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.

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.

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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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 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.13,15

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.

Acknowledgement.

We tender special thanks to Mr Rauf Sayed and Ms Roxanne Beauchain from the Department of Biostatistics at the University of Cape Town for their assistance in data analysis.

References


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

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

Locations 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 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.13,15

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

Haiku: Peter Folb