The Journal of Laryngology & Otology
February 2002, Vol. **116,** pp. 156–158

Radiology in Focus

A primary glomus tumour of the facial nerve canal

M. N. H. Waldron, F.R.C.S., L. M. Flood, F.R.C.S., K. Clifford, F.R.C.R.*

Abstract
Glomus tumours can present in several sites in the head and neck. A red mass in the middle ear, visible on otoscopy generally indicates a glomus tympanicum or glomus jugulare. We present photographic and radiologic evidence of such a lesion arising from the course of the intra-tympanic facial nerve, the Fallopian canal, and review the differential diagnoses.

Key words: Facial Nerve; Glomus Tumour; Ear, Middle

Case report

A 71-year-old man presented to the ENT casualty department at North Riding Infirmary, Middlesbrough with a five-day history of right-sided pulsatile tinnitus. This was attributed by his general practitioner, following otoscopy, to bullous myringitis. He was, however, pain free and had noted no change in his hearing.

He had previously undergone excision of a nasal basal cell carcinoma, suffered with ischaemic heart disease and was on methotrexate for arthritis.

Otoscopy demonstrated a red bulging lesion in the postero-superior quadrant of the right pars tensa (Figure 1). Facial nerve function was normal. Pure tone audiometry revealed a symmetrical high frequency loss, above 2 kHz only, of 60 dB.

Computerized tomography with contrast in the coronal and axial planes demonstrated a 4 mm lobulated soft tissue density lesion in the posterior right epitympanum (Figures 2, 3 and 4). This lesion abutted the superior aspect of the right tympanic membrane and enhanced avidly. It arose from a pedicle based on the pyramidal eminence, was

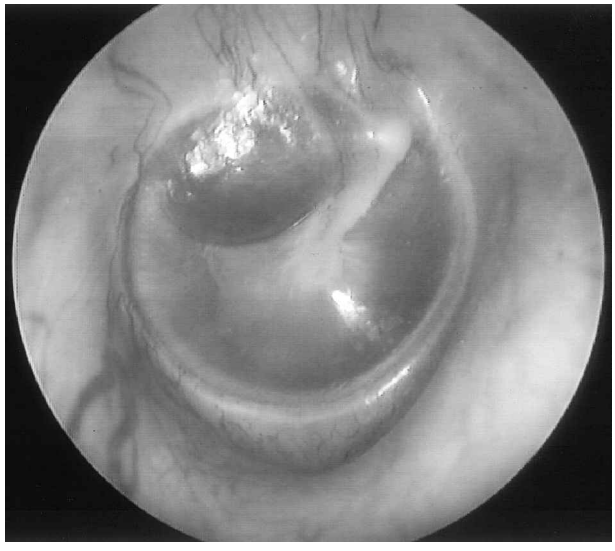

Fig. 1
Otoscopic appearance.

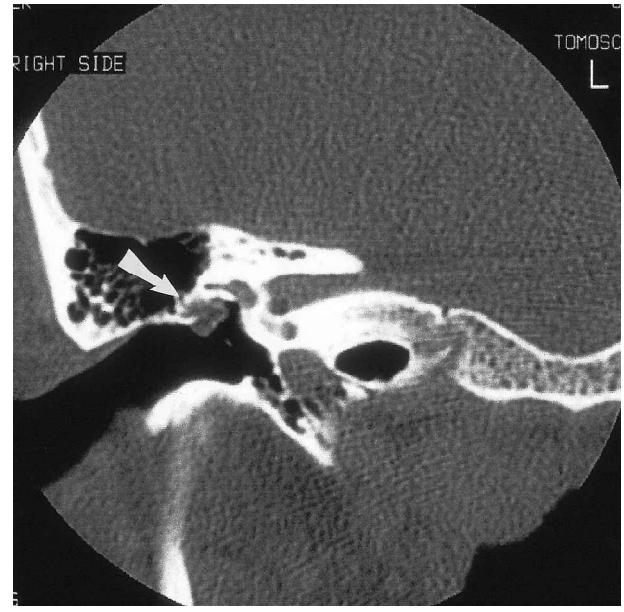

Fig. 2
Coronal CT demonstrating a lobulated lesion in the upper mesotympanum, involving the inferior surface of the lateral semi-circular canal and horizontal facial nerve (arrowed).

From the Department of Otolaryngology, North Riding Infirmary, Middlesbrough, and the Department of Radiology*, South Cleveland Hospital, Middlesbrough,U K.
Accepted for publication: 8 August 2001.

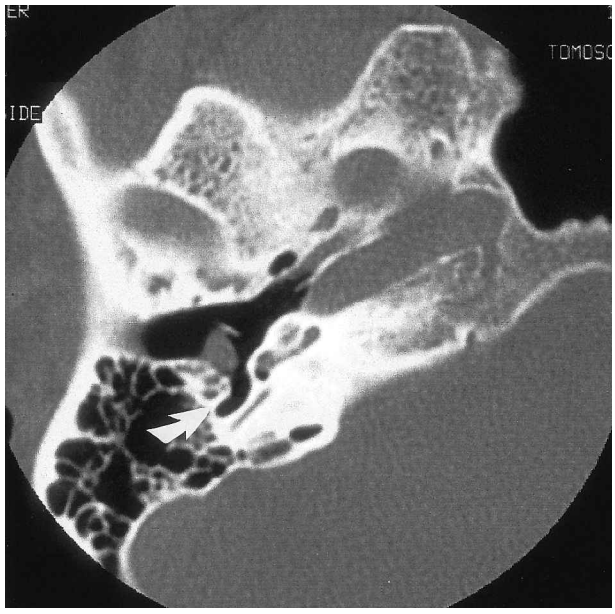

FIG. 3

Axial CT showing the mass between the malleus handle anteriorly and facial recess posteriorly. The sinus tympani (arrowed) is spared.

associated with opacity of the peri-facial cells and was completely separate from the promontory and hypotympanum.

At review, the tinnitus had resolved spontaneously and he was totally asymptomatic. Consequently the patient declined further investigation or diagnostic exploration. Five months after presentation the otoscopic appearances were identical. The audiogram was unchanged with tympanometry showing normal compliances and middle-ear pressure with preserved stapedial reflexes.

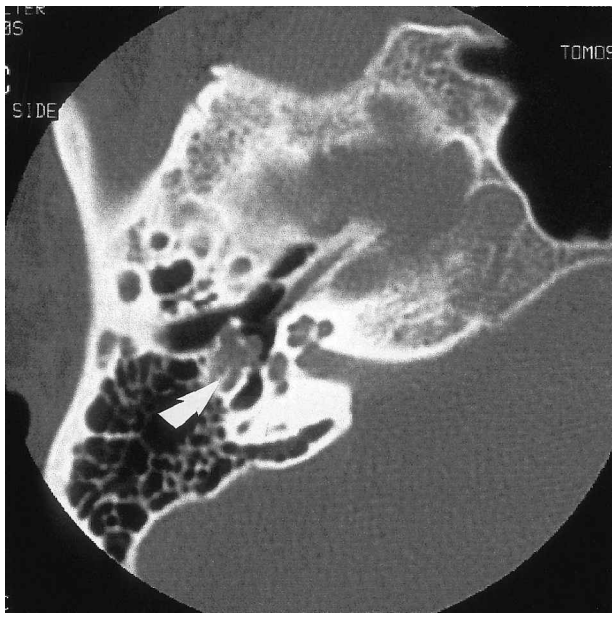

FIG. 4

Axial CT, a higher section, demonstrating the erosion of the Fallopian canal (arrowed).

Discussion

Despite the lack of histological diagnosis and surgical confirmation of the site of origin, we present this lesion as a curiosity, an unusual vascular lesion arising from the Fallopian canal.

The dramatic red appearance is characteristic of the commonest benign tumour of the middle-ear cleft, the glomus tumour or paraganglioma. Glomus tympanicum and glomus jugulare can both present similar otoscopic appearances of a vascular blush in the hypotympanum. The glomus tympanicum arises from glomus bodies associated with the tympanic branch of the glossopharyngeal nerve (Jacobson's nerve) and may present in various locations on the medial wall of the middle ear, along the course of the nerve. The glomus jugulare arises from glomus bodies found in association with Jacobson's nerve and the auricular branch of the vagus nerve (Arnold's nerve) as they pass through the adventitia of the jugular bulb. Although the facial nerve is, all too often, involved via secondary extension of glomus tumours, it is a very rare site for development of a primary lesion. Glomus tumours have, however, been described arising from Arnold's nerve distal to the jugular bulb.[1,2] The nerve passes from the jugular bulb to the facial canal via a mastoid canaliculus and ascends in the vertical portion of the facial canal. Guild observed glomus body cells along this branch of the vagus nerve within the vertical section of the Fallopian canal.[3] A few reported cases have involved the inferior descending portion of the facial nerve and been associated with hemifacial spasm or paresis. Other uncommon sites for glomus tumours include the inferior cervical ganglion, vagus nerve (glomus vagale), carotid bifurcation, the larynx, orbit, paranasal sinuses and aortic arch.[4] Atypical sites for histologically confirmed primary glomus tumours in the ear even include the external auditory canal.[5,6]

Other lesions have also been described within the middle ear simulating glomus tumours, although authors tend to stress a grey or blue colouration to lesions such as haemangiomas, granulomas and arterio-venous malformations. Dayal *et al.* report a patient with a capillary haemangioma apparently attached to the chorda tympani and a second patient with a cholesterol granuloma both presenting with hearing loss and a blue discolouration of the posterior half of the tympanic membrane on otoscopy.[7] The rarer still cavernous haemangioma of the middle ear is again described as bluish and associated with a greater tendency to ossicular erosion.[8] Haemangiomas of the temporal bone do indeed most frequently arise from the facial nerve or its immediate surroundings[9] but are invariably associated with motor loss or hemifacial spasm.[10] Most vascular tumours involving the facial nerve are only discovered on imaging to investigate a facial weakness and are therefore far more extensive than this reported lesion.

Although lacking histological confirmation, it does seem likely that this case is a further example of a primary glomus tumour in an unusual site, the Fallopian canal, but easily visible and largely, as yet, asymptomatic.

References

1 Dutcher PO, Jr., Brackmann DE. Glomus tumor of the facial canal. A case report. *Arch Otolaryngol Head Neck Surg* 1986;**112**:986–7
2 Bartels LJ, Pennington J, Kamerer DB, Browarsky I. Primary fallopian canal glomus tumors. *Otolaryngol Head Neck Surg* 1990;**102**:101–5
3 Guild SR. The glomus jugulare, a nonchromaffin paraganglion, in man. *Ann Otol Rhinol Laryngol* 1953;**62**:1045–71

https://doi.org/10.1258/0022215021909962 Published online by Cambridge University Press

4 Mafee MF, Valvassori GE, Shugar MA, Yannias DA, Dobben GD. High resolution and dynamic sequential computed tomography. Use in the evaluation of glomus complex tumors. *Arch Otolaryngol* 1983;**109**:691–6
5 Singh KB, Hanna GS, Dinnen JS. Paraganglioma of the external auditory canal. *J Laryngol Otol* 1993;**107**:228–9
6 Skinner LJ, Curran AJ, Barnes C, Timon CI. Paragangliona of the external auditory canal: an unusual case. *J Laryngol Otol* 2000;**114**:370–2
7 Dayal VS, Lafond G, Van Nostrand AW, Holgate RC. Lesions simulating glomus tumors of the middle ear. *J Otolaryngol* 1983;**12**:175–9
8 Mair IW, Roald B, Lilleas F, Olsholt R. Cavernous hemangioma of the middle ear. *Am J Otol* 1994;**15**:254–6
9 Mangham CA, Carberry JN, Brackmann DE. Management of intratemporal vascular tumors. *Laryngoscope* 1981;**91**:867–76
10 Pulec JL. Facial nerve angioma. *Ear Nose Throat J* 1996;**75**:225–38

Address for correspondence:
Mr L. M. Flood,
ENTER,
North Riding Infirmary,
Newport Road,
Middlesbrough TS1 5JE, UK.

Mr L. Flood takes responsibility for the integrity of the content of the paper.
Competing interests: None declared