The Journal of Laryngology & Otology (2007), ***121***, *1–4.*

doi:10.1017/S0022215106003574
Printed in the United Kingdom
First published online 24 October 2006

Main Article

A long term follow up of conchal flap meatoplasty in chronic otitis externa

P Jayanth Kumar, G J C Smelt*

Abstract

A long-standing diffuse chronic otitis externa can lead to itching. Resultant scratching may then lead to irreversible skin changes with canal stenosis by scar tissue. The poor ventilation and increased humidity gives rise to bacterial and fungal growths leading to breakdown of the skin defences and worsening itching. This vicious itching–scratch cycle or downward spiral often fails to respond to medical treatment. For these cases a simple conchal flap meatoplasty may improve ventilation of the external auditory canal and may lead to a self cleaning ear. We reviewed 84 patients who had undergone conchal flap meatoplasty in Calderdale and Huddersfield NHS Trust Hospitals from April 1993 to June 2002. A long-term follow up of conchal flap meatoplasty in chronic otitis externa showed no records of complications or further otitis in 93.2 per cent of cases. Thus surgical intervention plays an important role in the treatment of otitis externa not responding to treatment.

Key words: Ear Canal; Otitis Externa; Otologic Surgical Procedures

Introduction

High humidity is a major cause of chronic otitis externa. Moisture combined with inadequate lubrication of the stratum corneum and retention of keratin debris promotes bacterial and fungal growth. Long-standing diffuse otitis externa can lead to itching, scratching and thence irreversible skin changes with canal stenosis by scar tissue leading to poor ventilation and worsening itching. Often in these cases a simple conchal flap meatoplasty may improve ventilation of the external auditory canal and may lead to a self cleaning ear. If not, the widened external orifice of the canal might well facilitate aural toilet. The aim of this paper is to analyse the long-term surgical outcome of conchal flap meatoplasty in chronic otitis externa.

Materials and methods

We reviewed 149 patients who had undergone conchal flap meatoplasty in Calderdale and Huddersfield NHS Trust Hospitals from April 1993 to June 2002. Sixty-five patients were excluded with mastoid cavities, stenosis and recurrent wax entrapment. Chronic otitis externa was defined as recurrent eczematous skin changes in the ear canal associated with itch, with or without discharge. All the patients were suffering chronic otitis externa resistant to medical treatment. We assessed the complications and outcomes at follow up.

All the procedures were performed by the senior author (GJCS). The surgical technique used was described by Martin-Hirsch and Smelt.[1] The superficial meatus is opened by eliminating the sharp rim at the junction of the conchal bowl and the posterior canal wall cartilage; thinning the posterior canal wall skin and increasing the circumference of the external auditory orifice.[1] A brief description of the technique is as follows:

(1) Local or general anaesthesia. Eighty per cent of cases were done by local anaesthesia.
(2) Modified endaural incision: starting at the root of the helix, the incision extends across the conchal skin parallel to the conchal margin to meet the floor of the ear canal at the external orifice. It then ascends along the conchal margin to 12 o'clock whence the incision travels along the roof of the external auditory canal ending near the tympanic annulus (Figure 1).
(3) Elevation of conchal skin and partial excision of conchal cartilage and removal of subcutaneous tissue from the posterior canal wall and floor of the external auditory canal. (Figure 2).
(4) Rotation of conchal skin superiorly into the roof of the external auditory canal (i.e. into the 12 o'clock incision (Figure 3).

From the Department of Accident & Emergency, City Hospital, Birmingham, and the *Department of Otolaryngology, Head and Neck Surgery, Calderdale and Huddersfield NHS Trust, West Yorkshire, United Kingdom.
Accepted for publication: 2 March 2006.

FIG. 1
Modified endaural incision.

FIG. 2
Elevation of conchal skin.

(5) Suturing of posterior meatal skin to conchal skin margin.
(6) Bismuth iodoform paraffin paste pack for two weeks.

Results and analysis

One hundred and eighteen conchal flap meatoplasties were performed between April 1993 to June 2002. Out of 84 patients, 34 underwent bilateral meatoplasty. The procedure took approximately 20 minutes. The mean follow-up period was 56 months and 85 per cent of cases had follow up greater than two years (Figure 4).Complications noted were wound infection, perichondritis, sagging of the external auditory canal roof, excoriation of the pinna, granulation and recurrence of the otitis externa (Figure 5).

In the immediate post-operative period we had three cases of wound infection and one of perichondritis that responded well to medical treatment.

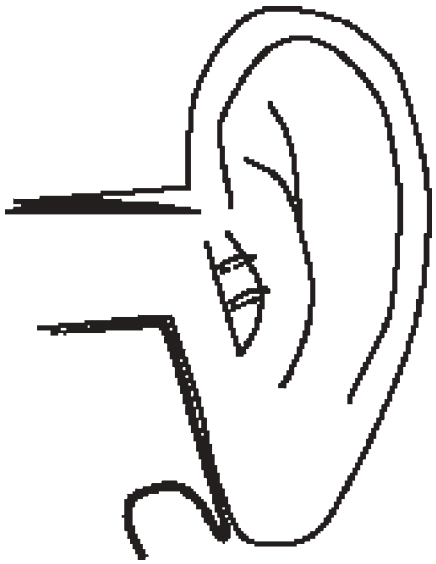

FIG. 3
Suturing of posterior meatal skin to conchal skin margin after rotation of conchal skin superiorly into roof of external auditory canal at 12 o'clock.

There were eight cases of recurrence of otitis externa; most of the cases responded well with medical management and only one case required revision surgery. In one case there was granulation at the posterosuperior margin on the external auditory meatus which responded well to cauterisation. Of four cases of roof sag from downward displacement of the skin flap, three required revision surgery and one resolved spontaneously.

No record of complications or further otitis was found in 93.2 per cent cases. Only four ears required revision meatoplasty.

Discussion

For chronic otitis externa, many meatoplasty[1–5] and canaloplasty techniques[6–9] have been described. Regardless of the exact cause of the chronic otitis externa, meatoplasty provides ventilation which helps to dry the ear, thus preventing chronic otitis externa and recurrence of the symptoms.[10,11] This is a review of the results of the conchal flap technique

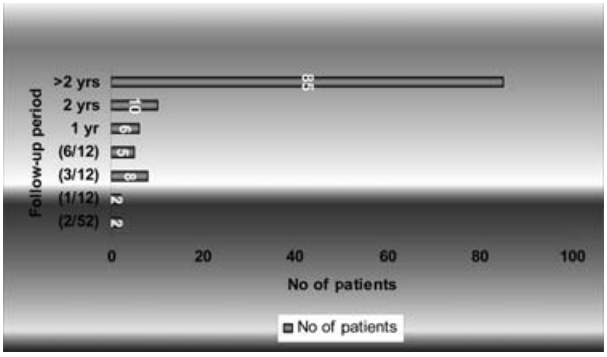

FIG. 4
Follow up.

https://doi.org/10.1017/S0022215106003574 Published online by Cambridge University Press

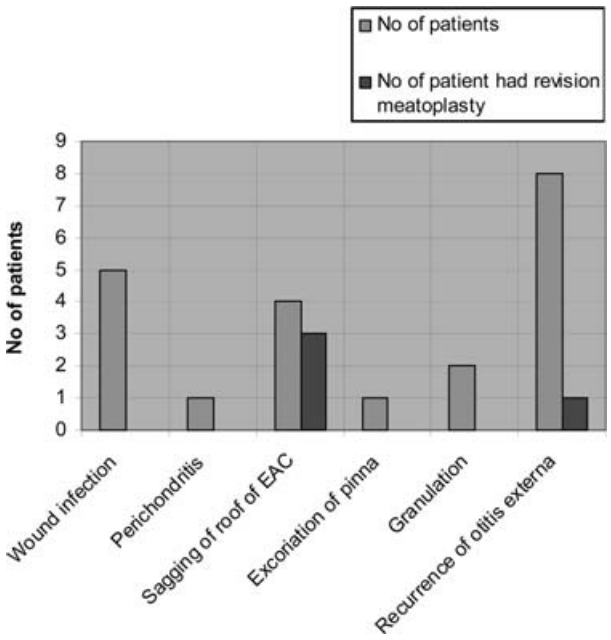

FIG. 5
Complications after surgery. EAC = external auditory canal

which was originally published by the senior author Mr. Smelt and his colleague Mr. Martin-Hirsch.[1] In our series, we have fewer complications compared to other similar series.[9]

The symptoms of chronic otitis externa are well known to all levels of staff in ENT out-patient clinics and many surgeons find themselves 'ringing the changes' with a number of topical medications from ancient antiseptics, such as gentian violet, mercuric oxide and bismuth iodoform paraffin paste, to more recent ones such as 1 per cent hydrocortisone cream or mixtures like triamcinolone acetonide containing an antifungal and antibiotic preparation. Auristelli containing antiseptic (Ear Calm® (Stafford-Miller)), antibiotics (gentamicin, neomycin) and antifungal (Canesten® (Bayer Consumer Care)) are also popular treatments especially by general practitioners. Spray delivery of these medications has been popular over the last decade (with Otomize® spray [GSK Consumer Health Care] or Ear Calm®) as the delivering of drugs to the deep meatus is often impaired by macerated keratin.

It is because of this problem of access that meatoplasty recommends itself, although the otologist must always weigh the advantage of improved access for medication and ventilation with the possible disadvantage of improved access to scratching devices such as cotton buds, matchsticks, hair-grips and even car keys.

However, of all the surgical interventions available to the otologist, meatoplasty may well be the least used in deserving cases of recurrent otitis externa. An internal audit of the surgeons in the Calderdale and Huddersfield NHS Trust (February 2003) showed a large variation in the number of meatoplasty operations and although the case-mix of out-patients was about the same for all four, one surgeon (the senior author) performed many more meatoplasties than his colleagues. Accusations of over- enthusiastic use of meatoplasty were countered by the results shown in this paper where the otitis externa settled in over 80 per cent of cases. It is therefore possible that there is under-use of this relatively simple and effective procedure.

- **Long-standing diffuse chronic otitis externa can lead to itching. Resultant scratching may then lead to irreversible skin changes with canal stenosis by scar tissue**
- **This paper describes the use of a simple conchal flap meatoplasty in 84 patients with chronic otitis externa**
- **Long-term follow up of conchal flap meatoplasty in chronic otitis externa showed no records of complications or further otitis in 93.2 per cent cases**
- **The surgical technique of this meatoplasty is described**

The presence of a nurse led 'wet-ear clinic' in a department might well lead to surgeons not being adequately motivated to help cure recurrent otitis externa with meatoplasty as the patients effectively disappear below the clinical horizon while their problems, compounded by frequent visits to hospital, continue to fester.

The procedure's efficacy may be seen to be mechanical in nature as there is undoubted improvement in ventilation and debridement – both self cleaning and access for syringing or instrumentation. However, there is also a neurological disturbance of the sensory afferent nerves from the superficial meatus. The conchal flap meatoplasty is in effect a z-plasty through a right angle and the transposition of the two flaps will divide the cutaneous sensory nerves to the external orifice of the external auditory canal. The relative numbness of the superficial meatus may well decrease the sensation of itch and therefore calm the itch–scratch cycle responsible for the eczematous change in the conchal bowl and ear canal skin.

Eighty per cent of the ears became permanently dry. The healed ear is cosmetically acceptable, as it leaves an enlarged oval orifice very similar to the normal ear hole. The worst ear should be operated on first (as in most bilateral otological interventions). The second ear should only be operated on when the first shows marked improvements. There were 34 (40.47 per cent) bilateral operations. Thus 34 ears were deemed successful by both patients and surgeons.

Conclusion

This present series shows that surgical intervention for chronic otitis externa plays an important role in the management of otitis externa not responding to medical treatment. The conchal flap technique is

https://doi.org/10.1017/S0022215106003574 Published online by Cambridge University Press

simple, cosmetically acceptable and not only does it reduce the number of visits to the out-patient department, but it also eases debridement and can help in the use of hearing aids.

Acknowledgements

I would like to thank all the staff of the department of ENT and audit involved in the management of these cases and the preparation of this paper in the Calderdale and Huddersfield NHS Trust.

References

1 Martin-Hirsch DP, Smelt GJ. Conchal flap meatoplasty. *J Laryngol Otol* 1993;**107**:1029–31
2 Hunsaker DH. Conchomeatoplasty for chronic otitis externa. *Arch Otolaryngol Head Neck Surg* 1988;**114**: 395–8
3 Rombout J, van Rijn PM. M-meatoplasty: results and patient satisfaction in 125 patients (199 ears). *Otol Neurotol* 2001;**22**:457–60
4 Kumar BN, Walsh RM, Courteney-Harris RG, Wilson PS. Treatment of chronic otitis externa by KTP/532 laser. *J Laryngol Otol* 1997;**111**:1126–9
5 Slattery WH, Saadat P. Postinflammatory medial canal fibrosis. *Am J Otol* 1997;**8**:294–7
6 el-Sayed Y. Acquired medial canal fibrosis. *J Laryngol Otol* 1998;**112**:145–9
7 Herdman RC, Wright JL. Surgical treatment of obliterative otitis externa. *Clin Otolaryngol* 1990;**15**:11–14
8 Goodman WS, Middleton WC. The management of chronic external otitis. *J Otolaryngol* 1984;**13**:183–6
9 Sharp HR, Oakley RJ, Padgham ND. The Canterbury technique for canalplasty via an endaural approach in the surgical management of chronic refractory otitis externa. *J Laryngol Otol* 2003;**117**:195–7
10 Senturia BH. Diseases of the external ear: current status. *Minn Med* 1967;**50**:837–8
11 Banerjee AR, Moir AA, Jervis P, Narula AA. A canalplasty technique for the surgical treatment of chronic otitis externa. *Clin Otolaryngol* 1995;**20**:150–2

Address for correspondence:
Dr P Jayanth Kumar,
6 Belmont Crescent,
Northfield,
Birmingham,
B31 2FH, UK.

E-mail: drpjkumar@gmail.com/drpjkumar@yahoo.com

Dr P Jayanth Kumar takes responsibility for the integrity of the content of the paper.
Competing interests: None declared