Success rate of myringoplasty at Groote Schuur Hospital

Juanita Becker, Darlene Lubbe

Objectives. The aim of this study was to determine the success rate of myringoplasty surgery performed at Groote Schuur Hospital and to evaluate some of the presumed prognostic factors.

Design. The study design was a retrospective analytical cohort.

Setting. Groote Schuur Hospital (tertiary medical centre), Cape Town.

Subjects. This study assessed the success rate of 341 myringoplasty operations performed by surgeons in the Department of Otolaryngology from January 2005 to December 2009.

Outcome measures. An unsuccessful operation was classified as a residual perforation seen at the 3-month follow-up visit that remained present at all subsequent visits. Presumed prognostic factors such as the rank of the surgeon, size of the perforation, location of the perforation, graft used and whether it was a revision procedure, were also evaluated. Where possible, the audiometric gain following surgery was calculated.

Results. The overall success rate in terms of an intact tympanic membrane following myringoplasty was 71%. The average improvement in pure tone average following myringoplasty was 12.4 dB. In 64% of patients, socially acceptable hearing levels were present postoperatively (air-conduction of less than 30 dB). None of the presumed prognostic factors was a statistically significant determinant ($p>0.05$).

Conclusion. The success rate for myringoplasty (in terms of perforation closure) of 71% at Groote Schuur Hospital compares well with that quoted in the literature. There is no ethical dilemma from a surgical outcomes perspective of registrars performing myringoplasties.

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To the Editor: Myringoplasty is the surgical restoration of the perforated tympanic membrane by grafting, with the principal goals being a 'dry ear' and improved hearing.[1] Myringoplasty is a challenging procedure, and there is great variation in outcomes among various surgeons and institutions.[2] The Royal College of Surgeons comparative ENT audit published in 1993 suggested that perforation closure could be expected in 65% of cases, with hearing improvement in 53%,[3] but a study in 2002 proposed that the success rate for myringoplasty among British surgeons ranged between 74% (small perforation) and 56% (large perforation).[4] An audit at Groote Schuur Hospital in 1993 by Black and Wormald found that perforation closure could be expected in 78% of cases.[5] However, no recent data are available on the success rate, making it difficult to accurately inform patients as part of the consent process. At Groote Schuur Hospital, where registrars perform myringoplasty as part of their early training, the question also arose whether the results of trainees were poorer than specialists, and whether patients should be asked for consent accordingly.

Methods

We assessed the success rate and presumed prognostic factors in 341 myringoplasty operations performed at Groote Schuur Hospital by surgeons in the Department of Otolaryngology from January 2005 to December 2009. The study design of choice was a retrospective cohort using medical patient records. Prognostic factors such as the rank of the surgeon, size and location of the perforation, graft used (cartilage or temporalis fascia) and whether it was a revision procedure, were also evaluated. Where possible, the audiometric gain following surgery was calculated. Patients were followed up at 6 weeks, 3 months and 6 months. The operation was considered to have failed if a perforation were still present at 3 months. The size and location of the perforation was determined by microscopic evaluation, and the pure tone average was calculated by audiometric tests before and after surgery.

Results

The overall myringoplasty success rate was 71%. The average improvement in pure tone average was 12.4 dB, with 64% of patients achieving socially acceptable hearing levels postoperatively. The success rate in patients who had revision surgery was 72.4%. None of the prognostic factors assessed in Table I was statistically significant ($p>0.05$). Unfortunately, 16.7% of patients were lost to follow-up beyond 6 weeks.

Discussion

The success rate of myringoplasty (in terms of perforation closure) of 71% corresponds well with figures quoted in the literature.[6] In some studies where the success rate was as high as 90%, the operation was performed by highly specialised surgeons with considerable experience in the procedure and a special interest in otology.[7] Even though multiple studies have been conducted evaluating the influencing factors in myringoplasty, many of these remain unresolved.[8]

Rank of surgeon

At Groote Schuur Hospital, uncomplicated tympanic membrane repairs are generally performed by registrars in their first year of training. Our study showed a difference in the success rate between consultants and registrars in the department, but it was not statistically significant. Statistically significant results were demonstrated in the literature.[6,8,9] In contrast, Palva *et al.*[10] showed that success might depend more upon technical skill and attention to detail than the level of training or experience of the surgeon.

Faculty of Health Sciences, University of Cape Town
Juanita Becker, final-year medical student

Division of Otolaryngology, Groote Schuur Hospital and University of Cape Town
Darlene Lubbe, FCORL (SA)

Corresponding author: *J Becker (bckjua001@uct.ac.za)*

Table I. Prognostic factors evaluated and their relationship to successful myringoplasty

Variable	Graft successful (% (*N*))	*p*-value
Rank of surgeon		0.118
Consultant	79.1 (72)	
Junior registrar	68.5 (61)	
Senior registrar	66.3 (69)	
Graft used		0.679
Cartilage graft (CG)	71.1 (37)	
Temporalis fascia graft (TFG)	70.6 (161)	
CG + TFG	100 (4)	
Size of perforation		0.834
Small	74.1 (80)	
Medium	68.9 (62)	
Large	75.0 (9)	
Subtotal	70.1 (40)	
Total	57.1 (4)	
Location of perforation		0.254
Posterior	91.0 (20)	
Anterior	75.7 (53)	
Inferior	71.4 (5)	
Subtotal	70.0 (42)	
Antero-inferior	66.7 (4)	
Central	66.4 (71)	
Total	57.1 (4)	

Location and size of perforation

The location of the perforation did not reflect significantly different results, with posterior perforations having the best result in our study (91%). Worse results are described in the literature for anterior perforations.[10] However, some studies show worse results for posterior[2] perforations, while other studies showed that the location of the perforation had no effect on success.[11,12] Lee *et al.*[4] and Onal *et al.*[6] found significantly higher success rates with perforations smaller than 50%, but the size of the perforation was not found to be a significant parameter in our and other studies.[11,13]

Graft material used

The type of graft used did not have a significant effect on success. It is has been suggested that, in the case of grossly inflamed mucosa, repair should be performed with cartilage rather than temporalis fascia.[7]

Conclusion

The 71% success rate of myringoplasty, in terms of perforation closure, compares well with figures quoted in the literature, where the success rate in a teaching programme seems to be between 74% (small perforation) and 56% (large perforation).[9] We also infer that there is no ethical dilemma, from a surgical outcomes perspective, in registrars performing myringoplasties.

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Four egyptian geese
Screeching one to the other -
Portent for the day.

Haiku: Peter Folb