

Management of posterior mesotympanic cholesteatoma

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Abstract

Contrary to previous practice, the eradication of posterior mesotympanic cholesteatoma can frequently be achieved using a transcanal approach and without the need for more major surgery. For success, certain specific steps are necessary. These are described and the results reported.

Introduction

In the past the management of patients, frequently in the first two decades of life, suffering from cholesteatoma arising from tympanic membrane retraction pockets invading the sinus tympani and facial recess has proved a surgical dilemma. In the otologists' mind was always the question as to whether it was better to observe the patient (possibly with repeated suction clearance) until an extensive mastoid operation became inevitable, or to intervene early, risking loss of frequently useful hearing and incurring a chance of recurrent cholesteatoma. The choice lay between prevaricating until major surgery could no longer be avoided or, early action, probably against an understandable preference of patient and parents, taking the risk that a relatively minor operation might fail and might later require to be converted into a major one, either course with the same likely end result.

For many years it has been our policy to treat cholesteatomatous middle ear disease at the time of diagnosis by

whatever method prior experience had shown rendered the best blend of cure and retention of function. Thirty years ago and subsequently, we treated all ears in which cholesteatoma had invaded the facial sinus by the combined approach method. There was an eventual unacceptably high rate of post-operative cholesteatoma recurrence, both from reformation of retraction pockets and also arising from keratinizing epithelium which had eluded removal, even at a planned second operation. This experience, coupled with the development of improved mesotympanic techniques, has led to a different method of management of posterior mesotympanic cholesteatoma. This paper describes the technique which has evolved for cholesteatomas and retraction pockets of the posterior mesotympanum and reports the results.

Patients and methods

Since 1983, 71 ears with deep retractions of the pos-

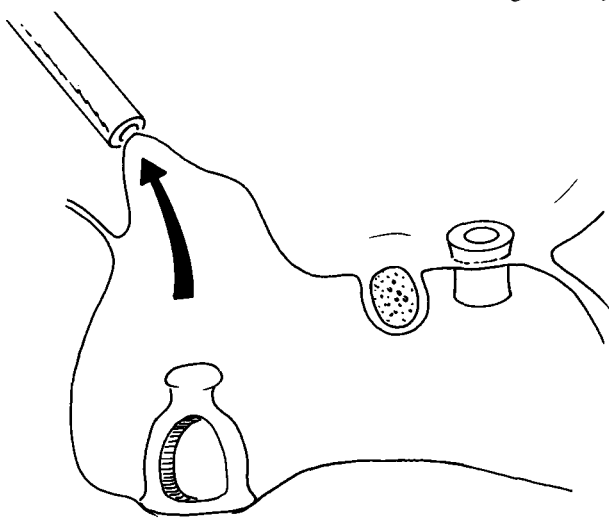


Fig. 1

Suction applied to the retraction pocket epithelium will pull it laterally as air enters the middle ear through a ventilation tube.

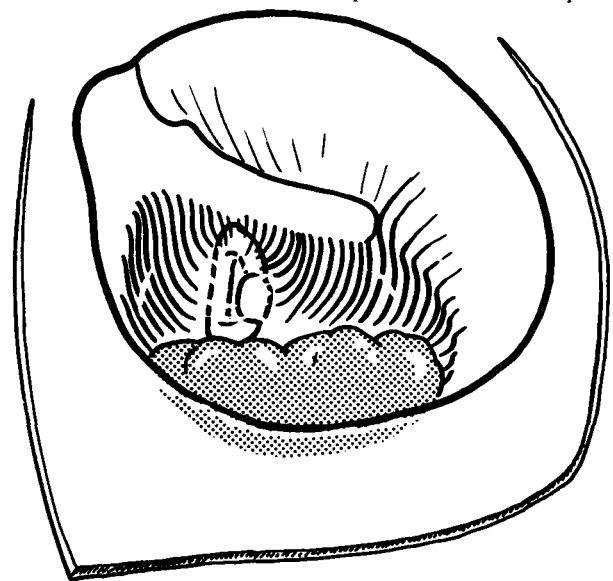


Fig. 2

Wide tympanomeatal flap provides access to hypotympanum.

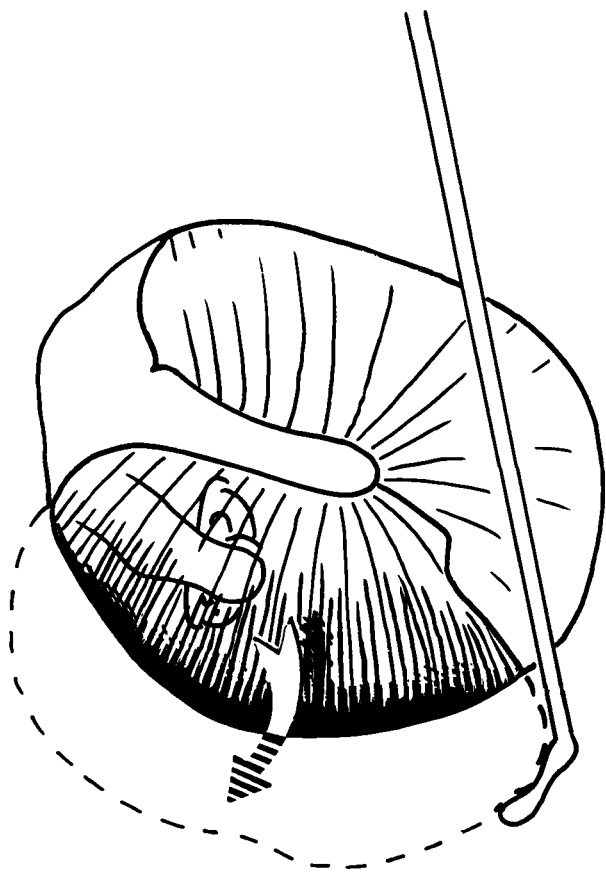


Fig. 3

Retracted epithelium is elevated in inferior to superior direction.

terior tympanic membrane producing non self-cleansing amounts of keratin, *i.e.* retraction pocket cholesteatoma

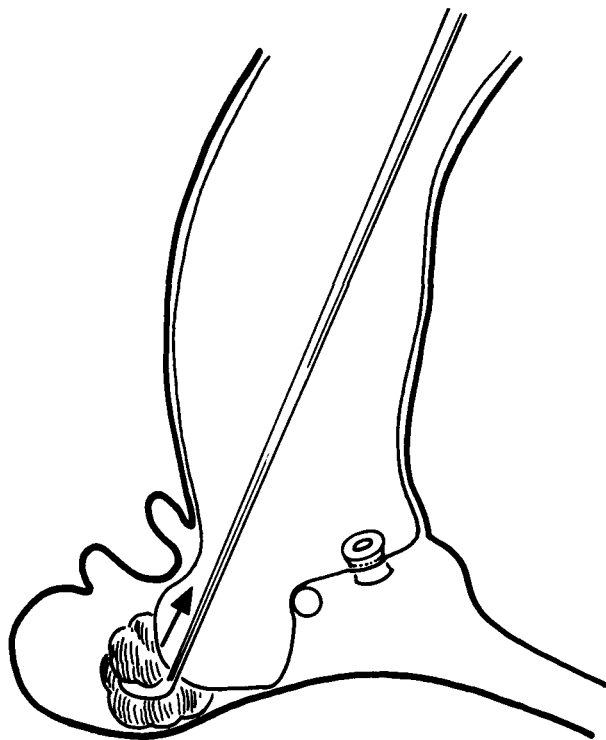


Fig. 4

Dissection of the pocket is assisted by using small cubes of plastic sponge to sweep the epithelial layer ahead of the excavator.

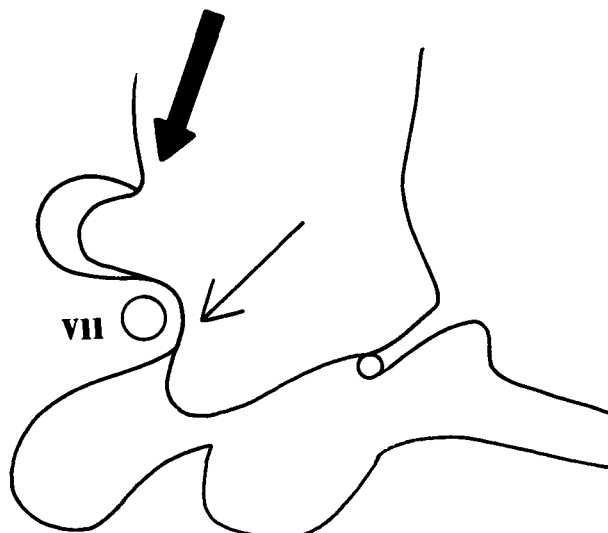


Fig. 5

Bone removal from the sulcus and anterior to the vertical facial nerve will improve access when required.

(Sadé, 1982), have been managed by a combination of surgical techniques, some learned from colleagues working in other centres. Forty-six of the 47 ears operated on prior to five years previous to the time of writing, have been examined regularly at 6–12 month intervals for five or more years in order to monitor control of cholesteatoma and retraction pocket recurrence and to measure hearing status (0.5–4 kHz). In the majority of ears the cholesteatoma was situated in the posterior mesotympanum usually extending into the facial recess and sinus tympani. In eight

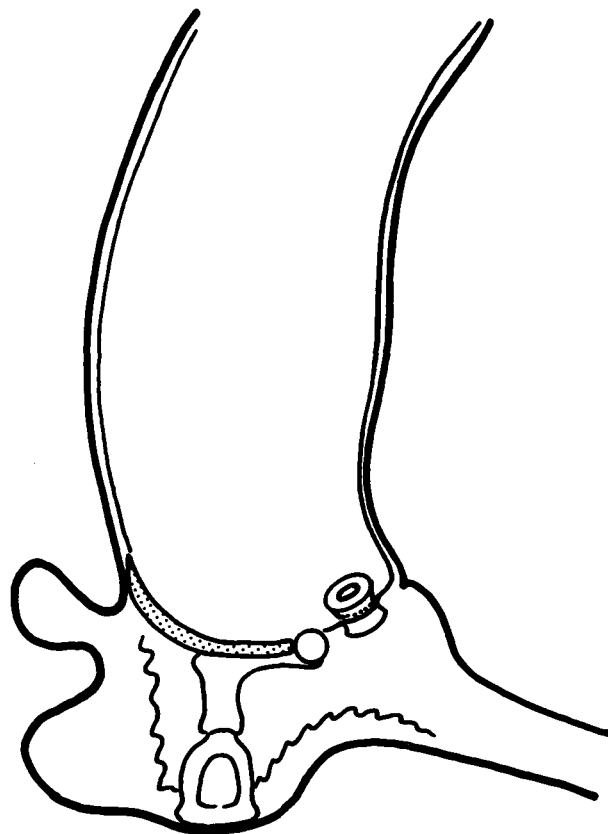


Fig. 6

The ossicular defect is repaired with a sculptured ossicle graft.

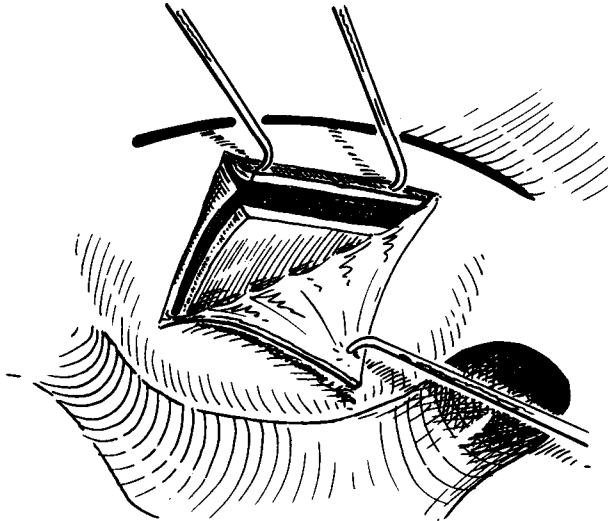


Fig. 7

Tragal cartilage is exposed with a right-angled skin incision.

there was generalized mesotympanic involvement and in three the retraction had also reached the epitympanum. These were also two ears with extensive atelectasia of the tympanic membrane. Until 1987, Cialit preserved homologous dura mater was the usual material for tympanic membrane repair. Subsequently, because of concern about dangers of Creutzfeld-Jacob transmission, autologous fascia or tragal perichondrium have been used.

In one-third of the ears in the study it was possible to preserve a previously intact ossicular chain. Occasionally a pre-existing myringostapediopexy was maintained. In ears with incus defects and an intact stapes arch, bridges between the stapes and tympanic membrane or malleus handle were used. When the stapes crura were absent, columellar reconstructions were made with Teflon or ceramic prostheses. No ossicular reconstruction was attempted in two ears owing to inadequate cochlear reserve. In 12 ears in which subsequent Eustachian tube dysfunction was expected, Armstrong ventilator tubes were left *in situ*.

The surgical steps, which owe much to the influence of Dr Jean Marquet (1989) were as follows:

1. Insert ventilator tube anteriorly.
2. Apply suction directly to outer aspects of retraction pocket working from its free edge (Fig. 1).
3. Make a wide tympanomeatal flap with a generous inferior limb along the floor of the meatus (Fig. 2).
4. Expose hypotympanum.

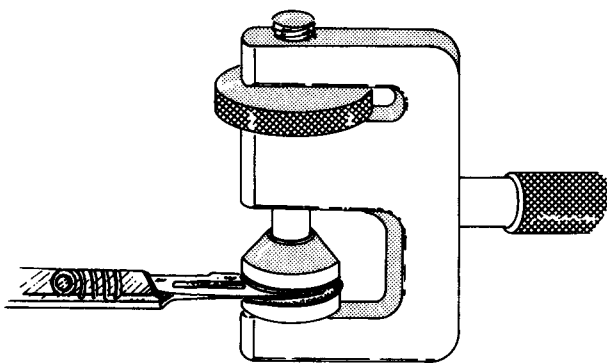


Fig. 8

Thinning cartilage using vein press.

5. Dissect pocket from inferior to superior using Austin excavators and plastic sponge, keeping the stapes and the oval window in view (Figs. 3 & 4).
6. When necessary, remove sulcus and osseous canal wall with curettes or burr to facilitate the dissection (Fig. 5).
7. Insert silastic disc to cover medial wall of the posterior mesotympanum.
8. Reconstruct ossicular defect (Fig. 6).
9. Prepare and insert tragal cartilage lozenge to support the posterior tympanic membrane (Figs. 7-9).
10. Overlay cartilage with fascia if a significant tympanic membrane defect is present.
11. Second look in six months if any doubt exists about residual keratinizing epithelium at the end of the first procedure.

Results

1. Findings subsequent to the primary operation

In this group of 71 patients, 32 ears required more than one procedure. Recurrence of retraction pockets necessitated a revision operation in four ears (there was an unexpected epithelial pearl in one).

Planned 'second look' procedures were carried out in 19 ears. In 17, using a transcanal technique, residual pearls were removed in three (two were anticipated and one was unexpected). In two other ears in which the second operation was inadvertently excessively delayed, the extent of residual cholesteatoma required a more extensive operation (one combined approach tympanoplasty and one open mastoidectomy with tympanic reconstruction).

Post-operative tympanic membrane defects were repaired in six ears (one unexpected epithelial pearl). In addition there were three revisions of ossicular reconstruction.

2. Hearing results

Of the 46 patients followed up for five years or longer,

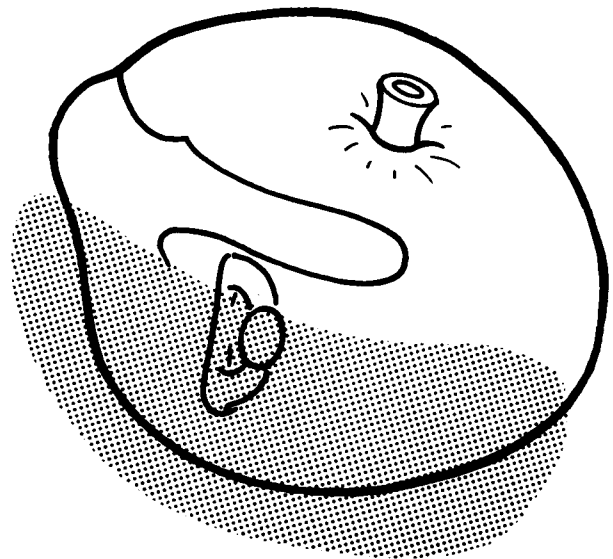


Fig. 9

A lozenge-shaped piece of cartilage is placed to support the posterior tympanic membrane.

two are excluded because of inadequate cochlear reserve pre-operatively. Twenty-four of the remainder had an intact ossicular chain or natural myringostapediopexy initially, while 20 had ossicular reconstruction at the time of primary surgery or as a delayed procedure. One additional patient suffered a dead ear after developing cholesteatoma which required a canal wall down tympanoplasty. Of the remaining 43 patients, 34 had hearing which remained at, or improved to, within 10 dB of the other ear and are therefore considered to have had a successful result (Smyth and Patterson, 1985). Nine patients did not improve to within 10 dB of the other ear. All but one of these had a primary attempt at reconstruction of the ossicles.

Discussion

The results of this surgical technique suggest that it has a part to play in the management of cholesteatomatous disease of the ear. In only 3 per cent of the ears in this study has it been necessary so far to proceed to a more extensive procedure for disease control. Similarly 34 (75 per cent) of patients have had a satisfactory hearing result, probably due to early intervention, before significant ossicular damage appeared.

This study suggests that when cholesteatoma has not

reached the aditus and it is not extensively involving the epitympanum, transcanal tympanoplasty is frequently appropriate. While it may occasionally be necessary to proceed to open cavity surgery, this technique will frequently avoid this.

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