The Journal of Laryngology and Otology
August 1986. Vol. **100.** pp. 939–941

Labyrinthine sequestrum
(A case report)

by

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Abstract
An unusual case of a labyrinthine sequestrum is presented. During mastoidectomy on a patient with chronic recurrent mastoiditis, a large sequestrum in the labyrinth was found. Four years earlier he had been treated for a posterior fossa abscess, which had followed acute otitis media. An extensive ablative and drainage procedure of the pars superior and pars inferior with preservation of the facial nerve was indicated in this patient.

Case report

A seven-year-old boy presented in November 1984 with one week's history of a painless right postauricular swelling. The child was apyrexial, the mass was fluctuant and the tympanic membrane was intact, dull and immobile. Audiometry confirmed a dead right ear. The left ear was normal.

In November 1980, after developing acute otitis media, for which he received two courses of antibiotics, he became ill with malaise, fever, ataxia and mental confusion. An abscess in the right cerebello-pontine angle was identified and drained. Staphylococcus aureus was isolated from the pus. Despite appropriate intravenous antibiotics and further drainage, serial pyograms showed an enlarging cavity. Ten days later a formal suboccipital craniectomy was performed and the abscess wall, which was attached to the petrous bone at the internal auditory meatus, was excised. Histology showed non-specific chronic inflammatory cells. The child recovered fully.

He was seen again in December 1983 because of poor hearing on the right. A dull, immobile tympanic membrane was found and audiometry showed a dead right ear. A myringotomy revealed granulation tissue filling the middle ear.

In January 1984 he presented with a bloody otorrhoea and a polyp filling the right external canal. X-rays showed mastoid sclerosis. A polypectomy and cortical mastoidectomy was performed which revealed oedematous mucosa and mucopus. It was noted at that time that there was an area of necrotic bone above the lateral semicircular canal.

In July he presented with a painless fluctuant post-auricular swelling and polytomography of the mastoids revealed an area of dense sclerosis in the region of the labyrinth (Fig. 1). At cortical mastoidectomy, fibro-gelatinous material was removed from the mastoid cavity and, on opening the defect above the lateral semicircular canal, a large sequestrum of the labyrinth was exposed and removed (Fig. 2). He recovered without ataxia or nystagmus but presented again in November with similar clinical signs.

It was felt that previous surgery had been too conservative and this time the labyrinth was widely opened to the internal auditory meatus *via* a cortical mastoidectomy. Permeatally, a tympanomeatal flap was raised and the promontory was widely removed between the oval and the round windows after removing the stapes footplate. Necrotic material filled the basal turn of the cochlea. The patient has remained well, with no further symptoms.

Discussion

The clinical range of labyrinthitis, as described by Schuchnecht (1974), may represent a gradation of the same disease process. Circumscribed labyrinthitis may progress to serous and on to suppurative labyrinthitis and eventually to labyrinthine sclerosis and ossification. This usually represents the healed inactive state but, in our case, the actual formation of a sequestrum led to the chronicity and recurrence of symptoms.

https://doi.org/10.1017/S0022215100100350 Published online by Cambridge University Press



FIG. 1

A. P. Polytomography of the mastoids. A localized sclerotic opacity is noted in the area of the right superior semicircular canal (arrowed).

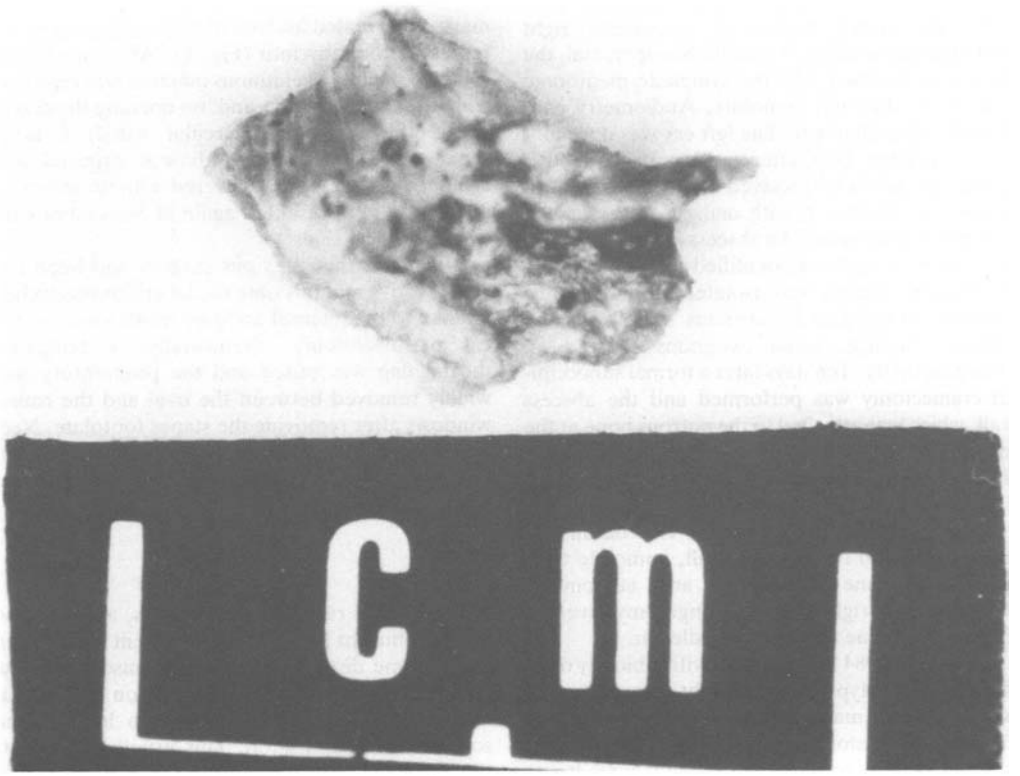


FIG. 2

The labyrinthine sequestrum removed at surgery.

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Labyrinthitis ossificans is a well recognised entity in which formation of fibrous tissue and new bone occurs, most commonly following suppurative labyrinthitis. Bacterial infection of the labyrinth may originate from the meninges through the IAM or cochlear aqueduct, from the middle ear through the oval or round windows, though a lateral semicircular canal fistula, or from blood borne septic emboli (Paparella and Sugiura, 1967).

The understanding of the histopathological changes in temporal bones associated with labyrinthitis has been helped by Suga and Lindsay (1975, 1977). They studied the temporal bones of three patients dying following influenzal meningitis, generalized osteomyelitis with haematogenous spread and otitis media. Features included labyrinthine inflammation with generalized fibrosis, osteogenesis, endolymphatic hydrops, degeneration of the sensorineural elements and fixation of the footplate of the stapes. The degree of ossification may range from small foci to total obliteration of the inner ear.

Circumscribed or diffuse tympanogenic labyrinthitis with extension of the inflammation through the round window is supported by other authors (Paparella *et al.*, 1972; Suga and Lindsay, 1977) and is the suspected mechanism in our patient. Treatment principles include appropriate antibiotics, sequestrectomy and wide exposure of the pars superior and the pars inferior. The labyrinthine operation involves widely removing the bony promontory between the oval and round windows, allowing drainage of the basal turn of the cochlea, as well as removing the semicircular canals with preservation of the facial nerve (Paparella, 1980).

I would like to thank Professor S. L. Sellars, for advice in the management of this patient; and Dr. Reeve Sanders, the Medical Superintendent of Groote Schuur Hospital and Professor Sellars, for permission to publish this case report.

References

PAPARELLA, M. M. (1980) Otolaryngology Vol. 2 (Paparella, M. M. and Shumrick, D.) pp. 1735–1756. W. B. Saunders Co., London.

PAPARELLA, M. M. and SUGIURA, S. (1967) The Pathology of Suppurative Labyrinthitis. *Annals of Otology, Rhinology and Laryngology*, **76:** 554–586.

PAPARELLA, M. A., ODA, M., HIRAIDE, F. and BRADY, D. (1972) Pathology of Sensorineural Hearing Loss in Otitis Media. *Annals of Otology, Rhinology and Laryngology*, **81:** 632–647.

SCHUKNECHT, H. F. (1974) Pathology of the Ear. Harvard University Press, Cambridge, Massachusetts. pp. 241–247.

SUGA, F. and LINDSAY, J. R. (1975) Labyrinthitis Ossificans due to Chronic Otitis Media. *Annals of Otology, Rhinology and Laryngology*, **84:** 37–44.

SUGA, F. and LINDSAY, J. R.(1977) Labyrinthitis Ossificans. *Annals of Otology, Rhinology and Laryngology*, **86:** 17–29.

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https://doi.org/10.1017/S0022215100100350 Published online by Cambridge University Press

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