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Location, Location, Location... Head and Neck Cystic lesions

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Chair

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ACR head and Neck Course



@bpoliceni



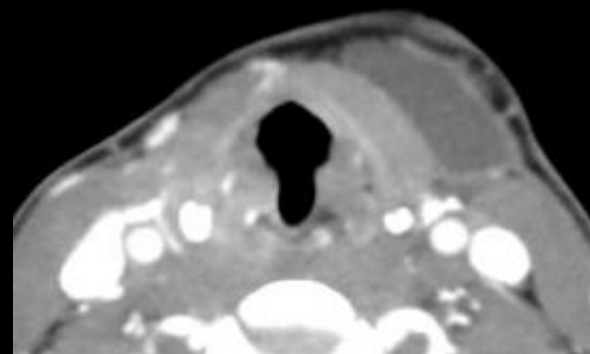
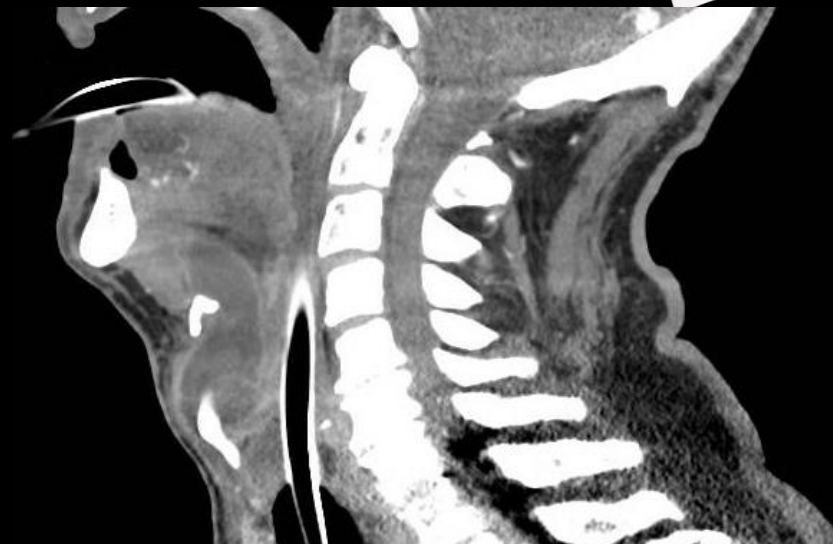
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HEALTH CARE

Financial Disclosure

No conflict of interest relevant to
this topic



Evaluation of neck lesions:

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- Location:
 - Midline
 - Paramedian
 - Peri parotid
 - Sublingual
- Clinical presentation
- Age
- Cystic versus Solid

1. Congenital

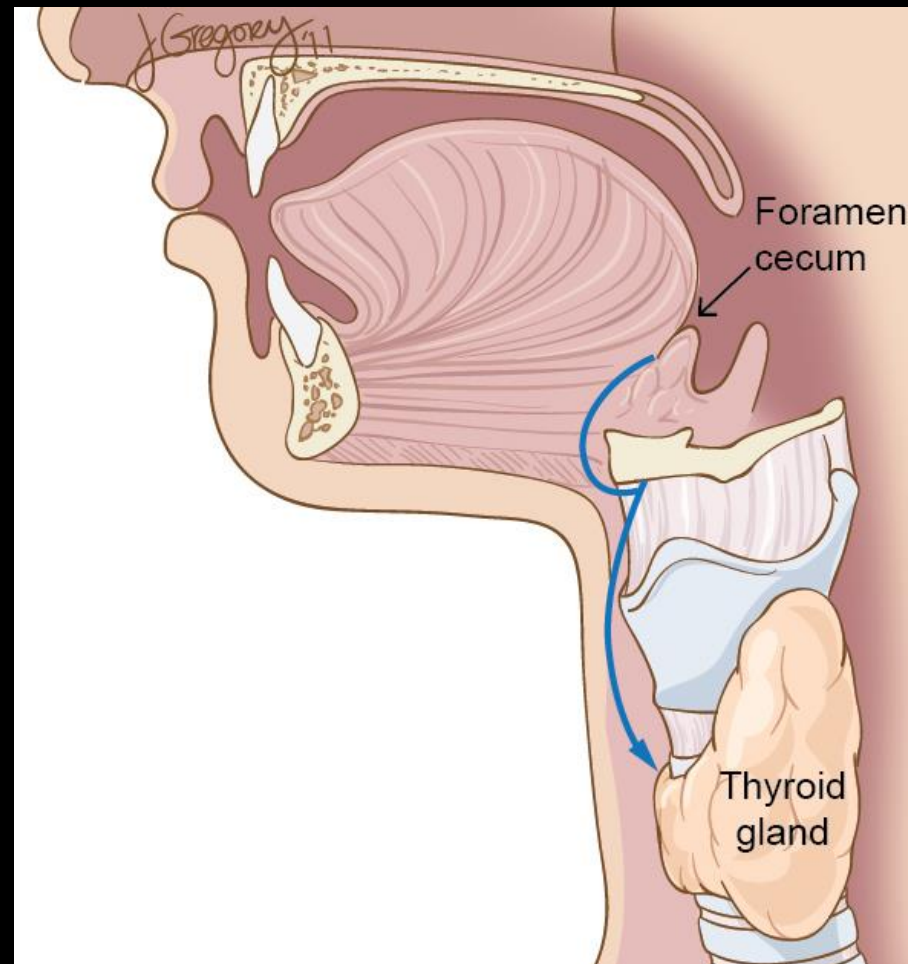
- Thyroglossal duct
- Branchial apparatus
- Lymphatic
- Epidermoid, Dermoid, Teratoma

2. Acquired

- Laryngocele
- Ranula
- Cystic node metastases
- Abscess

Thyroglossal duct lesions

- Embryologic thyroid primordium provides a road map for potential locations.
 - Base of the tongue
 - Hyoid bone
 - Midline infrahyoid portion of the neck
 - Lateral part of the neck

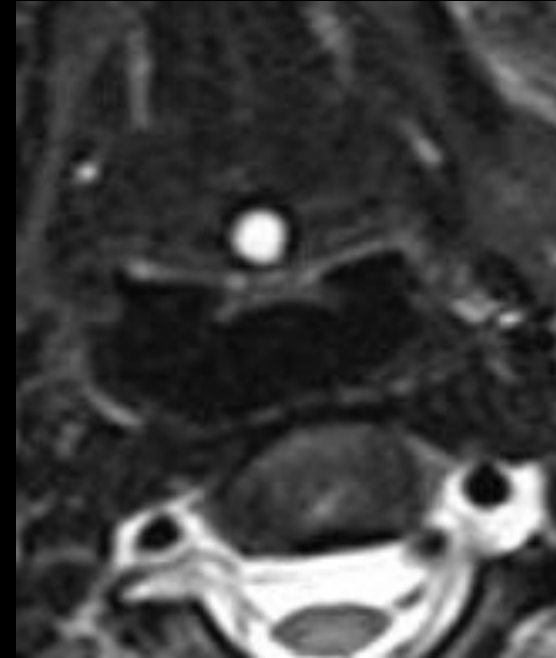
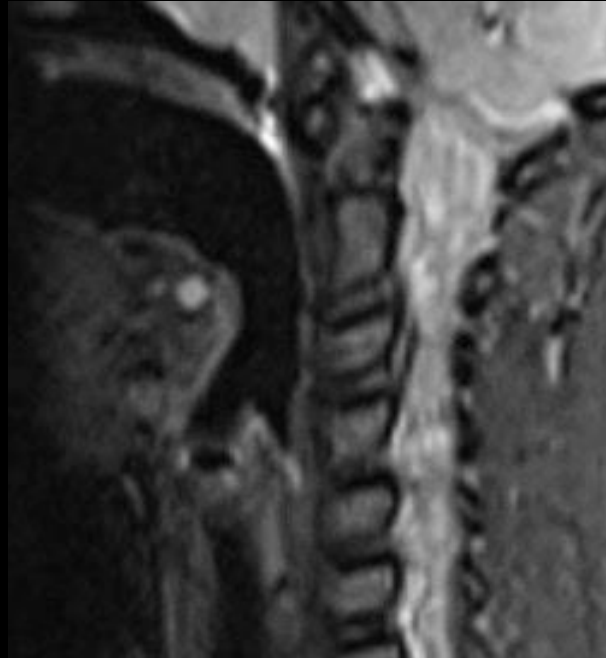


Thyroglossal duct lesions

- THYROGLOSSAL DUCT CYST:
 - By far the most common TGD anomaly >90%.
 - Failure of involution of the thyroglossal duct.
 - Cyst result from persistence secretion from epithelial lining.
Most common congenital cystic neck mass.
- ECTOPIC THYROID TISSUE:
 - Rests of thyroid gland tissue failure to descend completely. 10% of TGD anomalies.
- LINGUAL THYROID:
 - Failure of thyroid diverticulum to descend.
 - Occurs 1 in 100,000 individual. Rarely not at tongue base.

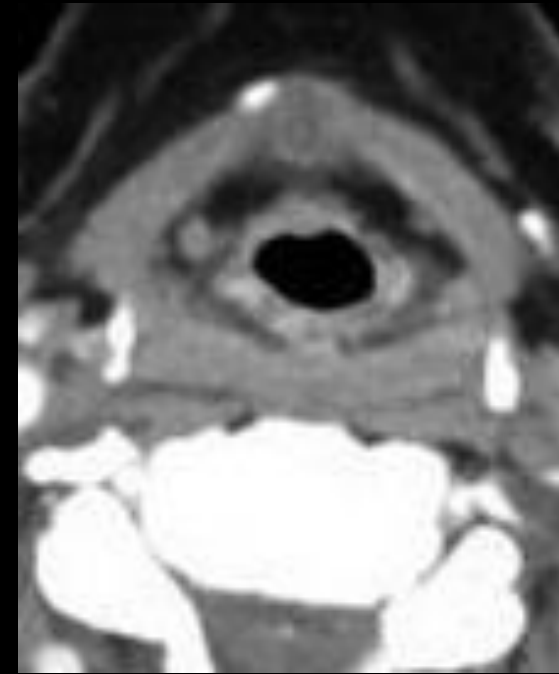
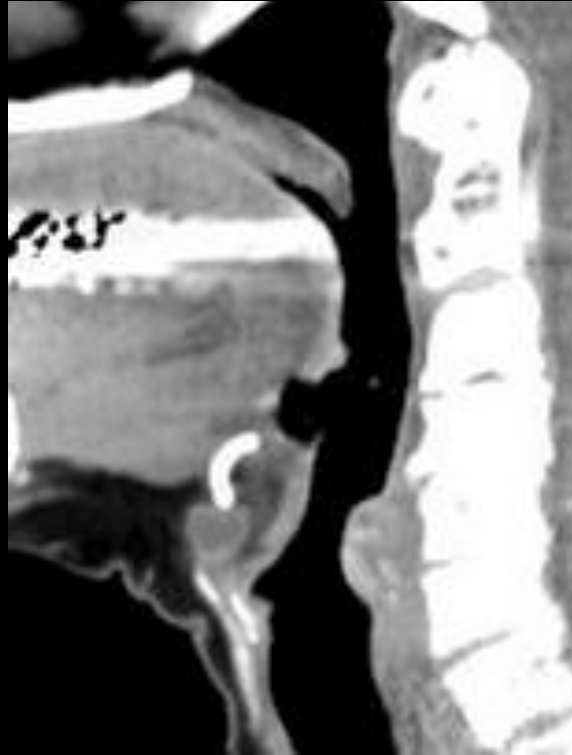
Base of the Tongue

- Foramen cecum, lies at the vertex of the sulcus terminalis linguae, as formed by the circumvallate papillae of the tongue.
- Near the level of the epiglottis and epiglottic vallecula



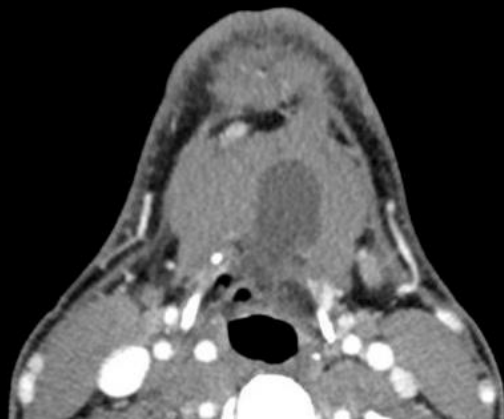
Hyoid bone

- Courses anteriorly and inferiorly and then loops posteriorly to the hyoid bone;
- Hyoid rotation during development
- Supra-hyoid midline.

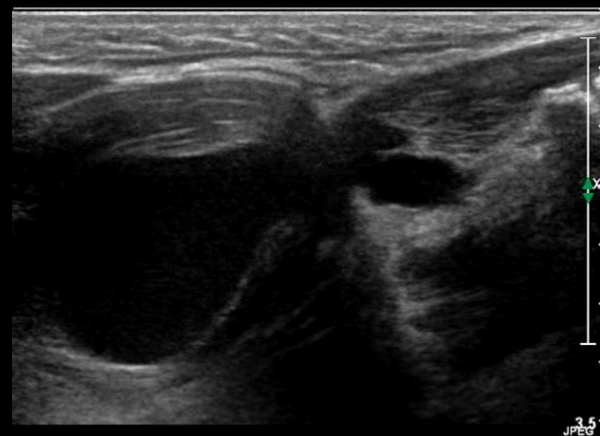


Supra and Infra hyoid

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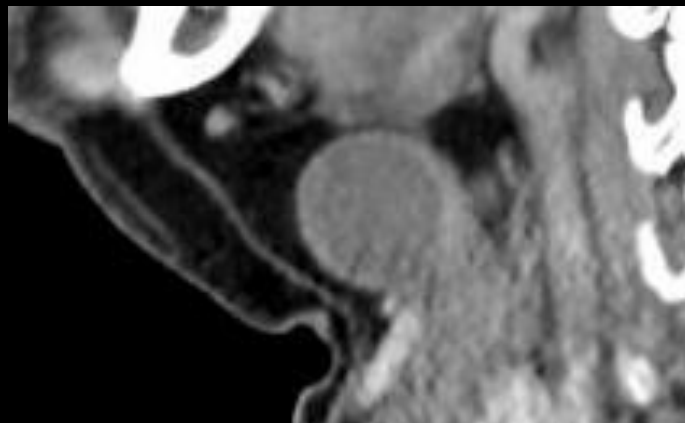
ML Trans Level I #1 Palpable Area



ML Long Level I #2 Palpable Area

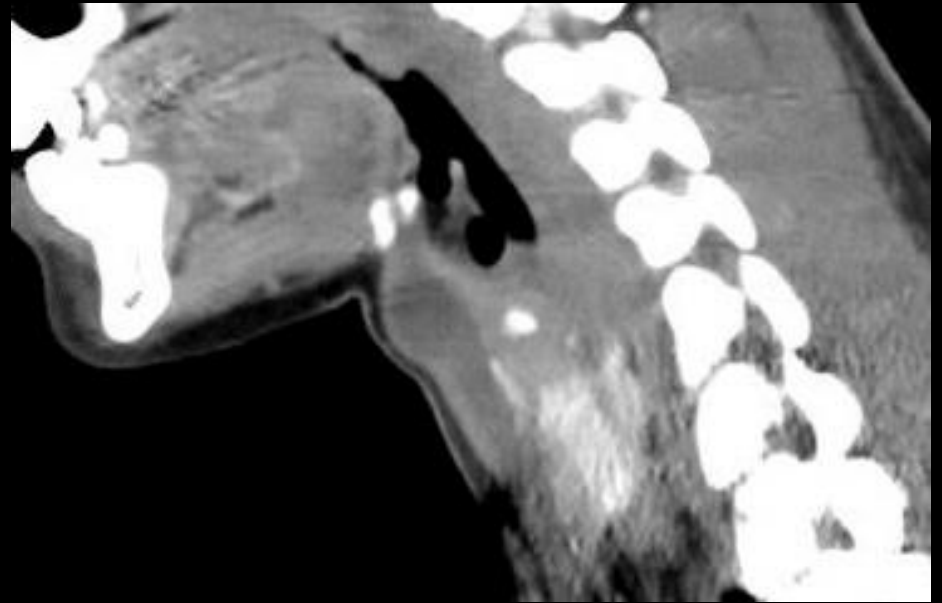
Infra-hyoid

- Infrahyoid (strap) muscles (sternothyroid and sternohyoid muscles).
- 25%–65% infrahyoid portion of the neck,
- Splay the strap. muscles or lie slightly off the midline.
- Deep to or embedded within the strap muscles (thin connecting stalk to the midline).



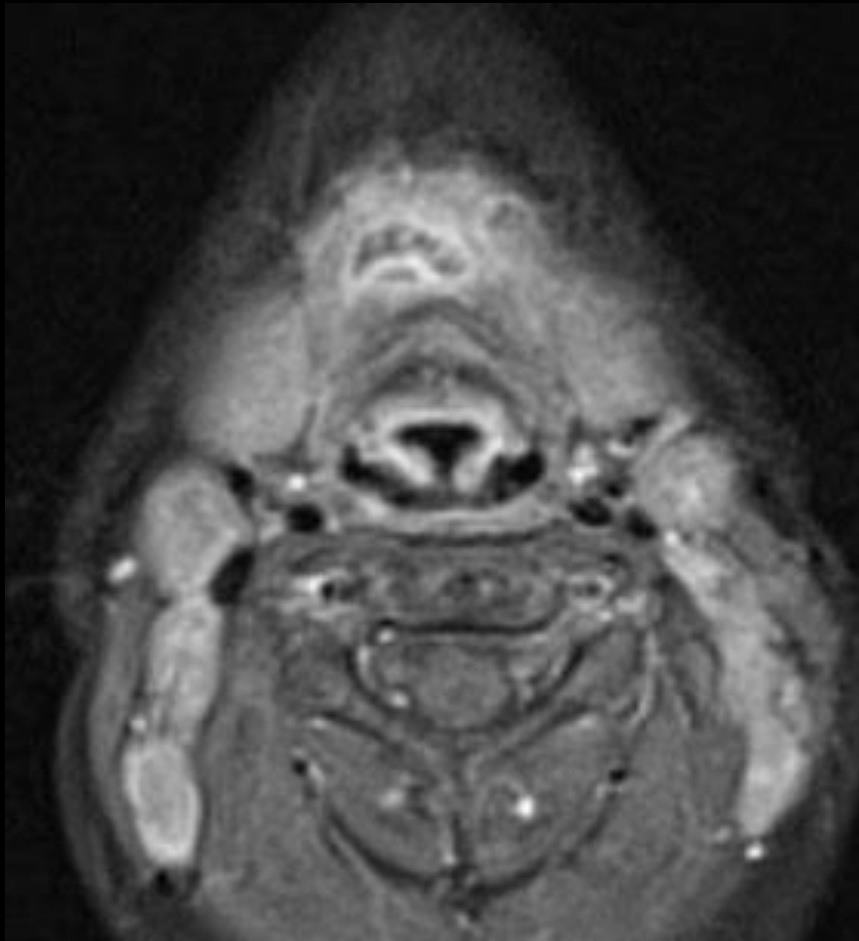
Infra-hyoid

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Infected Thyroglossal Duct Cyst

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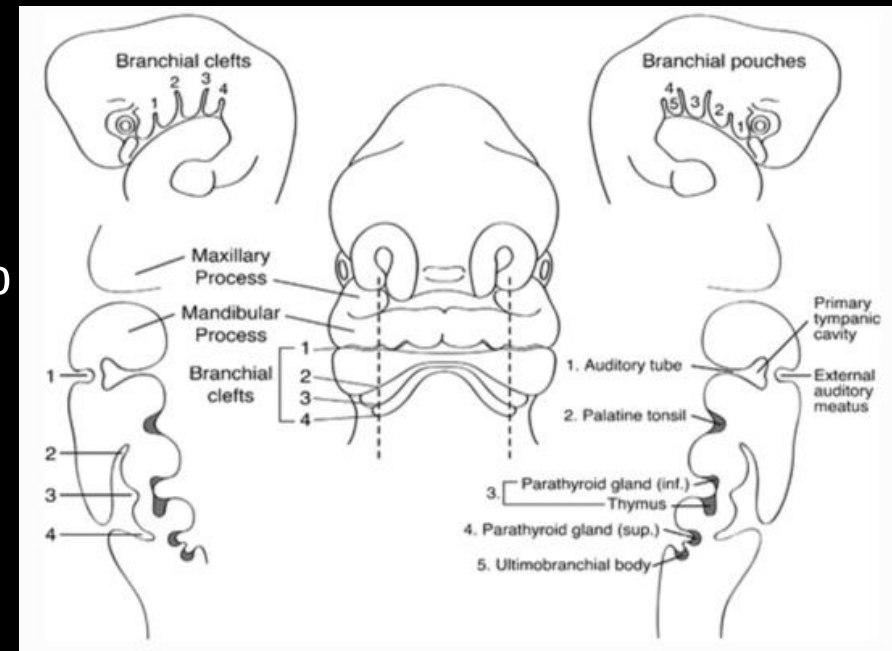


- 1.5 % of all thyroglossal duct cysts.
- Papillary is the most common pathology type.



Branchial apparatus

- 1ST BRANCHIAL ANOMALY: 8%
- 2ND BRANCHIAL ANOMALY: >90%
- 3rd BRANCHIAL ANOMALY: < 2%
- 4th BRABCHIAL ANOMALY: < 2%

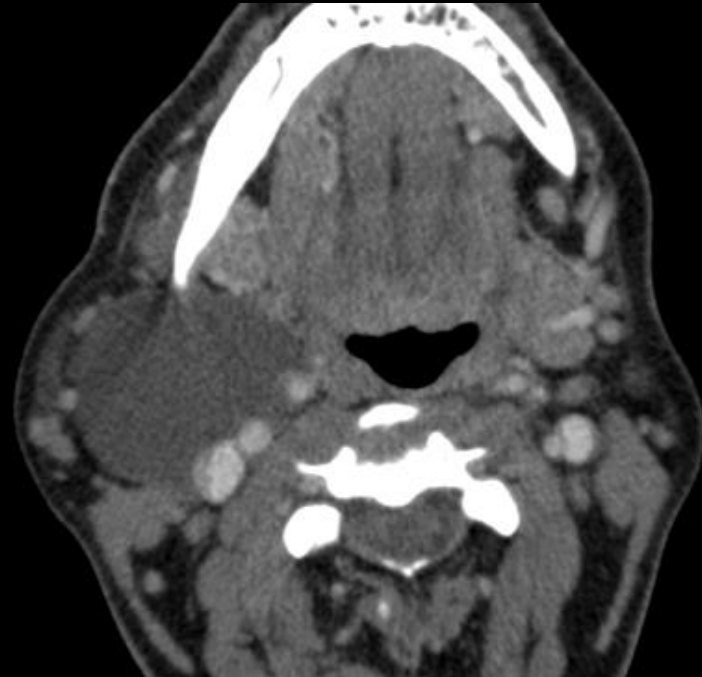


Seminars in Pediatric Surgery 15:64–69

- CYST:
 - Both ends closed (skin-cleft and pharyngeal-pouch). 2/3 of anomalies
- FISTULA:
 - Connection between (ectoderm-cleft) skin and (endoderm-pouch) pharyngeal mucosa
- SINUS: One blind end and one open end
 - Open to skin “Branchial cleft sinus”
 - Open to pharynx “Branchial pouch sinus”

Second Brachial Cleft Cyst

- Most common branchial anomaly
- Located anterior to the SCM
- Present after Upper respiratory infection.



Bailey Classification



Type I

Superficial cysts lying anterior and adjacent to the SCM muscle

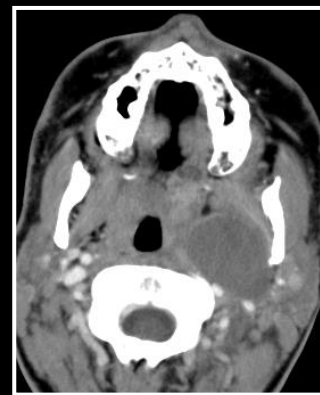
Deep to platysma muscle and the anterior lateral surface of sternocleidomastoid muscle.



Type II is more medial than type I, along the anterior surface of the sternocleidomastoid muscle, lateral to carotid space and posterior to the submandibular glands, arising on a line between the skin of the lateral neck and the ipsilateral faucial tonsil.



BCCs extend farther medially between the internal carotid artery and external carotid artery at the carotid bifurcation. Visualization of the cyst's extension or "tail" between the internal carotid artery and external carotid artery has been considered pathognomonic for type III BCCs

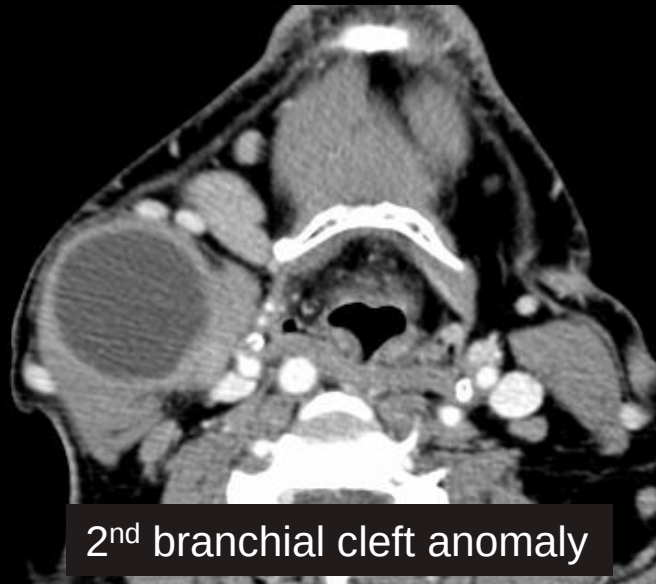
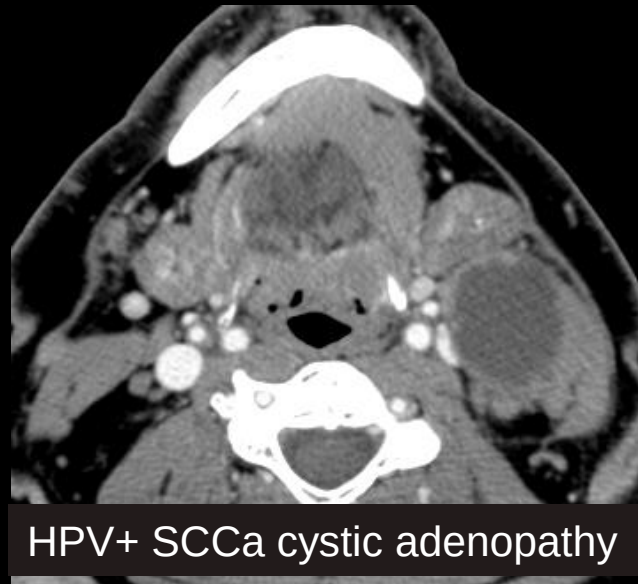


The least common and arises against the pharyngeal mucosal space just deep to the palatine tonsil, often extending upward from tonsil toward the skull base



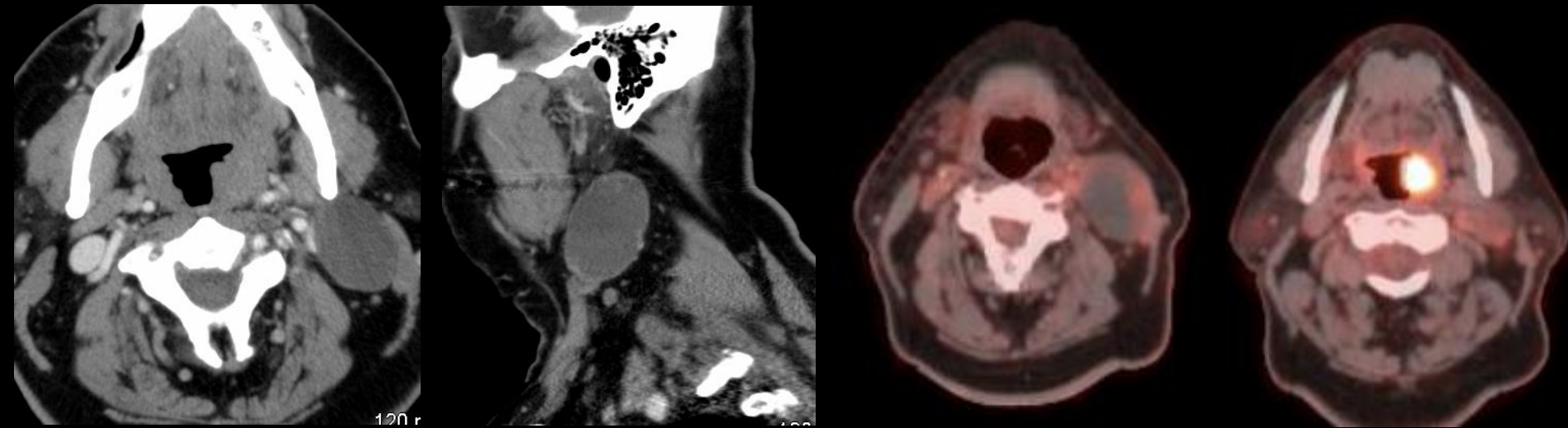
2nd BCC mimics

- Metastatic node (HPV+)
- Suppurative lymph node
- Neck abscess



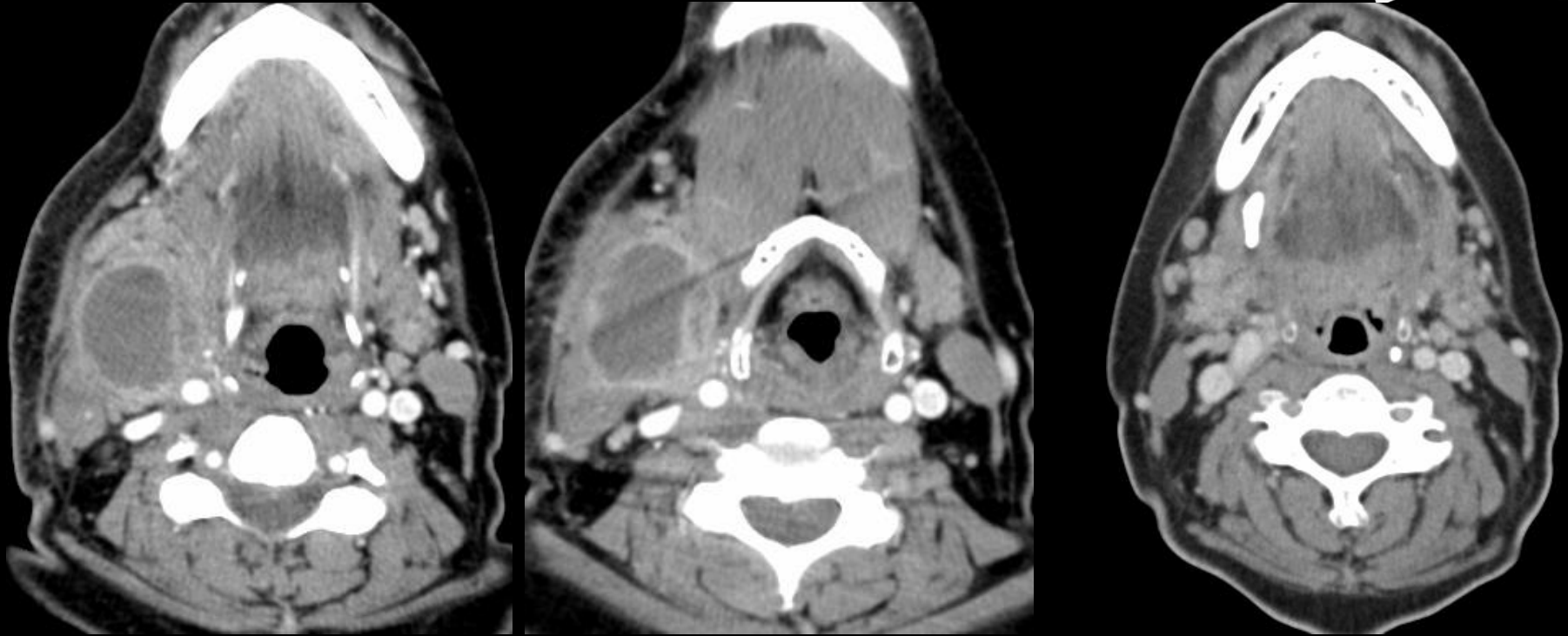
BCC or HPV+ SCCa ?

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- Cystic adenopathy of HPV+ SCCa closely resembles BCC and should always be suspected in patients older than 30 years

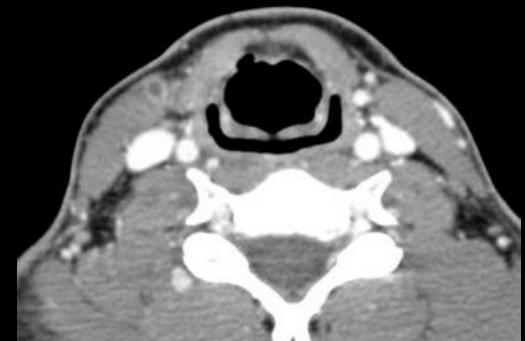
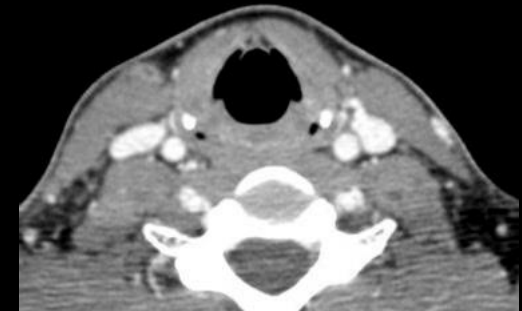
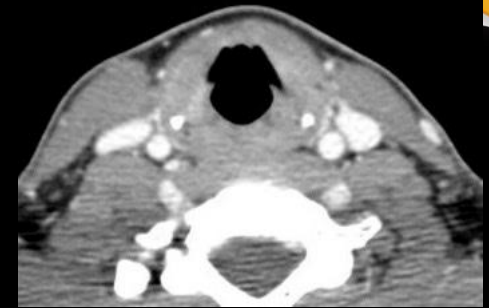
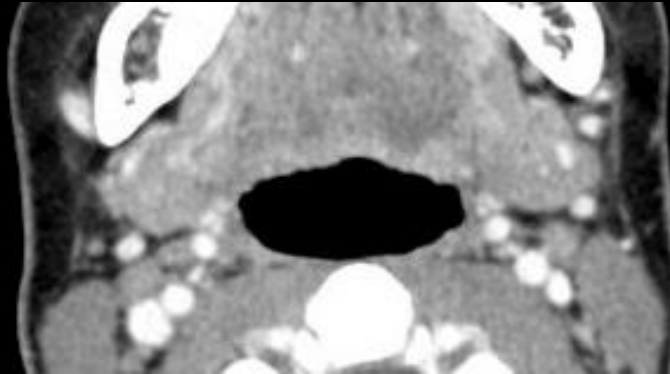
52YM presents with right neck swelling



1

2nd Brachial cleft fistula

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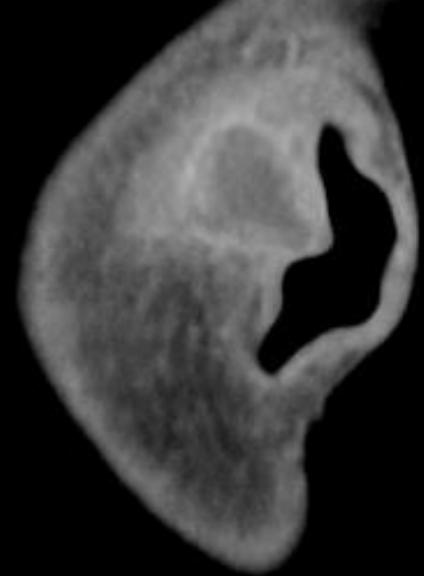
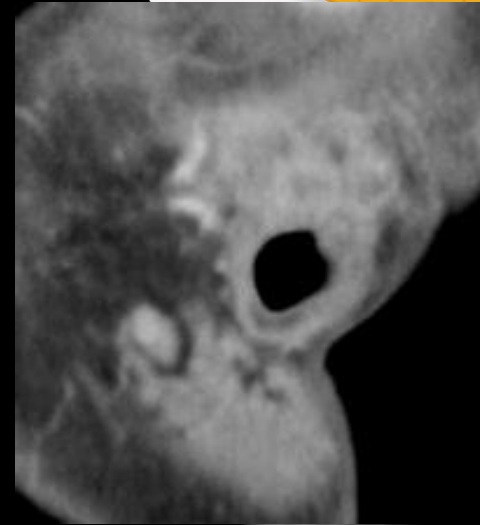
2nd Brachial cleft sinus

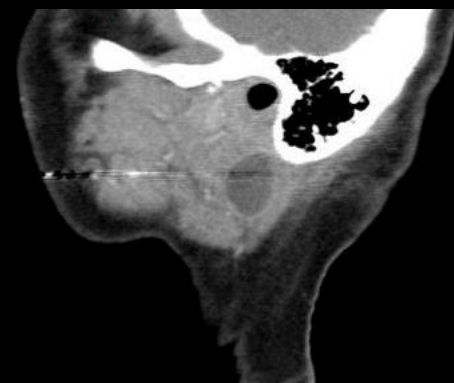
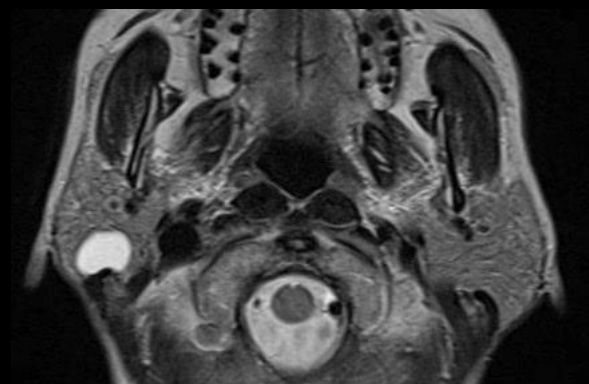
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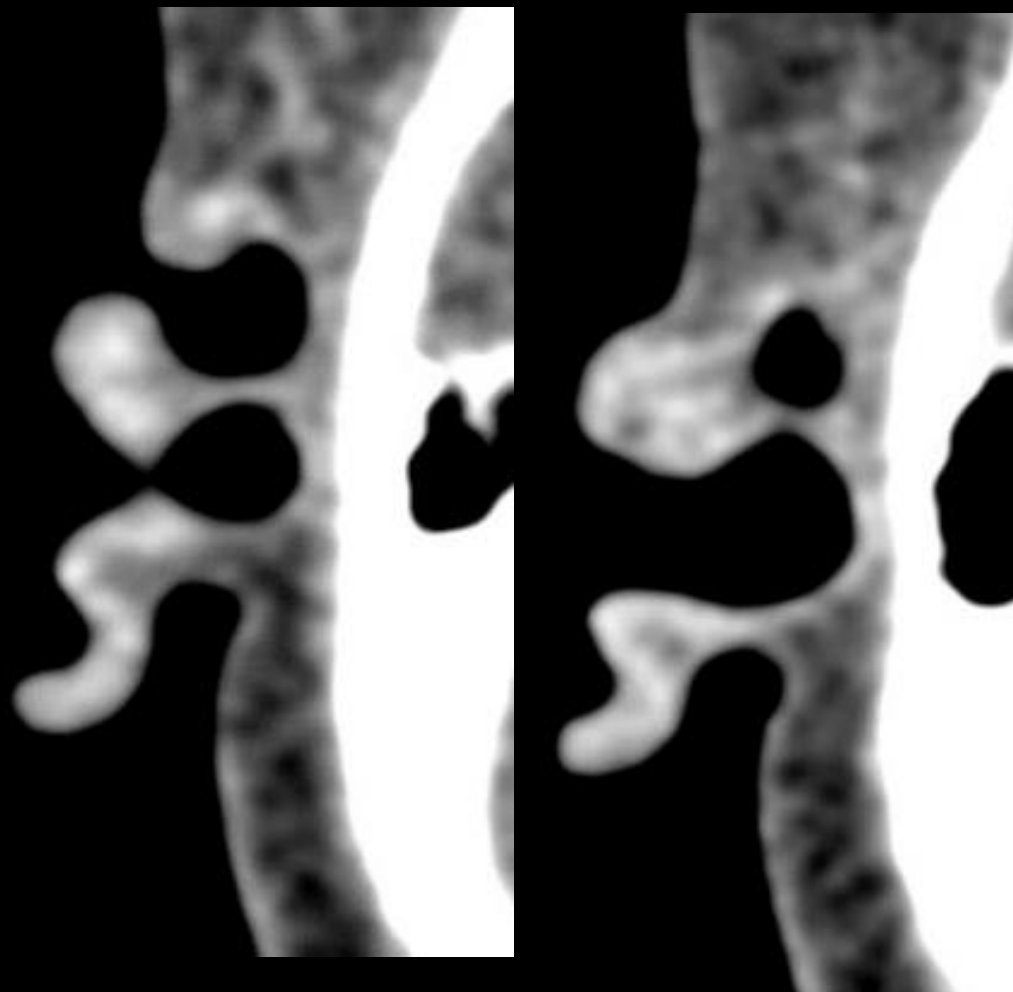


First Branchial Cleft Cyst

- Type I and Type II, based on presumed pathogenesis with limited applicability from an imaging perspective
- Cystic mass superficial/within/deep to the parotid salivary gland

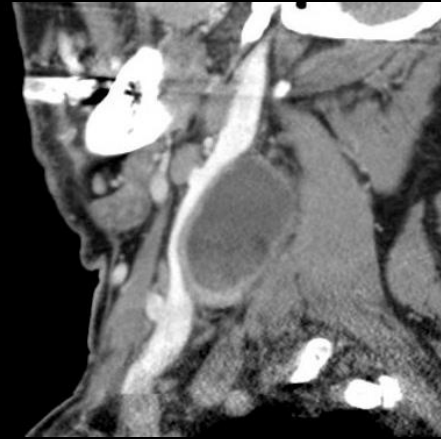






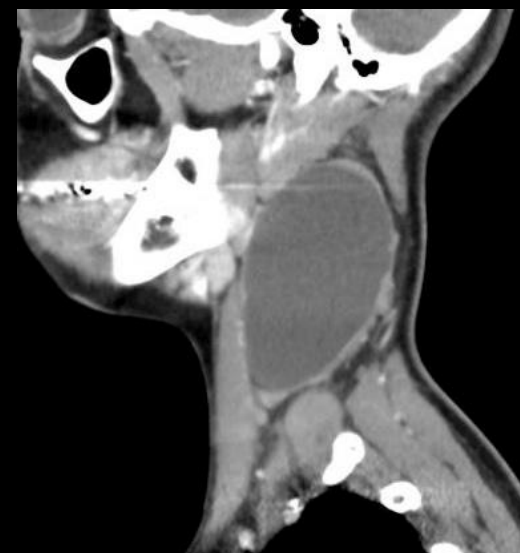
Third and Fourth Branchial Cleft Cyst

- May appear similar to second branchial cleft anomalies externally with a cutaneous opening in the supraclavicular area.
- Internally: enter the pharynx through the pyriform sinus below the hyoid bone
- Third and fourth branchial cleft anomalies are distinguished anatomically by their relationship to the superior laryngeal nerve with third pharyngeal cleft anomalies above and fourth pharyngeal cleft anomalies below.



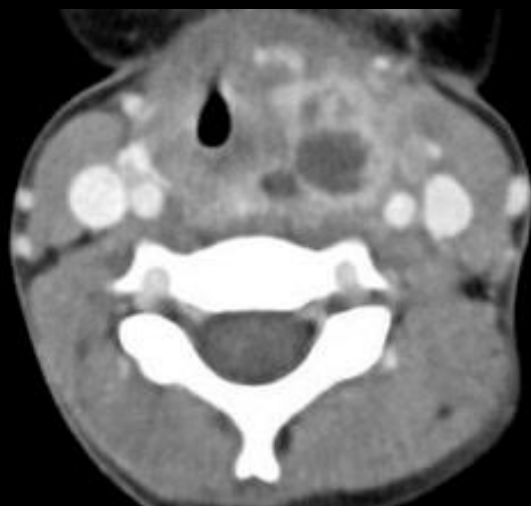
Third Branchial Cleft Cyst

- Third branchial cleft sinus arises from the rostral end of the pyriform fossa.
- Third branchial cleft fistulae/sinus tracts typically present earlier than third branchial cleft cysts.
- Most third branchial cleft cysts present in the posterior cervical space, posterior to the sternocleidomastoid muscle as a painless, fluctuant mass that may enlarge and become tender if infected. An infected third branchial cleft cyst should be considered if a patient presents with an abscess in the posterior triangle of the neck.



Fourth Branchial Cleft Cyst

- Fourth branchial cleft fistula/sinus tract arises from the pyriform sinus apex and descends inferiorly to the mediastinum in the path of the tracheoesophageal groove
- They are commonly left-sided for reasons that are yet to be established and most often present as a sinus tract coursing from the apex of the pyriform fossa to the upper aspect of the left thyroid lobe
- Recurrent abscess in the low anterior neck and/or recurrent suppurative thyroiditis



Lymphatic malformation (cystic hygroma/lymphangioma)

■ Imaging Findings:

- Ill-defined, multicystic mass most often occurring in posterior cervical triangle
- T1 hypointense, T2 hyperintense, possible faint rim enhancement

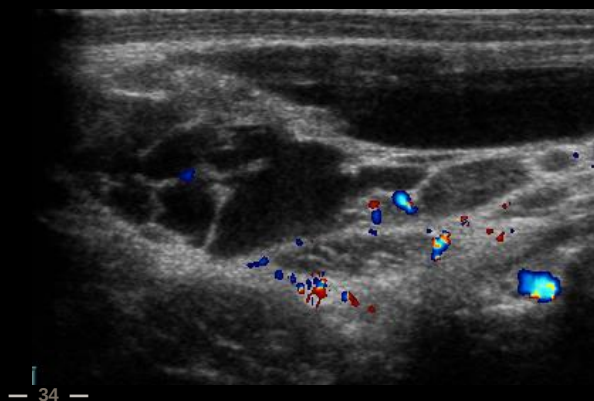
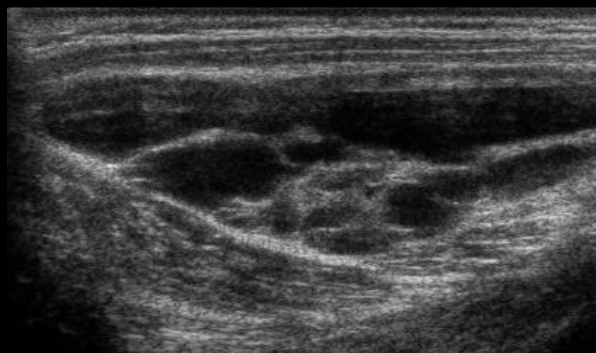
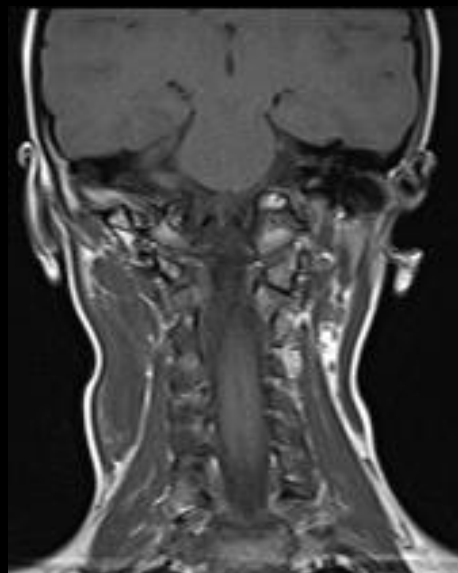
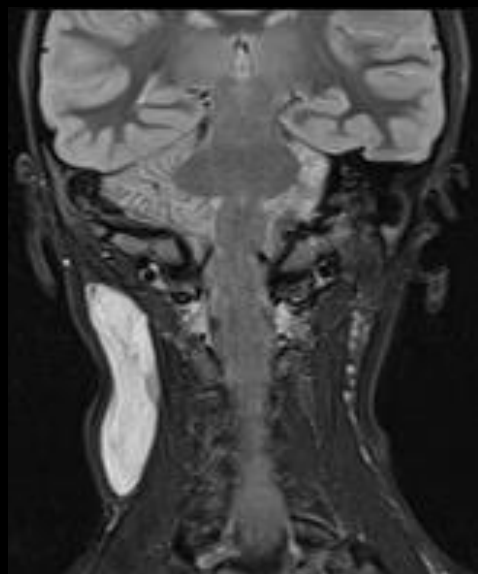
■ Clinical Significance:

- Slow flow vascular malformations per ISSVA
- Congenital lymphangioma
- Can be complicated by airway obstruction or infection

Teaching Point

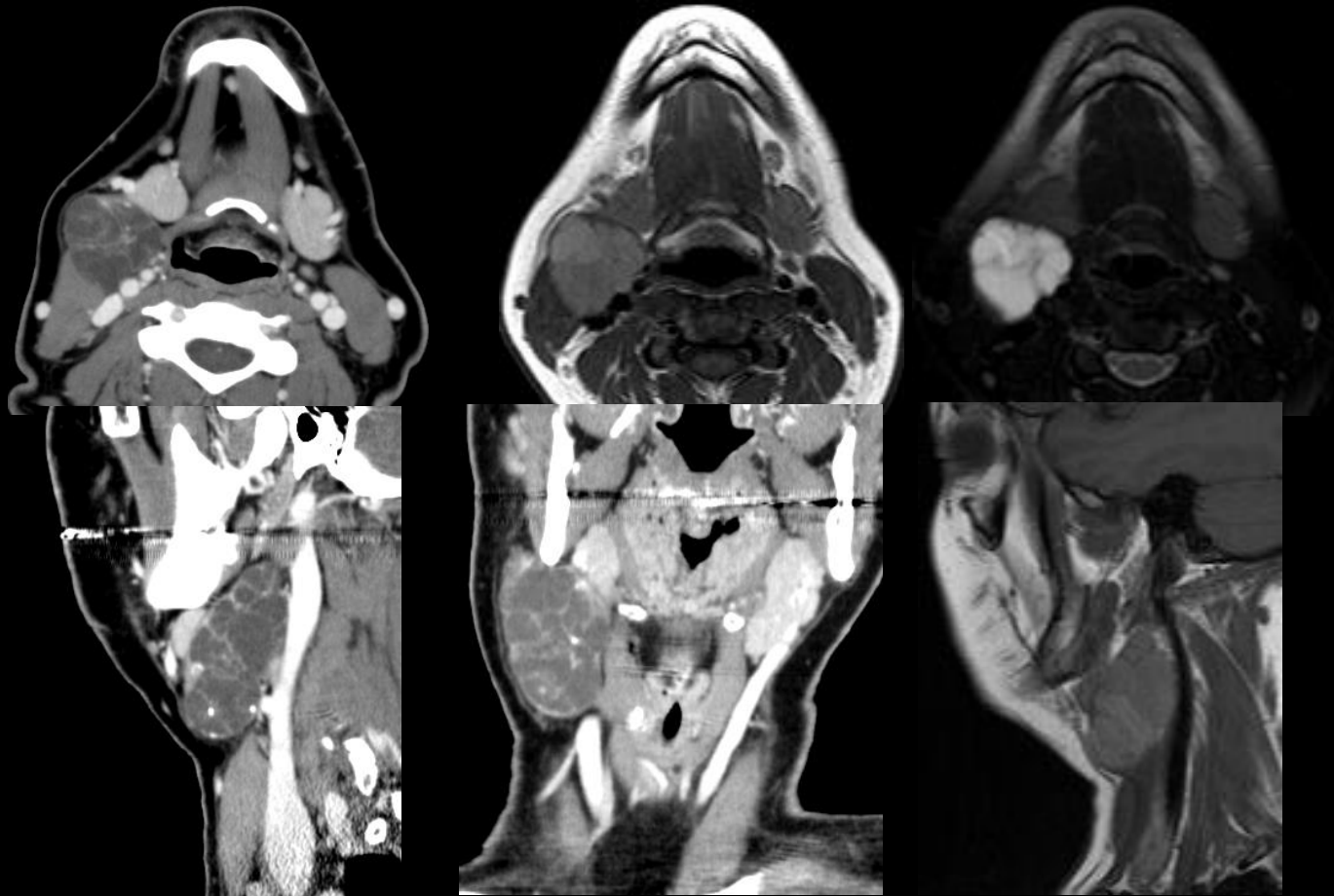
- Consider lymphatic malformation in the patient with a multicystic neck mass, especially in the posterior triangle. This is a slow flow vascular malformation per ISSVA.

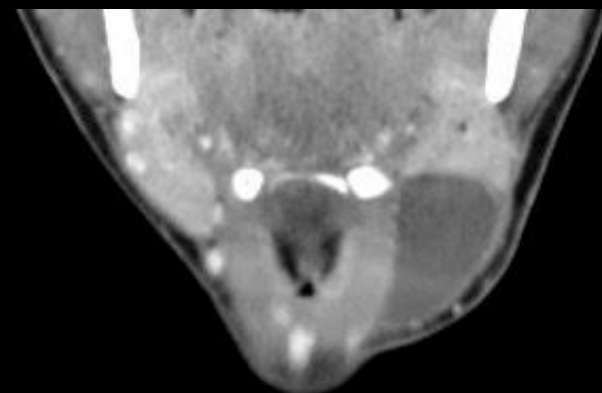
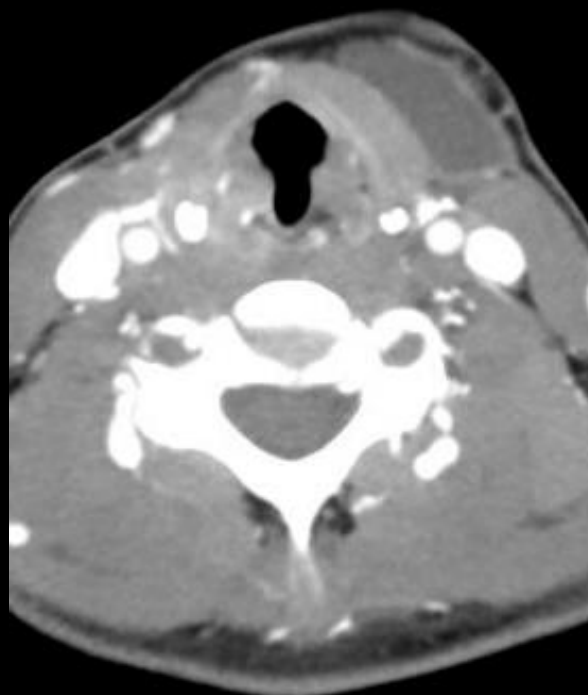
15 y/o F with posterior neck mass



Lymphatic Malformation

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Venous developmental anomaly

■ Imaging Findings:

- Calcified phleboliths often present
- Typically septated, multilobulated masses
- T1 hypo/isointense, T2 hyperintense, and flow voids corresponding to thrombi
- Slow, faint enhancement

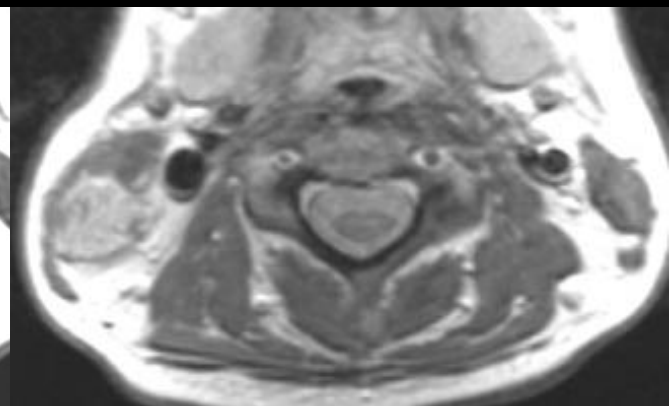
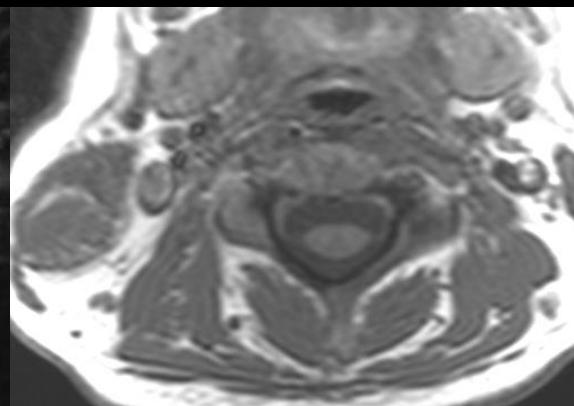
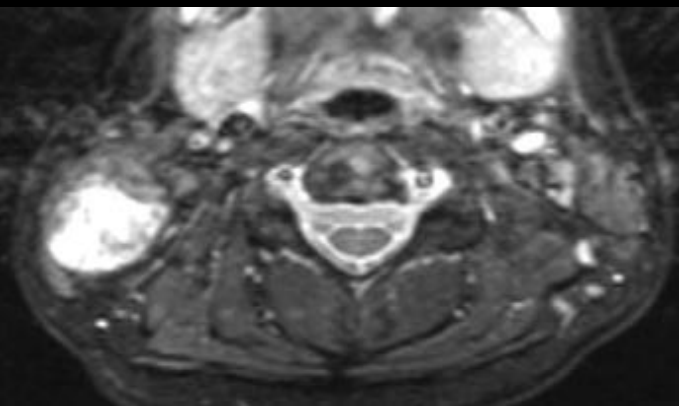
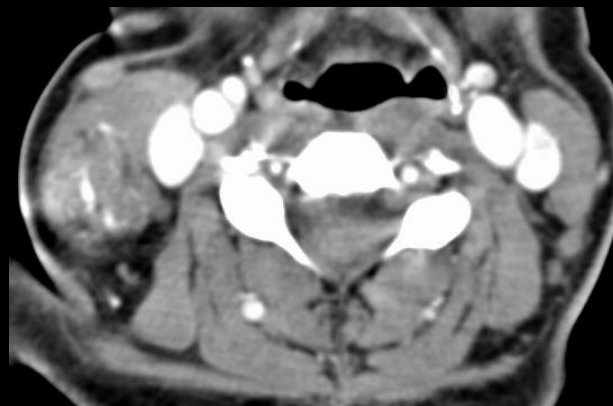
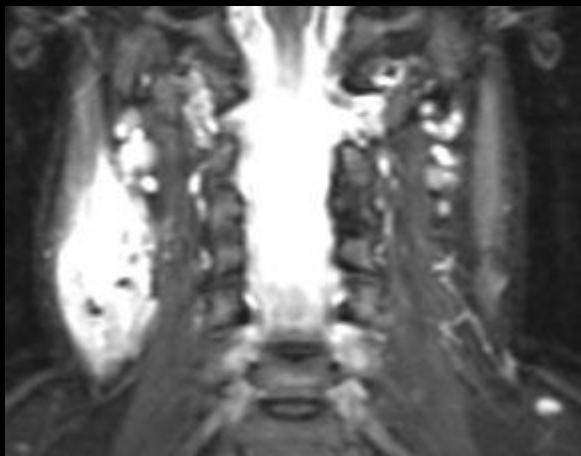
■ Clinical Significance:

- Most common congenital vascular malformation (prevalence 1%)
- Composed of ectatic venous channels
- Thought to be sporadic in most cases, though familial inheritance patterns exist

Teaching Point

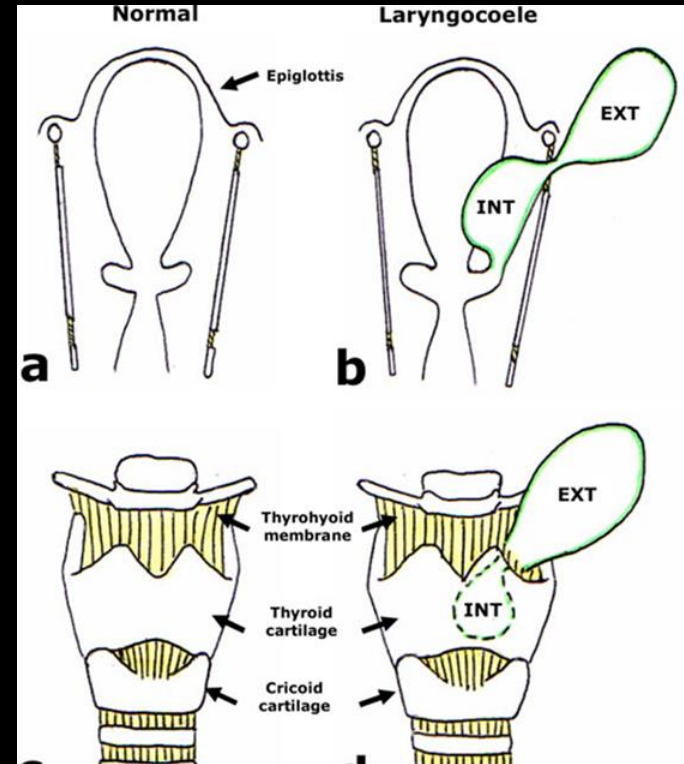
- Consider venous malformation in a septated, multilobulated mass with weak, delayed enhancement. These are slow flow vascular anomalies per ISSVA.

Venous developmental anomaly



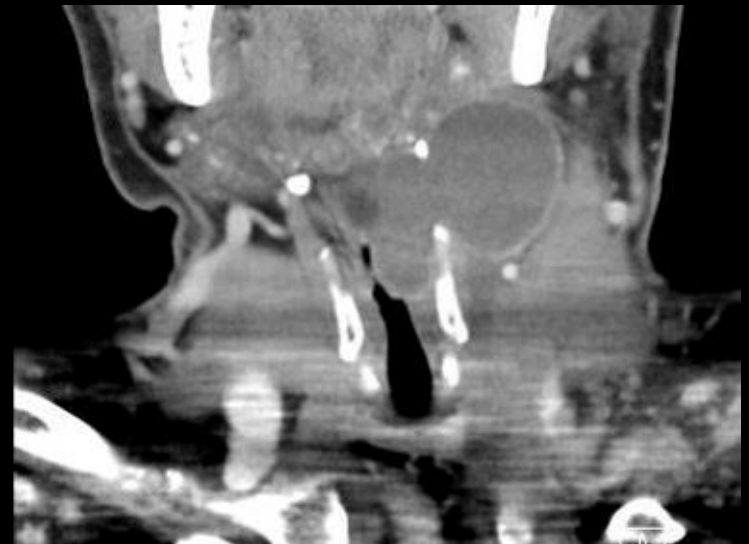
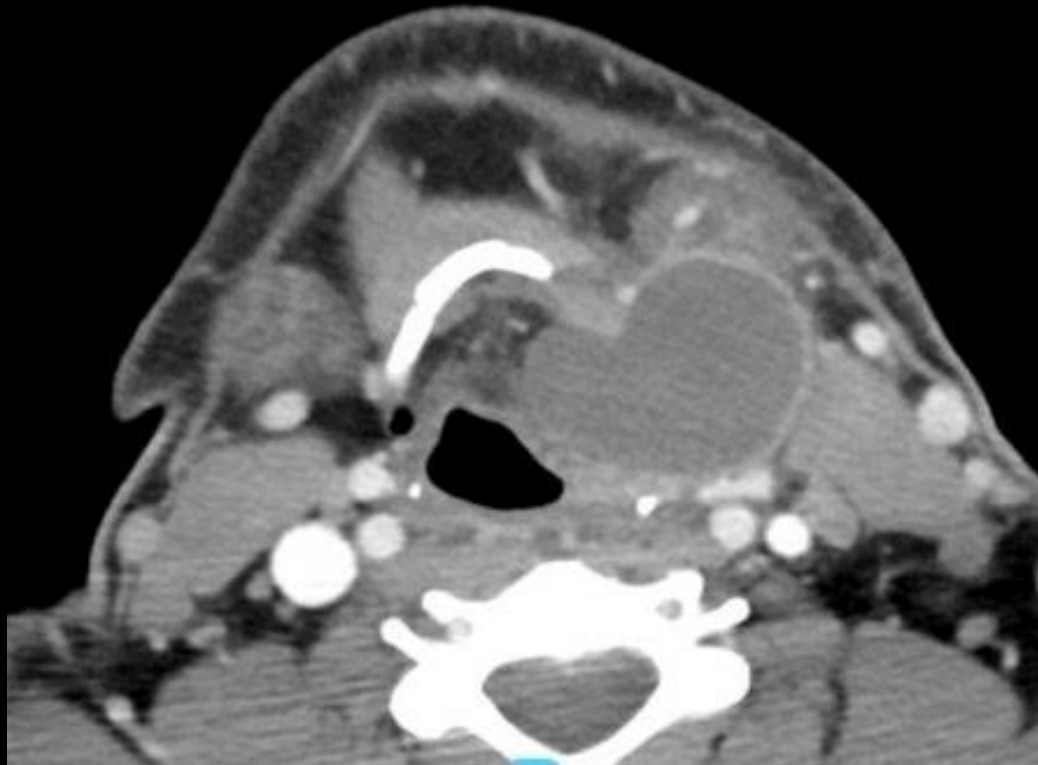
Laryngocele

- Lateral saccular cyst, laryngeal mucocele
- Classification:
 - Internal (simple): Paraglottic space, confined to the supraglottis, lateral to the false VC.
 - Mixed (external): Herniates through thyrohyoid membrane into anterior neck soft tissue
 - Pyolaryngocele: Contains pus
 - Secondary laryngocele: Caused by an obstructing tumor (15%)



Laryngocele

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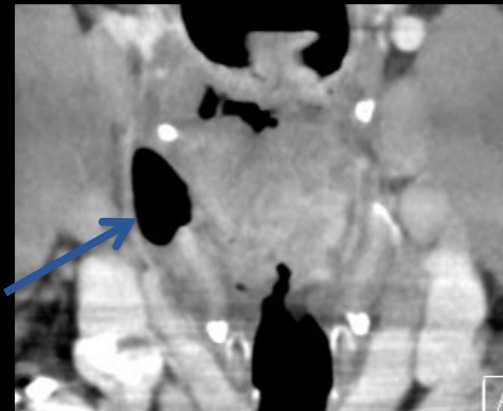
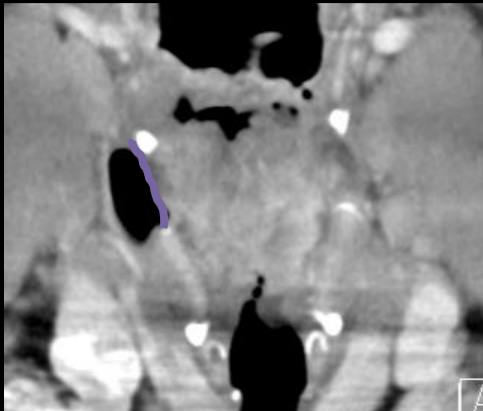
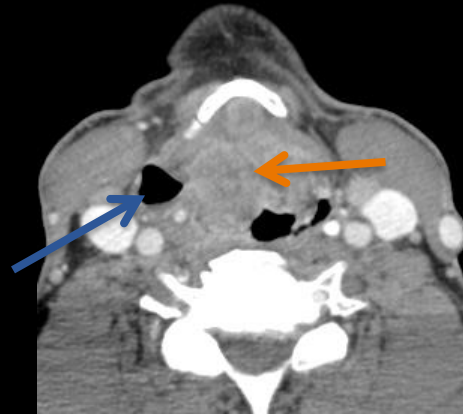
Laryngocele

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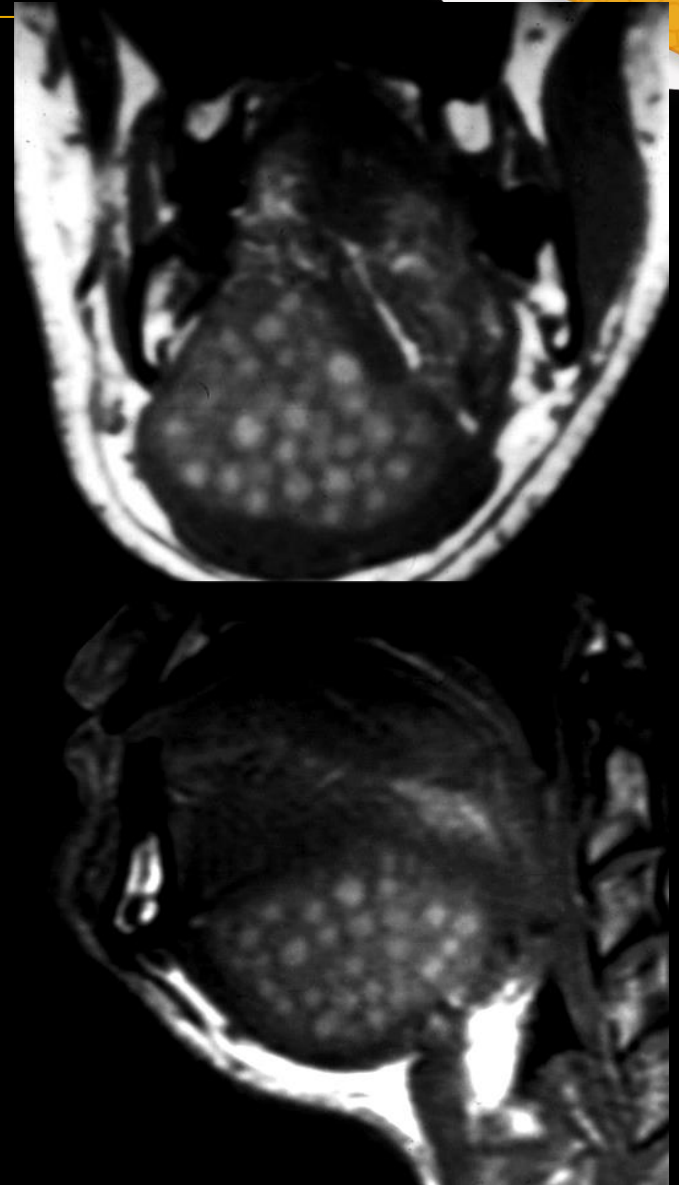
Secondary Laryngocele

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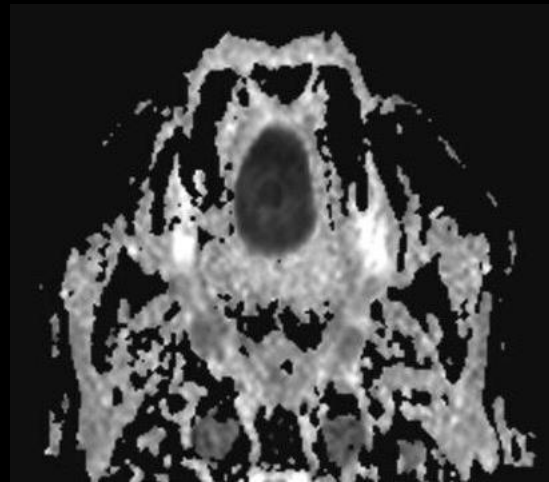
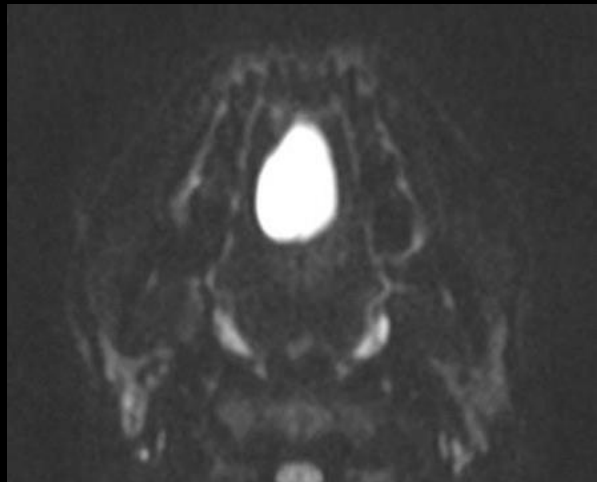
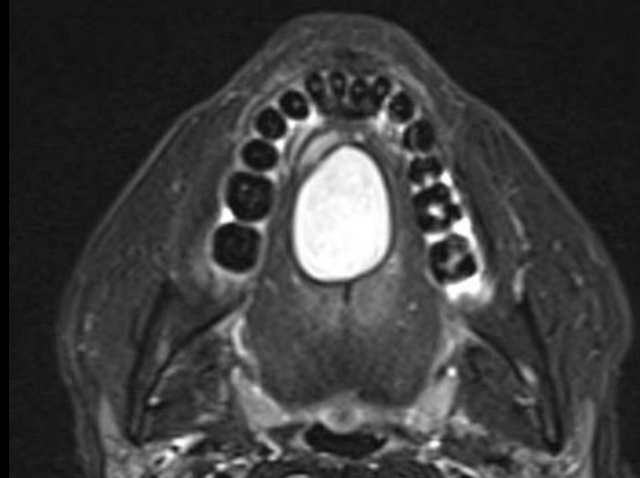
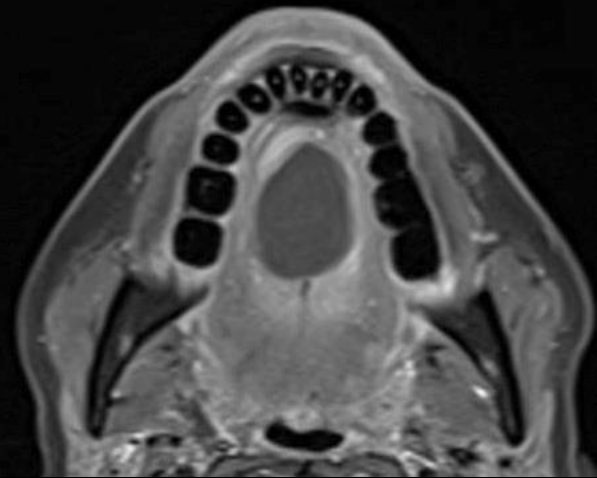
Dermoid Cyst

- Cysts on the floor of the mouth are classified into three types: epidermoid cysts, dermoid cysts, and teratomatous cysts.
- Each type is lined by an epithelial layer, but each type exhibits different histologic patterns.
- Dermoid cysts contain skin appendages and cystic teratomas present tissue originating from all the germinal layers.



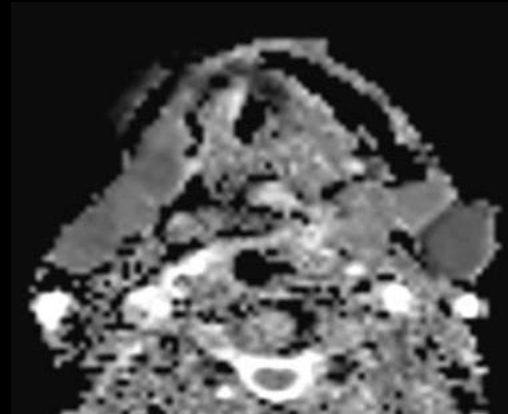
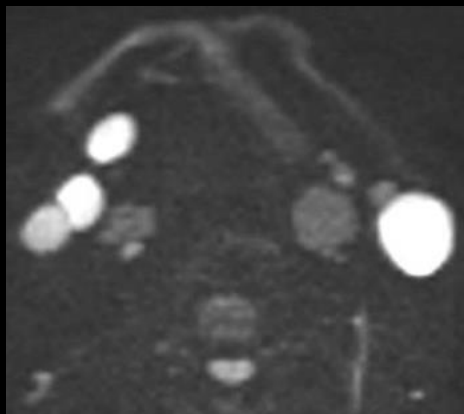
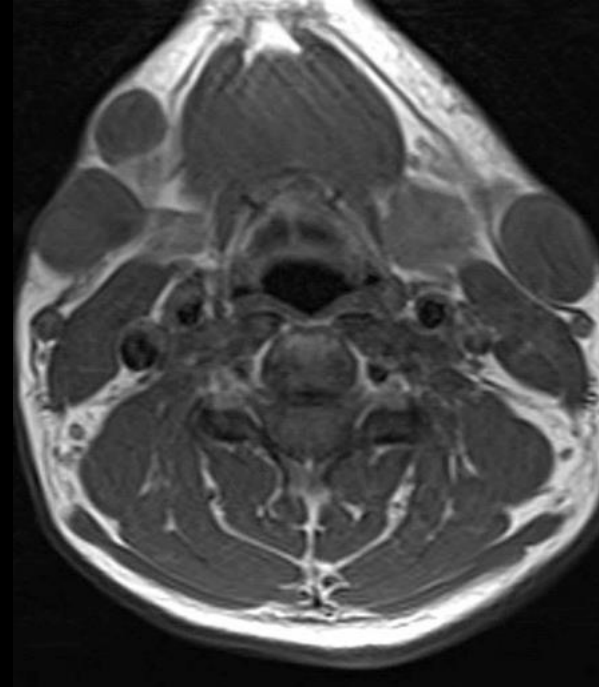
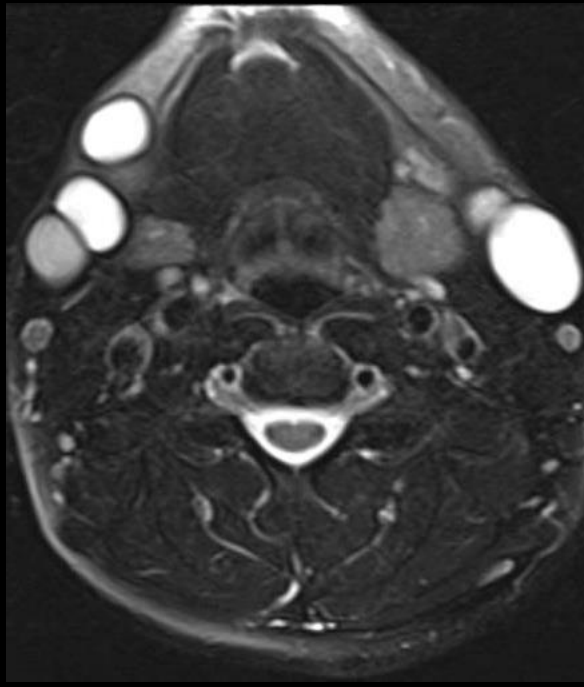
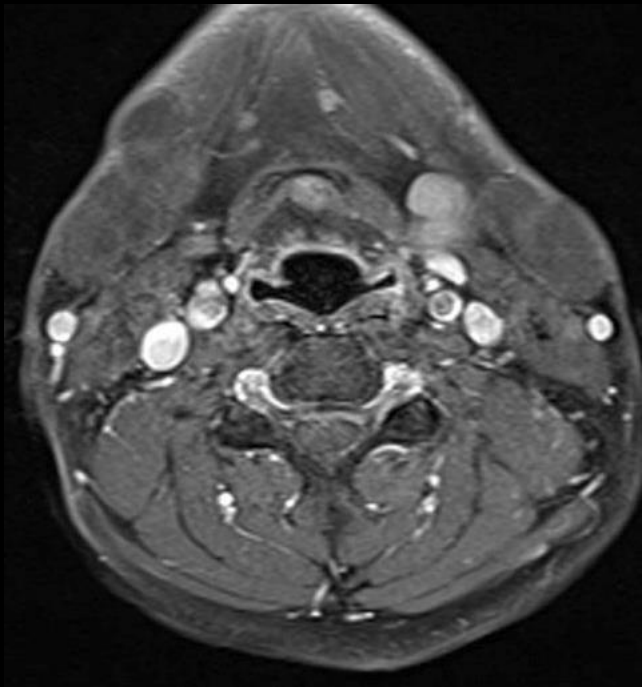
Tongue epidermoid

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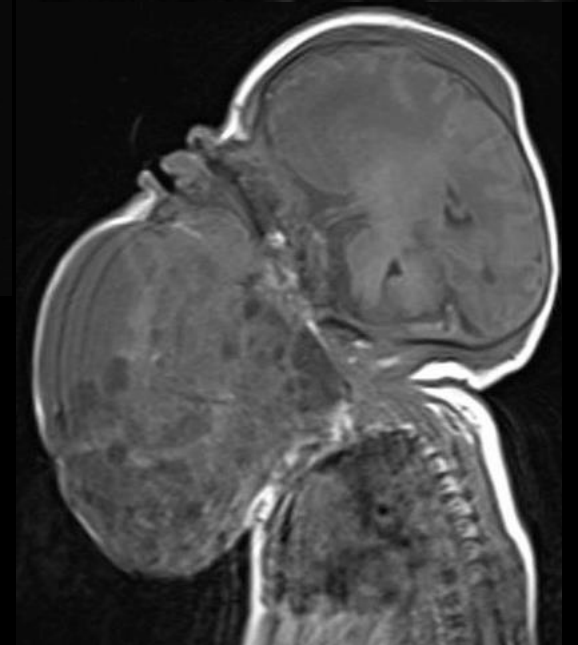
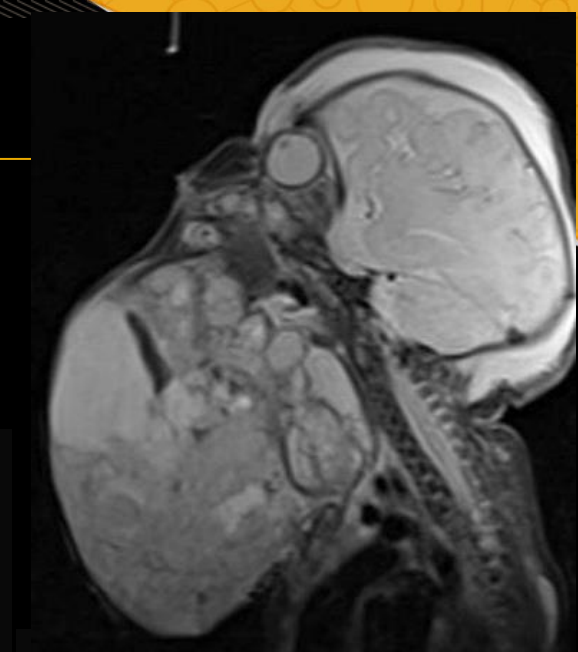
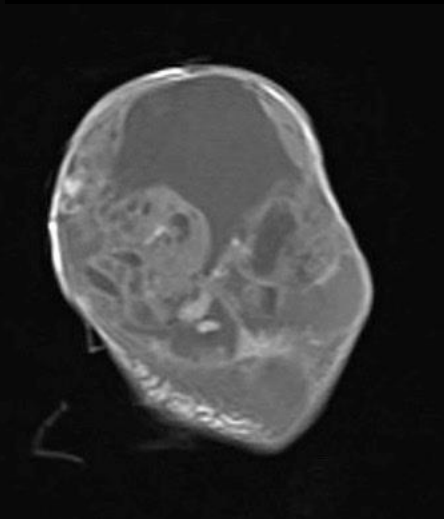
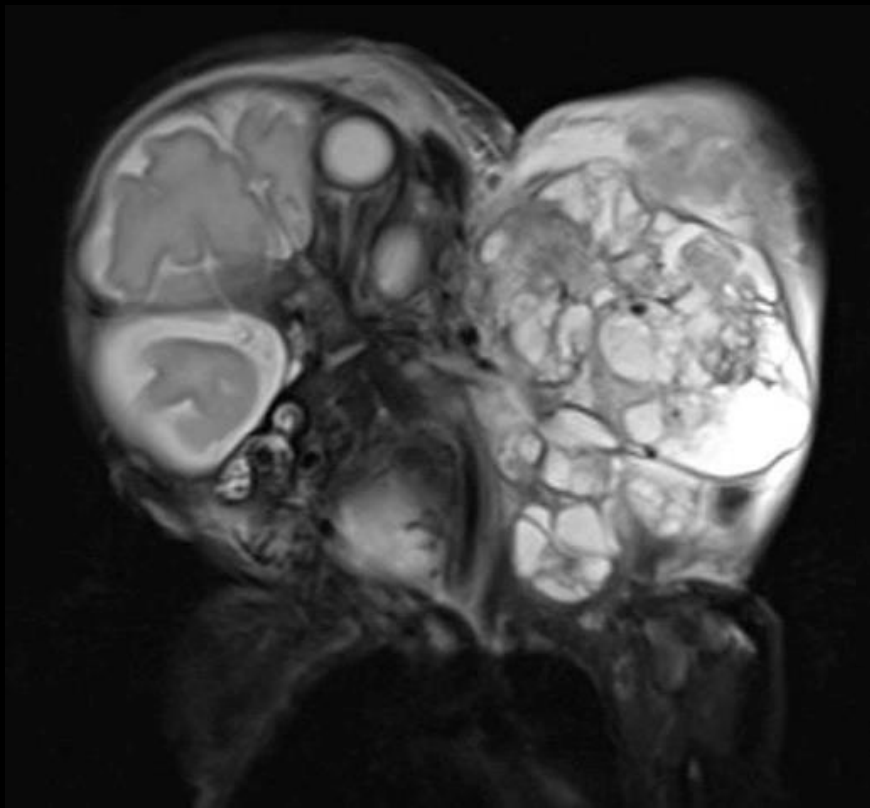


Epidermoid inclusion cyst

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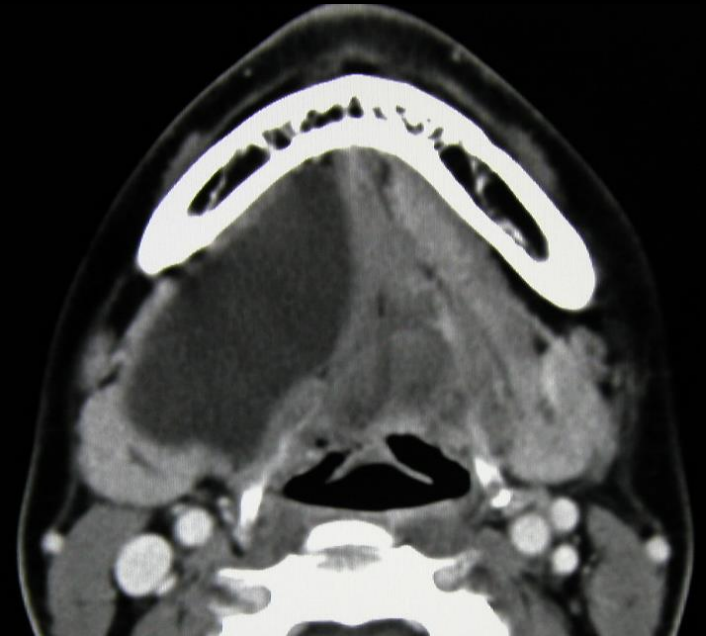
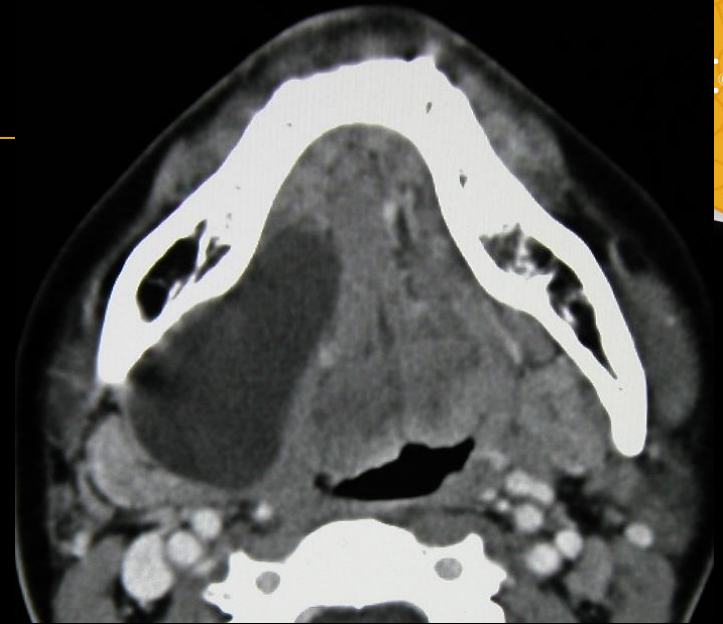


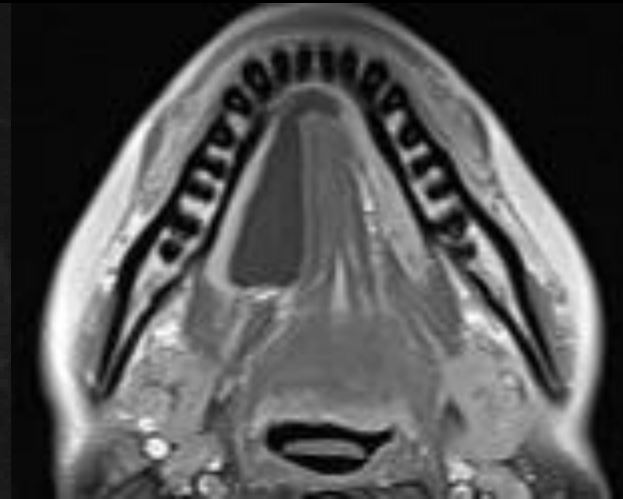
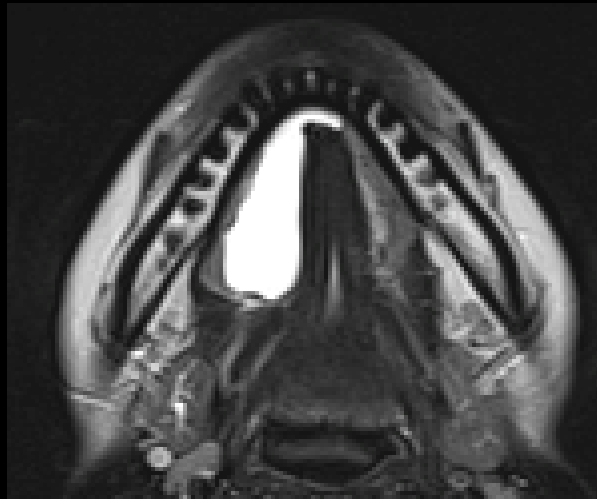
Teratoma

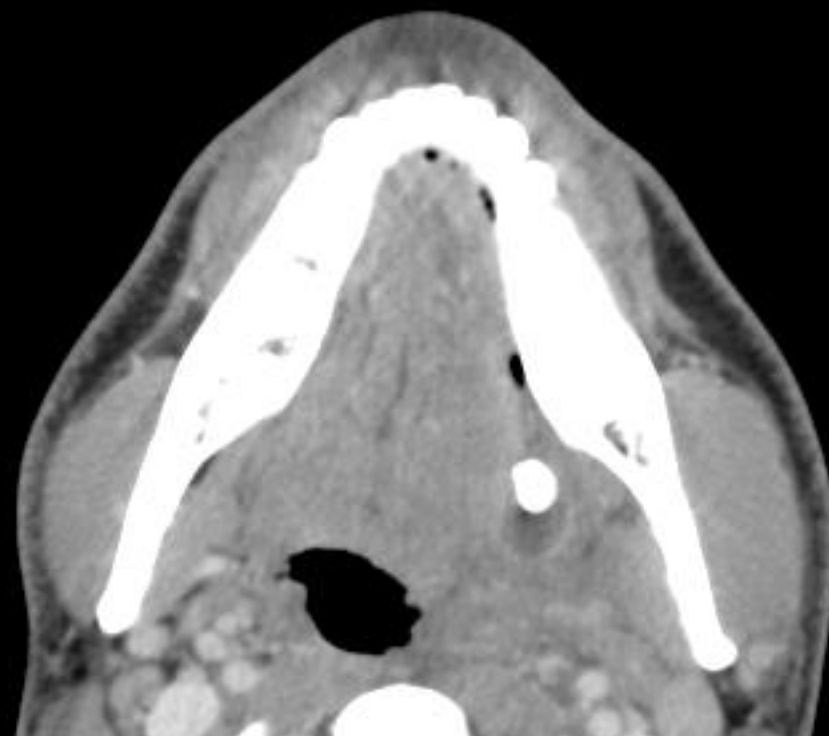


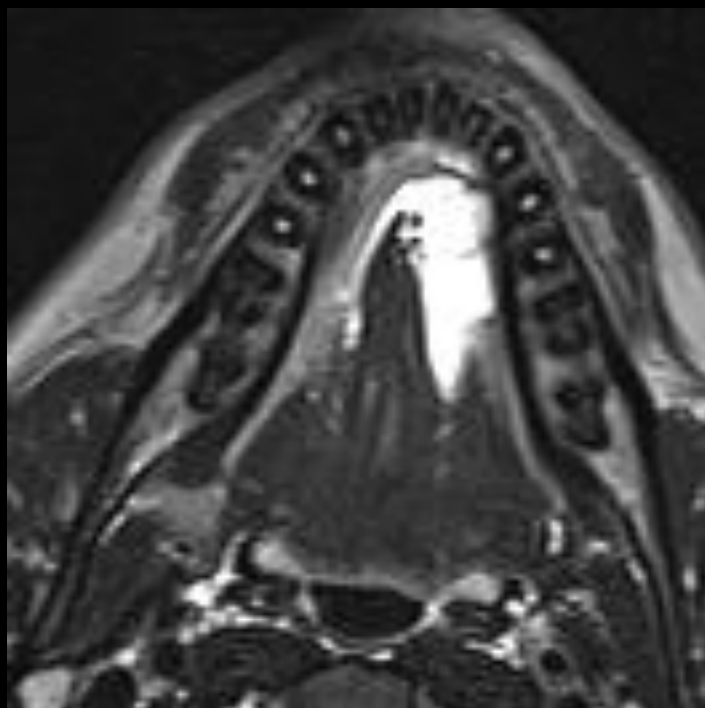
Ranulas

- Mucoceles/mucous retention cysts of the floor of the mouth
- Secondary to trauma or obstruction of sublingual gland/ducts
- Thin-walled; unilocular; non-enhancing
- Two varieties:
 - Simple ranula-in SLS (true)
 - Plunging ranula-in SMS (pseudocyst)

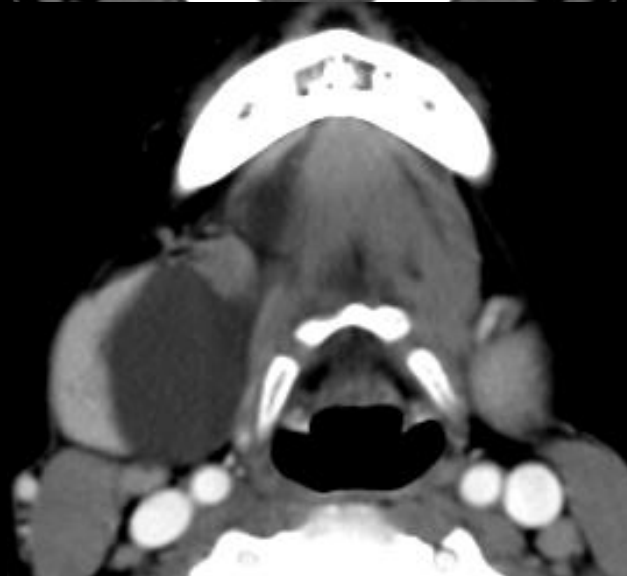
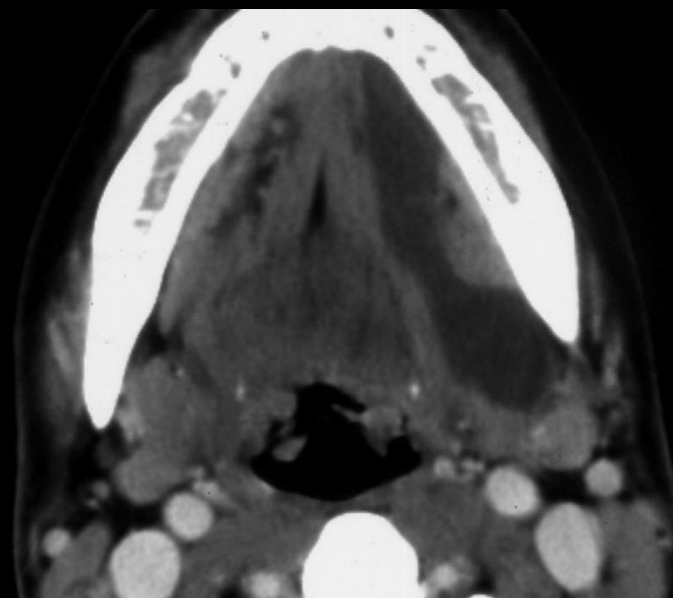
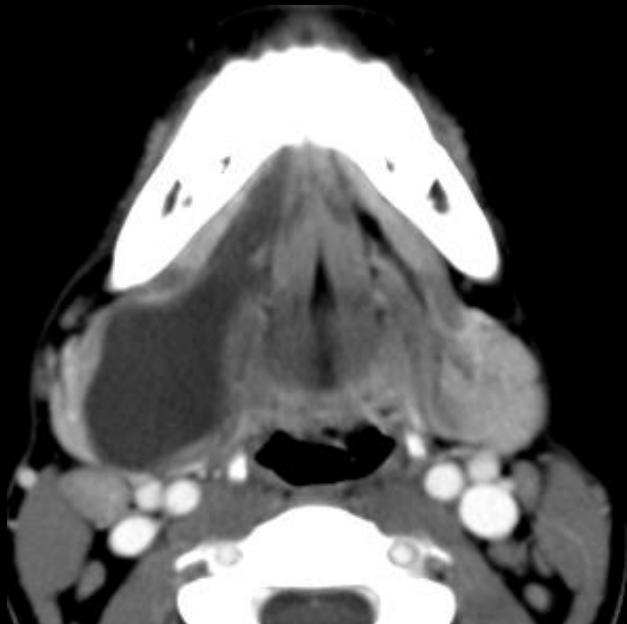




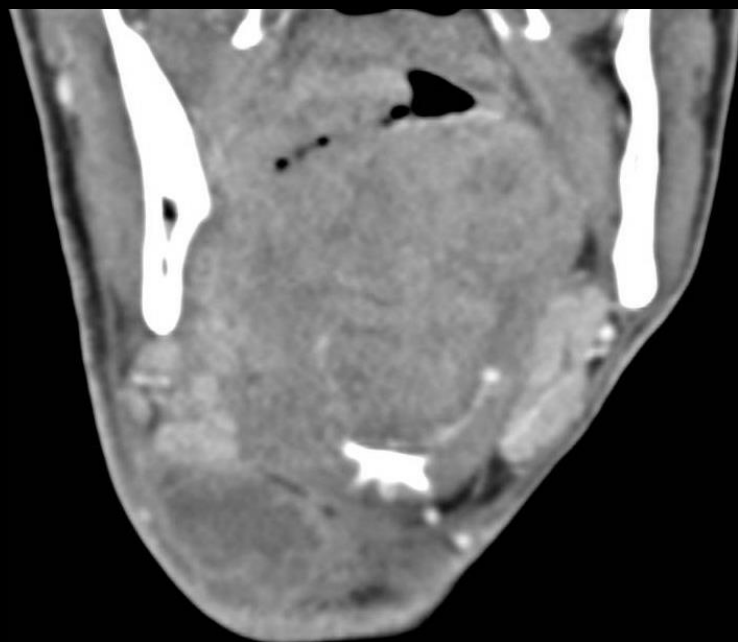


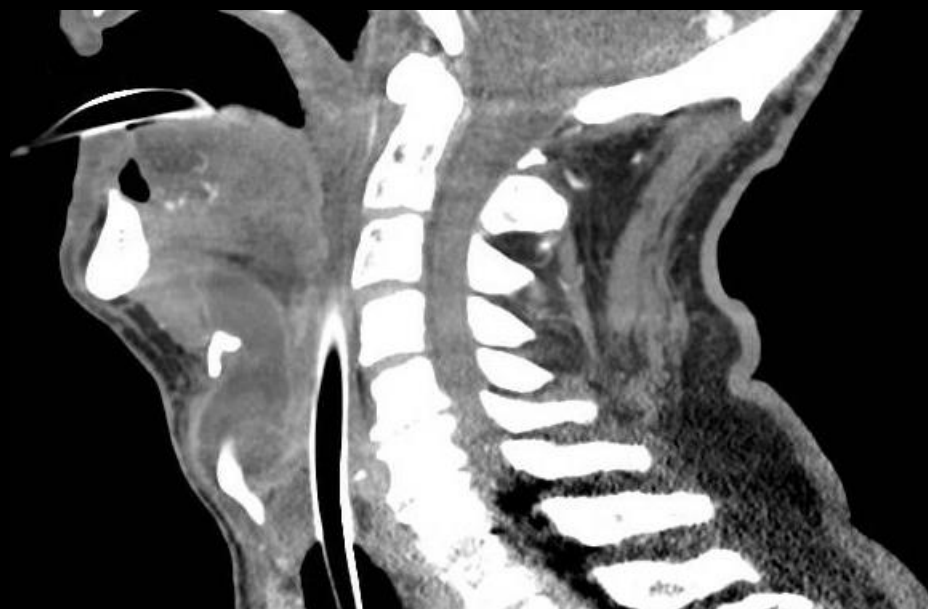


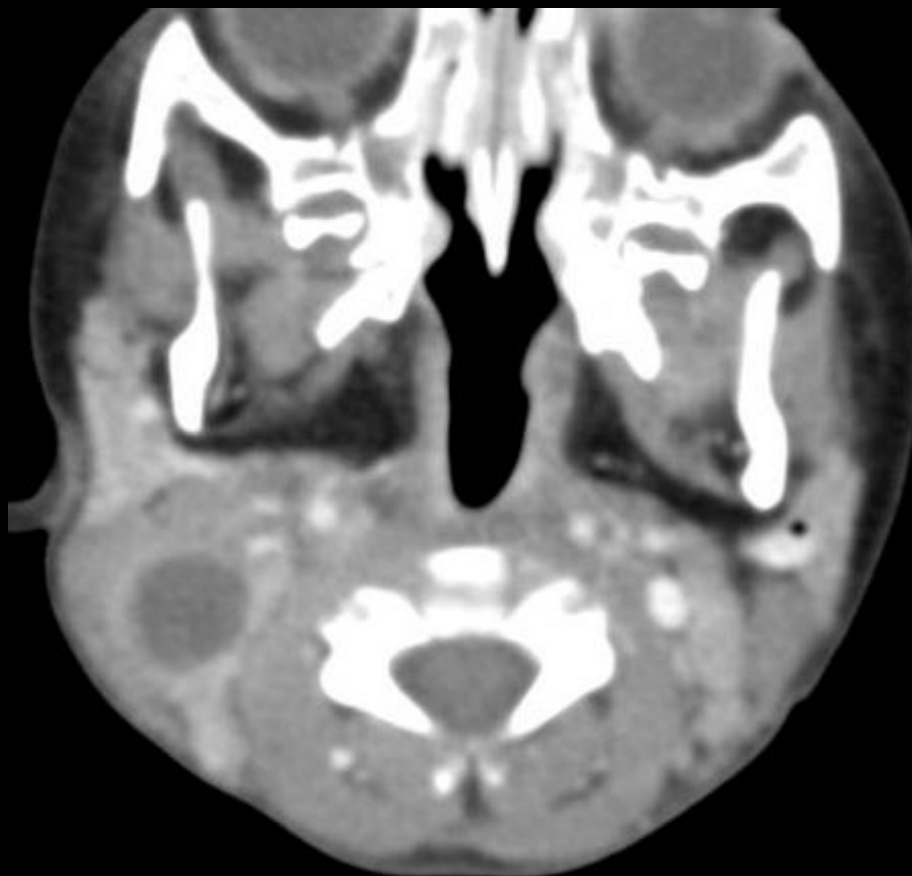
Plunging Ranulas



Abscess

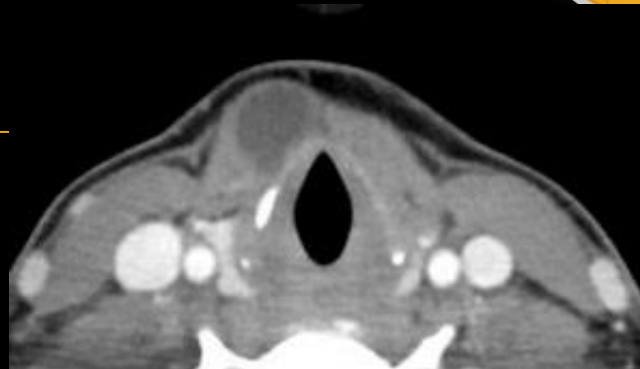
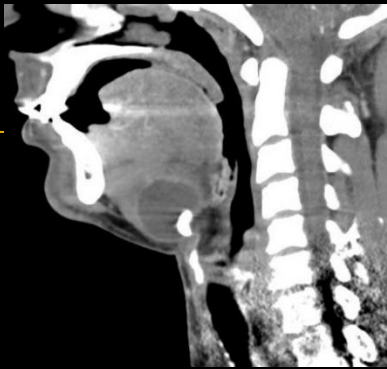






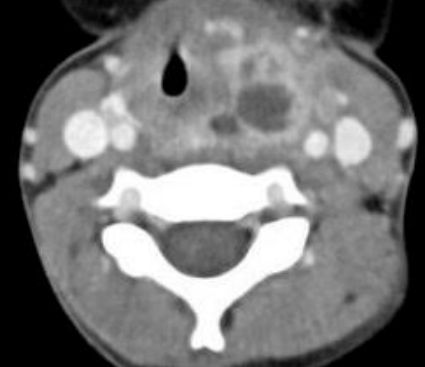
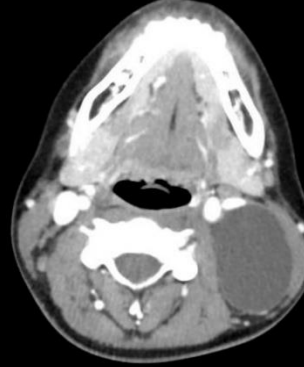
Summary

- TGDC

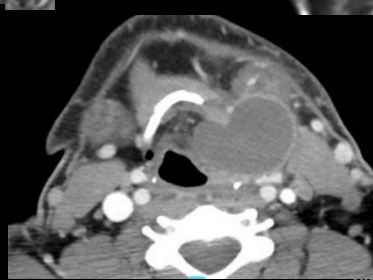
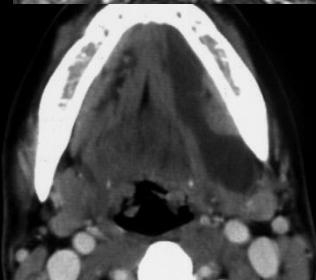
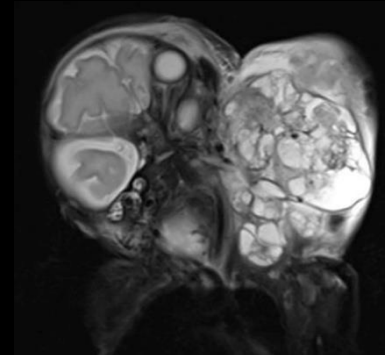
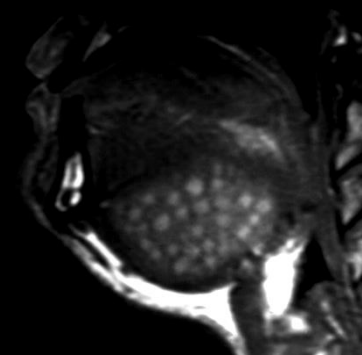
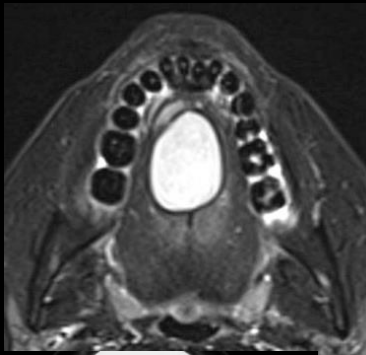


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- BCC



- Others:





That's all Folks!