay temporalis fascia graft applied under general anaesthesia. It addresses the small changes in technique required to perform this procedure as a day case and reports the results and contrasts them to those obtained on a parallel cohort who had their operation on an in-patient basis.

### Materials and methods

Patients requiring myringoplasty for chronic tympanic membrane perforation were routinely entered into the trial. Those recruited were aged 12 to 52 (mean 32 years) and, of these, six were children (under 15) and 15 were adults (15 and over). The tympanic membranes in these cases were perforated for greater than 25 per cent of their surface area and were a mixture of central, marginal and subtotal defects.

Patients satisfied appropriate entry criteria for day-stay surgery (Table I). No patient had a previous history of ear surgery which was, initially, considered an absolute contraindication to day case care. The operated ear was dry at the time of surgery and, in all cases, a pre-operative pure tone audiogram was performed. Patients were admitted to a purpose built

TABLE I  
GENERAL CRITERIA FOR PATIENT SELECTION

Age	<60 years
Body weight	<100 Kg
No history of chronic illness	
No previous history of complications following GA	
No past history of prolonged bleeding	
Permanent or temporary residence within 5 miles	
Availability of personal transport	
Adult companion in attendance for the first 24 hours	

day-stay unit and were seen pre-operatively by a consultant anaesthetist. The operation was performed under a general anaesthetic with endotracheal intubation (spontaneous respiration: nitrous oxide and oxygen with isoflurane).

Surgery was performed by Registrar and Consultant grade surgeons. The operative procedure was standardized for both groups of patients. The ear was first prepared by shaving the immediately adjacent scalp. The pinna, post aural skin and meatus were then cleaned using Travasept (chlorhexidine and cetrimide). The patient was draped and the post aural skin and meatus were infiltrated with 0.5 per cent lignocaine and 1/200,000 adrenaline. A post-aural incision was made using cutting diathermy and the skin and superficial tissues were separated from the underlying temporalis fascia and periosteum. A fascial graft was taken and prepared and, after the edges of the perforation had been freshened, a posteriorly based tympanomeatal flap was lifted. The drum was grafted with an underlay temporalis fascia graft on a gelfoam bed. Small pellets of gelfoam were placed immediately over the grafted area and the ear canal was dressed with a Pope otowick soaked in Sofradex. The tissues were closed with interrupted sutures and the skin was closed with subcuticular Vicryl and covered with Steristrips; no mastoid dressing was employed. In all cases the operative time was approximately one hour.

Patients were observed for six hours post-operatively and were given an information sheet prior to discharge. This augmented the previous explanation given about the operation and asked patients to contact their General Practitioner or local casualty

department immediately if they became very dizzy or noticed bleeding from the operated ear. On discharge all patients were given Sofradex drops to be inserted onto the aural dressing three times a day for a week and Co-proxamol as required for analgesia. At one week the otowick was removed and the patients were then seen at four weeks and at four months for audiological assessment.

For purposes of comparison the results obtained were contrasted with those of a parallel cohort of 19 patients (age range 12–44, mean 31; five children and 14 adults) who had their surgery as in-patients: this group was selected from in-patient waiting lists and satisfied the same entry criteria as the day-stay cohort. The pathology was in all respects similar and both groups had the procedure performed by the same surgeons. The results obtained were compared by computation of the standard error of the difference between percentages.

### Results

All patients had normal wound healing by first intention and there were no anaesthetic or major surgical complications in either group. However all patients having day case surgery were successfully discharged on the day of admission whereas the average stay for the in-patient group was 2.4 days.

Two patients in the day case cohort (10 per cent) were seen by their General Practitioner in the week following surgery because of minor wound infections and both were given oral antibiotics. The equivalent figure for the in-patient group was four (21 per cent) (Table II). Twelve patients having day case surgery required post-operative analgesia and two complained of nausea and dizziness following hospital discharge. However no patient in either group required re-admission and, when directly asked, only two of the day case group felt that the hospital stay was too short.

At four months 18/21 (86 per cent) in the day case group and 17/19 (89.5 per cent) of the in-patient group had tympanic membranes which were completely sealed (Table II). Fourteen patients (67 per cent) who had day case surgery had their hearing thresholds improved to within 5 dB of bone conduc-

TABLE II  
A COMPARISON OF DAY-CASE AND IN-PATIENT MYRINGOPLASTY (SIGNIFICANT VALUES  $\pm 2$  SE'S; NS = NOT SIGNIFICANT)

	Day case (n = 21)	In-patient (n = 19)	Difference between %	Standard error of differences	
GP <24 hrs post-discharge	0 (0%)	0 (0%)	—	—	NS
GP – within 2 weeks	2 (9.5%)	4 (21%)	11.5	11.3	NS
A & E – within 2 weeks	0 (0%)	0 (0%)	—	—	NS
Perforation sealed	18 (85.7%)	17 (89.5%)	3.8	7.6	NS
Hearing improved	14 (66.6%)	15 (78.9%)	12.3	10.3	NS
Hearing worse	0 (0%)	0 (0%)	—	—	NS

No day cases admitted overnight.

In-patients average length of stay (LOS): 2.4 days.

TABLE III  
PATIENTS CONSIDERED UNSUITABLE FOR DAY CASE MYRINGOPLASTY

Number of patients	Reason for in-patient admission
1	Asthmatic
1	Hypertension/angina
1	Epileptic
2	Re-do procedure

tion levels across all frequencies; in the in-patient group the equivalent figure was 15 (78.9 per cent). No patient in either group had any deterioration in hearing in the post-operative period.

There were no statistically significant differences between groups when visits to the General Practitioner or to Casualty units during the post-operative period were compared (Table II). Therefore performing the operation as a day case, while saving money for the in-patient unit, does not increase demand for community based services.

Since we have started to perform day-stay myringoplasty we have listed a total of 25 patients for this procedure (four remain on the waiting list). In the same period five have been added to the in-patient waiting list (Table III). This was because these patients did not satisfy the general or specific criteria laid down for selection as day cases. Therefore, in this small sample 25 out of 30 (83 per cent) consecutive patients seen as out-patients with tympanic membrane perforations were considered suitable for day-stay myringoplasty.

## Discussion

Day case repair of the tympanic membrane under local anaesthesia or intravenous sedation has been previously reported (Kane *et al.*, 1980; Kaddur, 1992). However the closure of tympanic membrane perforations normally requires a general anaesthetic and autologous grafting using fascia. There have been no previous reports of such techniques being utilized for day-stay surgery.

Our method of performing myringoplasty has been altered to accommodate this change in practice and it thus differs slightly from the conventional description of the technique (Gibb and Chang, 1982). In our patients the post-auricular incision is made using cutting diathermy. Such a method dramatically reduces intra-operative bleeding and must diminish the risk of post-operative haematoma. In our experience all such incisions, even those which subsequently suffered minor wound infections, have healed uneventfully and have been cosmetically acceptable. No post-aural haematoma has occurred in any of our patients and, because of this, we have, therefore, decided to abandon any form of traditional mastoid dressing in the post-operative period. Such bandaging may, in any case, be redundant for this operation (Hill *et al.*, 1993). With this technique we feel that we have appropriately addressed one of the conventional arguments against conventional myringoplasty as a day case procedure. We have also consistently utilized a Pope otowick as an ear canal dressing. Patients find

this more comfortable than gauze dressings and we have shown that its use does not hazard the overall success rate of the operation (McRae *et al.*, 1992). Because of this it has appeared to be a helpful adjunct to performing the operation on a day case basis.

In this series none of the patients who had day-stay surgery contacted their General Practitioner on the day of discharge and only two patients (9.5 per cent) visited their practitioner prior to a routine out-patient appointment at the end of the first week. This figure was, if anything, a reduction in demand on community service when compared to patients who had an overnight stay (Table II). This may represent the greater input made by nursing and medical staff in informing patients of the sequelae of surgery.

The overall success rate of day-stay myringoplasty compared favourably with in-patient procedures (Table II) and both compared favourably with other reported series. Gibb and Chang (1982) reviewed 206 patients who had a myringoplasty as an in-patient employing an underlying temporalis fascia graft and with a closure rate of 89.3 per cent. Our figures of 85.7 and 89.5 per cent compare well with this figure. None of our patients in either group had a sensorineural hearing loss and 67 per cent and 79 per cent showed a notable improvement in hearing thresholds as a result of surgery.

Some patients were unsuitable for day-stay surgery on medical grounds rather than possible technical difficulties of the procedure (Table III). However, until we had monitored the outcome of day case surgery revision procedures were excluded. Our selection criteria have now been changed to include these operations – but the surgeon must be satisfied that the procedure can be performed in one hour or less so that the time of discharge is not compromised.

Over the 12 months in which day-stay myringoplasty was performed in our unit a total of 83 per cent of patients were considered suitable for day-stay surgery. Buckley *et al.* (1991) estimated the cost of day case surgery to be 49 per cent of in-patient stay assuming 30 minutes of theatre time and two out-patient visits. Based on these figures the potential savings nationally, if up to 80 per cent of myringoplasties were carried out as day cases, is very significant. With increasing pressure on health care resources this procedure should increasingly be performed on an ambulatory basis.

This study demonstrates that day-stay myringoplasty can be performed without compromising the safety or overall success rate of the procedure. Very little, if any, additional work is generated in the community and patient satisfaction is high. The reduced cost of the procedure should lead to a further freeing of in-patient beds and a reduction of waiting lists.

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## Address for correspondence:

R. Benson-Mitchell,  
Otolaryngology Consultants of Memphis,  
PC 777 Washington Avenue,  
P240 Memphis,  
Tennessee 38105,  
USA.

Fax: 001 (901) 821 4313.