

## Clinical Records

# Chorda tympani neuroma masquerading as cholesteatoma

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### Abstract

Facial nerve neuromas occur throughout the course of the facial nerve and its branches, however lesions occurring on the chorda tympani branch are exceptionally rare.

We present a case where the diagnosis was made intra-operatively; the patient was pre-operatively thought to have had a cholesteatoma.

Total resection is the treatment of choice for these cases. Early diagnosis, aided by high resolution computed tomography (CT) scanning, will facilitate complete excision without damage to the facial nerve itself or the ossicular chain. The slow growing nature of the neuroma is likely to allow compensatory mechanisms to occur without the patient experiencing dysgeusia. As with any rarity the diagnosis can only be made with a high index of suspicion.

**Key words:** Chorda Tympani Nerve; Neuroma; Tomography, X-Ray Computed

### Introduction

Facial nerve neuromas occur throughout the course of the facial nerve and its branches, however lesions occurring on the chorda tympani branch are exceptionally rare. We present a case where the diagnosis was made intra-operatively; the patient was pre-operatively thought to

have had a cholesteatoma. As with any rarity the diagnosis can only be made with a high index of suspicion.

### Case report

A 53-year-old male patient was referred urgently to the department with a two-week history of vertigo suggestive of benign paroxysmal positional vertigo. He had a long-

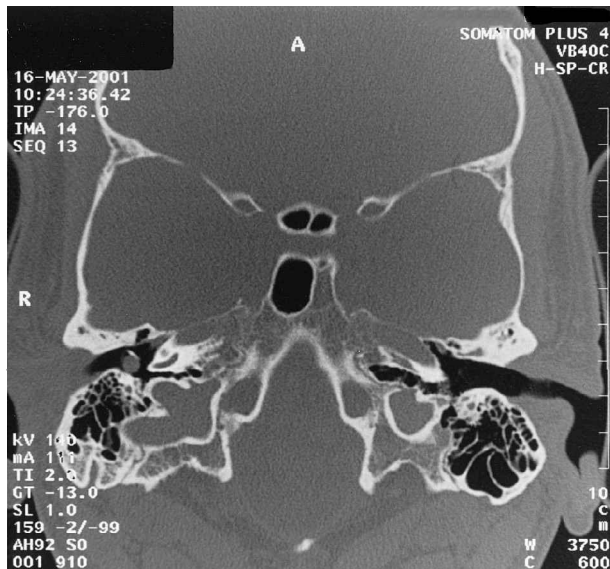


FIG. 1

Axial CT scan demonstrating well-defined soft tissue lesion within right middle-ear cleft, abutting on to handle of malleus. Remaining middle-ear and mastoid cavity appears normal and well pneumatized.

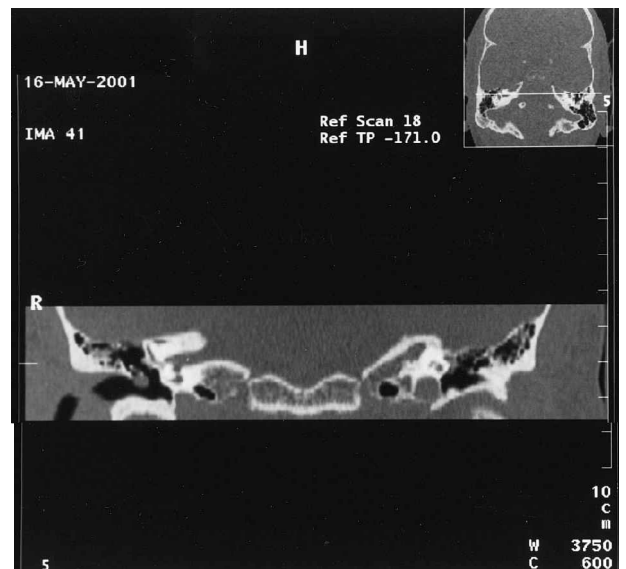


FIG. 2

A reconstructed coronal CT image demonstrating above soft tissue lesion abutting onto malleus and scutum, with no apparent bony erosion of scutum.

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standing history of poor hearing in the right ear, and had undergone a myringotomy on that side as a child. On examination the tympanic membrane was intact but a bulging soft tissue mass was found in the postero-superior quadrant suggestive of a keratin pearl. Cranial nerve examination was normal, and pure tone audiology showed a mild mixed hearing loss on the right side. A computed tomograph (CT) demonstrated a small rounded soft tissue mass in the postero-superior quadrant of the middle ear extending into the attic (Figures 1 and 2). Given the radiological appearance, clinical findings and history of previous myringotomy as a possible means of implantation, the lesion was thought to be a keratin pearl.

- **This case report is of a patient who was thought to have a cholesteatoma and was found, at surgery, to have a neuroma of the chorda tympani**
- **Five cases have been reported before in the world literature**
- **This paper highlights the need for high resolution CT scanning in an attempt to make the diagnosis pre-operatively**

At surgery a tympanomeatal flap was raised. A mass was identified contiguous with the chorda tympani and resected in continuity with the nerve. The mass was clearly separate from the main trunk of the facial nerve and ossicular disruption was not required. Histology confirmed the diagnosis of a schwannoma of the chorda tympani. The patient made an excellent post-operative recovery, with no apparent deficit following resection. The patient complained of temporary taste disturbance post-operatively but recovered completely.

### Discussion

A neuroma is a slow-growing benign tumour arising from the myelin-producing schwann cell layer of the peripheral nerve sheath.<sup>1</sup> They are most common in middle age and have a female preponderance. They may arise on cranial and sympathetic nerves. They have a striking propensity to involve sensory nerves, the cochlear-vestibular nerve being the most common. Therefore, it is surprising that they occur with a relatively high frequency on the facial nerve, and may be found anywhere along its course from brainstem to its distal branches.<sup>2</sup> The presenting symptoms vary with anatomical site, but many will develop a facial palsy. Although the chorda tympani is a sensory nerve only five reports can be found in the literature, and this is the first case reported in the United Kingdom.<sup>3-7</sup> Four reports<sup>3-5,7</sup> describe lesions in young adults, presenting at a relatively later stage causing significant conductive hearing loss and otorrhoea. Resection required mastoid exploration in each case, revealing bi-lobed tumours arising from the mastoid segment of the nerve, extending into the middle ear and bony ear canal. The final case<sup>6</sup> presented with otorrhoea, at a similar stage to the neuroma described, yet was not detectable on CT imaging. As in this case, complete resection was achieved at tympanotomy without disruption of the ossicular chain. It is likely that

high resolution CT imaging will facilitate early diagnosis in future cases. Vertigo has not previously been reported in association with these lesions and may have been unrelated in this case.

Resection of the chorda tympani often causes no subjective change in overall taste sensation. The nerve is often sacrificed in middle-ear surgery; one study has noted a 31 per cent incidence of permanent taste alteration in cases of complete nerve resection.<sup>8</sup> In a report of 32 cases of bilateral nerve section 20 per cent reported no change at all, while the majority of those with altered taste sensation described a temporary metallic taste, which recovers fully.<sup>9</sup> Normal taste perception is derived from bilateral inputs of the chorda tympani, greater superficial petrosal, glossopharyngeal and vagus nerves. It has been proposed that a 'taste network' exists which mediates compensation following nerve section.<sup>10</sup> Both in chorda tympani section and anaesthesia it is found that taste intensities are increased especially on the contralateral side due to a loss of inhibition of the glossopharyngeal nerve.<sup>10</sup> The slow growing nature of the neuroma is likely to allow compensatory mechanisms to occur without the patient experiencing dysgeusia.

### Conclusions

Total resection is the treatment of choice for these cases. Early diagnosis, aided by high resolution CT scanning, will facilitate complete excision without damage to the facial nerve itself or the ossicular chain.

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