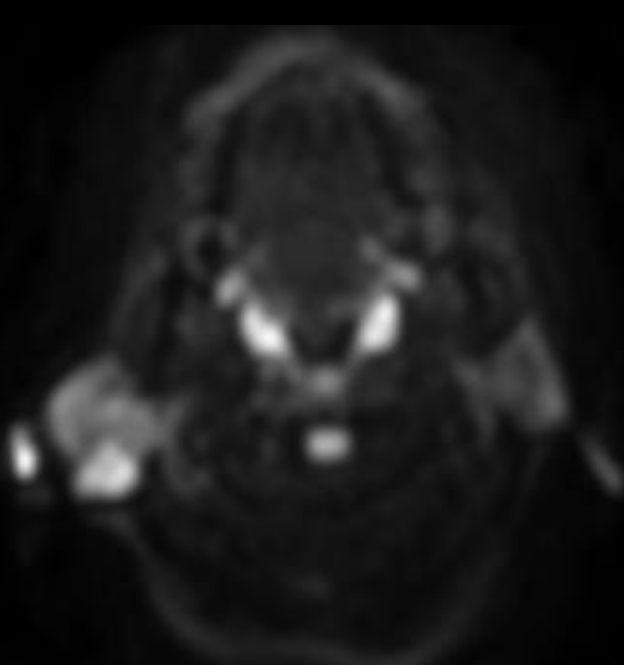
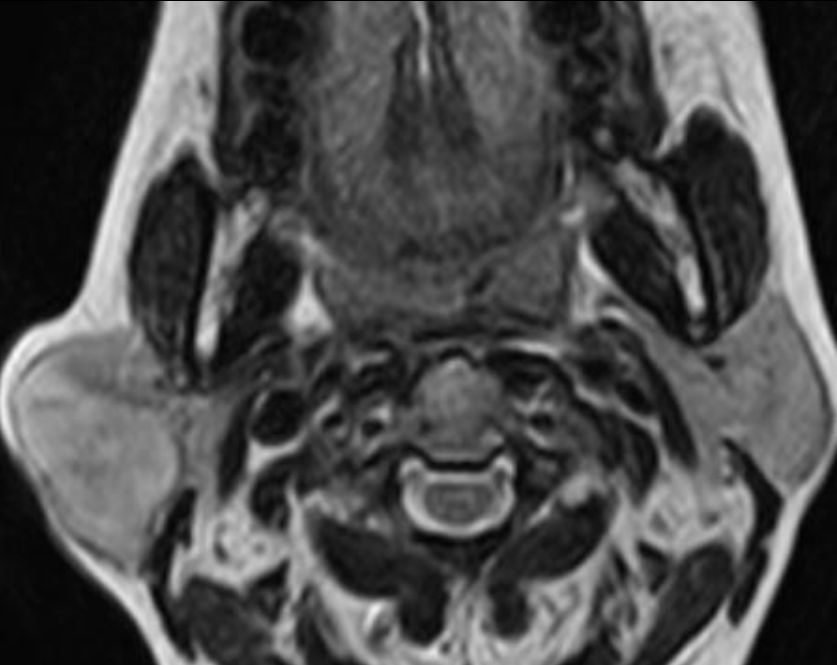


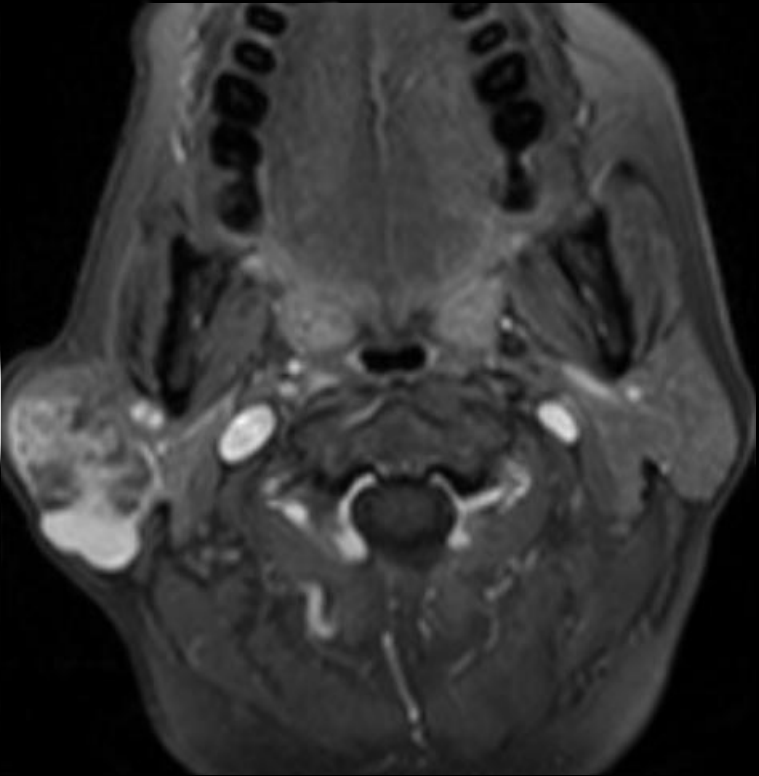
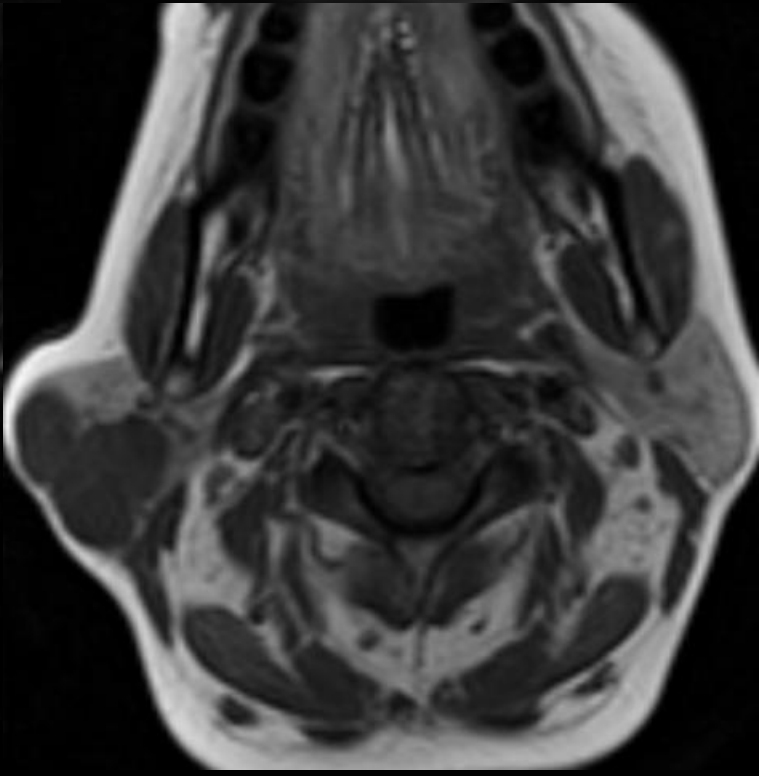
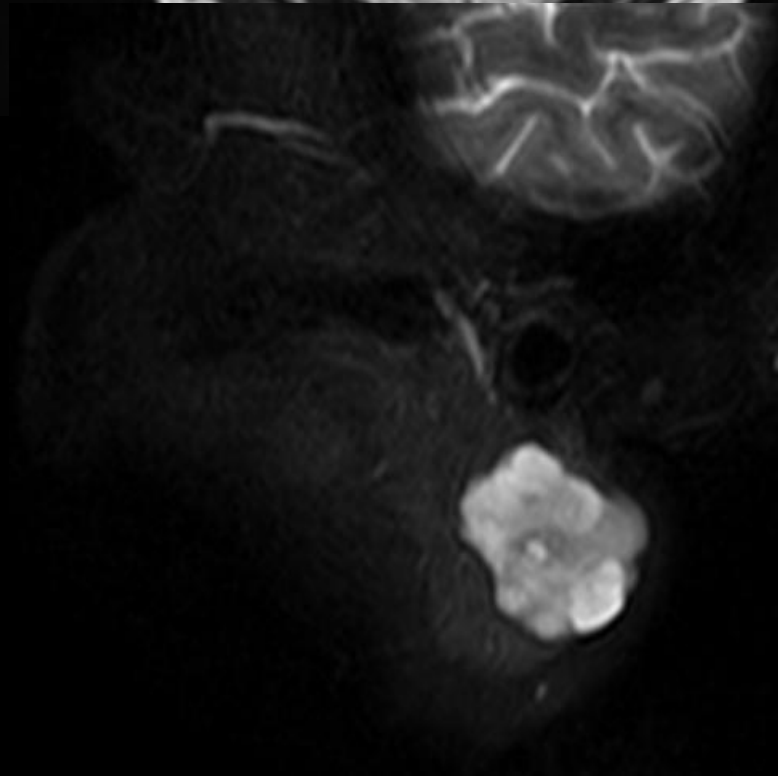


2025

KARNATAKA RADIOLOGY EDUCATION PROGRAM



52 Y/F with
gradual swelling
on right side of
face



- A lobulated, circumscribed lesion is noted in the superficial part of right parotid gland measuring ~ 2.3 x 2.8 x 3.14 cm (TR x AP x CC) in maximal dimensions showing T2/STIR fairly homogeneous hyperintense T1 intermediate to low signal with focal area of diffusion restriction in the posterior aspect, heterogeneous post-contrast enhancement within the solid areas.
- The lesion is confined to the parotid gland, involving the superficial part, without obvious extension beyond it.
- The retromandibular vein is not involved by the lesion. The neurovascular bundle is not involved.
- S/o pleomorphic adenoma.
- How to identify malignant transformation?
 - T2 intermediate signal solid components with low ADC and enhancement.

Pleomorphic Adenoma

1. Overview & Pathology:

- **Most common benign salivary gland neoplasm** (~60% of parotid tumors).
- Arises from **myoepithelial and ductal epithelial elements**, forming a **biphasic architecture** within a fibromyxoid stroma — hence “pleomorphic.”
- Though benign, has **potential for malignant transformation (carcinoma ex pleomorphic adenoma)** if long-standing or recurrent.

2. Epidemiology & Sites:

- Predominantly in **superficial lobe of parotid gland** (~80%); less commonly in **submandibular gland or minor salivary glands** (palate > nasal cavity > parapharyngeal space).
- Peak incidence: **3rd–5th decade**, slight female predilection.

3. CT Imaging Features:

- **Well-circumscribed, smoothly marginated soft-tissue mass**, often round or lobulated.
- **Non-contrast CT**: hypodense relative to gland parenchyma; may show **coarse or punctate calcifications**.
- **Post-contrast**: mild to moderate **delayed enhancement** (due to fibromyxoid matrix); typically homogeneous in small lesions, heterogeneous if large or old.

4. MRI Characteristics (Modality of Choice):

- **T1**: Low to intermediate signal intensity.
- **T2**: Very **hyperintense (“light-bulb bright”)**, reflecting myxoid stroma; **internal heterogeneity** in chronic lesions.
- **Post-contrast**: Intense enhancement, sometimes peripheral or delayed.
- Often shows **thin fibrous pseudocapsule** and “cleft-like” interface with gland on high-resolution images.

Pleomorphic Adenoma

5. Diffusion and Advanced MRI:

- **High ADC values** (low cellularity) distinguish from malignant tumors, which typically restrict diffusion.
- Dynamic contrast-enhanced MRI shows **progressive enhancement pattern**, unlike rapid wash-in/washout in Warthin tumor.

6. Patterns of Extension:

- In the **parapharyngeal space**, may appear as a **smooth, medially bulging mass displacing the oropharyngeal wall** (from deep lobe parotid origin).
- Usually **non-infiltrative**, but **pseudopodia or microscopic capsular breaches** can cause recurrence if not completely excised.

7. Key Differentials:

- **Warthin tumor** (older male smokers, T1/T2 hyperintense, cystic, shows washout).
- **Low-grade mucoepidermoid carcinoma** (less well-defined, more infiltrative).
- **Carcinoma ex pleomorphic adenoma**: irregular margins, infiltration, necrosis, and perineural spread.

8. Oncoradiologic Significance:

- Imaging defines **extent, capsule integrity, and relation to facial nerve/parapharyngeal space**, guiding surgical planning (superficial or total parotidectomy).
- **Incomplete excision → recurrence → risk of malignant transformation (~5%).**
- MRI follow-up recommended in **deep lobe or recurrent lesions.**

Contributor

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