



FACIAL NERVE SCHWANNOMA CROSSING BOUNDARIES: INTRATEMPORAL TO PAROTID EXTENSION IN A YOUNG ADULT

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ABSTRACT

A 20-year-old male presented with a 3-year history of right ear pain, tinnitus, vertigo, and progressive facial asymmetry. Clinical examination revealed a pinkish mass in the external auditory canal and House-Brackmann Grade IV facial palsy. HRCT showed smooth expansion of the facial nerve canal involving tympanic and mastoid segments. MRI demonstrated a solid-cystic enhancing lesion tracking from the intratemporal facial nerve through the stylomastoid foramen into the deep parotid lobe. Imaging characteristics supported the diagnosis of a multisegmental facial nerve schwannoma. This case highlights the importance of multimodality imaging in evaluating rare cranial nerve tumors and distinguishing them from mimickers such as hemangiomas and perineural tumor spread.

KEYWORDS : Facial nerve schwannoma, Temporal bone, Parotid extension, HRCT, MRI

INTRODUCTION

Facial nerve schwannomas (FNS) are rare benign nerve sheath tumors accounting for less than 1% of all temporal bone neoplasms. Their presentation varies depending on the nerve segment involved. Due to their diverse manifestations, they can mimic vestibular schwannomas, cholesteatomas, hemangiomas, or parotid malignancies. Multimodality imaging plays an essential role in identifying nerve involvement and lesion extent.

Case Presentation

A 20-year-old male presented with chronic right ear pain, tinnitus, episodic vertigo, and progressively worsening facial asymmetry. A pinkish mass was visible in the right external auditory canal along with mild postauricular fullness. Neurological examination showed House-Brackmann Grade IV lower motor neuron facial palsy. The patient underwent HRCT and MRI at Tata Memorial Centre, Mumbai.

Imaging Findings

HRCT temporal bone revealed smooth expansion of the facial nerve canal involving the tympanic and mastoid segments, thinning of the bony cortex, and widening of the stylomastoid foramen. MRI demonstrated a lobulated solid-cystic lesion that was isointense on T1, hyperintense on T2, and heterogeneously enhancing post-contrast. The lesion extended from the intratemporal facial nerve into the deep lobe of the parotid gland, compressing the retromandibular vein. Geniculate ganglion involvement was absent.

Differential Diagnosis

Diagnosis	Imaging Features	Reason Excluded
Facial nerve hemangioma	Honeycomb calcification, irregular margins	No calcification or aggressive erosion
Cholesteatoma	Non-enhancing lesion with diffusion restriction	Lesion enhanced strongly on contrast MRI
Parotid malignancy with perineural spread	Primary parotid mass + proximal nerve thickening	No parotid primary mass identified
Vestibular schwannoma	IAC widening, CPA involvement	Geniculate ganglion spared; no CPA extension

DISCUSSION

Facial nerve schwannomas can involve any segment of the facial nerve. Multisegmental involvement extending into the parotid gland is rare. HRCT demonstrates smooth canal

expansion, while MRI highlights the lesion's solid-cystic nature, enhancement pattern, and anatomical spread. Heterogeneous enhancement corresponds to a mixture of Antoni A and Antoni B histological areas. Differentiation from hemangiomas, cholesteatomas, and perineural spread is crucial, as management varies significantly.

The absence of calcification, irregular bony erosion, or a primary parotid mass favored the diagnosis of schwannoma. The patient's progression to House-Brackmann Grade IV prompted surgical evaluation. A translabyrinthine or retrosigmoid approach was considered to preserve remaining nerve function. Early diagnosis and accurate imaging interpretation are essential for optimal outcomes.

Teaching Points

1. Smooth expansion of the facial nerve canal on HRCT strongly suggests a benign neural sheath tumor such as schwannoma.
2. MRI is essential in identifying multisegmental involvement and extracranial extension for surgical planning.

CONCLUSION

This case highlights a rare multisegmental facial nerve schwannoma with parotid extension in a young adult. Combined HRCT and MRI are crucial for accurate diagnosis, differentiation from mimics, and guiding management decisions aimed at preserving facial nerve function.

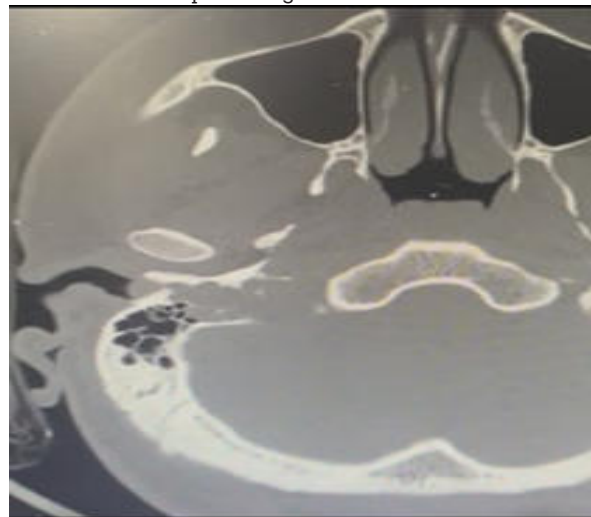
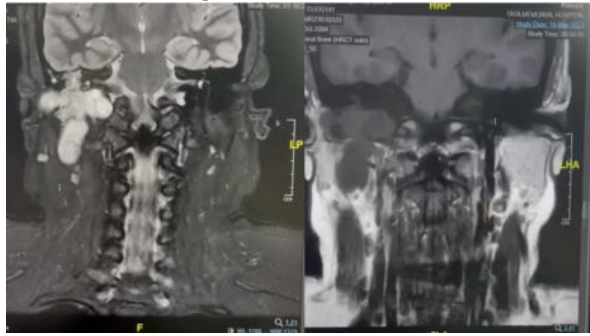


Fig 1: HRCT showing smooth expansion of the facial nerve

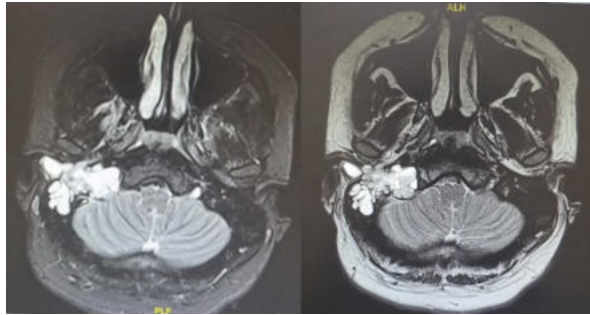
canal with cortical thinning, extension into hypotympanum and external auditory canal



2a. coronal T2 stir

coronal T1

Fig 2: Coronal MRI showing solid-cystic lesion extending into the deep parotid lobe, widening of facial canal and extension into EAC.



3a.

3b

Fig 3: Axial post-contrast MRI showing heterogeneous enhancement along the facial nerve and enlarged geniculate ganglion

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