

Demystifying facial nerve schwannoma

An anatomical approach to the correct diagnosis

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RADIOLOGY
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INTRODUCTION

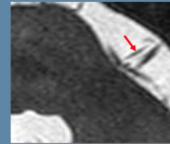
Facial nerve schwannoma (FNS) is uncommon accounting <1% of the temporal bone tumors. Despite the rare incidence of FNSs, their appearances are variable **depending on the segments of facial nerve involved**.

In this pictorial review, we describe an anatomical approach to aid radiologists to correctly diagnose FNS. Case examples of FNSs will be presented with relevance to the segmental anatomy of facial nerve.

SEGMENTAL ANATOMY OF CN VII

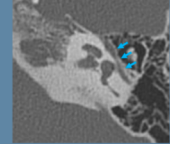
	MRI	CT
Cisternal segment	✓	
Canalicular segment	✓	
Labyrinthine segment	✓	✓
Geniculate ganglion	✓	✓
Tympanic segment	✓	✓
Mastoid segment	✓	✓
Extratemporal segment	✓	

IMAGING TECHNIQUE OF CN VII EVALUATION



MRI

- High resolution 3D heavily T2 weighted sequences, e.g. CISS, SSFP
- Post contrast T1W images with fat saturation

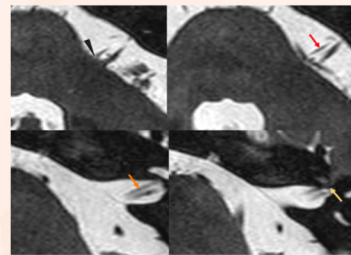


CT

- High resolution CT temporal bone

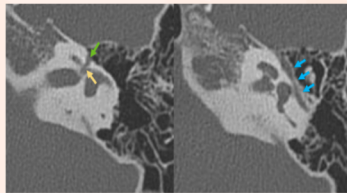
MRI ANATOMY

The cisternal (red arrow), canalicular (orange arrow) and labyrinthine (yellow arrow) segments are clearly demonstrated at high resolution 3-dimensional heavily T2-weighted images.

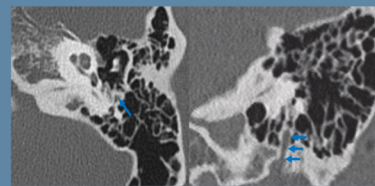


CT ANATOMY

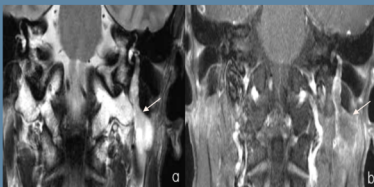
Temporal bone CT allows superior delineation of osseous anatomy and demonstration of the labyrinthine segment (yellow arrow), geniculate ganglion (green yellow) and tympanic segment (light blue arrows).



Course of the **mastoid segment** (blue arrows) of facial nerve can be assessed on axial and coronal images of temporal bone CT

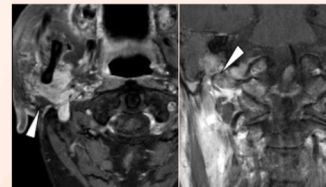


Mastoid/extratemporal FNS mimicking parotid gland tumor



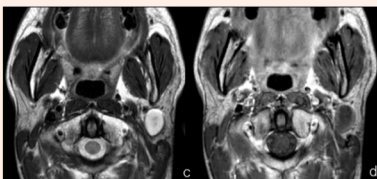
Coronal T2W (a) and T1W contrast-enhanced MR (b) images show a fusiform T2W hyperintense and heterogeneously enhancing FNS (arrows) involving the left extratemporal, mastoid and tympanic segment. Note the expansion of the stylomastoid foramen.

Companion case: Adenoid cystic carcinoma with perineural spread mimicking FNS



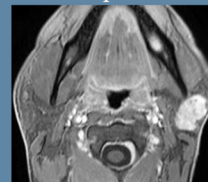
Coronal and axial contrast enhanced T1W images show adenoid cystic carcinoma of right parotid gland shows perineural spread along the facial nerve with involvement of stylomastoid foramen. Note the infiltrative nature of the tumour, in contrast to the well defined border of FNS.

Extratemporal FNS mimicking parotid gland tumor



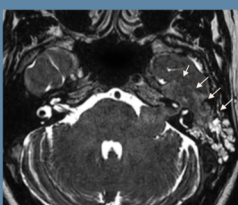
Axial T2W (c) and T1W (d) images show a roundish T2W hyperintense and T1W hypointense extratemporal segment FNS in the parotid gland, mimicking a parotid gland tumor.

Companion case: Pleomorphic adenoma of the parotid gland



Axial T1W contrast-enhanced MR shows a circumscribed lobulated enhancing mass involving both deep and superficial lobe of left parotid gland. Biopsy confirmed it to be pleomorphic adenoma.

Cisternal/cannicular FNS mimicking vestibular schwannoma



Axial CISS image shows a large FNS with ice-cream cone shaped in the cerebellopontine angle with extra- and intra- canicular components, resembling a vestibular schwannoma.

The fact that the tumour extends to the geniculate ganglion and involves the extra-axial space of the left middle cranial fossa (arrows) supports the diagnosis of FNS.

TEACHING POINT

Robust knowledge of the facial nerve anatomy and awareness of the diverse imaging appearance of FNSs at individual segment and their mimics are the keys for radiologists to accurately diagnose FNS.