The Journal of Laryngology and Otology
November 1992, Vol. **106,** pp. 994–995

Clinical Records

Fistula between the external auditory canal and the temporomandibular joint: a rare complication of otitis externa

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Abstract
Otitis externa is a relatively common complication of ear syringing. Temporomandibular joint complications of otitis externa are rare. A case of otitis externa with communication between the external auditory canal and the temporomandibular joint is described.

Introduction

Otitis externa is a common condition. A rare complication is septic arthritis of the temporomandibular joint (Thomson, 1989). In the few cases reported there has been pre-existing joint disease or predisposing factors such as debilitation or immunosuppression. The case presented is of otitis externa with communication between the external auditory canal and the temporomandibular joint. Due to the death of the patient from unrelated disease, pathological examination of the temporal bone was possible.

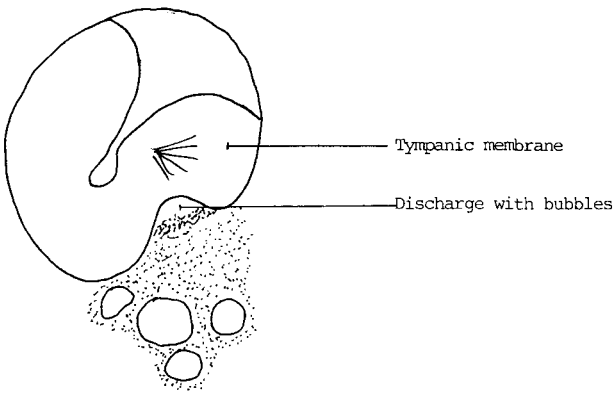
Case report

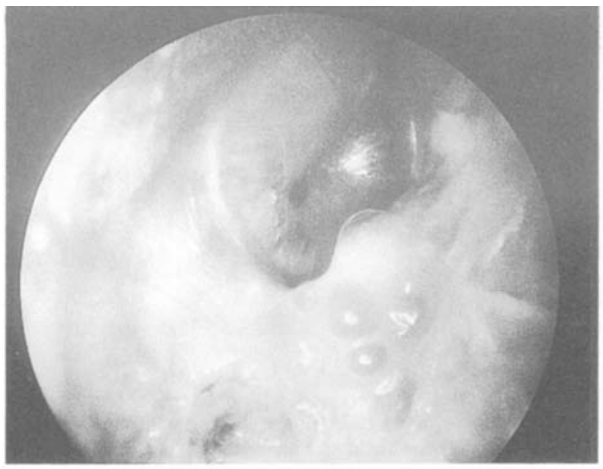
A 75-year-old man with long-standing chronic obstructive airways disease and ischaemic heart disease was admitted to Selly Oak Hospital, Birmingham, for investigation of a discharging right ear and noisy jaw movements. He had been referred from the Dermatology department under whose care he had been for six months for investigation of probable scleroderma and gout. One week prior to admission his ears had been syringed for removal of wax. Following this he complained of right sided deafness and of an offensive green discharge from the right ear. He also noted discomfort and a wet 'squelching' sound in his right ear on opening and closing his mouth. There was no previous history of any ear or facial symptoms and no history of facial trauma.

Physical examination revealed a patient with generalized muscle wasting. There was an audible 'squelch' on movement of the jaw. The left ear was normal on otoscopy. The right tympanic membrane was normal, but there was a swelling covered with green discharge on the floor of the external canal (Figs. 1a & 1b). On opening the jaw, the swelling appeared to drop inferiorly. On closing the jaw, the swelling reappeared with a spurt of fluid, followed by air bubbles. Movements of the temporomandibular joint were full with minimal tenderness.

Clinical and audiometric testing showed a bilateral sensorineural deafness. X-rays of the temporomandibular joint showed a normal right mandibular condyle with no reduction in joint space and no bony erosion.

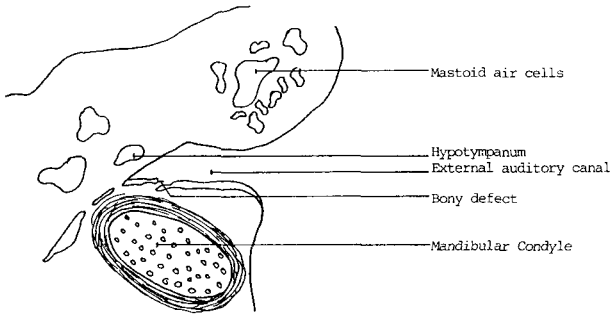
A presumptive diagnosis of otitis externa with communication between the temporomandibular joint and the external auditory canal was made and treatment by aural toilet and antibiotic and steroid ear drops was instigated. Five days after admission the patient died of faecal peritonitis, secondary to a perforated diverticulum of the colon. At post-mortem the temporal bone was removed. There was a bony defect in the thin bone between the antero-inferior aspect of the external auditory canal and the





FIGS. 1a & 1b
Right external auditory canal and tympanic membrane.

Accepted for publication: 22 September 1992.



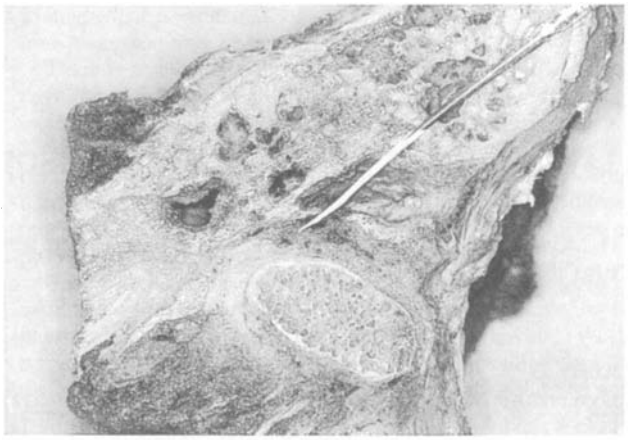


FIG. 2a & 2b
Horizontal section of temporal bone viewed from inferiorly.

glenoid fossa (Figs. 2a & 2b). This was small, measuring about 1 mm in diameter. It extended through the bone, but there was no evidence of erosion of the fibrocartilage lining of the glenoid fossa. There was therefore no communication with the actual joint space.

Discussion

Septic arthritis of the temporomandibular joint is a rare condition and has been seen in cases with predisposing factors such as debilitation and immunosuppression (Kellgren *et al.*, 1958; Mitchell *et al.*, 1976). It has also been reported as a complication of otitis externa. The most recent report of two cases of septic arthritis of the temporomandibular joint were in a patient with diabetes mellitus and in a second with rheumatoid arthritis (Thomson, 1989). Both had a previous history of facial pain that could be attributed to the temporomandibular joint. Both presented with several weeks history of otorrhoea followed by preauricular swelling which subsequently proved to be secondary to a septic arthritis of the temporomandibular joint. In one case a defect was demonstrated between the external auditory canal and the temporomandibular joint. In the other no defect was demonstrable.

Channels between the temporomandibular joint and external auditory canal have been described. Congenital dehiscences of the cartilaginous canal, fissures of Santorini or a dehiscent squamotympanic fissure may account for spread of infection between the external auditory canal and the temporomandibular joint (Smith and Lucente, 1986). Asymptomatic herniation of the temporomandibular joint into the external auditory canal has also been described (Hawke *et al.*, 1987). Hawke demonstrated a defect in the anterior wall of the bony canal which he proposed was due to a failure of closure of the foramen of Huschke. An osteological study has demonstrated the foramen of Huschke in 27 per cent of 377 temporal bones (Wang *et al.*, 1991). The foramen is formed by the fusion of the two bony prominences of the U shaped tympanic ring and usually closes by continued growth before the fifth year of life.

In the case presented there did not appear to be herniation of the temporomandibular joint into the external auditory canal on otoscopy. In addition the opposite ear was normal. Post-mortem examination of the temporal bone was possible due to death of the patient. This confirmed a small defect between the temporomandibular joint and the external auditory canal with no evidence of herniation of the temporomandibular joint capsule. It seems likely that the air bubbles seen on closing the jaw arose from air sucked into the defect by opening the jaw.

The actual diagnosis is in some doubt. It is possible that there was a small pre-existing defect which only became apparent when infection supervened. The defect might be a result of local trauma from syringing with super-added infection. It might also represent the earliest stages of malignant otitis externa with the small degree of bone destruction seen a result of the short history of infection. Although the temporomandibular joint was not apparently infected due to the intact fibrocartilaginous lining, with time a septic arthritis might have developed. As in the cases described by Thomson this patient had long-standing systemic disease in the form of scleroderma and gout.

Conclusion

Temporomandibular joint complications secondary to otitis externa are rare. This case describes one such complication. It is not possible to say whether the defect between the external auditory canal and temporomandibular joint was present prior to the otitis externa or was due to bony erosion secondary to infection. In patients with a known defect between the external auditory canal and temporomandibular joint syringing of the ears should be undertaken with care as temporomandibular joint infection may well represent yet another complication of ear syringing.

Acknowledgements

I would like to thank Mr I. Donaldson and Mr A. P. Reid of Selly Oak Hospital, Birmingham, for allowing me to report their case, and Mrs Janet Pye for her secretarial assistance.

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Key words: Otitis externa; Complications, fistula; Temporomandibular joint