The Journal of Laryngology and Otology
December 1980. Vol. **94.** pp. 1387–1393.

Out-patient myringoplasty*

By ROBIN J. KANE, F.R.C.S.I., F.R.C.S.,
DAVID A. MOFFAT, B.Sc., F.R.C.S. and ALEC F. F. O'CONNOR, F.R.C.S.
(London)

Introduction

MARCUS BANZER recorded the first attempt to repair the tympanic membrane in 1640. He inserted into the perforation a small tube of elkhorn covered with pig's bladder. Since that time, many graft materials have been employed. Artificial tympanic membranes were proposed by Leschevian in 1763 and by Authenrieth and Bohneberger in 1815 (Lawrence, 1960). James Yearsley (1858) used cotton wool moistened with oil, and alloplastic materials were adopted after Joseph Toynbee used gutta percha in 1852 (Guthrie, 1940).

In 1879 the first surgical closure of a drum head perforation, using an autograft, was performed by Berthold who coined the term 'myringoplasty'. He successfully utilized a full thickness, free skin graft for the first time, but his methods were not widely accepted and myringoplasty fell into disrepute.

The modern era of tympanoplastic surgery dates from the stimulus of Wullstein in 1951. Improvements in surgical technique, the introduction of the microscope and the availability of antibiotics improved the chances of graft survival and, with this, came general acceptance of the procedure.

Since Wullstein's skin grafts, many tympanoplastic materials have been tried. Shea introduced vein grafts in 1960 and, in the same year, Forman employed corneal grafts. In 1961 Goodhill reported the use of perichondrium, and Storrs the use of temporalis fascia. Later, Trombetta (1963) utilized pericardium and Chiossone (1964) periosteum. Some small perforations do not warrant formal myringoplasty and simple surgical manoeuvres have been adopted to encourage the re-epithelialization across the defect. Derlacki (1953) cauterized the rim of the perforation with trichloracetic acid and applied a thin, flattened, cotton patch; Juers (1958, 1963) modified this by combining trichloracetic acid cautery with fragmentation and eversion of the perforation's epithelial margin, using tiny curettes under loupe magnification. A paper disc, coated medially with urea-boric acid ointment, was laid on to the edges of the perforation. Goodhill (1966) reported on neo-membrane growth using a pad of compressed, absorbable gelatin sponge (gelfoam). Ringberg successfully

* From the Department of Otolaryngology, The London Hospital, Whitechapel, London, E1 1BB.

https://doi.org/10.1017/S0022215100090216 Published online by Cambridge University Press

introduced compressed ear lobe fat as a graft substance in 1962, and more recently (1978) he has described his results.

Despite the availability of simple surgical techniques to close small perforations, most patients are admitted to hospital and the procedure is usually carried out under general anaesthesia. This is expensive in purely financial terms, in hospital bed occupancy and in the surgeon's and patient's time.

In this paper we describe one simple type of out-patient myringoplasty, using homograft temporalis fascia to close perforations of the tympanic membrane, and report our results.

Patient selection

Eighteen patients with tubo-tympanic disease and small-to-medium sized central drum head perforations were included in this study. Their ages ranged from twenty-one to sixty years, with a mean of thirty-eight years. None of the patients at the time of surgery had active discharge from the ear. The indication for surgery was principally closure of the perforations, in order to avoid recurrent otorrhoea. Only five patients had a conductive deafness. Five patients had undergone formal myringoplasty procedures previously.

Materials and Methods

Equipment (Fig. 1)

Homograft temporalis fascia, stored in Cialit for at least 5 weeks
Dental syringe
Jobson Horne probe
Curved anodized needle
Aural speculum

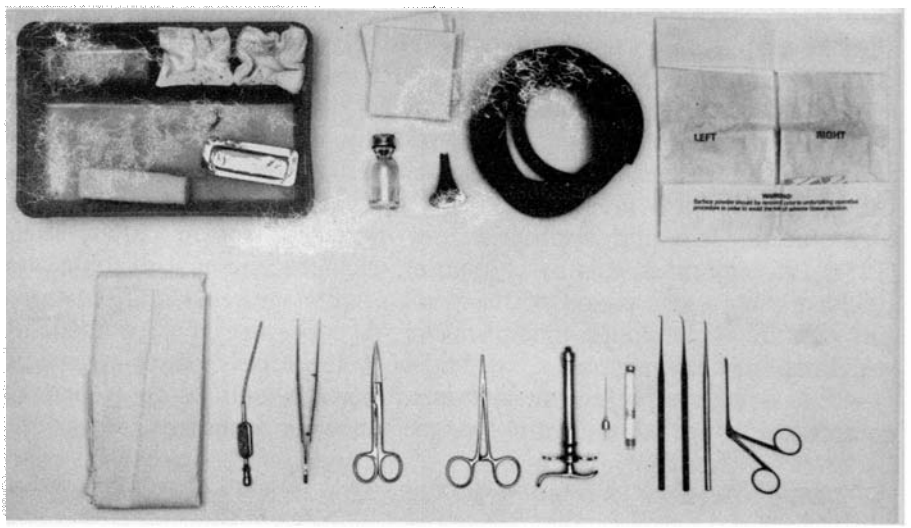


FIG. 1

https://doi.org/10.1017/S0022215100090216 Published online by Cambridge University Press

Crocodile forceps
Iris scissors
Zöllner fenestrated sucker with fine ends
Gelfoam
Silastic sheeting (0·005 mm)
BIPP gauze pack

The operations were performed in the microscope room of the Out-Patient Department in a clean, rather than sterile, environment. The Zeiss operating microscope was used and the surgeon was assisted by the Out-Patient Staff Nurse or Sister. The surgery was performed by the authors.

Patients were advised to attend accompanied by a person able to assist them with their return journey. Counselling by the surgeon and Out-Patient Nurse preceded the administration of sedative and analgesic drugs. An intravenous injection of pethidine (1 mg per kg body weight) and perphenazine (5 mg) was given via a butterfly cannula, in an anterior cubital vein, five minutes before the commencement of surgery. The patients lay supine on an examination couch, with the affected ear uppermost. The external auditory meatus was infiltrated with radial injections of 2 mls of Lignocaine 2 per cent and adrenalin 1:200,000 (Fig. 2). A pledget of cotton wool, soaked in a solution of 4 per cent cocaine, and adrenalin 1:30,000 was placed in the perforation so as to anaesthetize the middle ear mucosa and the mucosal borders of the membrane perforation. The margins of the perforation were gently cleared of all squamous epithelium, using a curved needle and crocodile forceps. Gelfoam was placed in the middle ear cavity, to act as a support for the graft (Fig. 3), which was fashioned to cover the perforation comfortably. The graft was

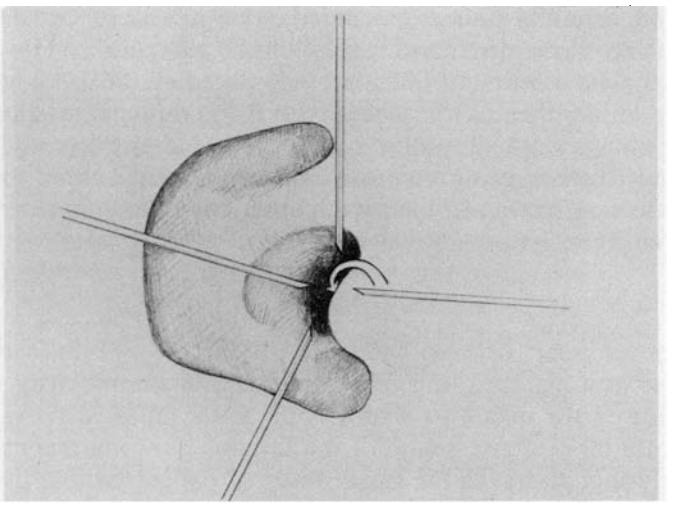


FIG. 2

https://doi.org/10.1017/S0022215100090216 Published online by Cambridge University Press

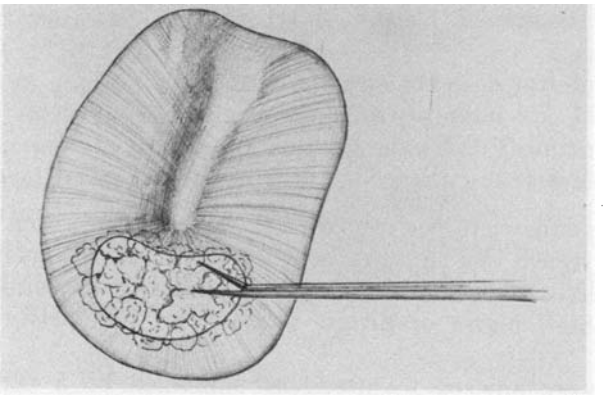


FIG. 3

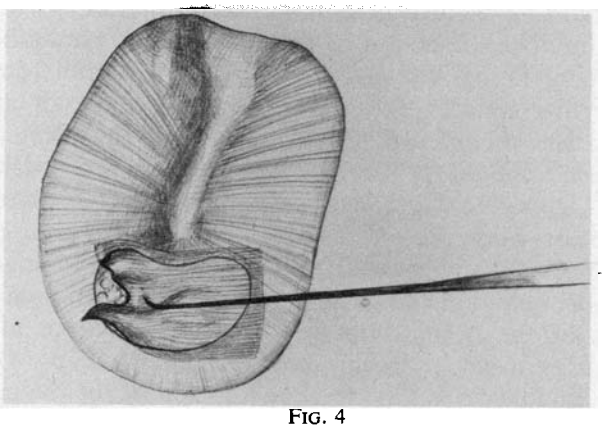


FIG. 4

introduced carefully and manoeuvred until it was in contact with the medial aspect of the drum and resting on the gelfoam bed (Figs. 4 and 5).

Thin silastic sheeting (0·005 mm) was placed on the drum head and the external auditory meatus was placed with BIPP impregnated gauze.

The patients were allowed to recover for at least thirty minutes in the department, before being escorted home. The total clinic time for the patient was approximately ninety minutes. The follow-up care was as for formal myringoplasty.

Results

The results can be seen tabulated in Fig. 6. The follow-up period varied between eighteen and forty months and the majority of patients were followed for over two years. Four grafts failed, leaving an overall success rate of 78·2 per cent. All the failures have undergone successful formal myringoplasty. In the small group of patients with a pre-operative conductive deficit, closure of the air-bone gap has been attained in every

https://doi.org/10.1017/S0022215100090216 Published online by Cambridge University Press

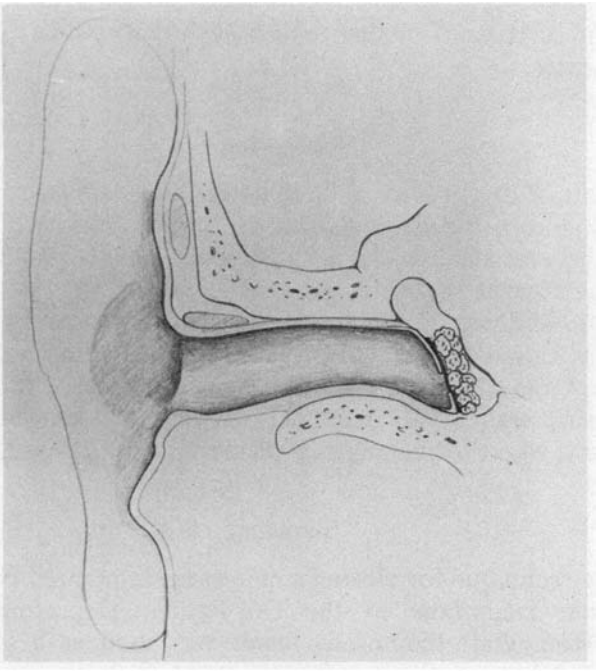


FIG. 5

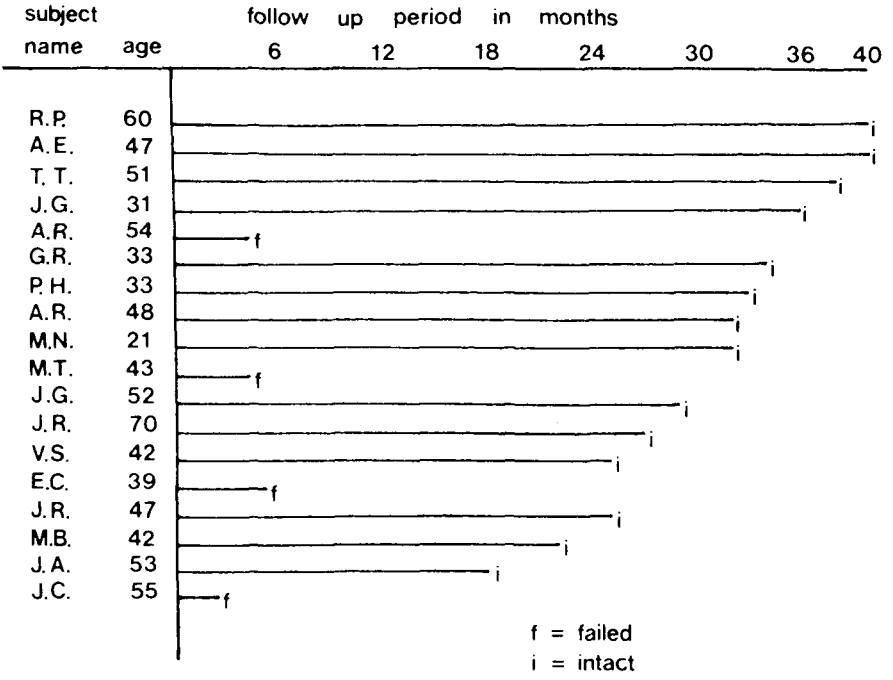


FIG. 6

https://doi.org/10.1017/S0022215100090216 Published online by Cambridge University Press

case. Patient acceptance of this procedure was found to be good in the majority of cases.

Discussion

The merits of this procedure lie in its good closure rate and its relative convenience. From the patient's point of view, avoidance of hospitalization and general anaesthesia, with its concomitant risks, are beneficial, as is an early return to work.

From an administrative point of view, financial savings are made in bed occupancy, pre-operative investigations, theatre time and nursing care. Utilization of the Out-Patient Department is increased and the interest of the nursing staff stimulated. This technique does not compromise future surgery, where formal myringoplasty can be employed.

Summary

A simple technique for closing small-to-medium sized perforations of the tympanic membrane in the Out-Patient Department has been described. Homograft temporalis fascia was used as a graft material. In a series of eighteen patients a closure rate of 78·2 per cent was obtained. The advantages of the method have been discussed.

Acknowledgements

The authors are grateful to Miss Jo Abbott, Medical Artist in the Department of Medical Illustration, The London Hospital, for her help with the preparation of the figures. We would also like to thank Mr. A. W. Morrison, Mr. P. McKelvie and Mr. J. B. Booth for allowing us to report patients under their care.

REFERENCES

BANZER, M. (1640) Disputatio de Auditione Laesa, Wittebergae. As cited by House (1963). *Transactions of the American Academy of Ophthalmology and Otolaryngology*, **67,** 233.
BERTHOLD, E. (1879) *Medizinisch-chirurgisches Zentralblatt*, **14,** 195.
CHIOSSONE, E. (1964) *Archives of Otolaryngology*, **79,** 302.
DERLACKI, E. L. (1953) *Archives of Otolaryngology*, **58,** 405.
FORMAN, F. S. (1960) *Laryngoscope*, **70,** 1691.
GOODHILL, V. (1961) *Revue de Laryngologie, Otologie et Rhinologie (Bordeaux)*, **82,** 305.
GOODHILL, V. (1966) *Annals of Otology, Rhinology and Laryngology*, **75,** 866.
GUTHRIE, D. (1940) *Journal of Laryngology and Otology*, **55,** 473.
JUERS, A. L. (1958) *Laryngoscope*, **68,** 1207.
JUERS, A. L. (1963) *Archives of Otolaryngology*, **77,** 76.
LAWRENCE, M. (1960) *Archives of Otolaryngology*, **71,** 133.
RINGBERG, J. C. (1962) *Laryngoscope*, **72,** 188.
RINGBERG, J. C. (1978) *Laryngoscope*, **88,** 982.
SHEA, J., JR. (1960) *Archives of Otolaryngology*, **72,** 443.
STORRS, L. (1961) *Archives of Otolaryngology*, **74,** 75.
TROMBETTA, A. (1963) *Archives of Otolaryngology*, **77,** 81.

https://doi.org/10.1017/S0022215100090216 Published online by Cambridge University Press

WULLSTEIN, H. (1951) *Zeitschrift für Laryngologie, Rhinologie, Otologie und inhre Grenzegebiete*, **30**, 203.

YEARSLEY, J. (1858) Controversy on the artificial tympanum. H. Balliere, 219 Regent Street, London, as cited by House (1963). *Transactions of the American Academy of Ophthalmology and Otolaryngology*, **67**, 233.

Address for reprints:
R. J. Kane,
Old Wells Cottage,
Bow Green Road,
Bowdon, Cheshire.

https://doi.org/10.1017/S0022215100090216 Published online by Cambridge University Press