



سُورَةُ الْأَنْبِيَاءِ

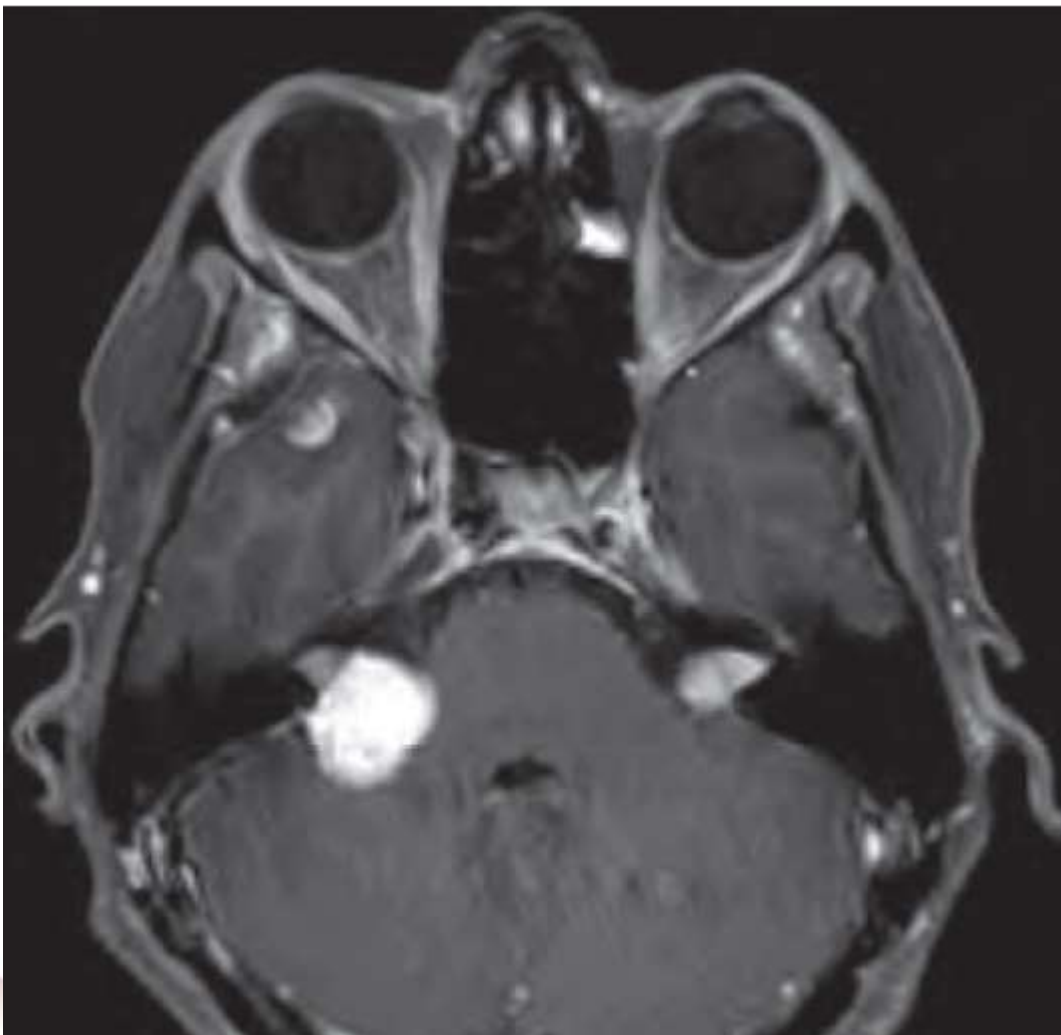
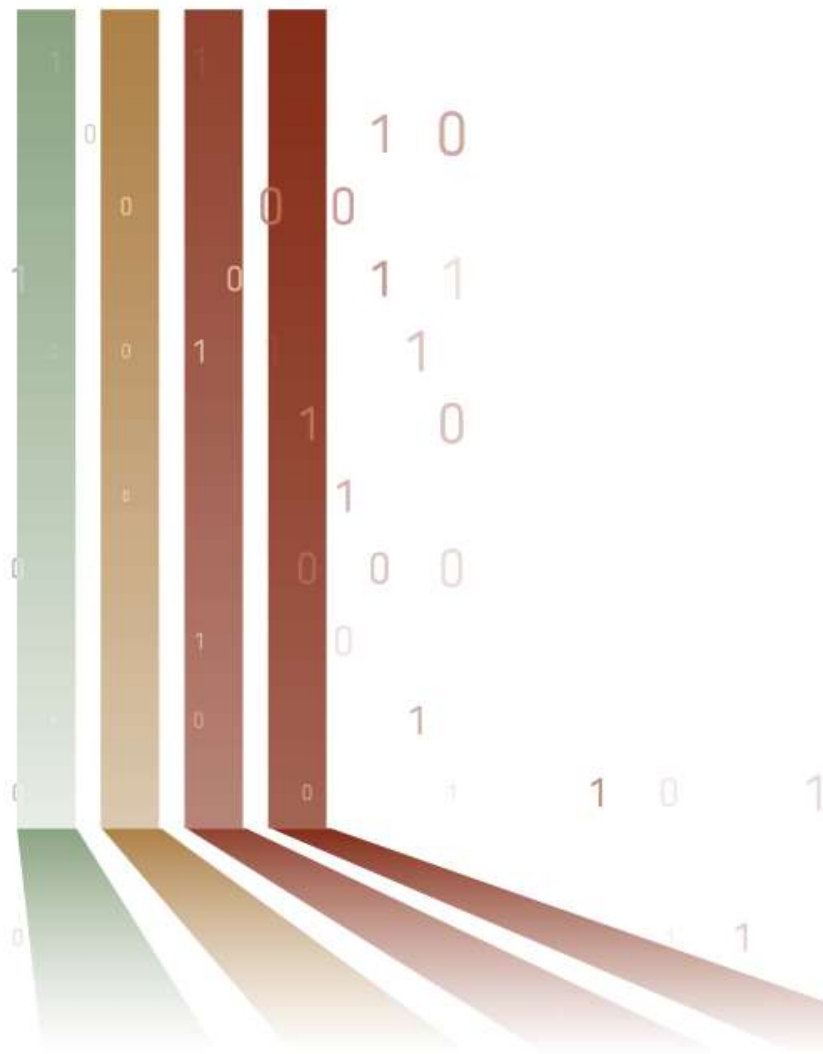
بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

فَفَهَّمْنَهَا سُلَيْمَنُ وَكُلًّا ؕ آتَيْنَا حُكْمًا وَعِلْمًا وَسَخَّرْنَا
مَعَ دَاوُدَ الْجِبَالَ يُسَبِّحْنَ وَالطَّيْرَ وَكُنَّا فَاعِلِينَ ﴿٧٩﴾

Head & Neck

Case (1)

History: A 23-years-old woman with balance problems



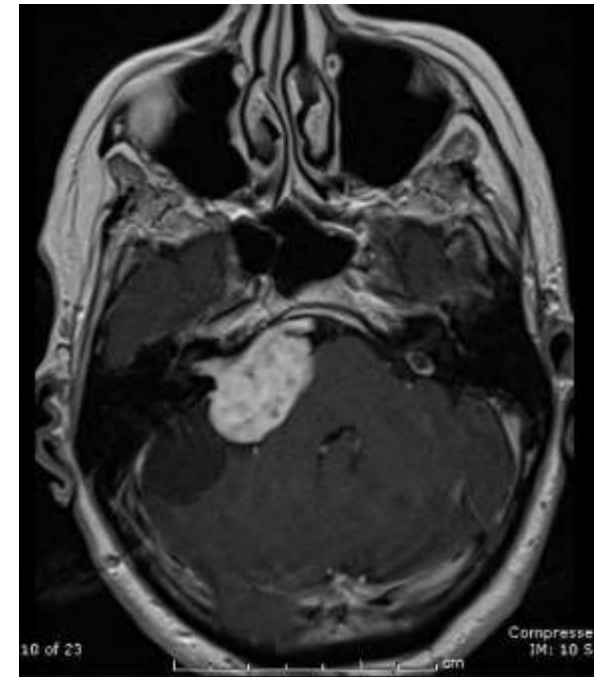
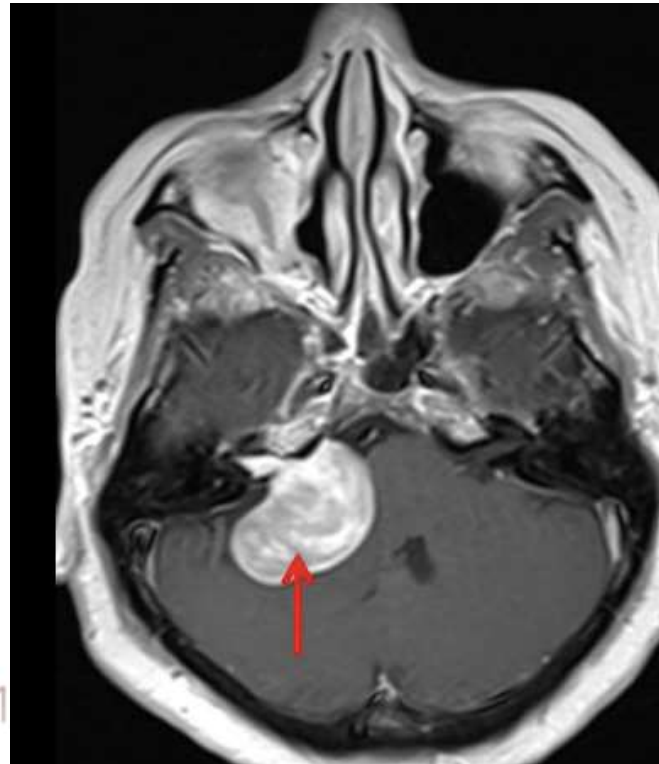
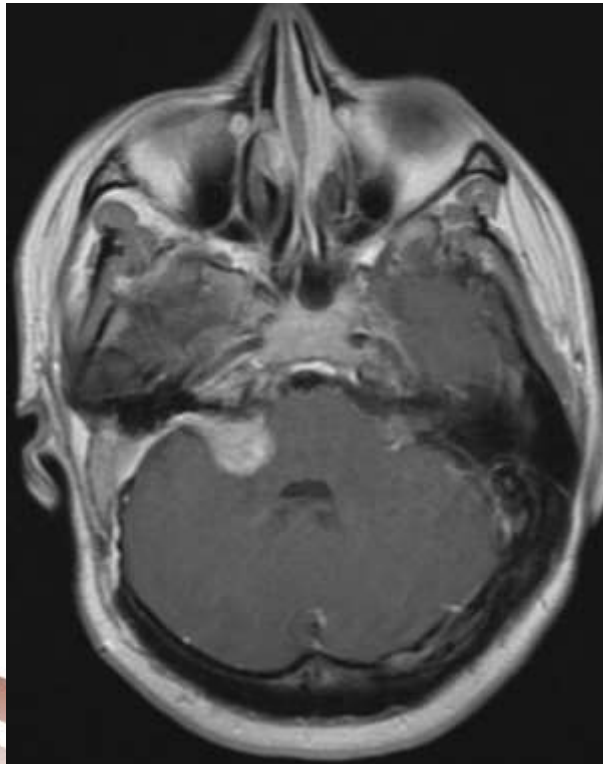
Bilateral vestibular schwannomas in NF2

In this case:

T1+C with fat saturation through the level of the orbits demonstrates enhancing lesions in both internal auditory canals, the lesion on the right is larger and has more extension into the cerebellopontine angle (CPA), with mass effect on the adjacent brain

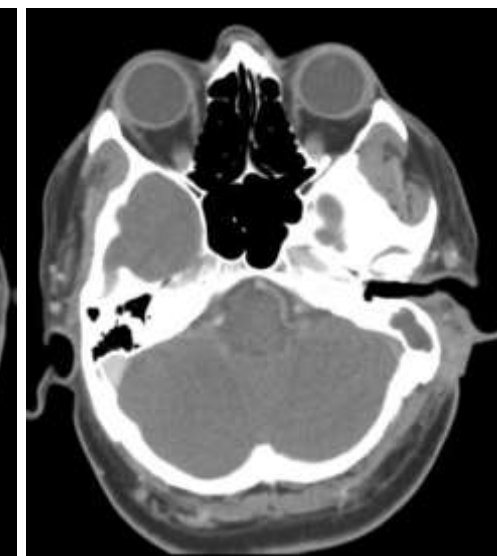
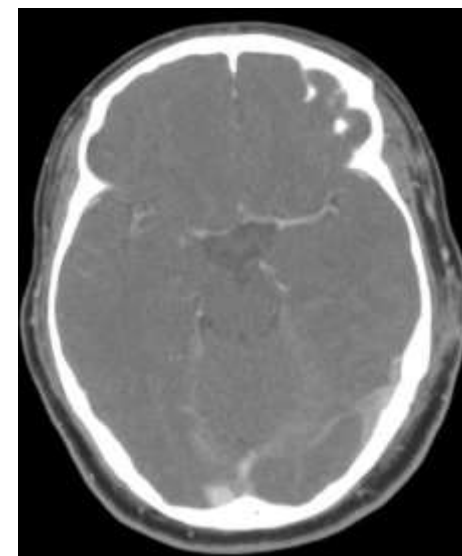
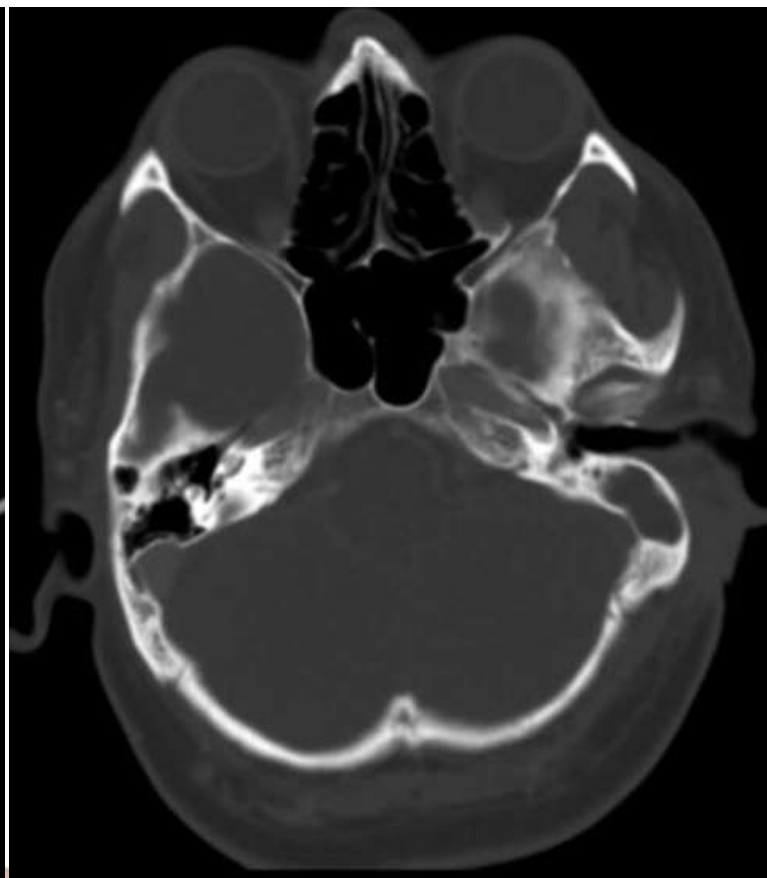
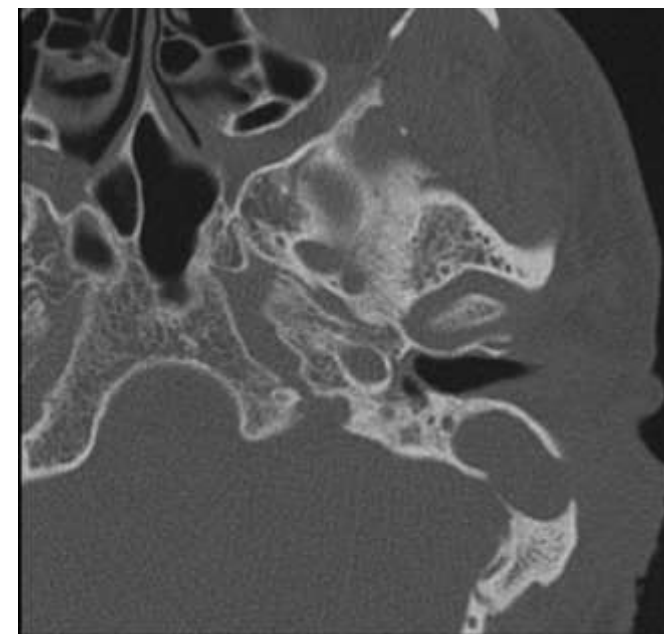
DD: CPA masses

- 1-Vestibular schwannoma
- 2-Meningioma
- 3-Epidermoid cyst
- 4-Arachnoid cyst



History: A 30-years-old man with failed IV antibiotic therapy for presumed infected cholesteatoma

Case (2)



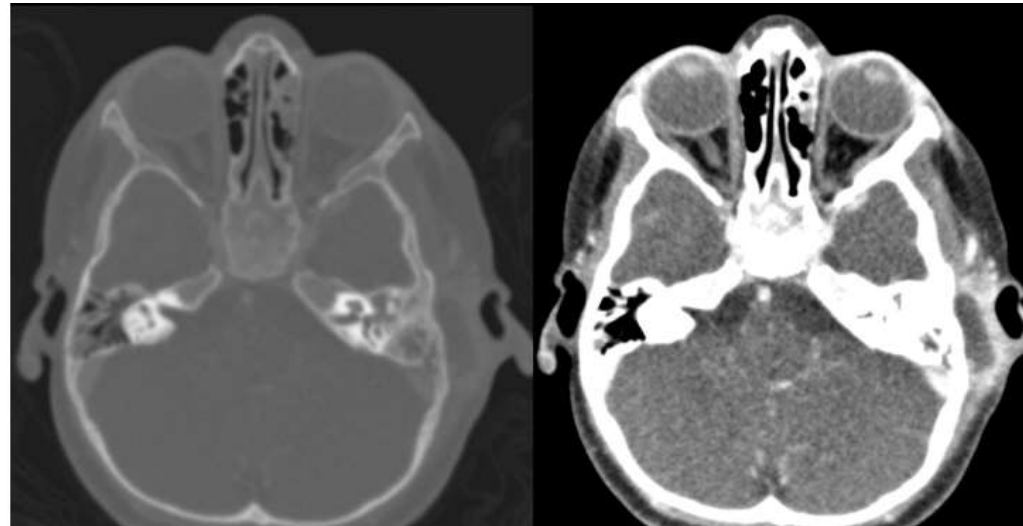
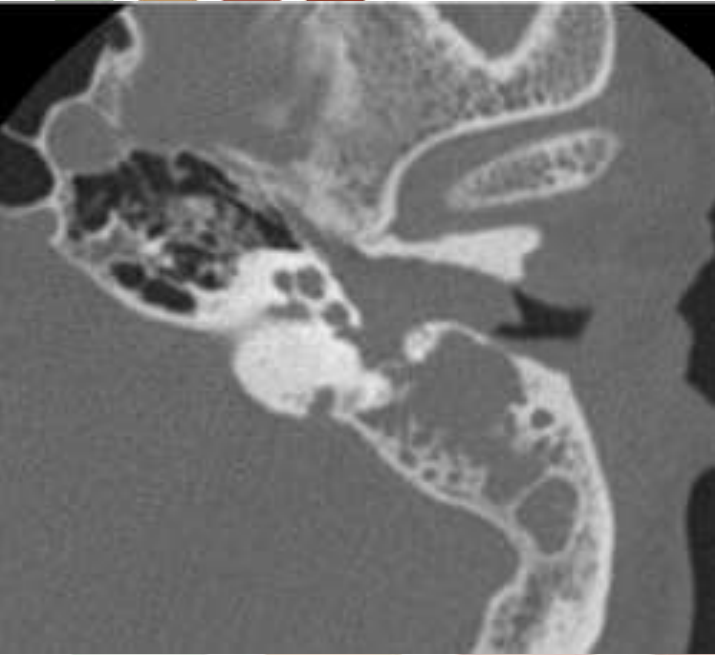
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Mastoid mass with associated transverse and sigmoid sinus thrombosis

In this case:

CT+C: Heterogeneous soft tissue mass within left posterior mastoid and petrous apex with cortical breach into left supratemporal masticator space, left sigmoid sinus and middle ear

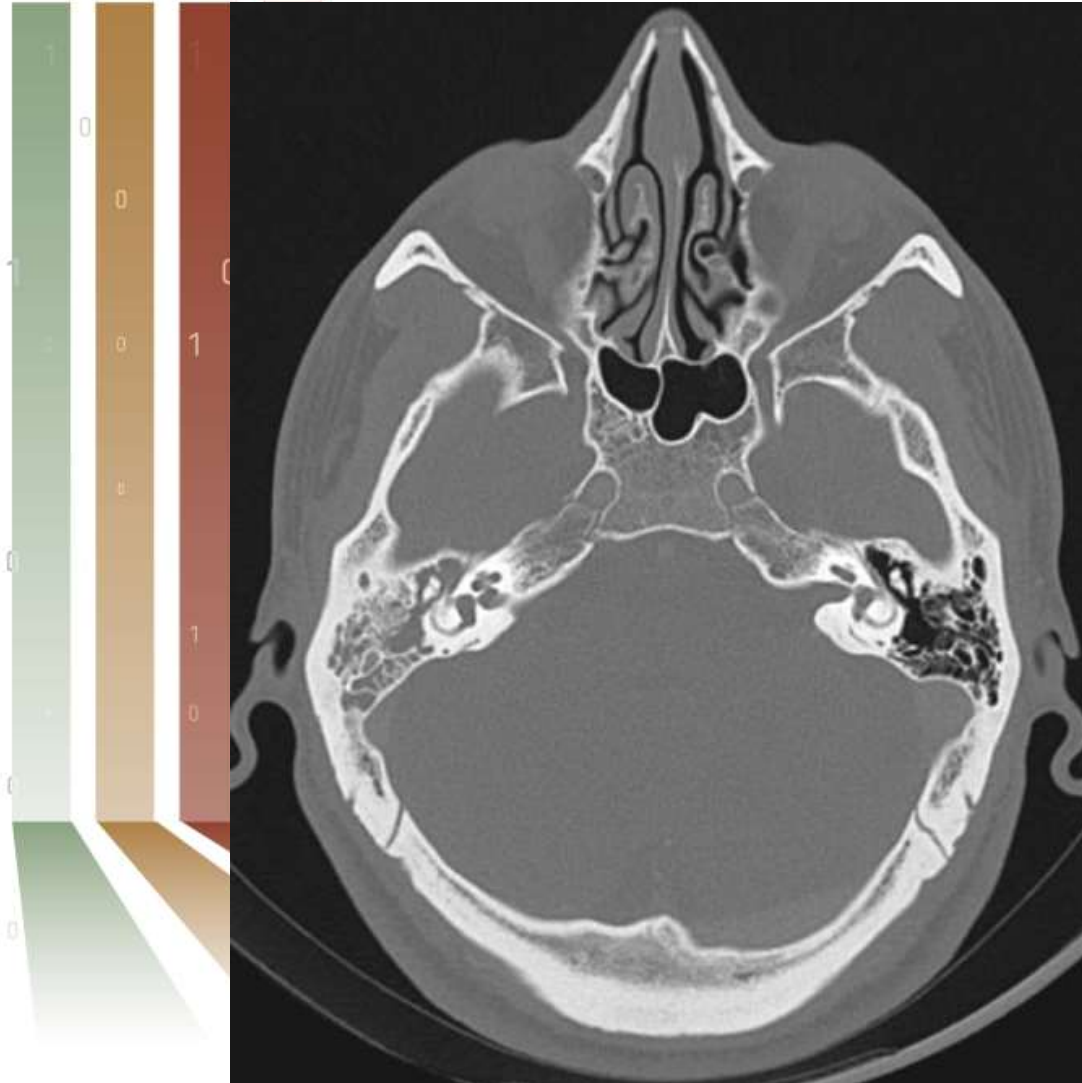
CTV: Filling defects within the left transverse and sigmoid dural venous sinuses



- 1-Abscess, especially Bezoal abscess
- 2-Parotid tumors
- 3-Rhabdomyosarcoma
- 4-Chondromyxoid fibroma
- 5-Langerhans cell histiocytosis
- 6-Dermoid cyst
- 7-Epidermoid cyst (cholesterol granuloma)

Case (3)

History: A 24-years-old man with ear pain gradually worsening since one month

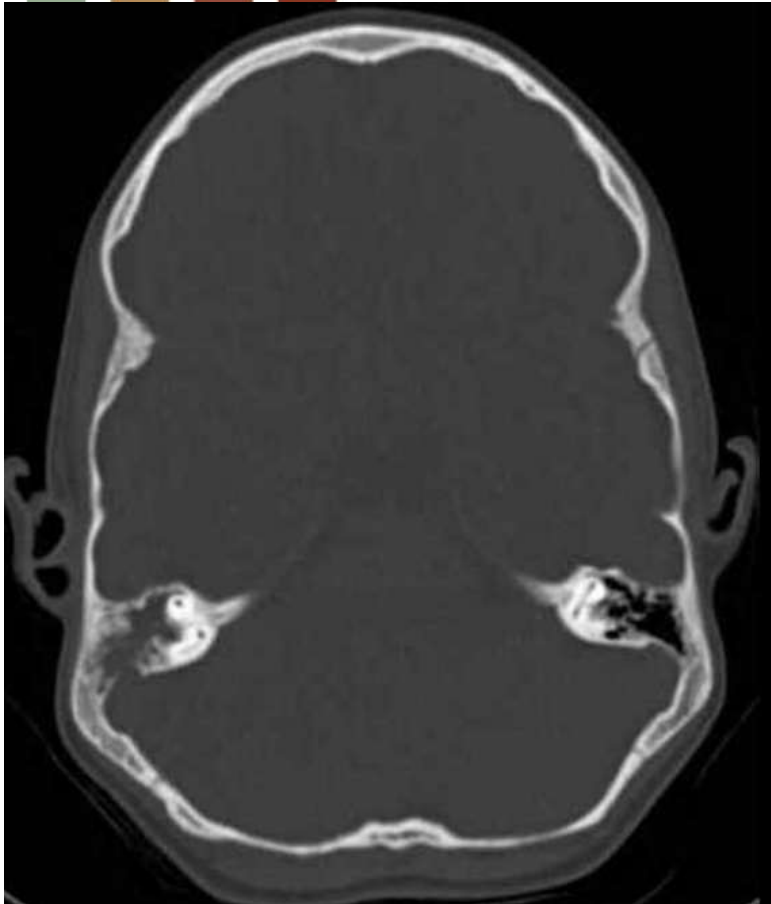


Acute otomastoiditis

In this case:

Complete opacification of the middle ear cleft (namely the epi, meso, and hypotympanum), the mastoid antrum, and the mastoid air cells by fluid density

NB: Look at complications (cerebellar abscess/ sinus thrombosis)

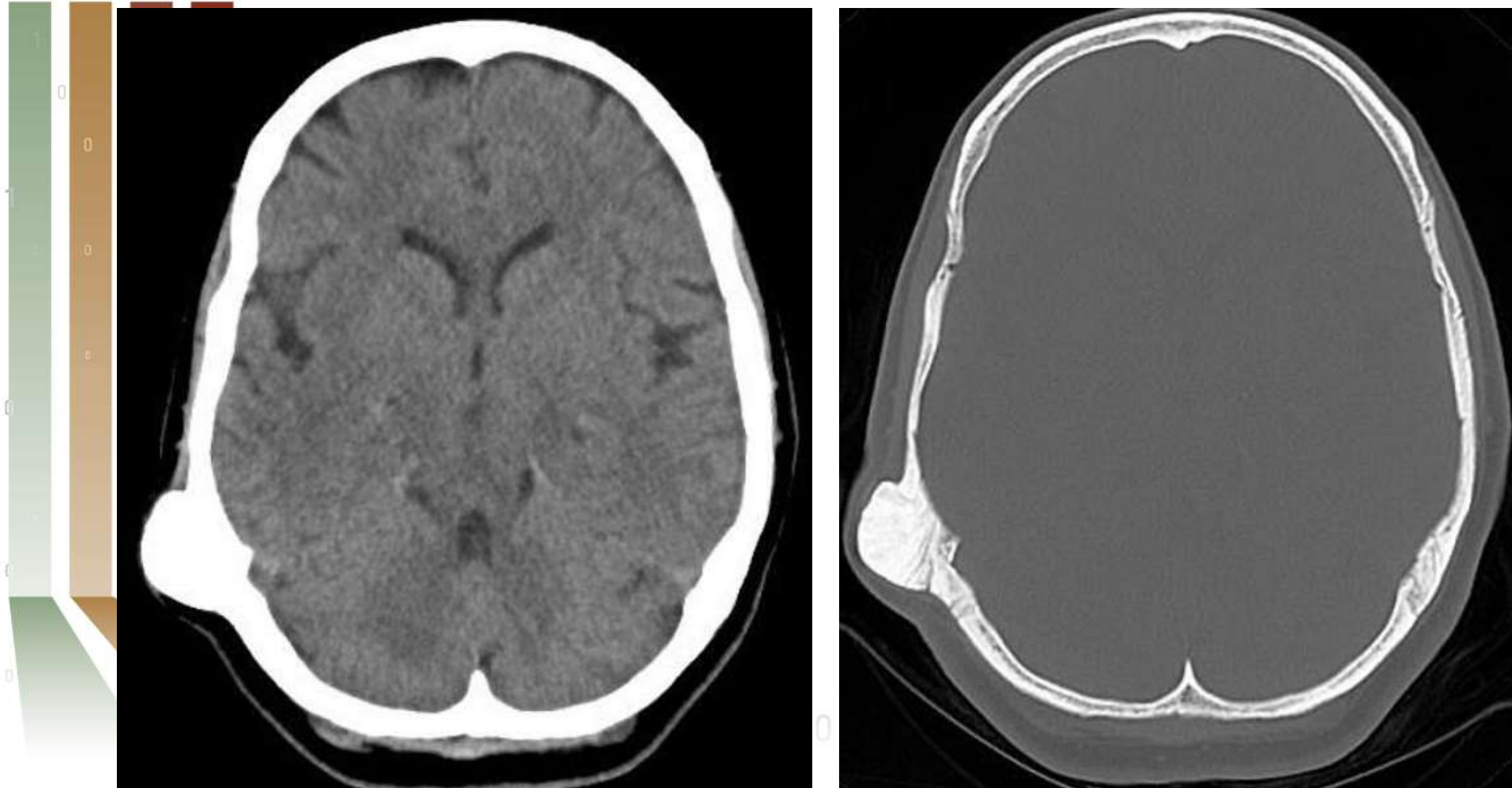




A 2-year-old girl with right-sided mastoiditis and venous sinus thrombosis, (a) Axial T1+C; (b) coronal T1; (c) coronal time-of-flight venography show fluid accumulation and increased contrast uptake in the right mastoid (red arrow) + thrombus in the right transverse sinus (white arrow)

Case (4)

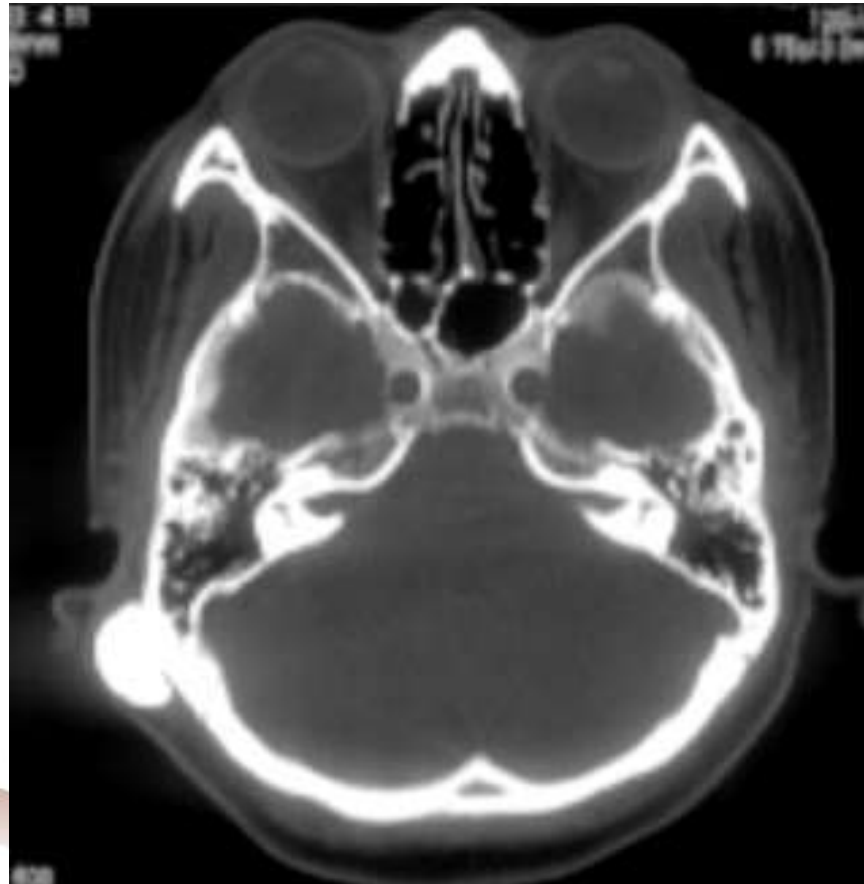
History: A 60-years-old woman with painless hard bulge on the superior posterior region of the auricle of the right ear



Mastoid osteoma

In this case:

Large benign-appearing osseous mass lesion on the superior posterior cortex of the right mastoid is seen that the sclerotic medulla of the mass is in continuity with the adjacent calvarium diploe + no associated soft tissue mass lesion



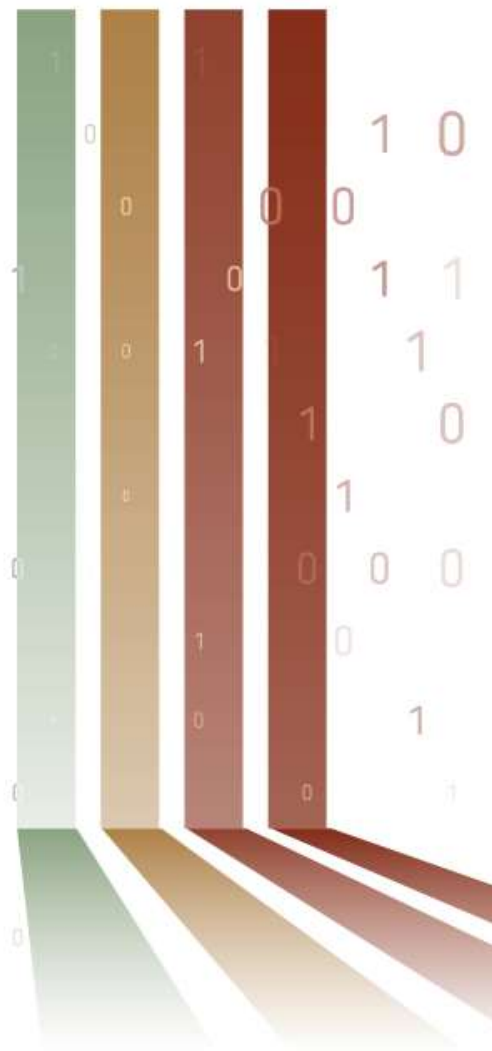
DD: Mastoid bone mass

- 1-Osteoma
- 2-Bony exostosis
- 3-Periosteal chondroma
- 4-LCH
- 5-Glomus Jugulare



Case (5)

History: A 61-years-old man with sore throat



Allergic fungal sinusitis



Fungal sinusitis

(i) Non-invasive = allergic fungal sinusitis

(ii) Invasive = bone destruction

Acute: < 4 weeks, Immunocompromised, bone destruction + no hyperdense material

Chronic: Immunocompetent, > 12 weeks, + hyperdense material



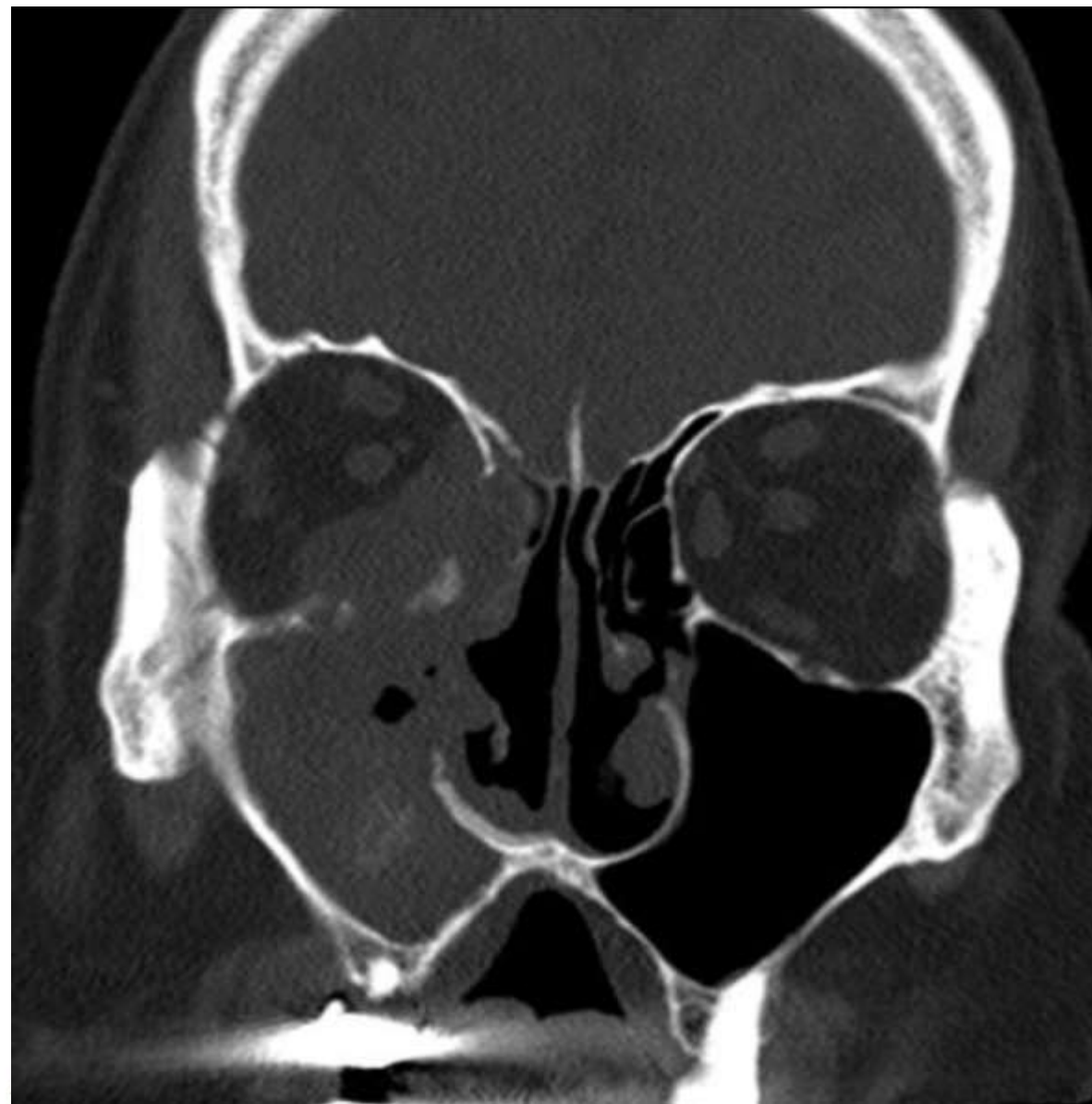
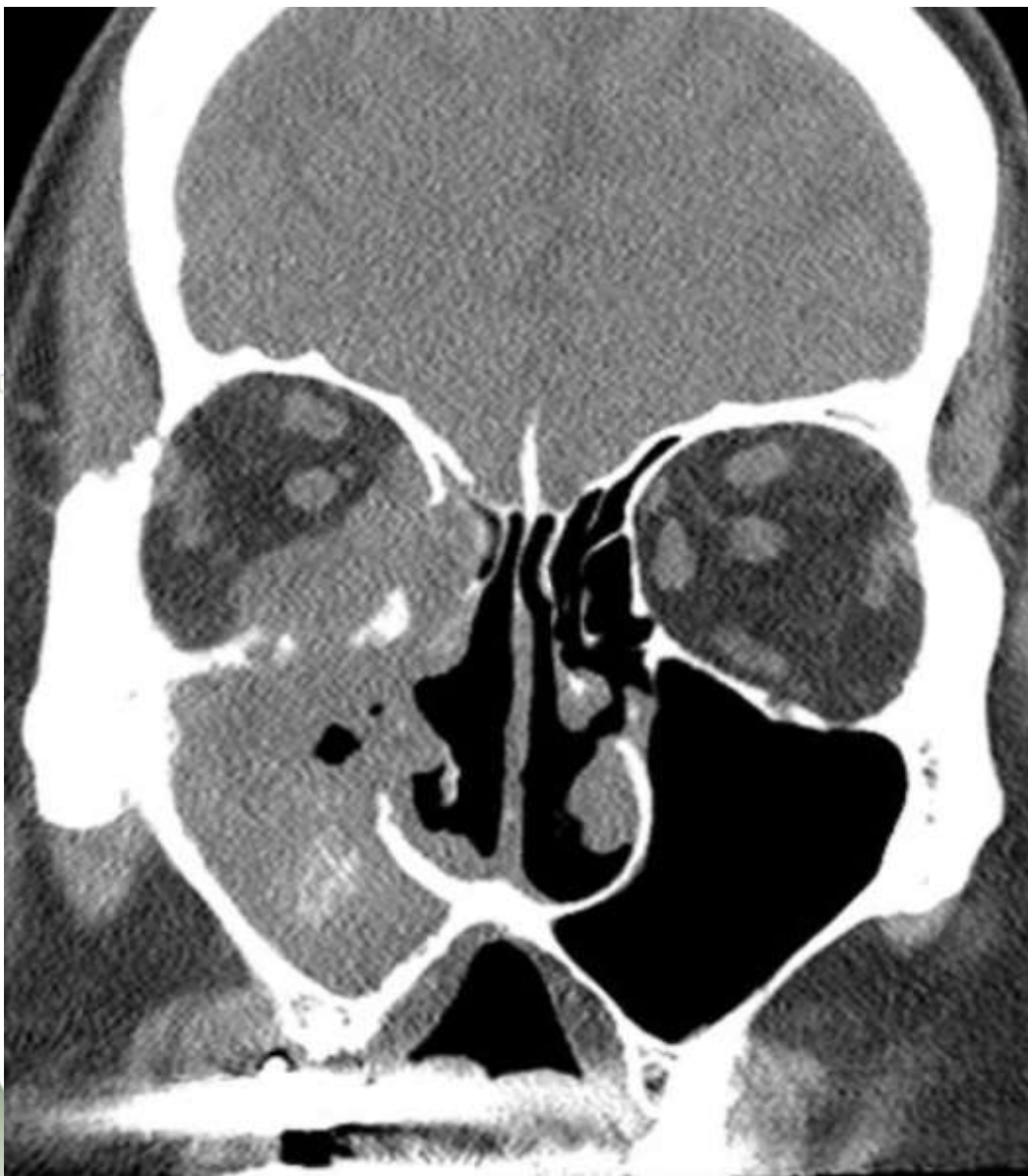
Allergic fungal sinusitis

Most common form of fungal sinusitis

CT: Hyperdense (no bone destruction), only expansion

T1, T2: Hypo

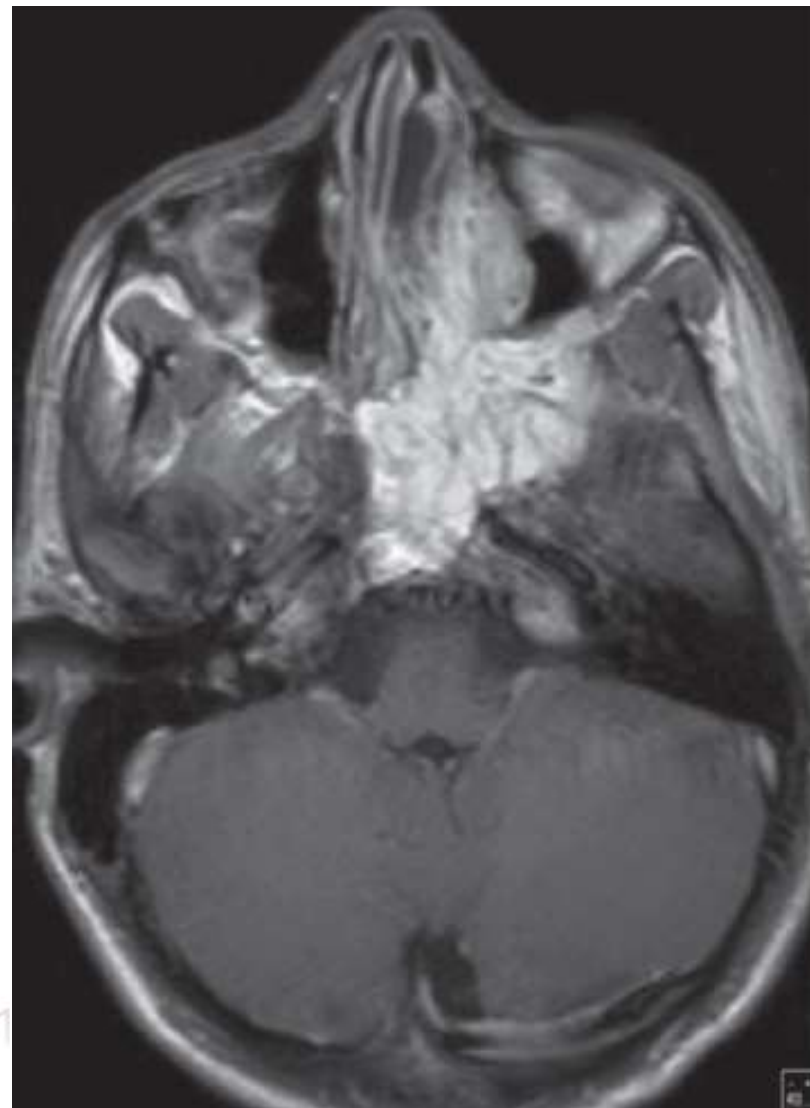
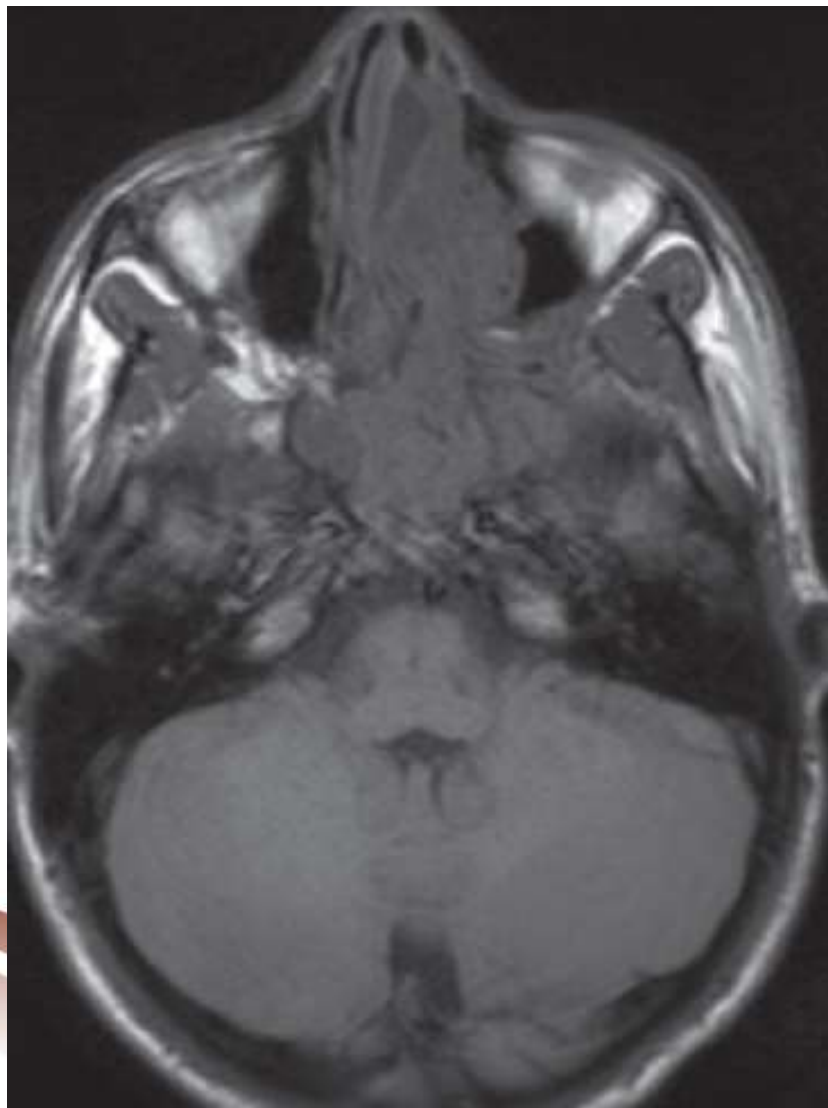
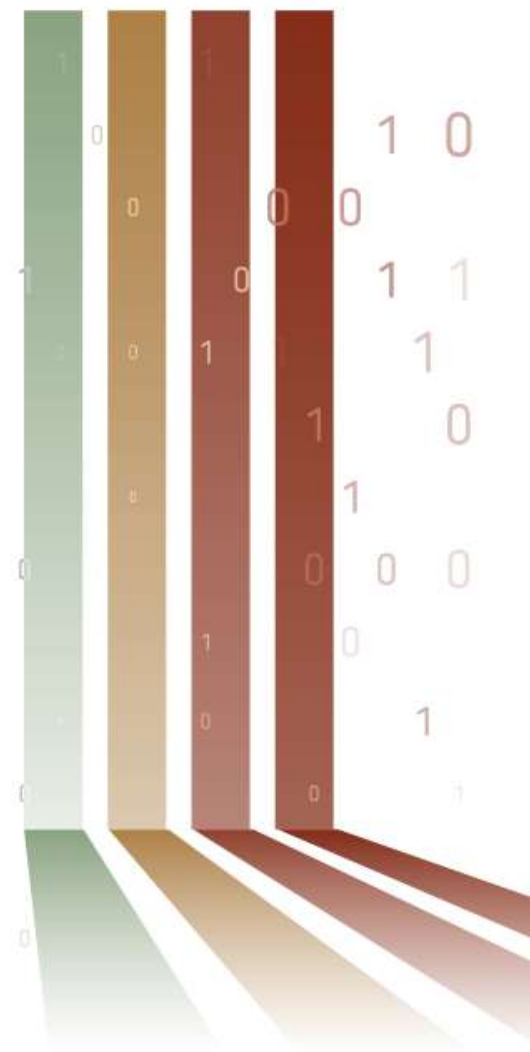
T1+C: No ++ (cf tumors)



Invasive fungal sinusitis

Case (6)

History: A 11-years-old boy with chronic stuffy nose, facial asymmetry, and visual disturbances



Juvenile nasopharyngeal angiofibroma

In this case:

(a) Pre- and (b) post-contrast T1 demonstrate a large T1 hypointense mass which demonstrates intense homogeneous enhancement, the mass involves the left nasopharynx, nasal cavity, and pterygopalatine fossa and extends laterally through the sphenopalatine foramen, the maxillary sinus is also involved

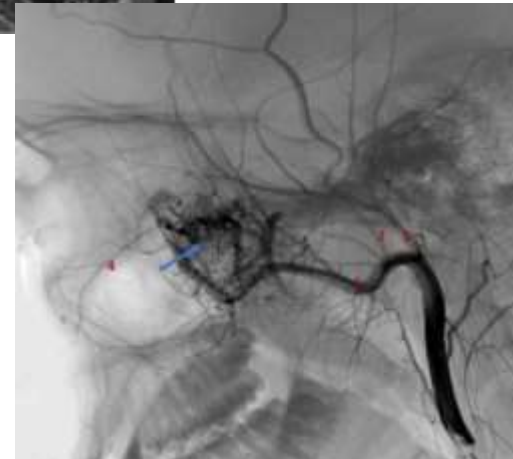
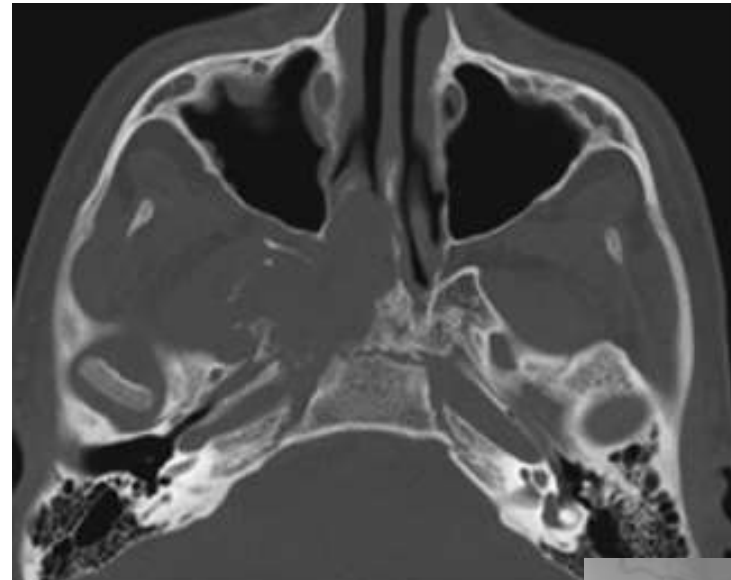
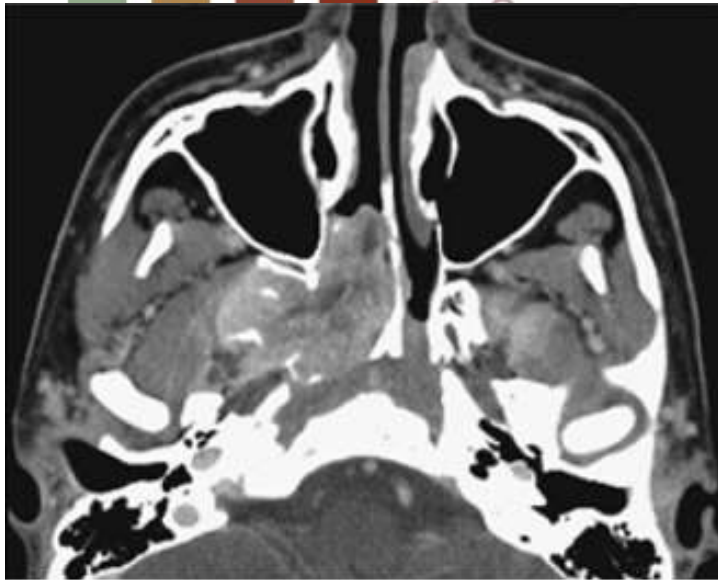
Benign locally aggressive in adolescent boys
Originate in the nasopharynx adjacent to the sphenopalatine foramen and pterygopalatine fossa

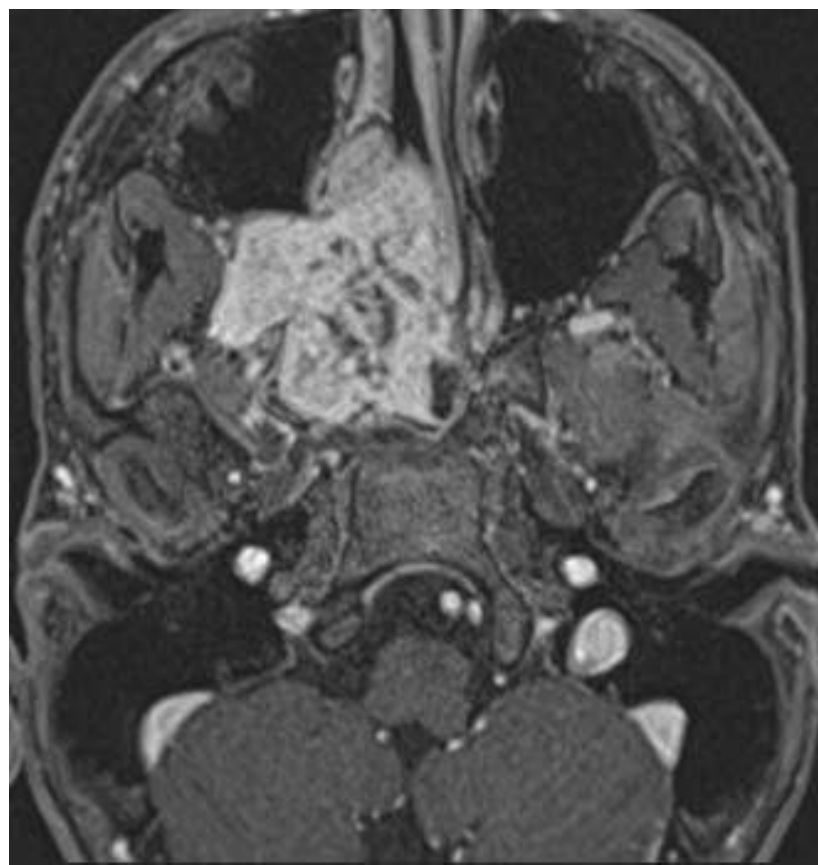
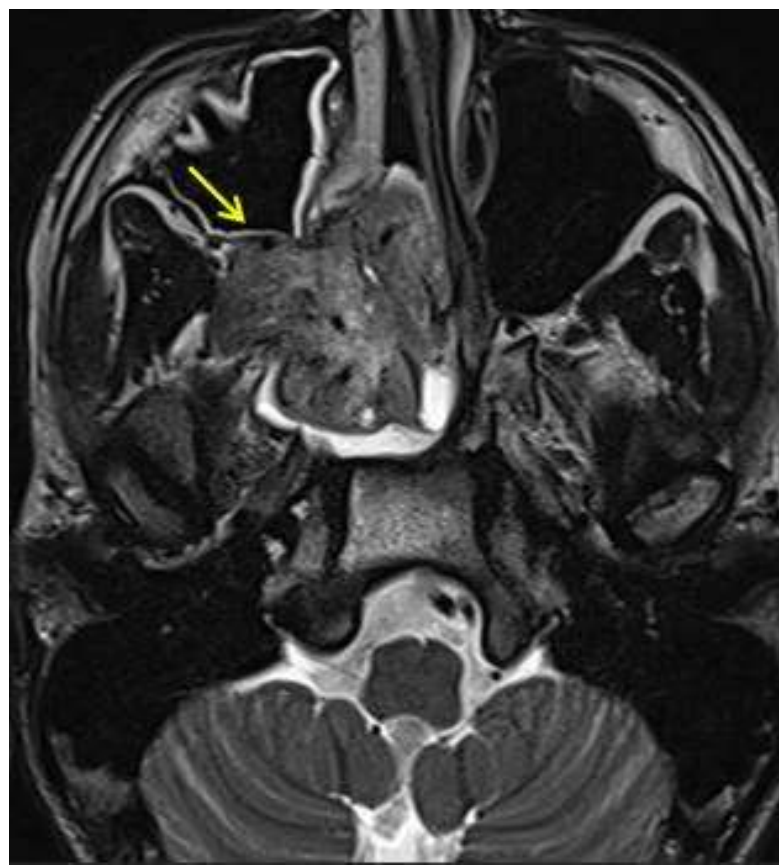
Extension: Infratemporal, Intracranial, intraorbital & PNS
Anterior bowing of the posterior maxillary sinus wall

C/P: Nasal obstruction /epistaxis

T1: Hypo/Iso, T2: Iso/Hyper, T1+C: Avidly ++ (flow voids are commonly seen)

Preoperative embolization is needed

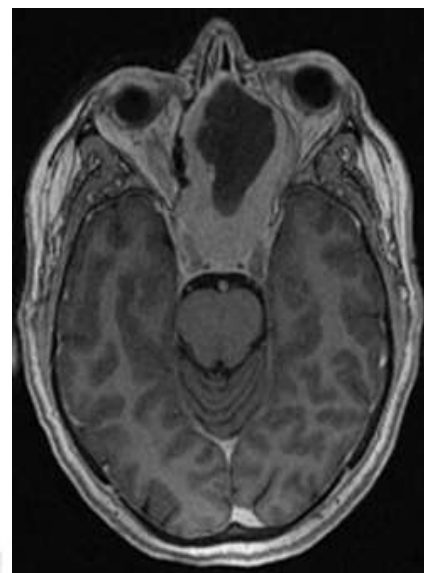
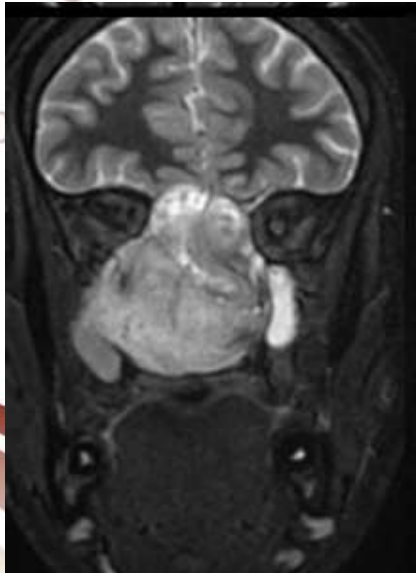
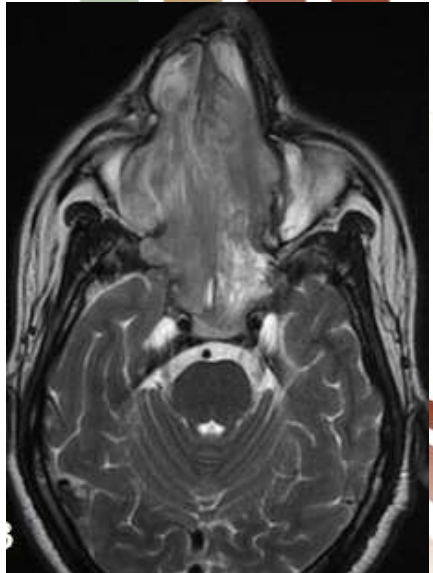
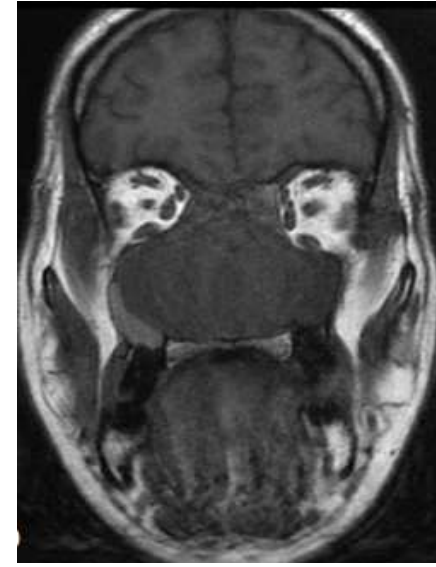




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Differential Diagnosis

Aggressive nasal mass in a child/ adolescent



1-Esthesioneuroblastoma (ENB):
Malignant neuroendocrine tumor which arises from olfactory endothelium within the superior nasal cavity

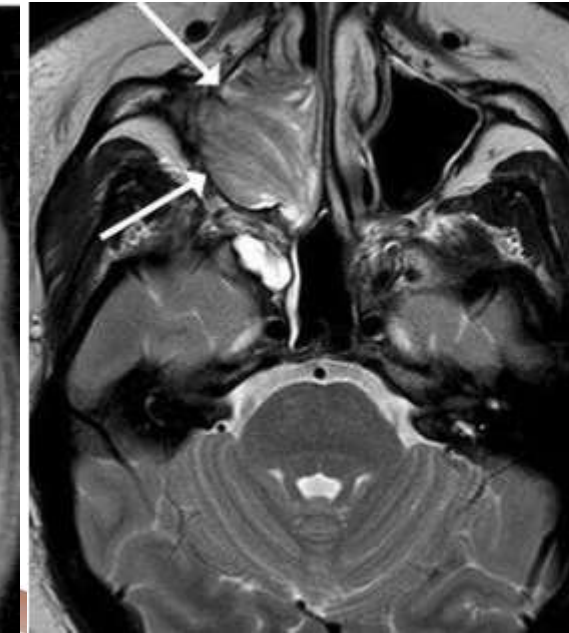
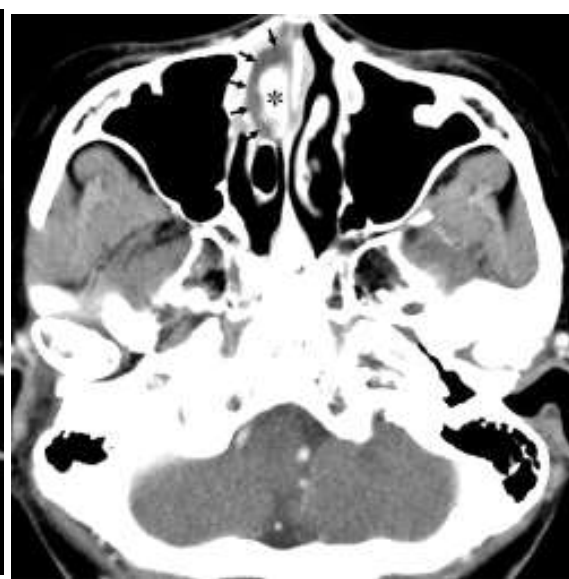
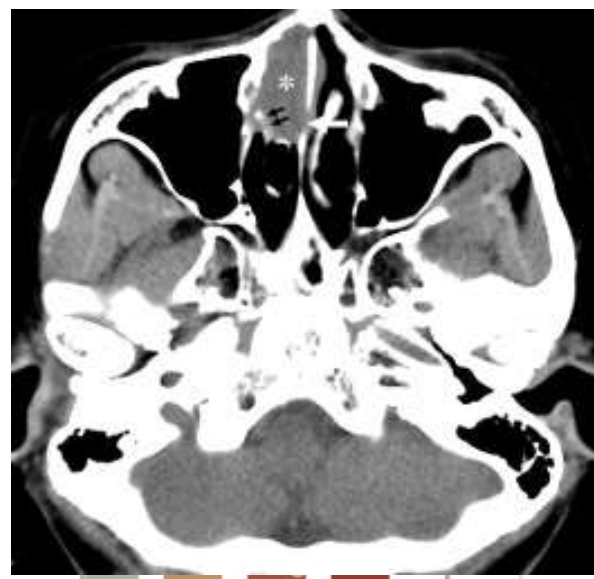
Occurs in adolescents and middle-aged patients who present with nasal obstruction and epistaxis
Dumbbell-shaped mass with upper portion in anterior cranial fossa, lower portion in upper nasal cavity & waist at the level of cribriform plate, intracranial portions of the tumor often demonstrate cystic components

T1: Hypo/Iso, T2: Hyper, T1+C: ++

2-Rhabdomyosarcoma:

May involve sinuses, nasal cavity, & nasopharynx with bony destruction + intracranial extension is common

T1: Homogenous iso to hypo, T2: Hyper, T1+C: ++



3-Hemangioma:

Benign tumors which may occur within the nasal cavity at any age but most often present in the pediatric population or during pregnancy. May be capillary (more common) or cavernous and typically occur along the nasal septum or turbinates.

Well-circumscribed, lobulated avidly enhancing nasal soft-tissue mass which is hypointense to intermediate on T1 and hyperintense on T2.

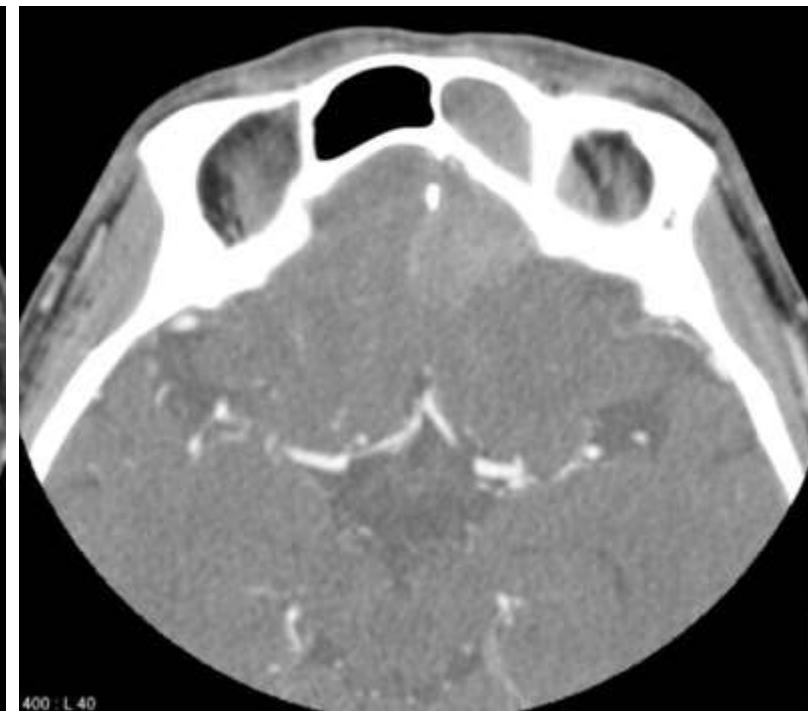
4-Inverted Papilloma:

Benign, locally aggressive neoplasms which may occur in adolescents but are most common in adult men who present with nasal obstruction. They originate along the middle meatus and extend into the PNS.

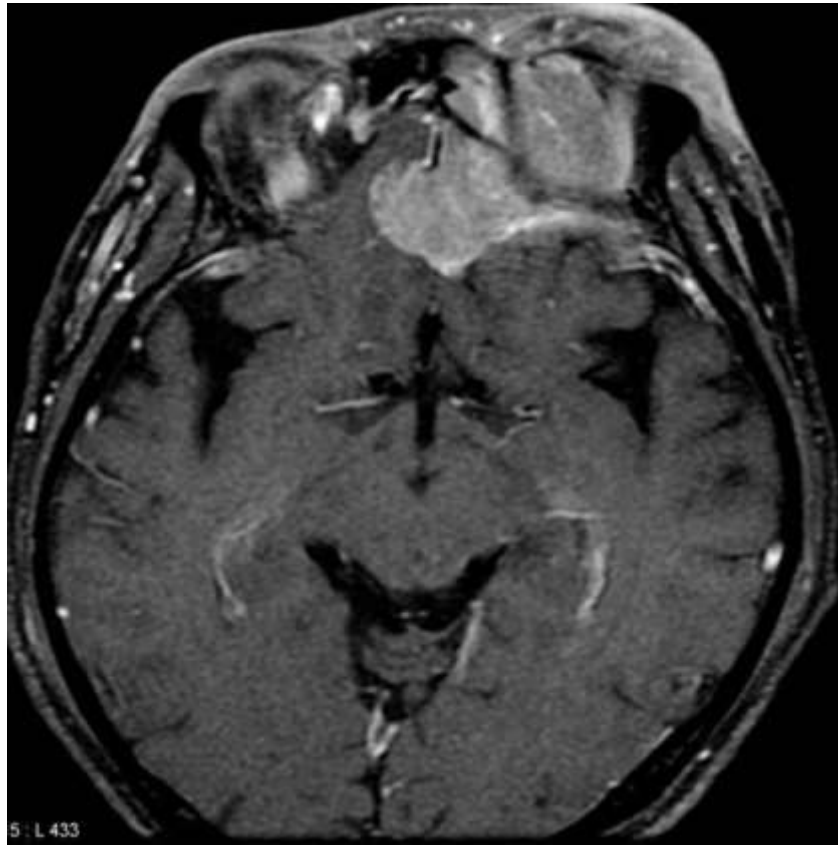
T1: Iso, T2: hyper +characteristic linear striations, T1+C: Heterogeneous ++

Case (7)

History: A 52-years-old man with Rhinorrhea and episodes of epistaxis



Next step?



0

1

0

1

1

1

1

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1

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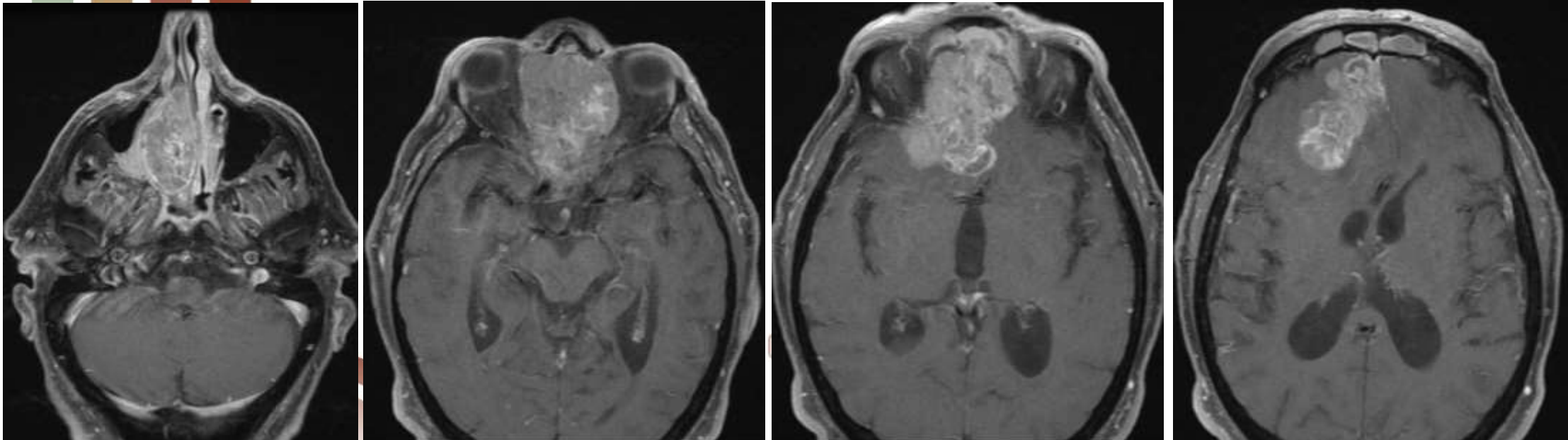
1

Aggressive sinonasal mass for DD

In this case:

CT and MRI through the paranasal sinuses demonstrate a large aggressive mass the epicenter of which appears to be centered in the superior aspect of the nasal cavity, the mass extends superiorly into the anterior cranial fossa, laterally into the orbit and posteriorly into the sphenoid sinus, the outflow of the sphenoid sinus and left frontal sinus is presumably obstructed as the sinuses are opacified

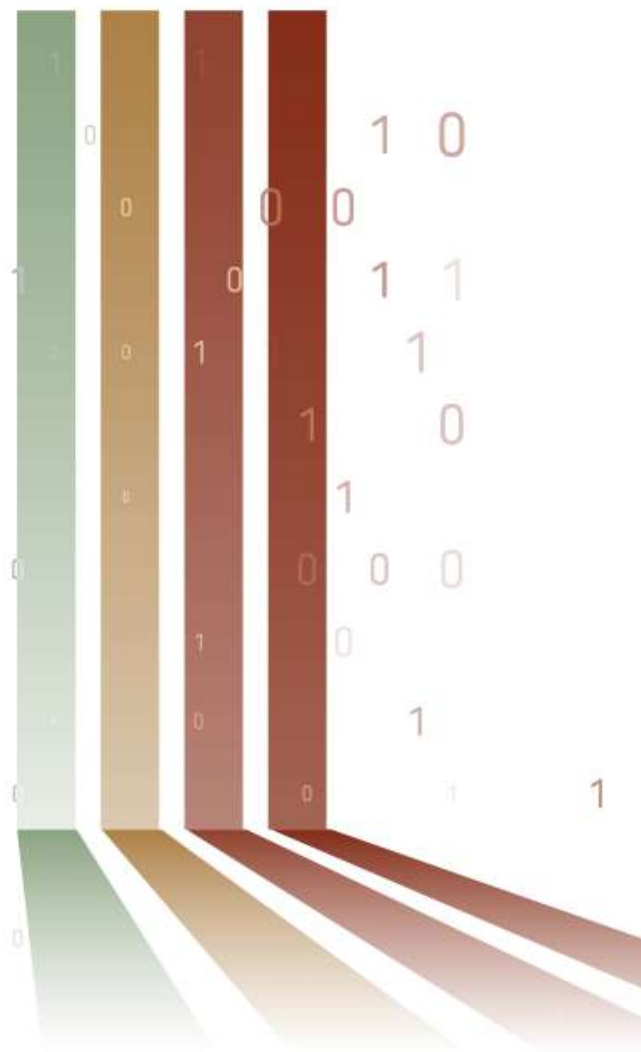
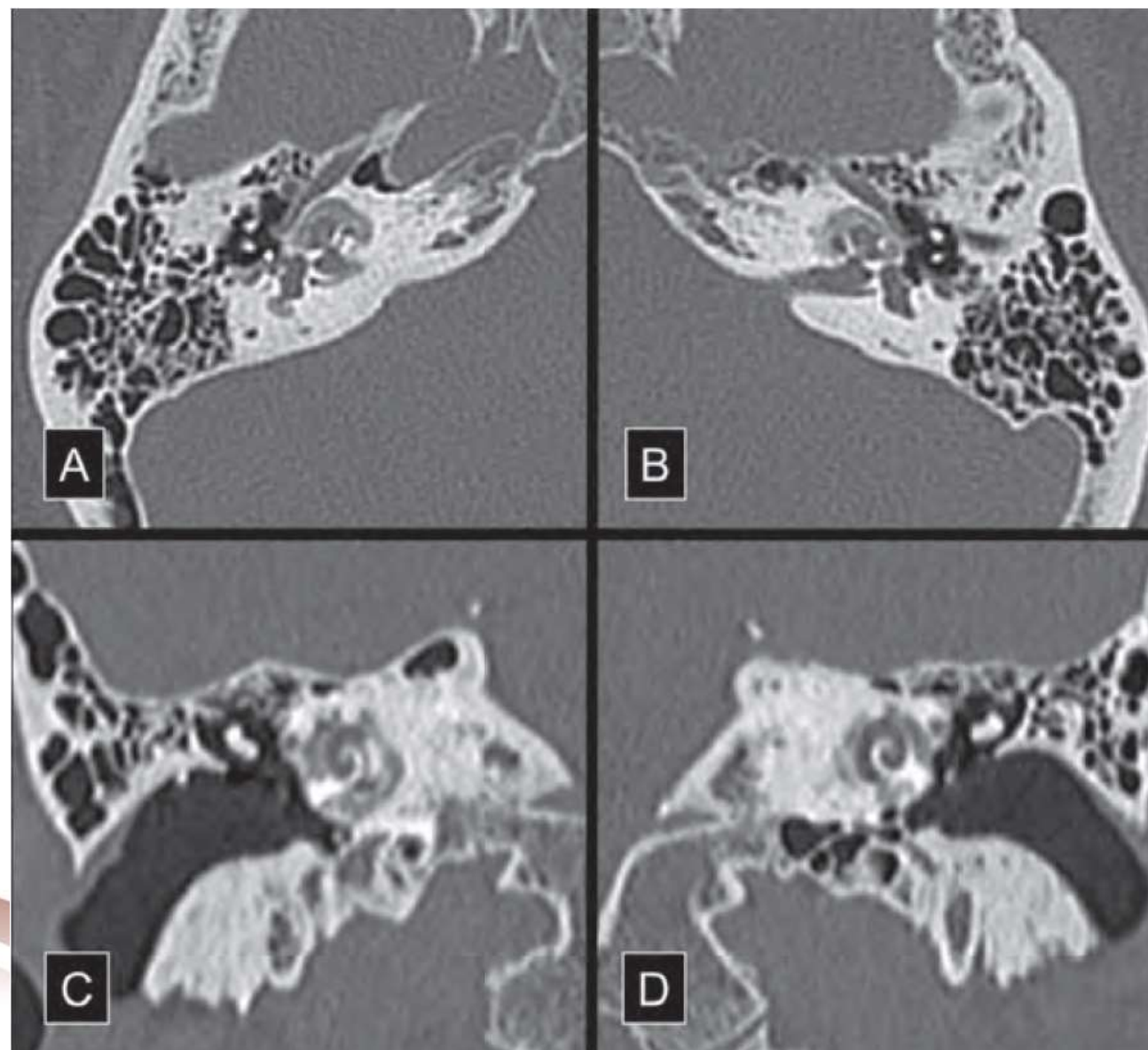
- 1-Sinonasal carcinoma (squamous cell carcinoma/adenocarcinoma)
- 2-Olfactory neuroblastoma / Esthesioneuroblastoma
- 3-Sinonasal lymphoma
- 4-Sinonasal mucosal melanoma
- 5-Metastases



Large right nasal cavity mass extending through cribriform plate into inferior right and left frontal lobe with surrounding vasogenic edema, it enhances markedly with contrast + significant mass effect with displacement of right frontal horn

Case (8)

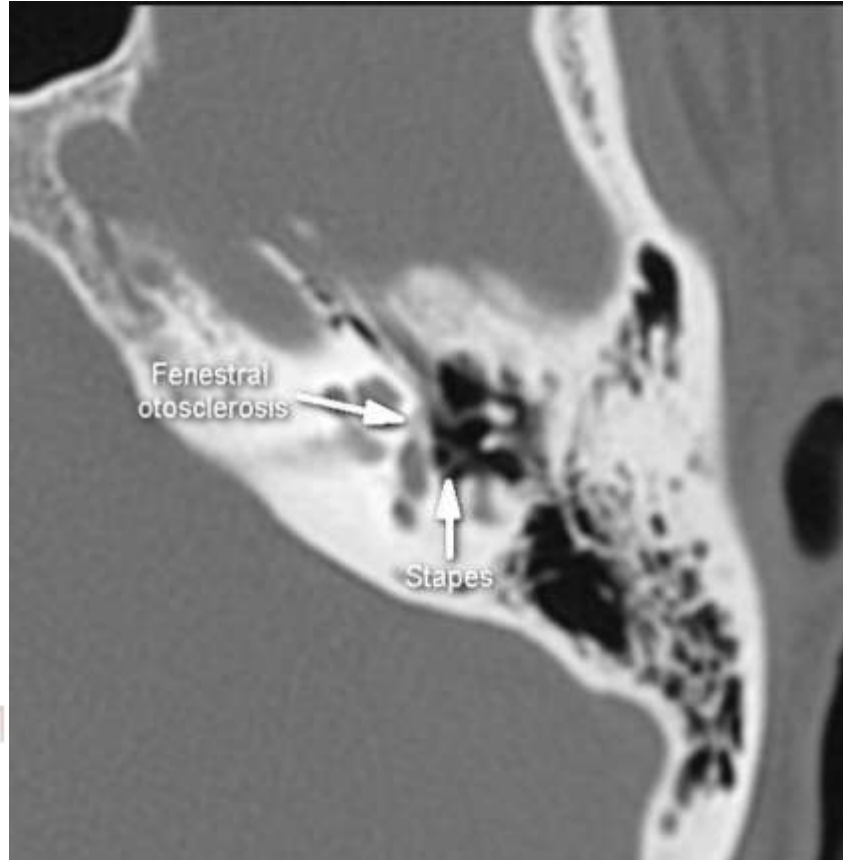
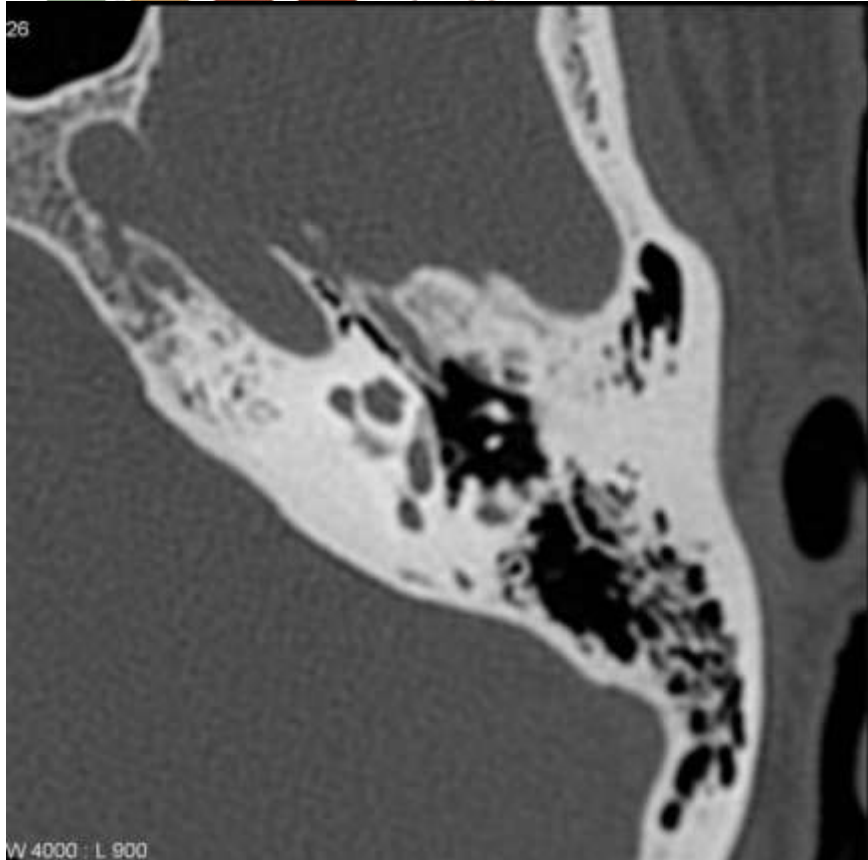
History: A 53-years-old woman with bilateral hearing loss



Otosclerosis

In this case:

Temporal bone CT case with bilateral axial (A and B) and coronal (C and D) images show patchy lucencies surrounding the cochleas bilaterally



Primary bone dysplasia of the otic capsule >> replacement of normal endochondral bone by irregular spongy bone
Young & middle aged females, bilateral in 85%

Types:

1-Fenestral (80%): anterior to oval window (conductive hearing loss)

2-Retrofenestral (20%): cochlear (SNHL)

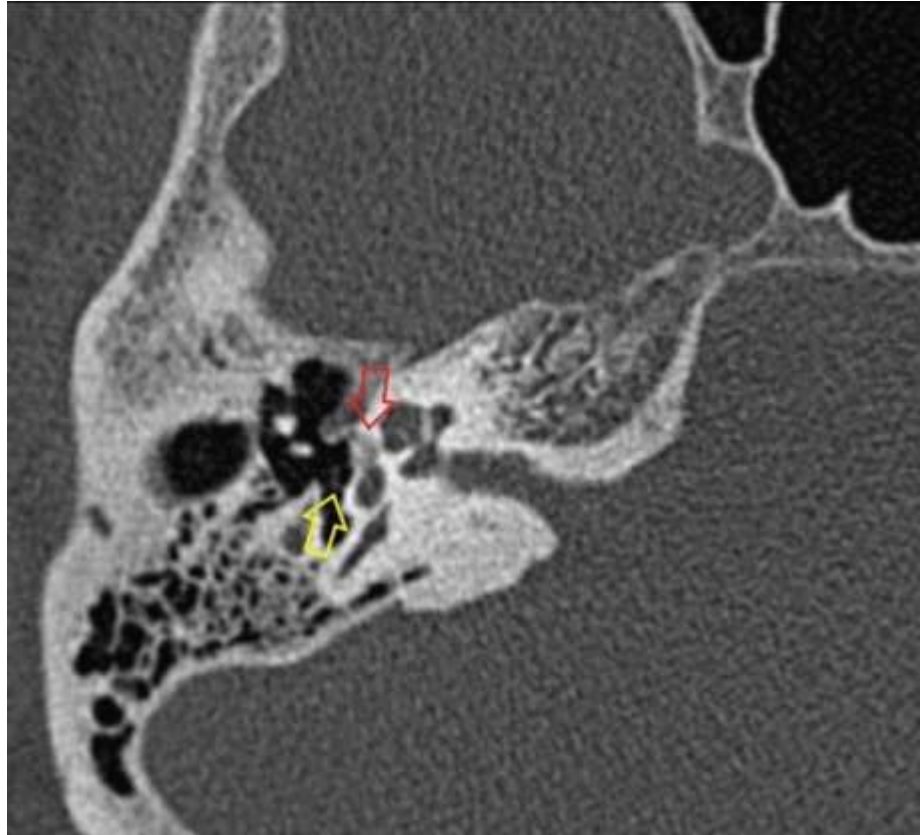
CT: ↑↑ lucency of the affected bone

CT grading system:

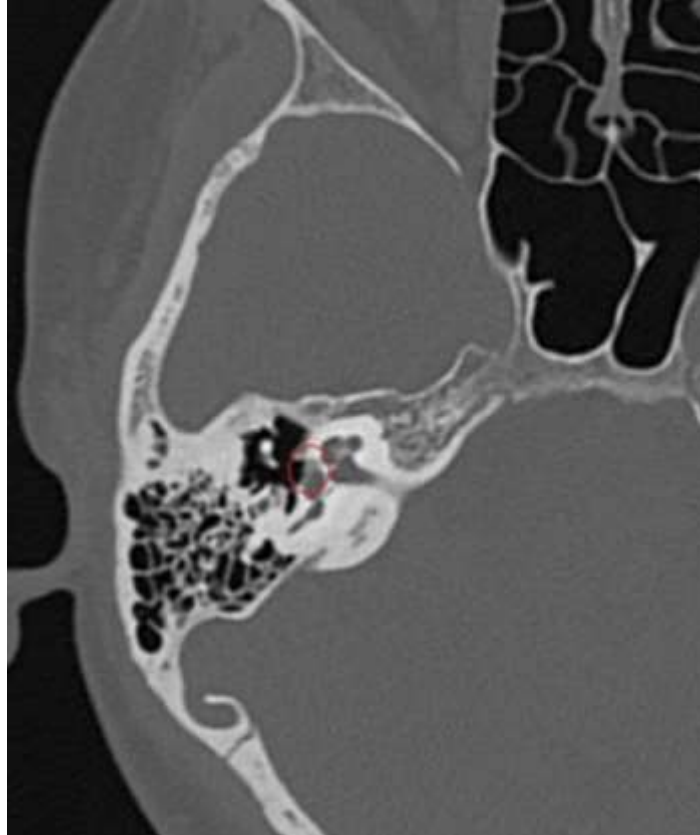
Grade 1: Only fenestral

Grade 2: Patchy cochlear

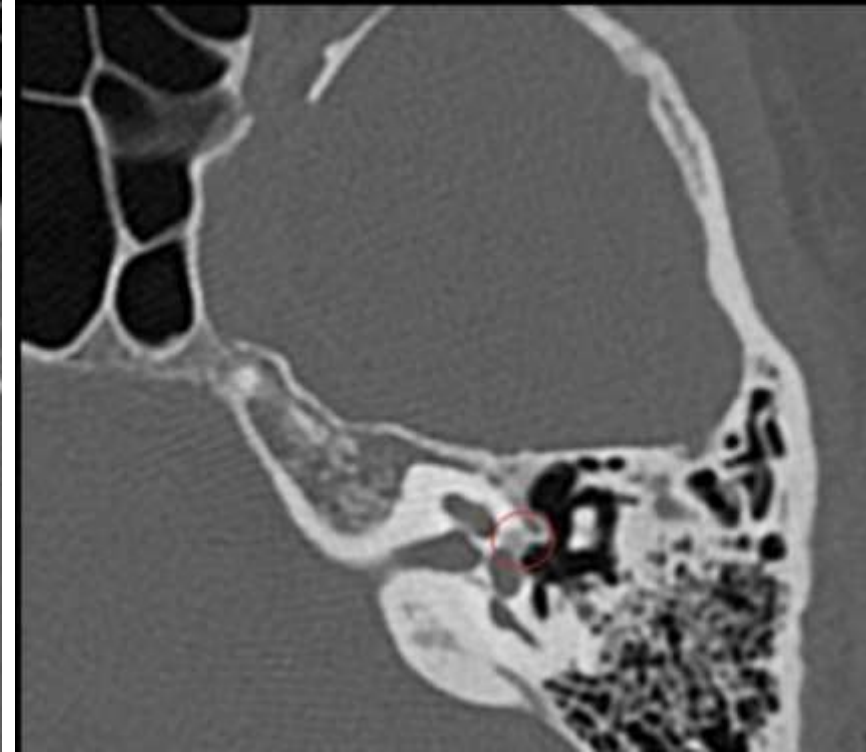
Grade 3: Diffuse cochlear



The foot plate of stapes (yellow arrow) articulating with the oval window and just anterior to it the focal area of lucency (red arrow) denoting fenestral otosclerosis

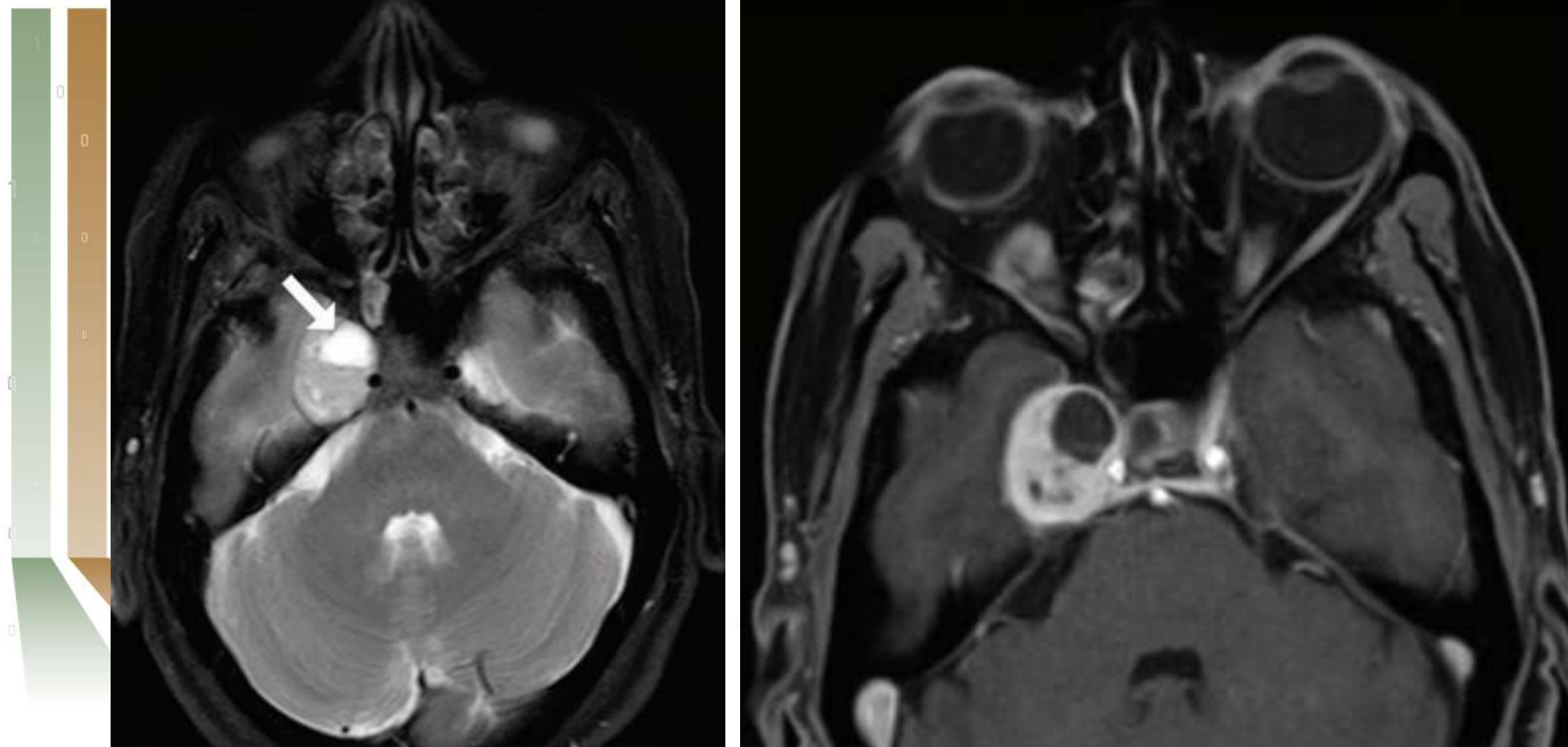


Red circle showing fenestral otosclerosis on either side



Case (9)

History: A 55-years-old woman with holocranial headache

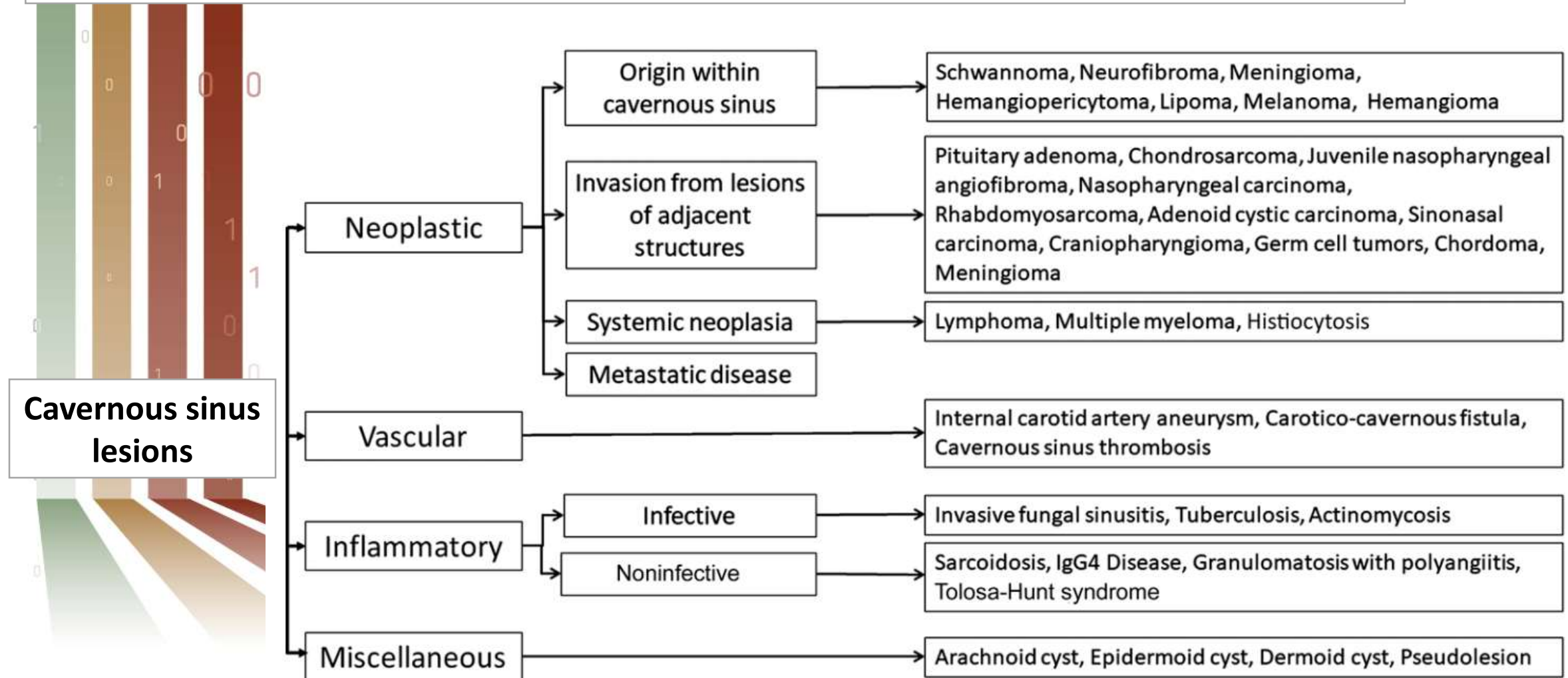


Cavernous sinus schwannoma

In this case:

T2: Shows a hyperintense lesion in the right cavernous sinus, with an anterior cystic component (arrow)

T1+C: Shows enhancement in the solid component

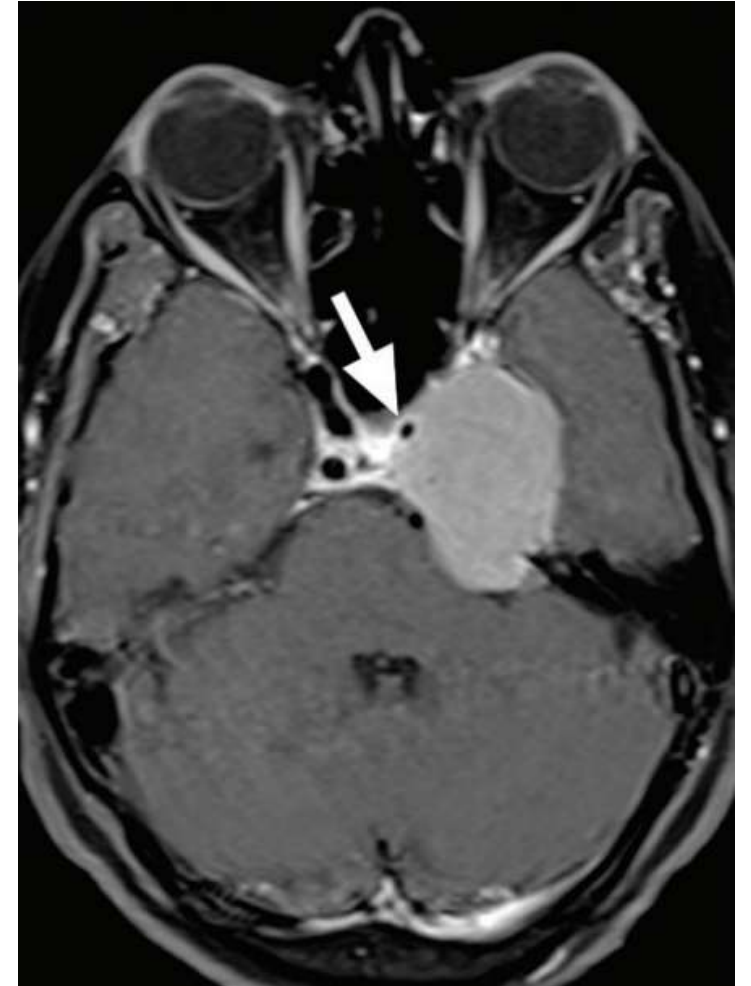




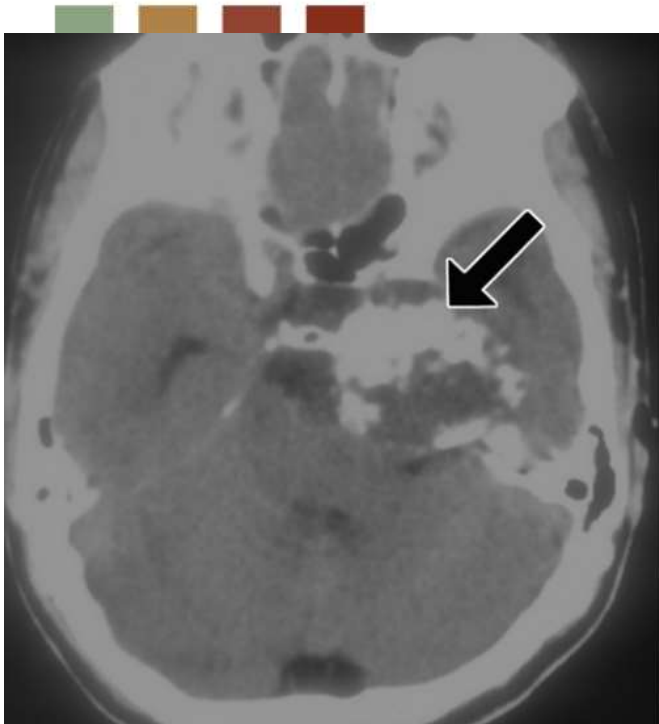
CCF



Tolosa hunt syndrome



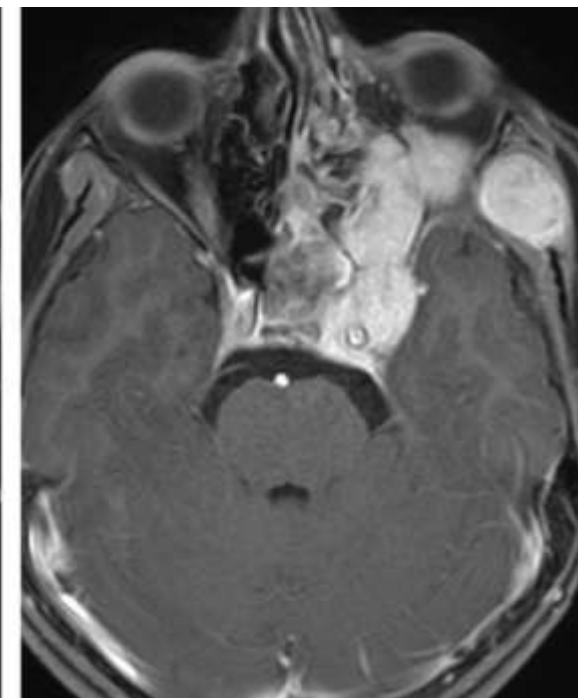
Cavernous sinus meningioma



Chondrosarcoma

CT: A mass causing expansion of the left petrous apex, note the large calcified component of the mass anteriorly (arrow)

T2: Shows a markedly hyperintense mass lesion (arrow) involving the posterior part of the left cavernous sinus



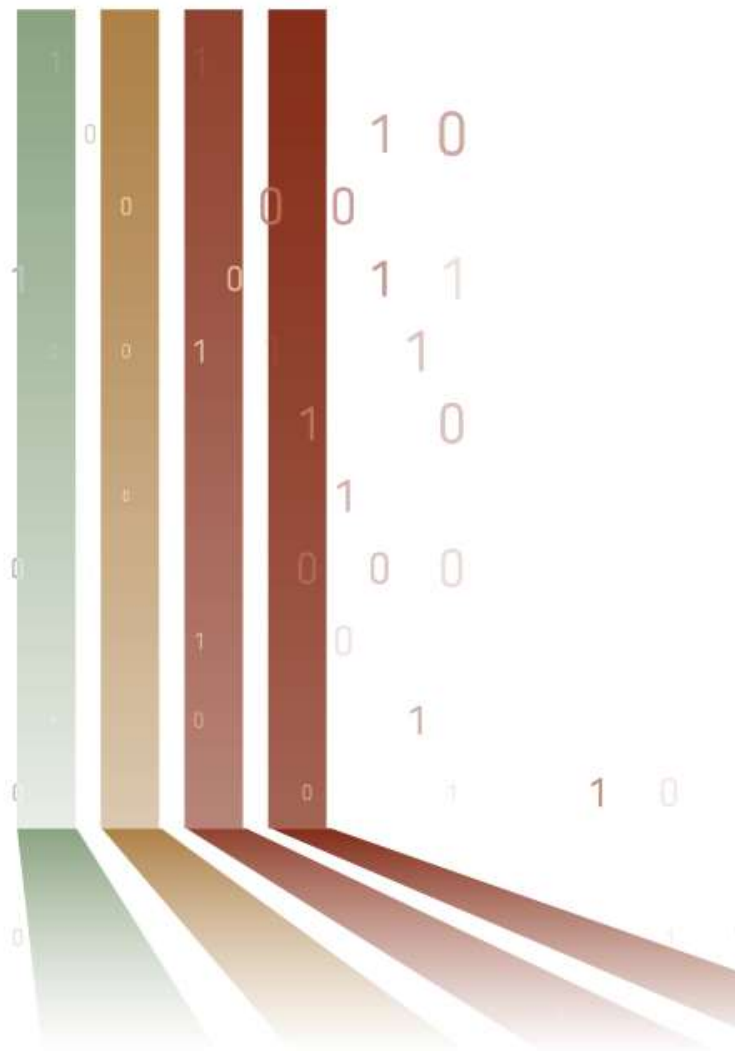
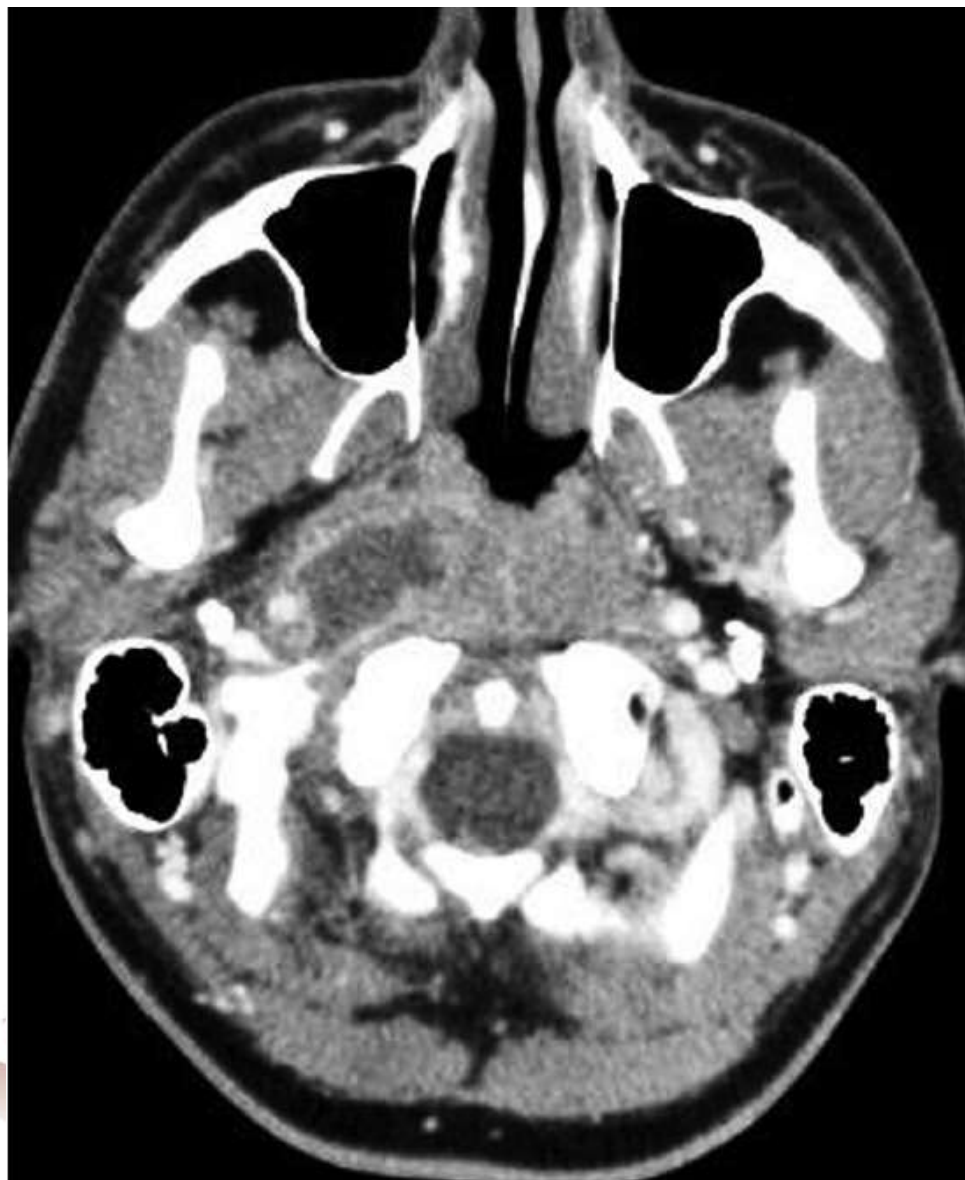
Juvenile nasopharyngeal angiofibroma

Intensely enhancing mass lesion centered in the left pterygopalatine fossa, causing its expansion, with anterior bowing of the posterior wall of the left maxillary sinus (white arrow), normal right pterygopalatine fossa (black arrow)

More cranial level than a shows involvement of the left cavernous sinus and orbit by the lesion

Case (10)

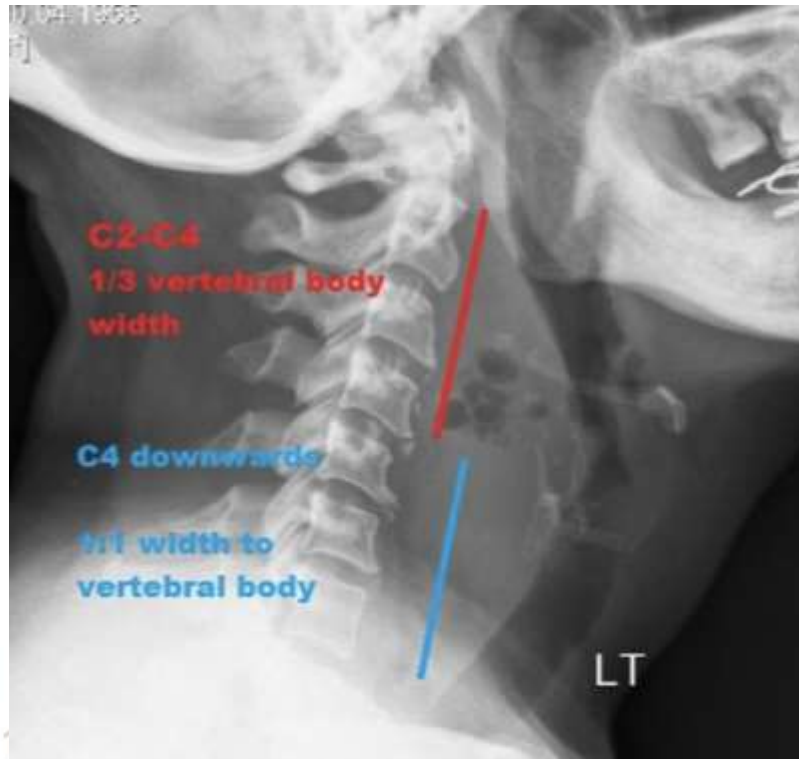
History: A 61-years-old man with sore throat



Retropharyngeal abscess

In this case:

CT+C: Shows rim-enhancing fluid collection within the retropharyngeal space on the right



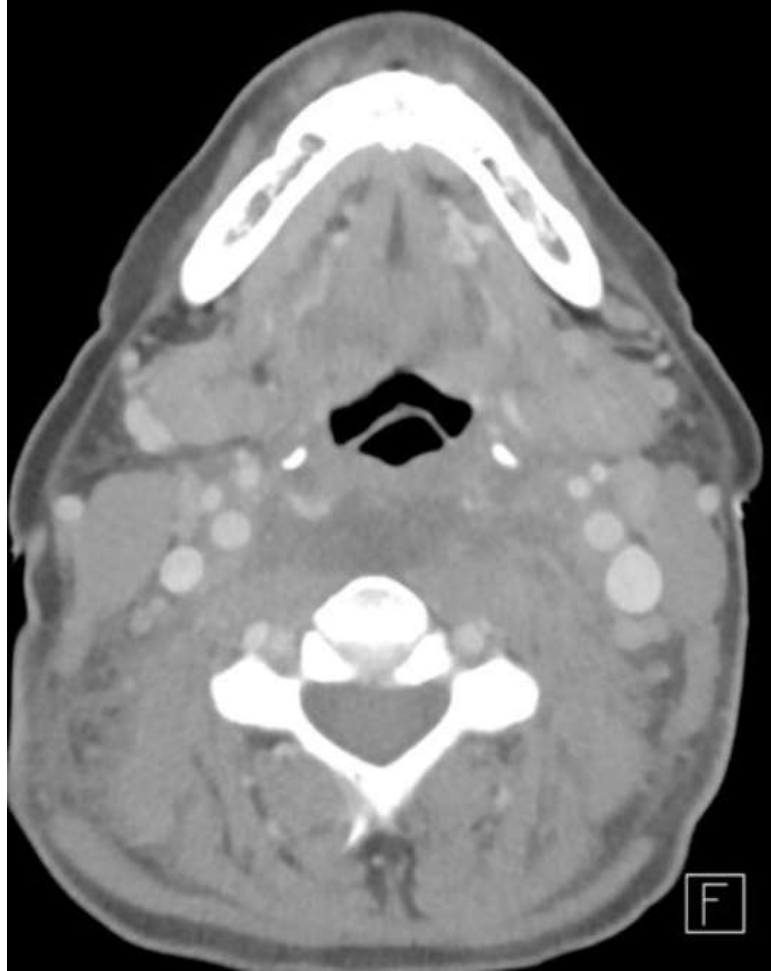
Normal width of the pre-vertebral soft tissue at the various cervical levels
C2-4 < 1/3 vertebral body
C5-7 = width of adjacent vertebra

Potentially life-threatening infection involving the retropharyngeal space which requires prompt diagnosis and aggressive therapy

X-rays: Soft tissue swelling posterior to the pharynx, with a widening of the prevertebral soft tissue

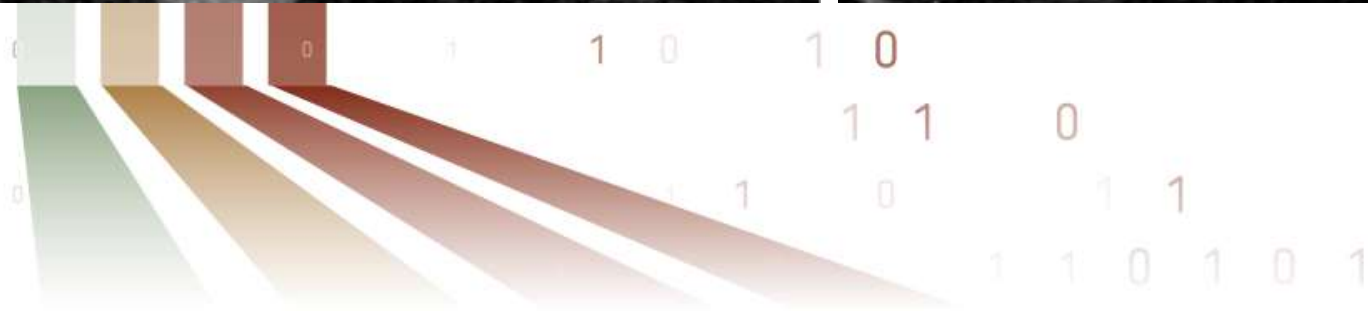
CT: Usually have a peripherally enhancing rim with a centrally hypodense collection, expansion of the retropharyngeal space, and may contain locules of gas

DD: Retropharyngeal (RP) hematoma (trauma)/ Prevertebral abscess/ RP cellulitis/ RP edema/ RP effusion/ mass in the RPS (hemangioma, tumor)



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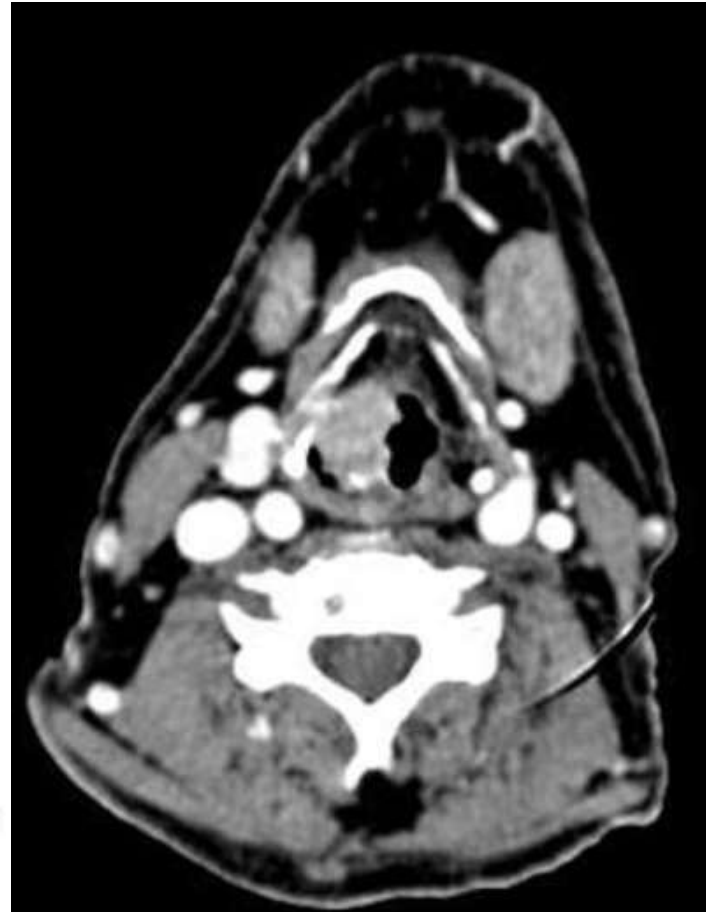
History: A 61-years-old man with sore throat



Laryngeal cancer

In this case:

Mass lesion arising from right true cord crossing the midline with thickening of the anterior commissure and spread to contralateral cord with subglottic extension + necrotic right level III node



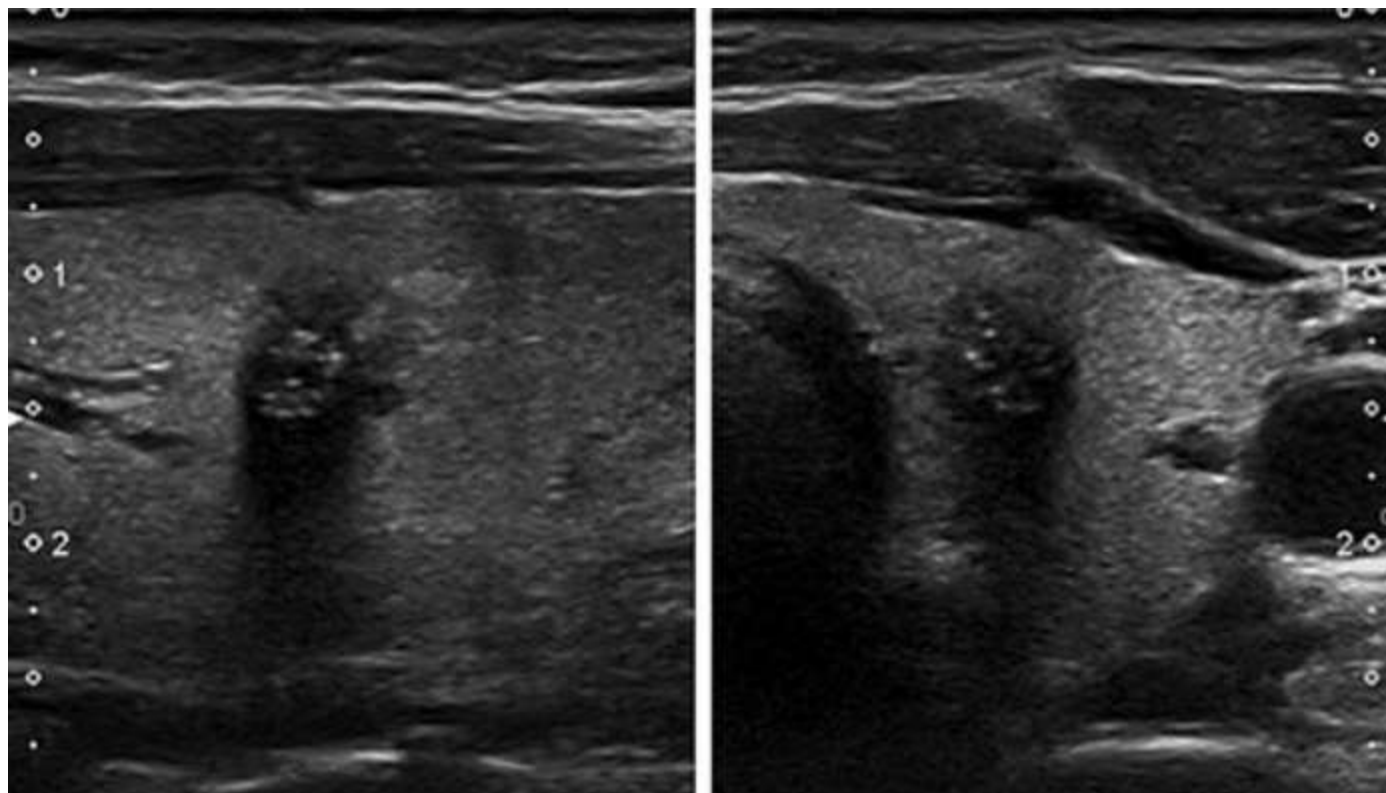
SCC is the most common
Males > 50 years of age

Classification:

- 1-Supraglottic (30%), epiglottis, aryepiglottic fold, false vocal cord
- 2-Glottic (60%), true vocal cords
- 3-Subglottic (5%), anywhere below true vocal cord
- 4-Transglottic (involving two or more of these spaces)

Case (12)

History: A 56-years-old woman with neck swelling



Thyroid ultrasound

Suspicious thyroid nodule

In this case:

high-risk nodule with a non-oval shape, spiculated margins, microcalcifications, and marked hypoechogenicity

COMPOSITION (choose 1)	ECHOGENICITY (choose 1)	SHAPE (choose 1)	MARGIN (choose 1)	ECHOGENIC FOCI (choose all that apply)
cystic or almost completely cystic 0 points	anechoic 0 points	wider than tall 0 points	smooth 0 points	none or large comet tail artefact 0 points
spongiform 0 points	hyperechoic or isoechoic 1 point	taller than wide 3 points	ill-defined 0 points	macrocalcifications 1 point
mixed cystic and solid 1 point	hypoechoic 2 points		lobulated/irregular 2 points	peripheral/rim calcifications 2 points
solid or almost completely solid 2 points	very hypoechoic 3 points		extra-thyroidal extension (ETE) 3 points	punctate echogenic foci 3 points

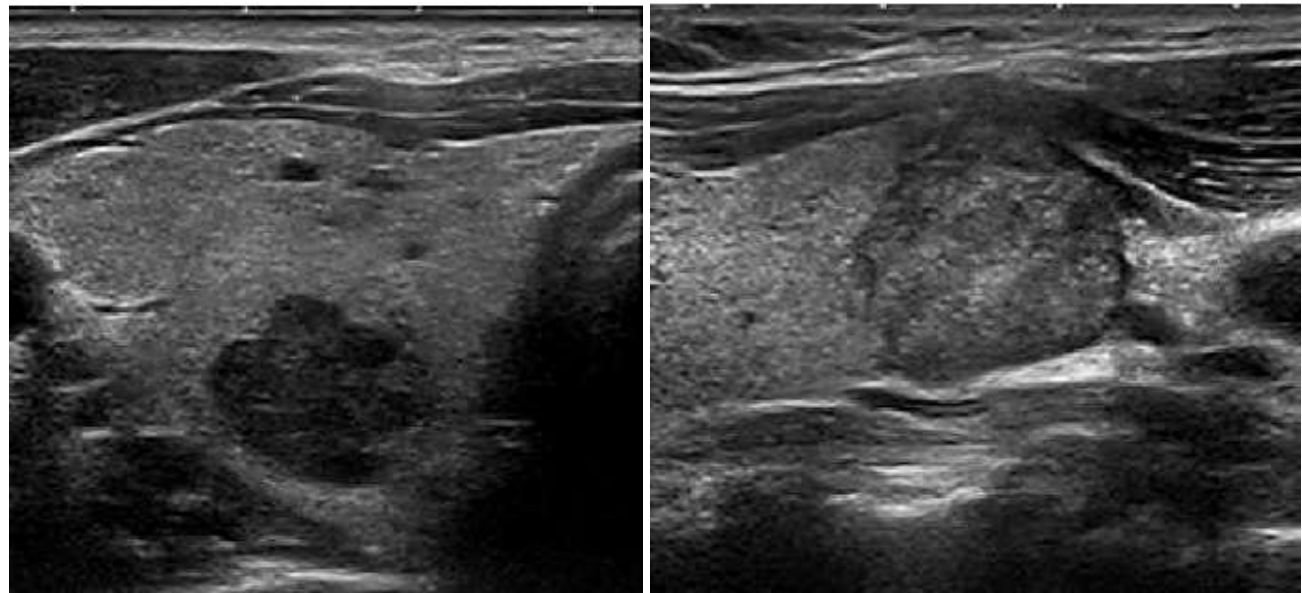
summation of points from each column to determine TI-RADS grade

0 points	2 points	3 points	4-6 points	≥7 points
TR1 benign	TR2 not suspicious	TR3 mildly suspicious	TR4 moderately suspicious	TR5 highly suspicious
no FNA	no FNA	≥ 1.5 cm follow up ≥ 2.5 cm FNA	≥ 1.0 cm follow up ≥ 1.5 cm FNA	≥ 0.5 cm follow up ≥ 1.0 cm FNA

Source: ACR White Paper 2017

Suspicious of malignancy:

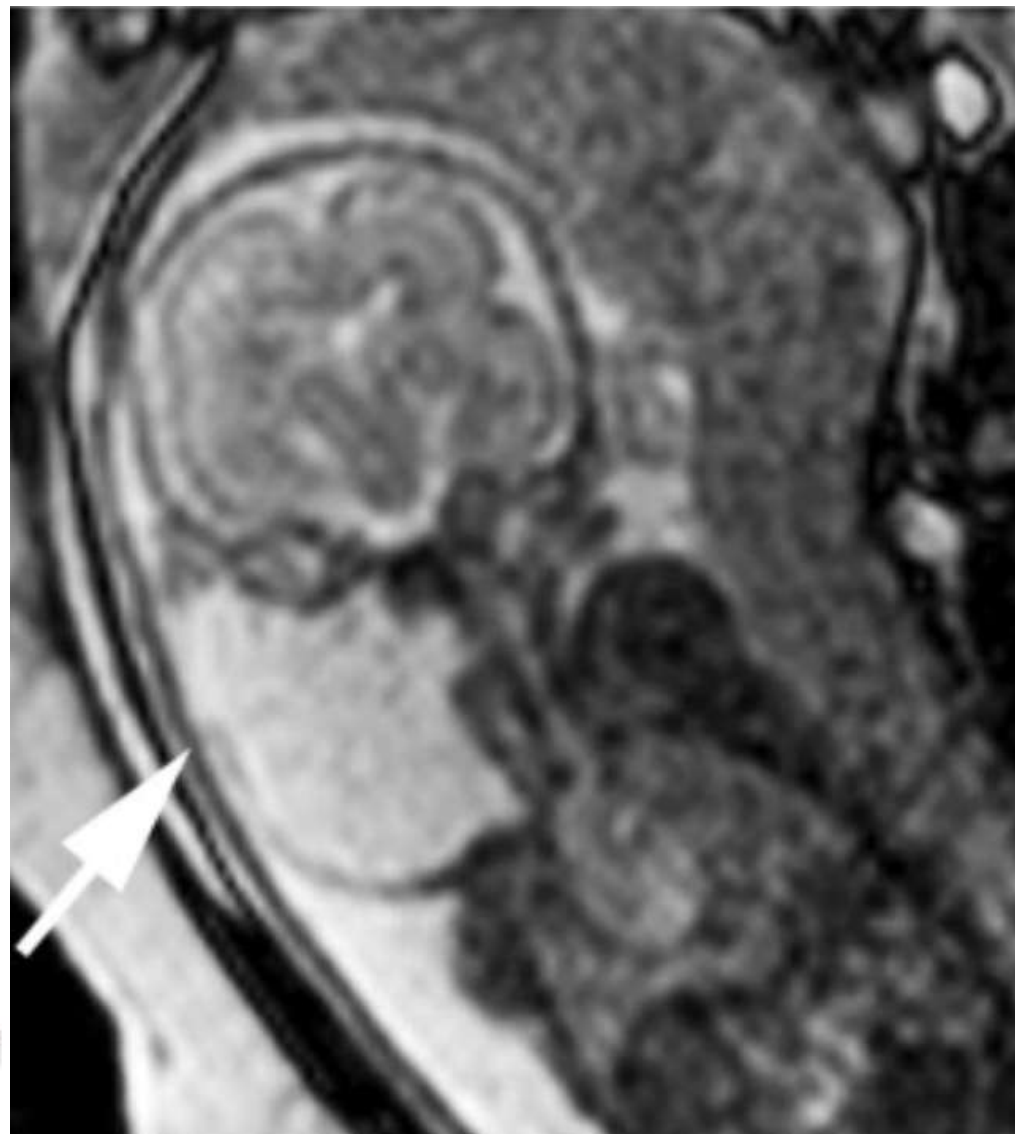
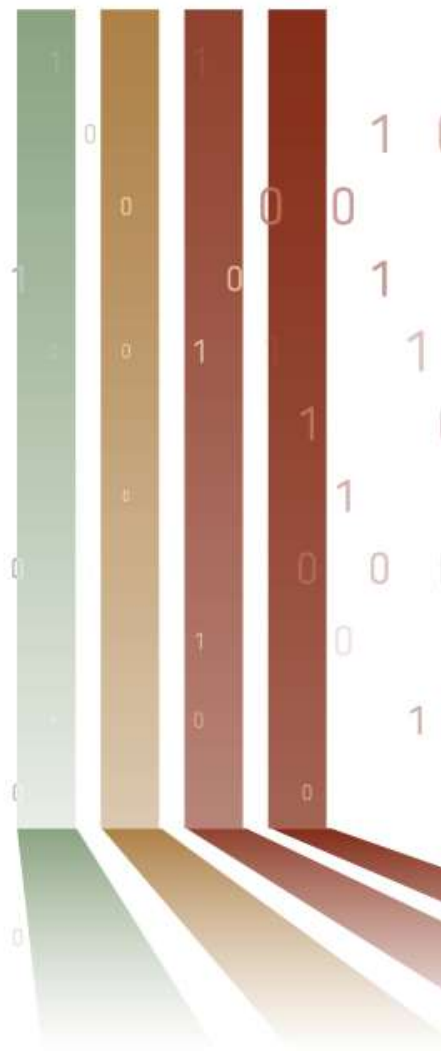
Irregular borders, hypoechoic, microcalcifications
Enlarged calcified or cystic lymph nodes + ↑↑ vascularity



1
0 1 0 1

History: Fetal MRI

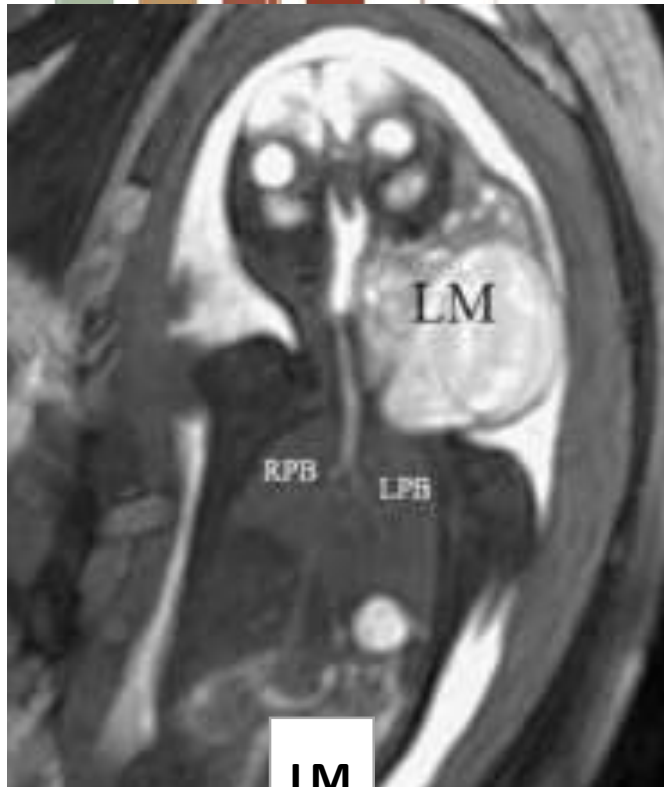
Case (13)



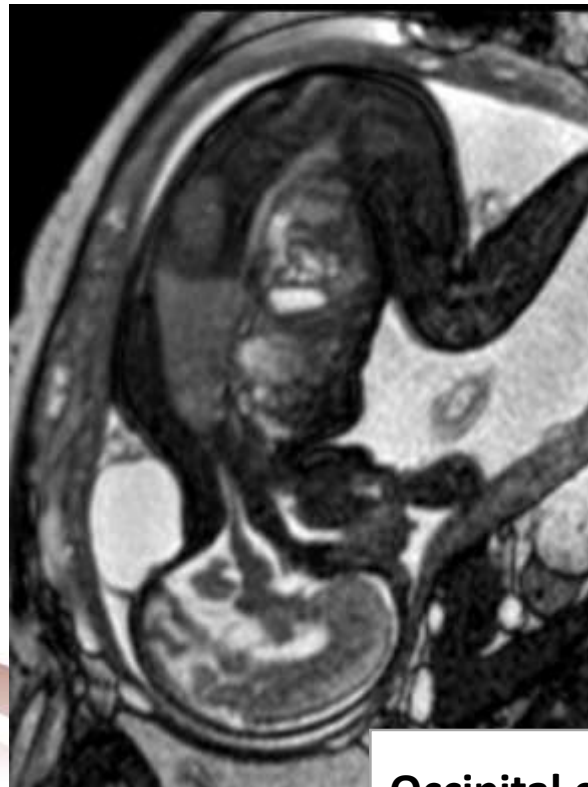
Cystic hygroma (Lymphatic malformation)

In this case:

Cystic mass in the anterior neck region, MRI of a fetus at 20 WG show a large cystic mass (arrow) is seen on the anterior and right anterolateral aspect of the neck extends from the floor of the mouth to the thoracic inlet, the mass is cystic with no evidence of solid components or septa



LM



Occipital encephalocele

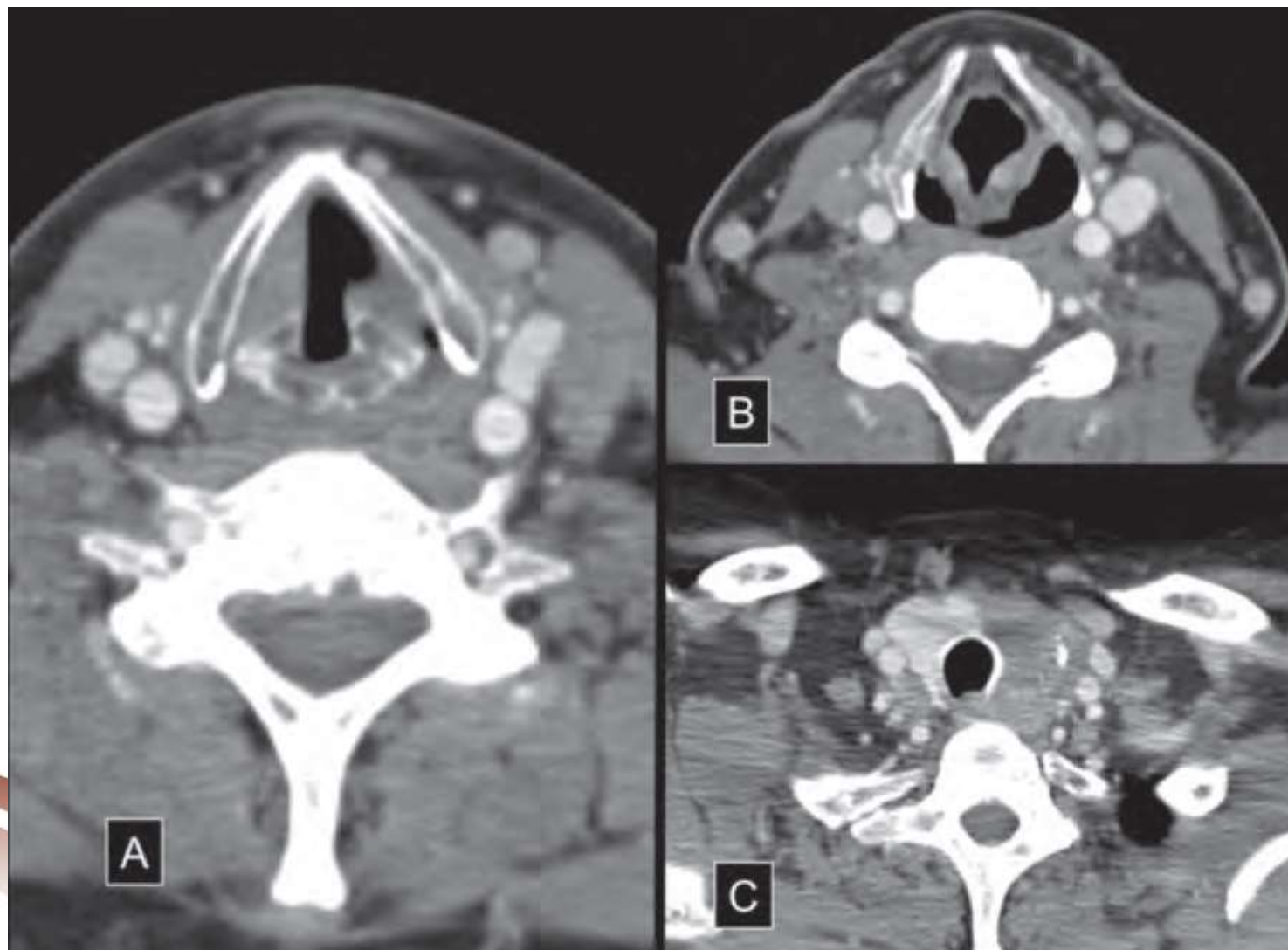
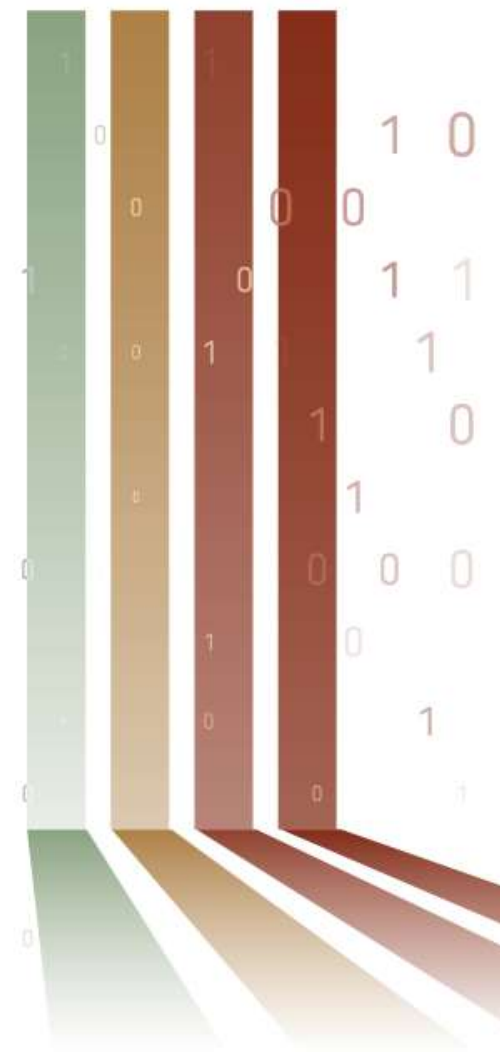


DD: Fetal cystic mass

- 1-Cystic hygroma (Lymphatic malformation):
 - 50% with turner syndrome
 - Large thin walled multiseptated cystic mass
- 2-Occipital encephalocele/ cervical myelomeningocele: Neural tube defect
 - Herniation of central nervous tissue & meninges through osseous defect
 - Encephalocele>> brain tissue is herniated through calvarial defect
 - Myelomeningocele>> spinal canal (cervical)
- 3-Cystic teratoma

Case (14)

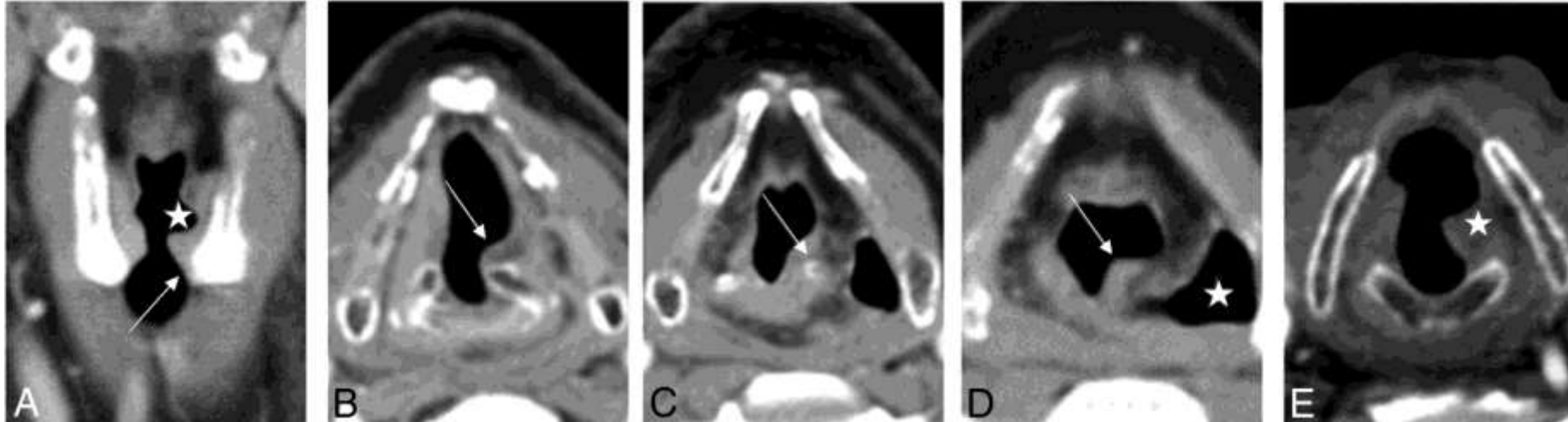
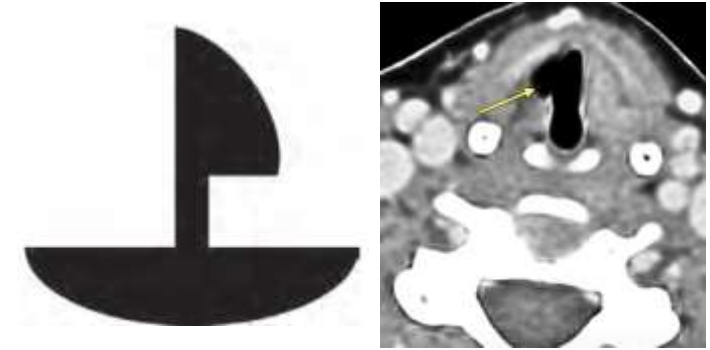
History: A 55-years-old man with persistent hoarseness



Vocal cord paralysis (VCP)

In this case:

Asymmetry of the vocal cords with slight widening of the thyroarytenoid groove (A), a slightly higher axial image (B) shows thickening and anteromedialization of the left aryepiglottic fold and enlargement of the pyriform sinus, a lower section through the thyroid gland (C) demonstrates an aggressive lesion of the left lobe of the thyroid



A, Coronal CT demonstrates dilation of the left laryngeal ventricle (*star*) and loss of the subglottic arch (*arrow*). B, Axial CT demonstrates medial positioning of the left posterior vocal fold margin (*arrow*). C, Axial CT demonstrates anterior positioning of the left arytenoid cartilage (*arrow*). D, Axial CT demonstrates rotation and thickening of the left aryepiglottic fold and enlargement of the left pyriform sinus (*star*). E, Axial CT demonstrates the mushroom sign, tilting toward the left (*star*)

-Signs:

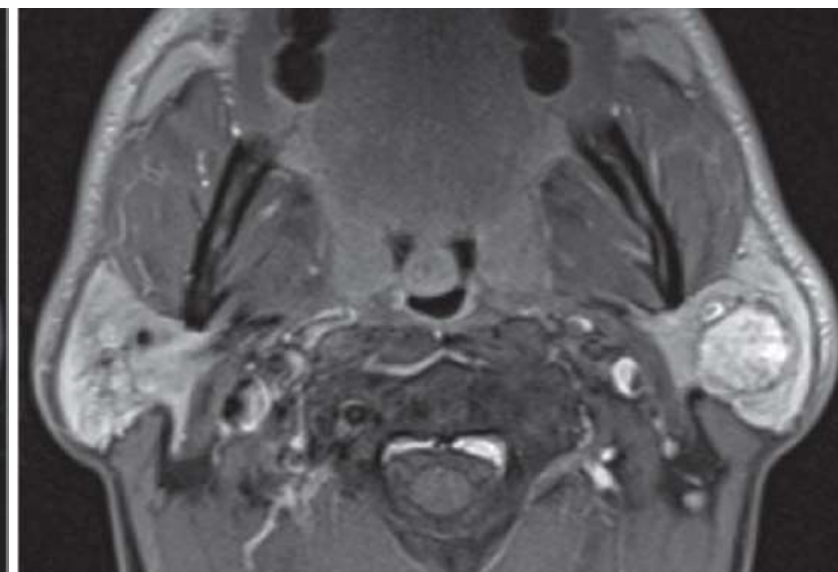
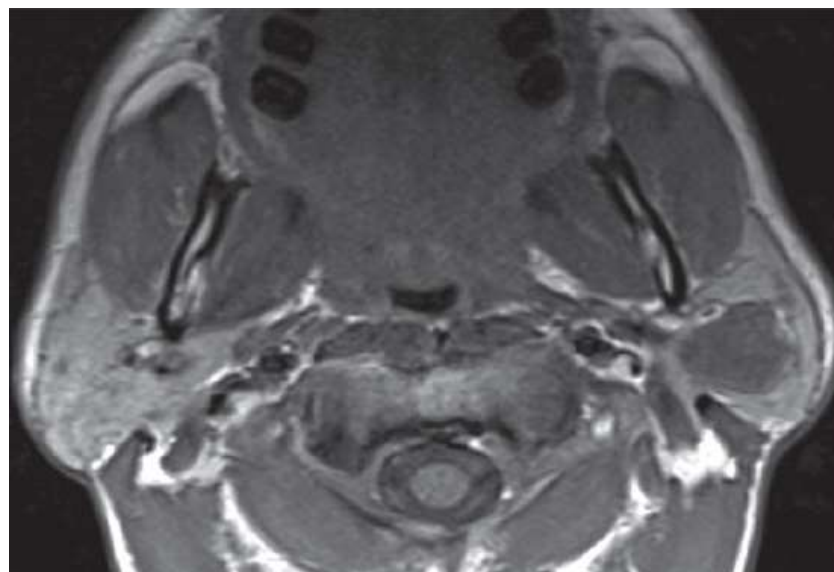
1-Sail sign (spinnaker): Thickened & medialized aryepiglottic fold
2-Dilatation of the pyriform sinus on the same side

3-Dilatation of the laryngeal ventricle

-Most commonly left recurrent laryngeal nerve
>> look for mediastinal or thoracic mass

Case (15)

History: A 43-years-old man with palpable abnormality



Pleomorphic adenoma

In this case:

(a) Axial T2, (b) T1, and (c) T1 fat-suppressed post contrast MR show a circumscribed, lobulated T2 hyperintense, T1 hypointense left parotid gland mass with homogeneous enhancement, the mass is centered in the superficial parotid lobe, with a small component extending medial to the retromandibular vein into the deep parotid lobe

DD: Parotid masses

1-Lymph node: Most common parotid mass

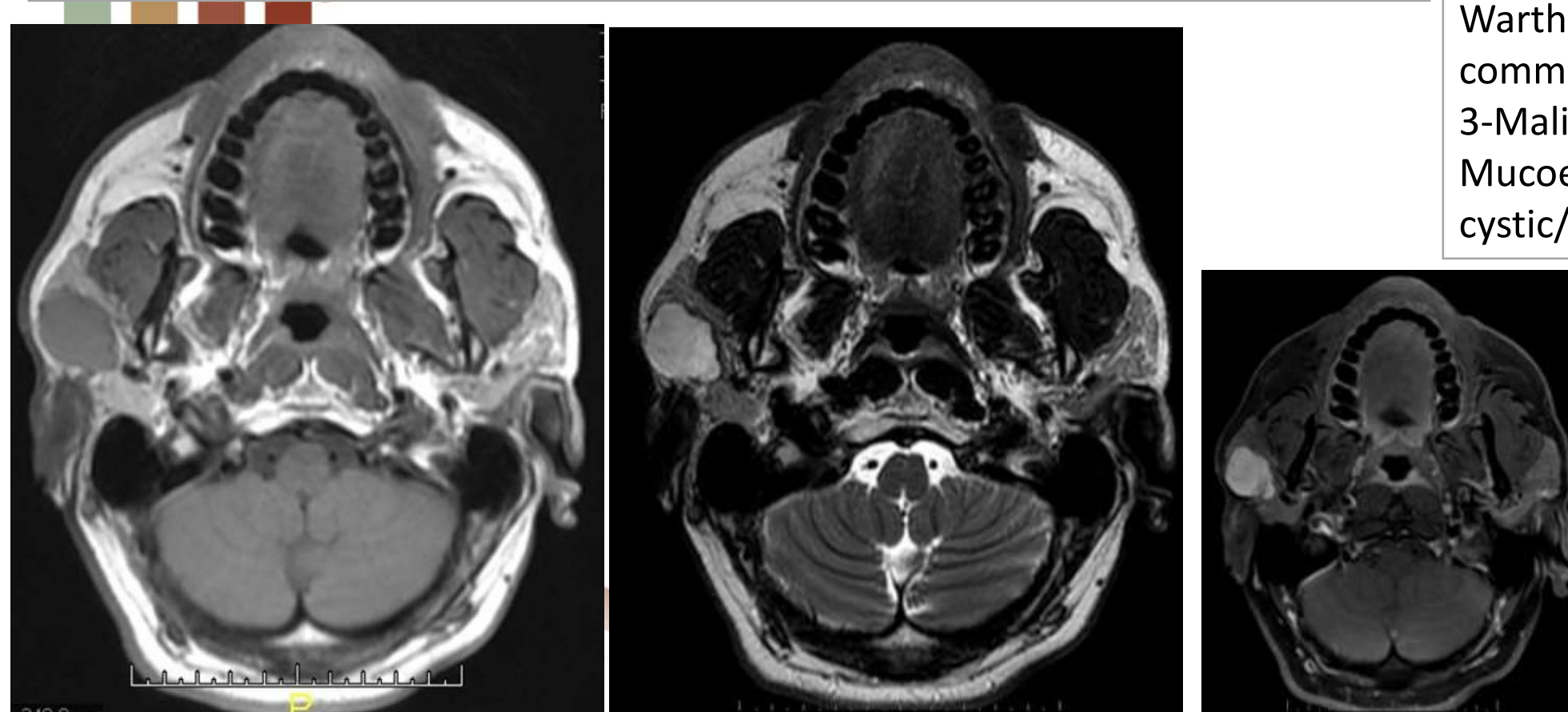
2-Benign tumors:

Pleomorphic adenoma: most common, low T1, high T2, enhances

Warthin tumor: 2nd most common, cystic, no ++

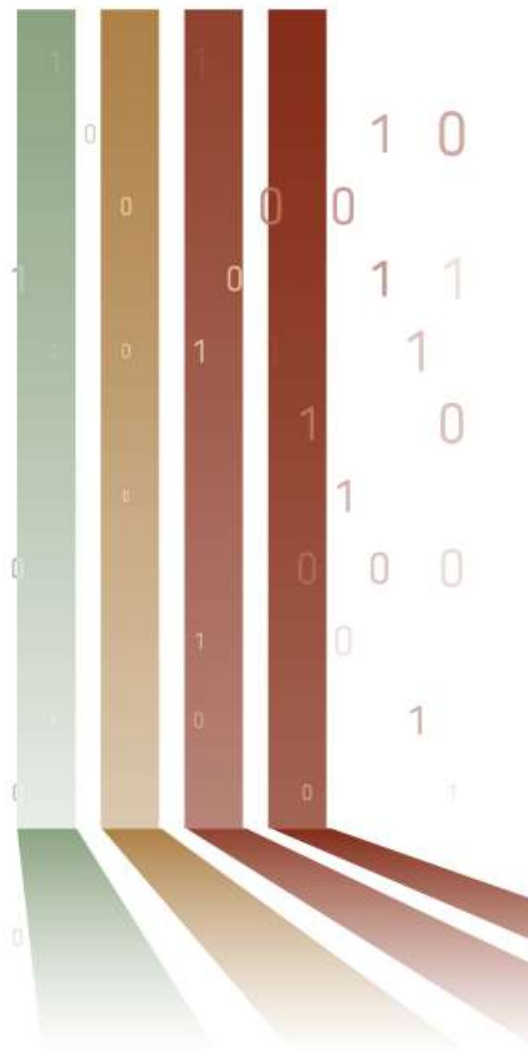
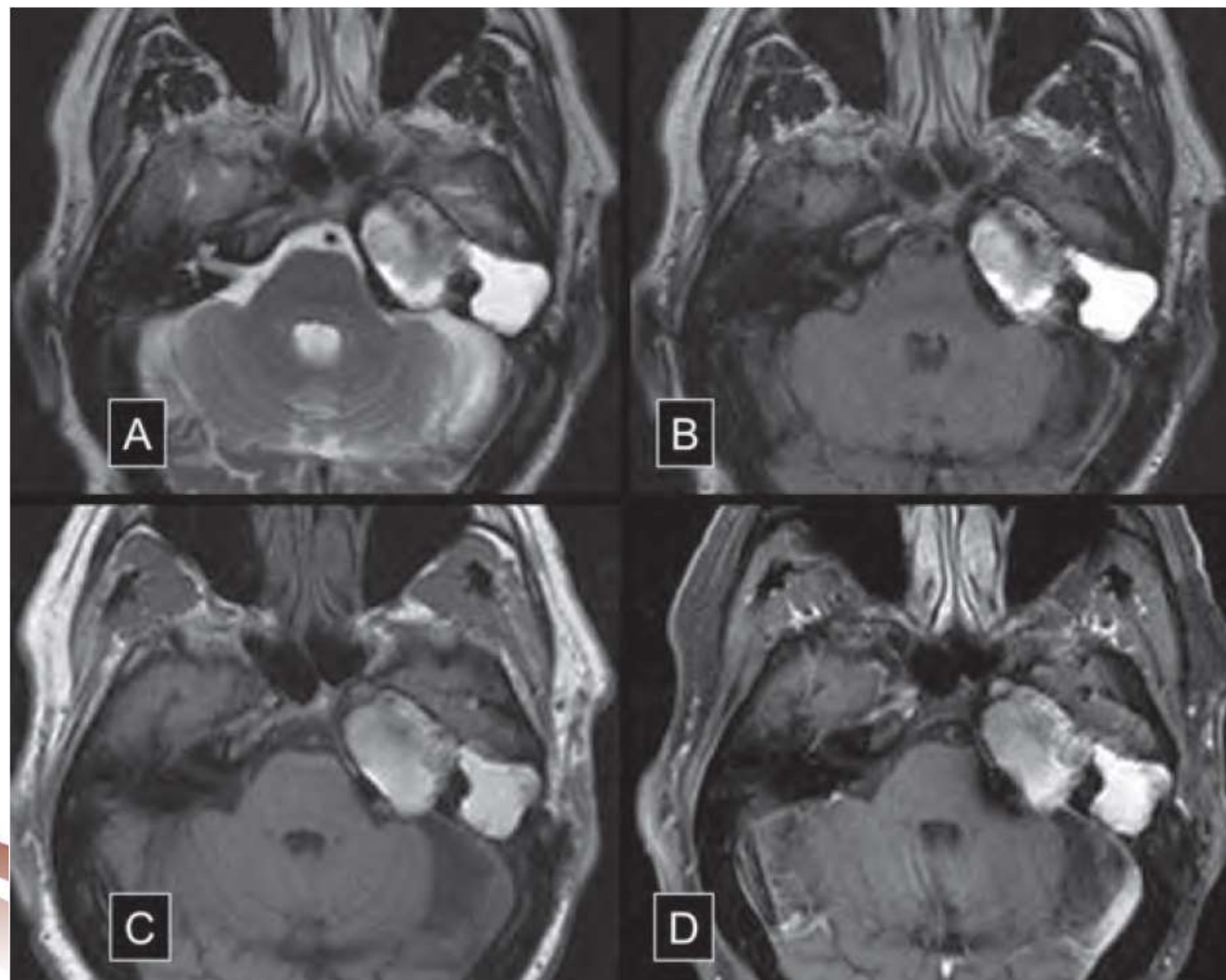
3-Malignant tumors:

Mucoepidermoid/ adenoid cystic/ squamous cell carcinoma



Case (16)

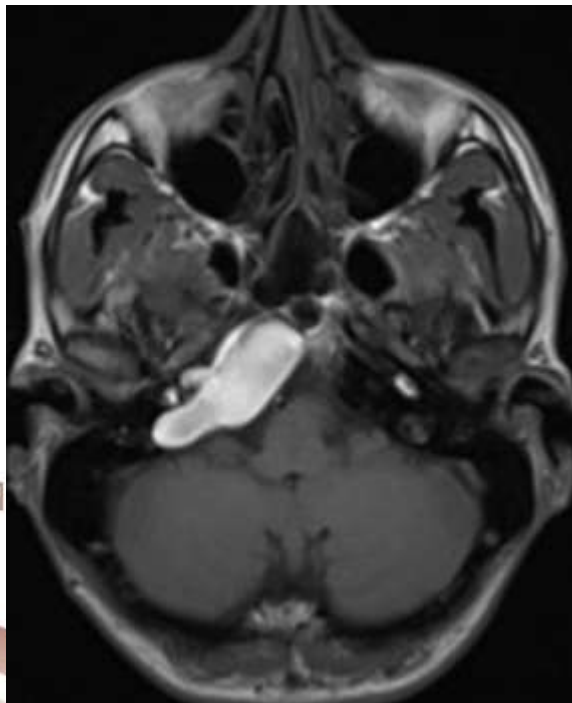
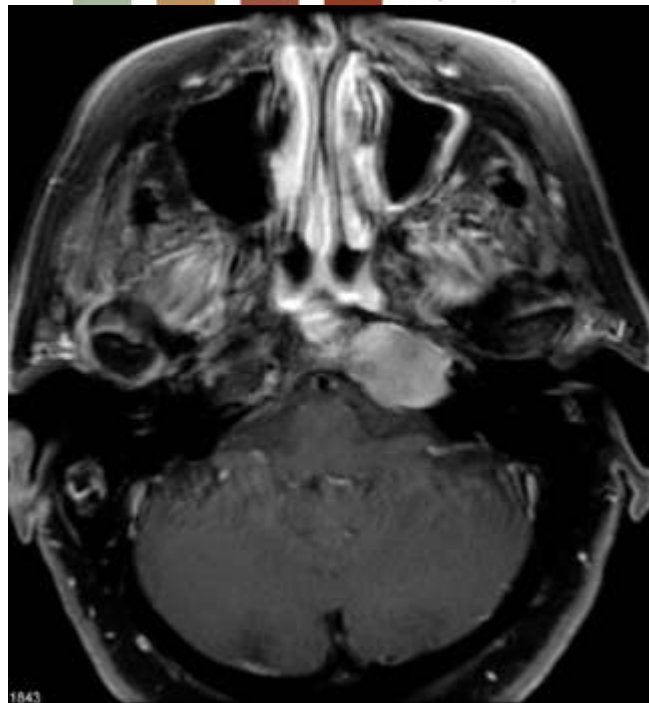
History: A 55-years-old man with hearing loss



Cholesterol granuloma

In this case:

Axial T2 (A) & FLAIR (B) images show bright signal intensity within the lesion predominantly laterally, there are surrounding benign changes without brain vasogenic edema, axial T1 precontrast (C) and correlating axial T1 post-contrasted fat saturation (D) show that there is similar bright T1 signal intensity with no enhancement of the lesion

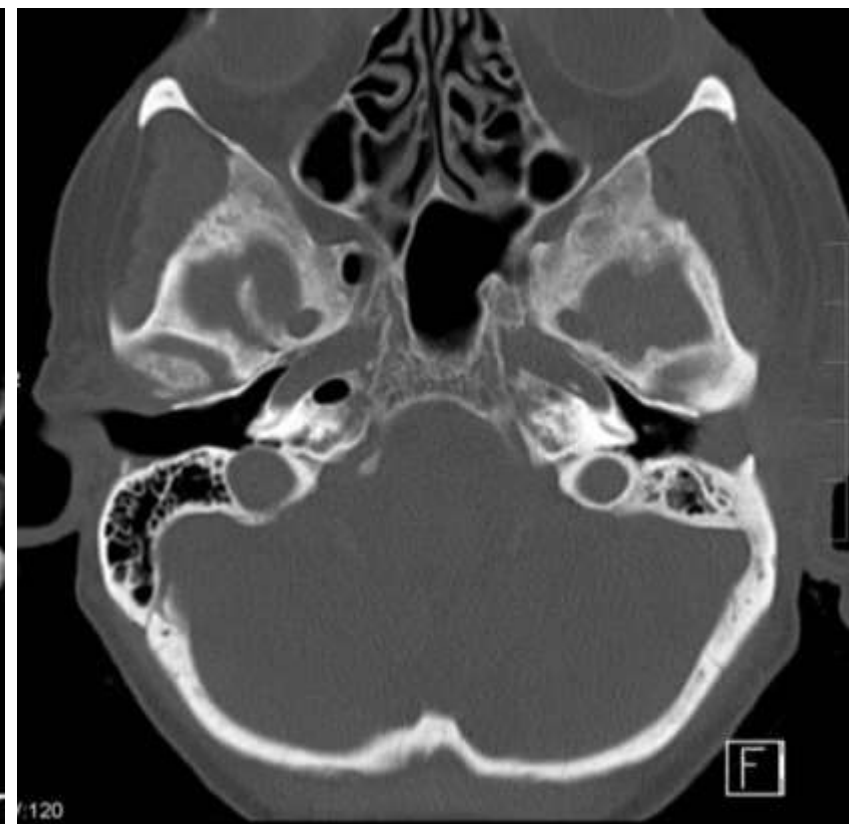
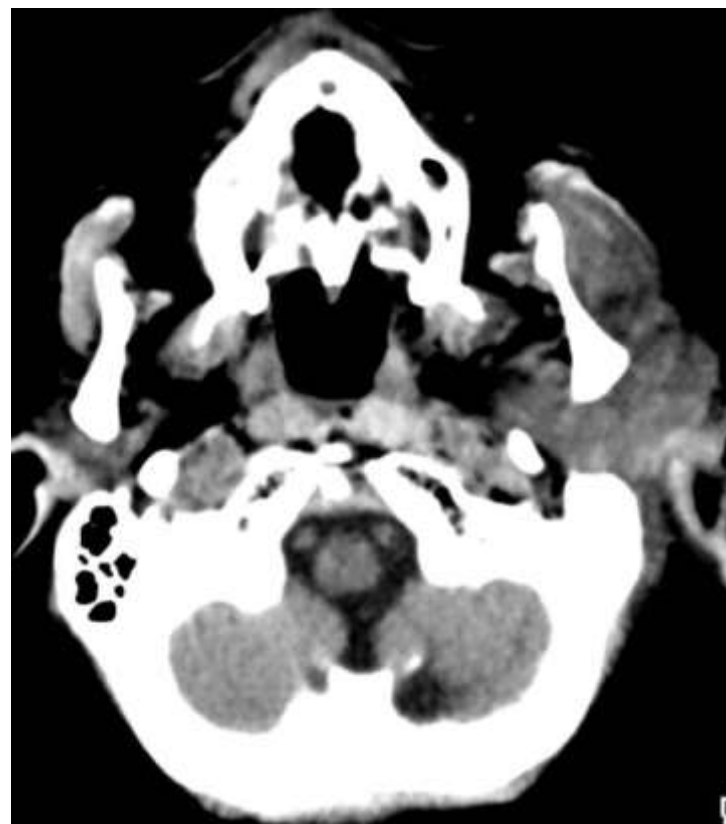
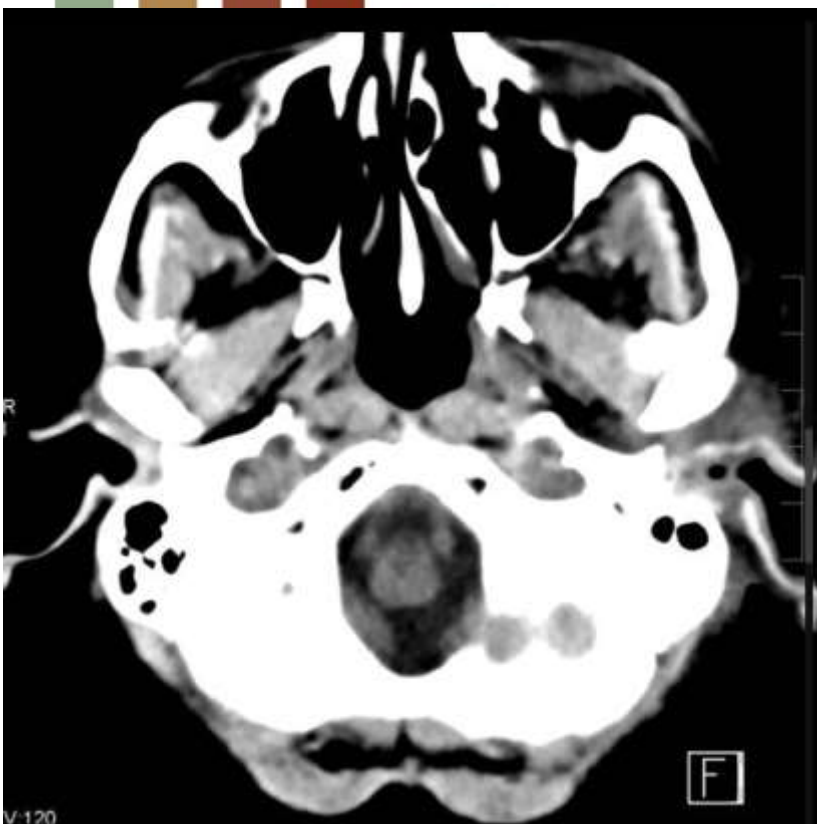


DD: Petrous apex lesions

- 1-Cholesterol granuloma (most common), high T1, no restriction
- 2-Congenital cholesteatoma: Bone erosion + diffusion restriction
- 3-Meningioma: dural tail
- 4-Apical petrositis: Fluid within the petrous apex
- 5-EG: Well circumscribed lytic lesion in a child
- 6-Mets/MM: Aggressive
- 7-Chondrosarcoma/Chordoma: Aggressive appearing, high in T2

Case (17)

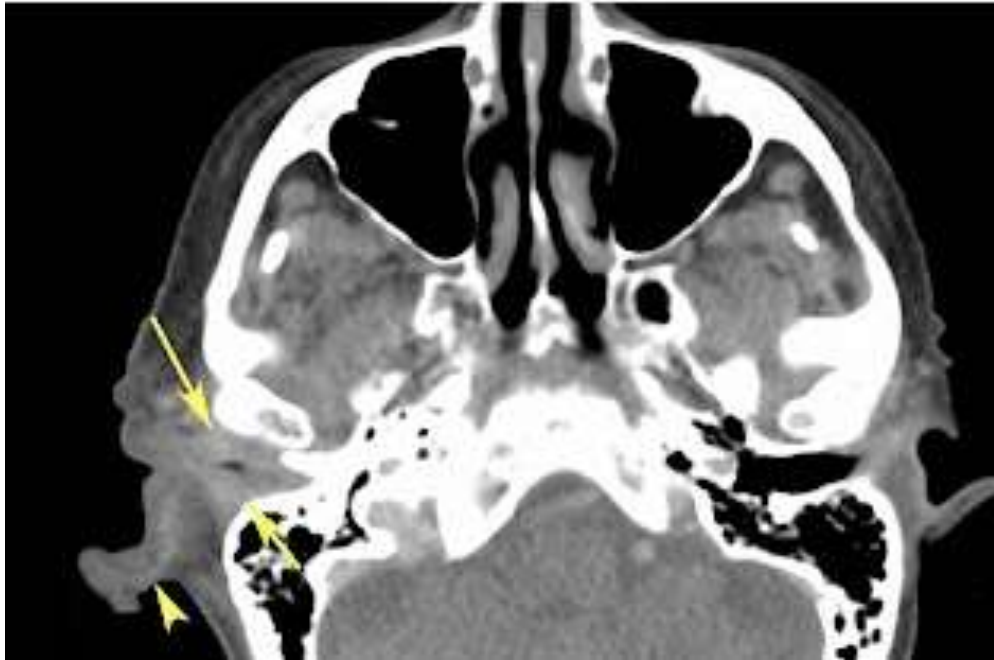
History: A 71-years-old woman with recent completion with chemotherapy, presented with swollen left face and neck



Necrotizing (malignant) otitis externa

In this case:

Pronounced swelling of the left external auditory meatus (EAM), pinna and periauricular soft tissue, no periauricular or subperiosteal collection was detected, fluid is present in the left mastoid sinuses without evidence of bone erosion



Severe invasive infection of the EAC which can spread rapidly to involve the surrounding soft tissue, adjacent neck spaces & skull base

Common in DM & immunosuppression

CT: Enhancing thickened soft tissue +/- cortical bone erosion +/- abscess >> may extend with inflammatory changes in the periauricular soft tissues, nasopharynx & parapharyngeal space +/- opacification of the mastoid air cells

Case (18)

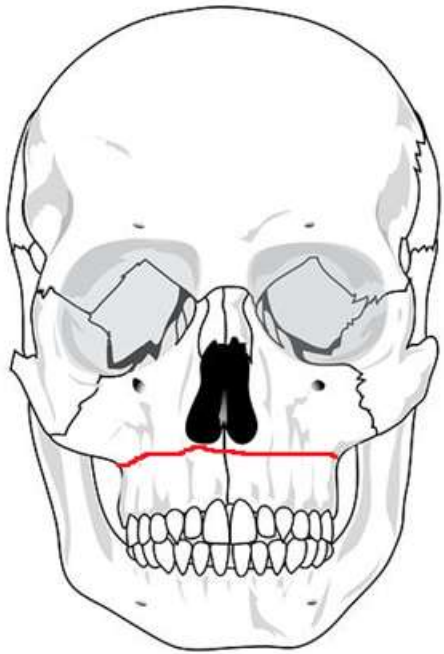
History: Withheld



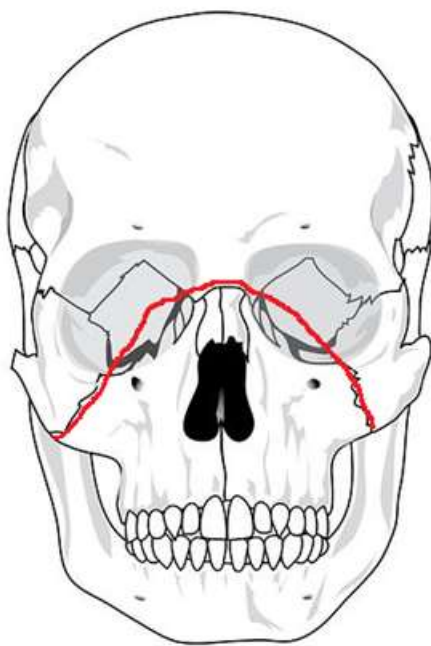
Le fort fracture type I

In this case:

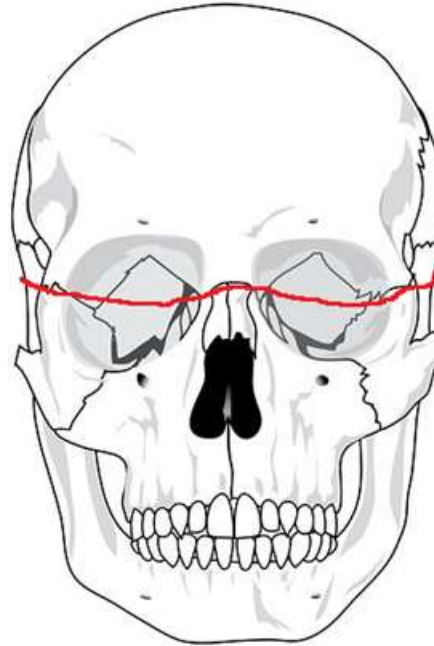
Fractured maxillary sinus walls, pterygoid process, blood levels in both maxillary sinus and extensive soft tissue emphysema



LE FORT I



LE FORT II



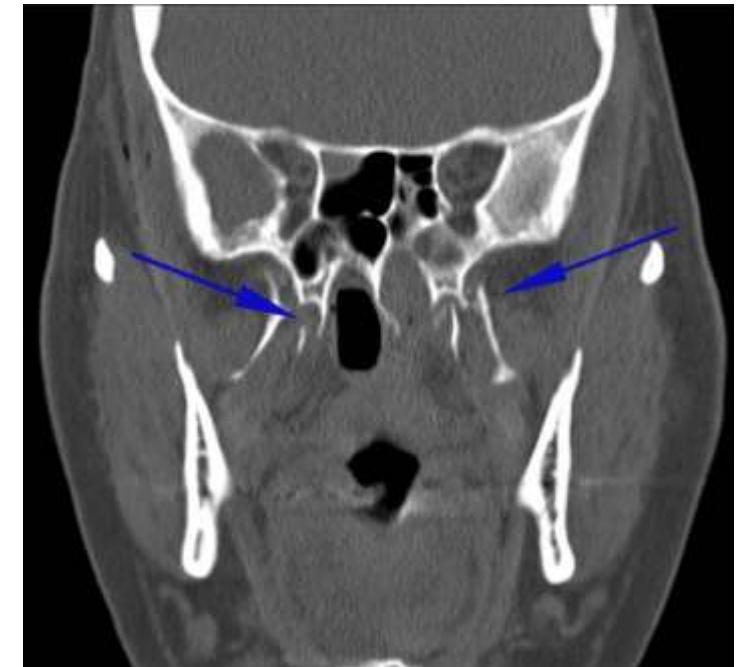
LE FORT III

Le fort fracture = pterygoid plate fracture

(I) Maxillary arch to move away from the nose & face

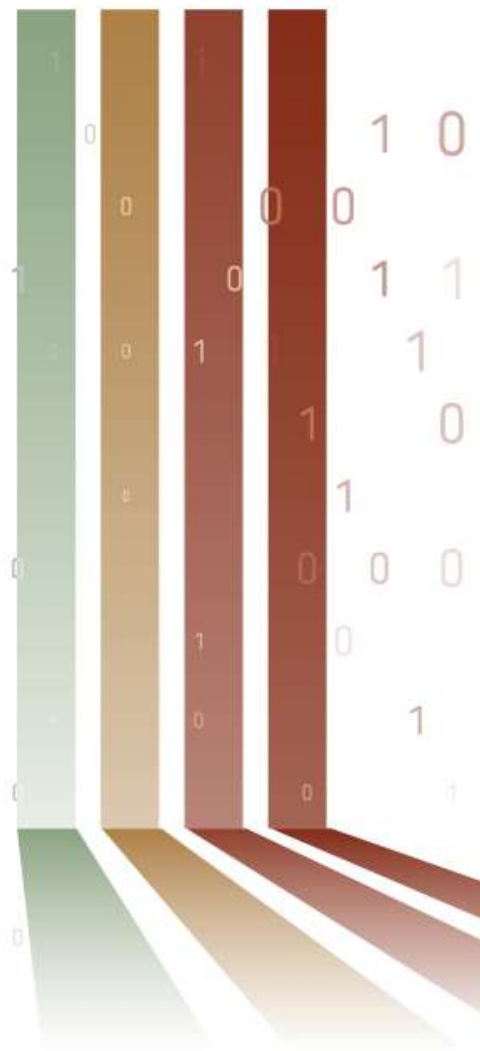
(II) Maxillary arch & nose to move away from the remainder of the face

(III) The whole face to move away from the base of the skull



History: Withheld

Case (19)

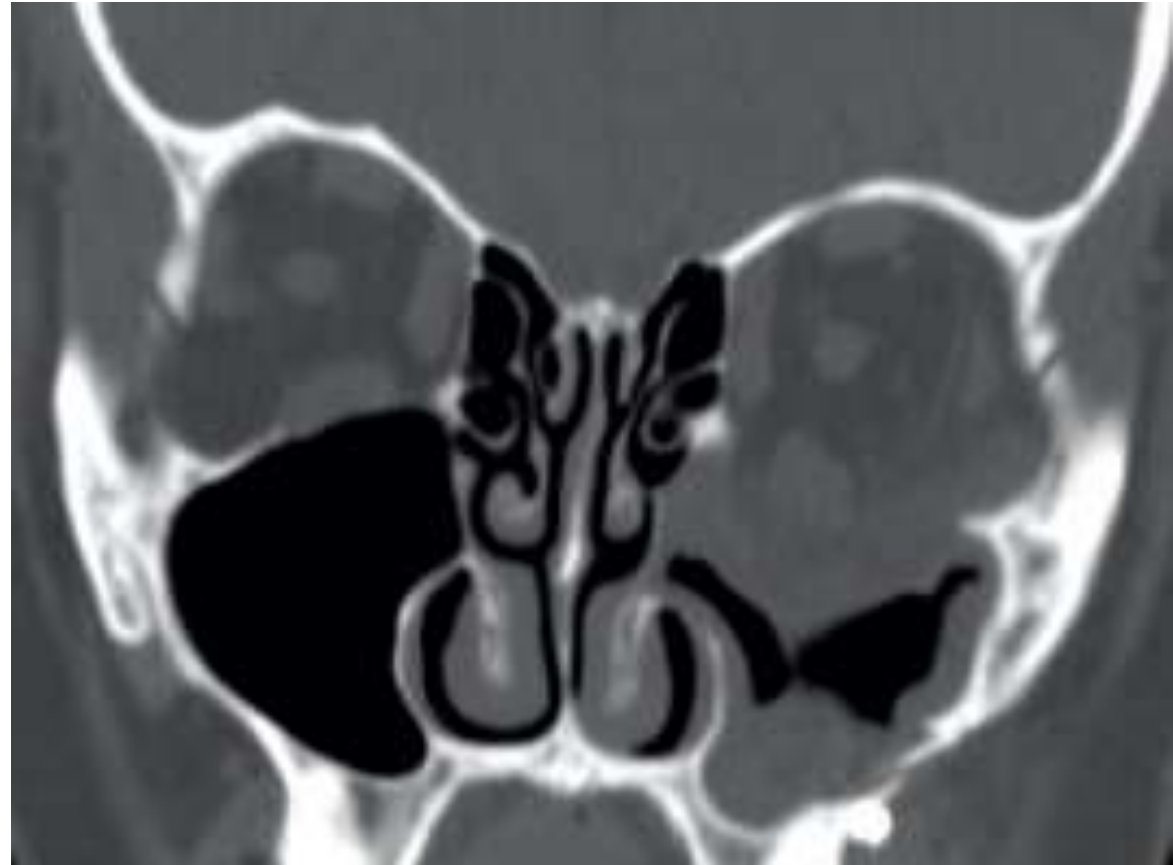
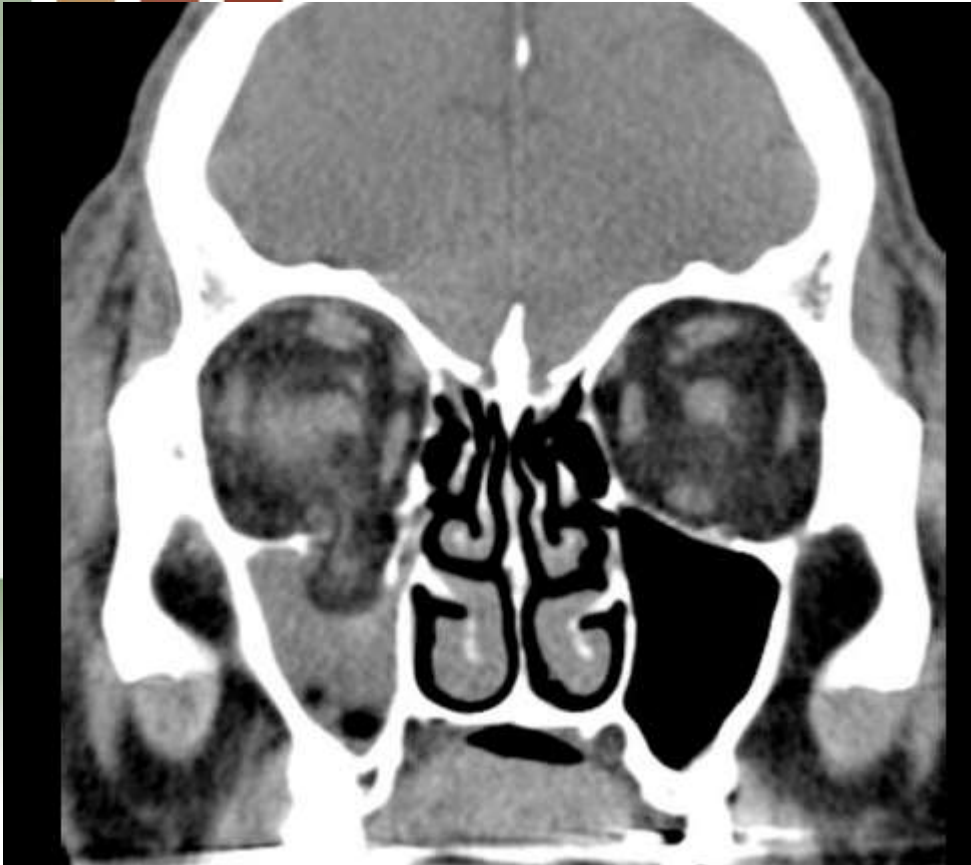


Orbital blow out fracture

In this case:

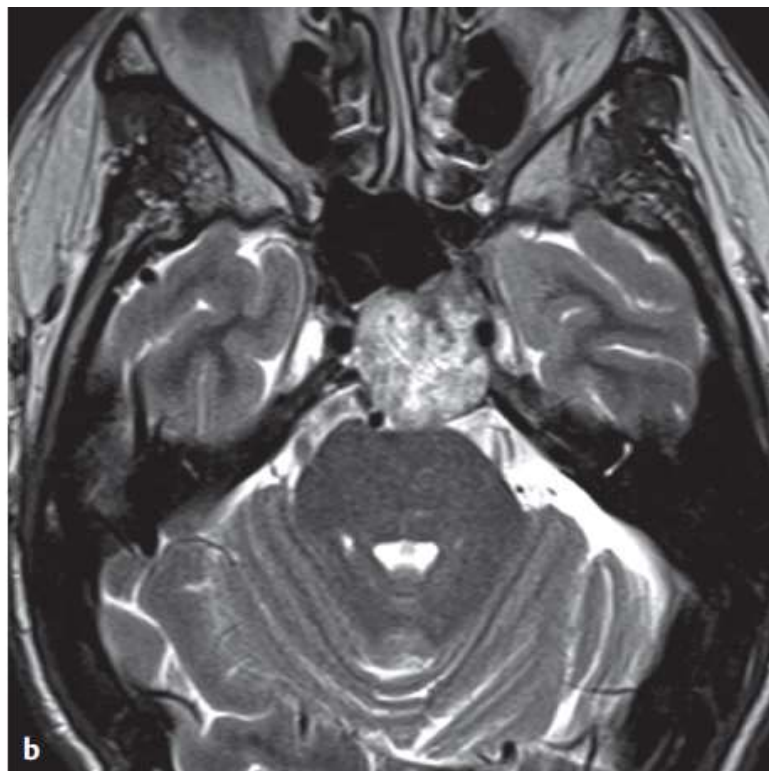
There is a comminuted fracture of the floor of the left orbit with inferior emplacement of the fracture fragments and herniation of the intraorbital fat through the defect, the infraorbital canal is involved by the fracture

Direct trauma to the orbit >> ↑↑ orbital pressure >> disruption of the orbital floor or medial wall (lamina papyracea) with herniation of orbital contents outside the orbit >> herniation of the inferior rectus muscle >> diplopia



Case (20)

History: A 63-years-old man with headaches



Chordoma

In this case:

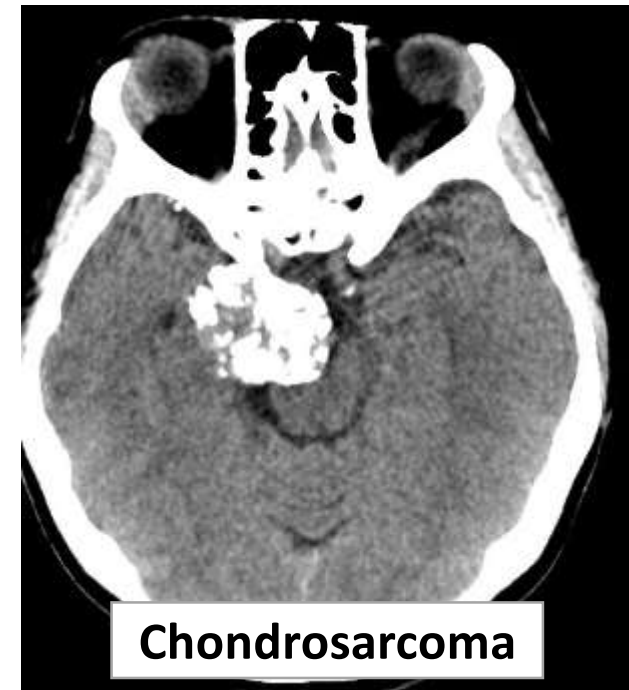
(a) T1 demonstrates a lobulated hypointense mass centered within the clivus with extension superiorly along the inferior sella and posteriorly into the prepontine cistern, (b) The mass is T2 hyperintense with regions of intermediate signal intensity and demonstrates heterogeneous enhancement on axial fat-suppressed post-contrast (c), the mass partially encases the left internal carotid artery without frank cavernous sinus extension

DD: Clival mass

- 1-Mets
- 2-Chordoma (midline)
- 3-Chondrosarcoma (off midline + calcifications)
- 4-Invasive pituitary macroadenoma
- 5-Plasmacytoma
- 6-Meningioma



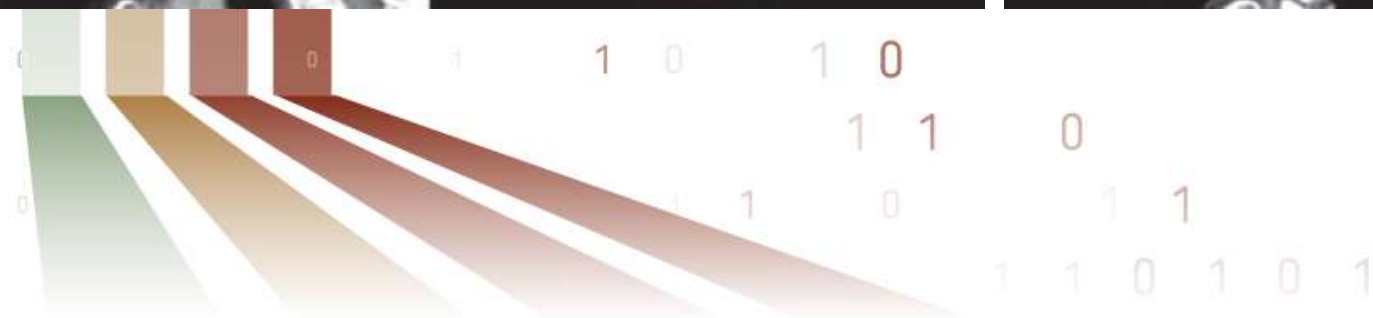
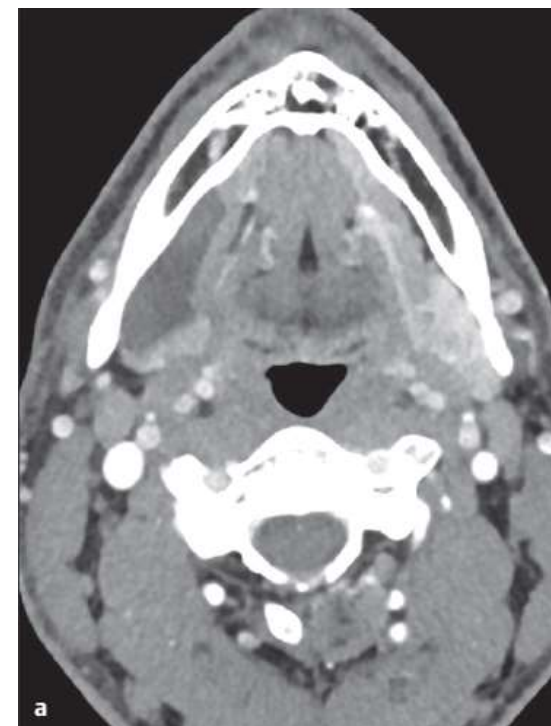
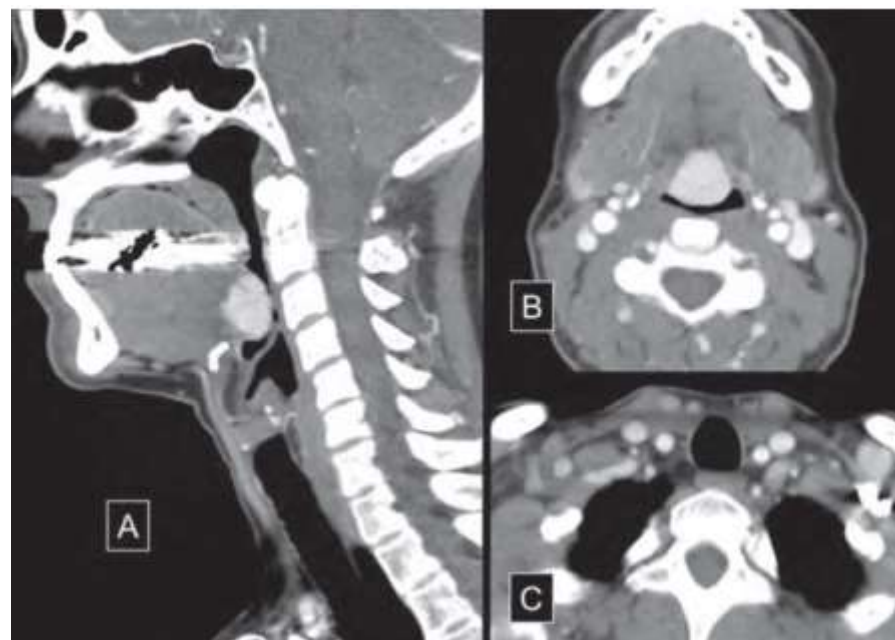
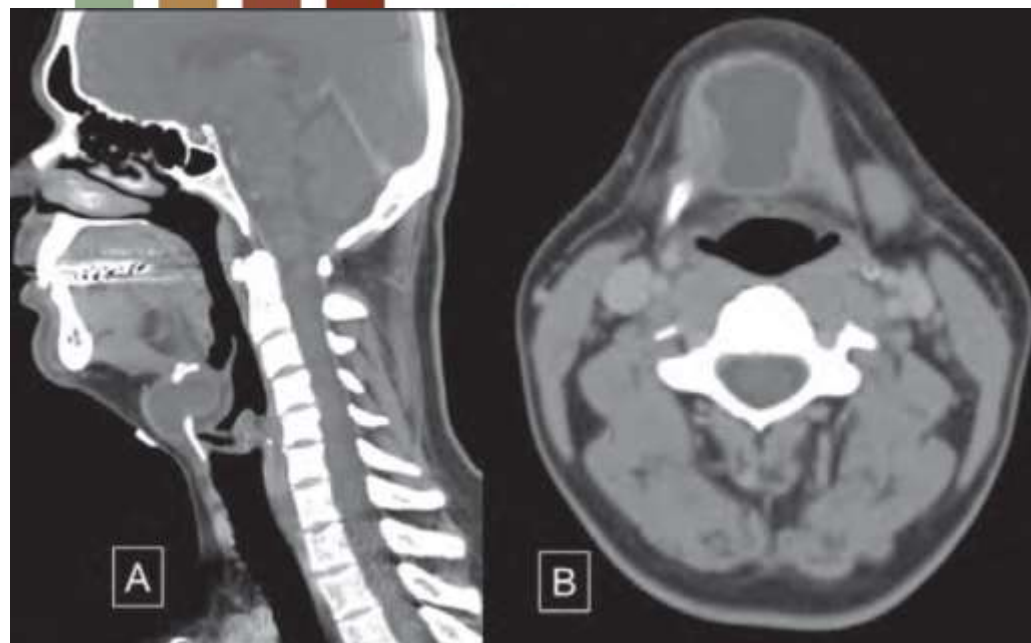
Chordoma



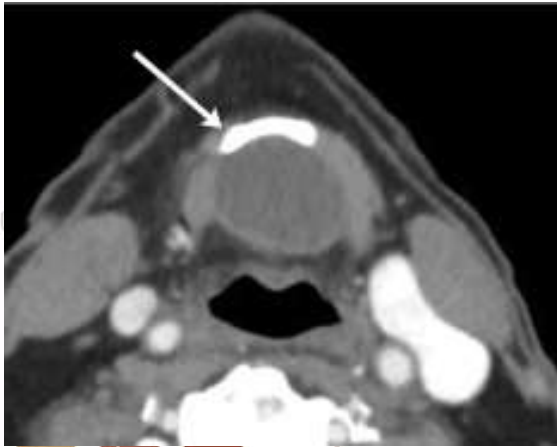
Chondrosarcoma

Case (21)

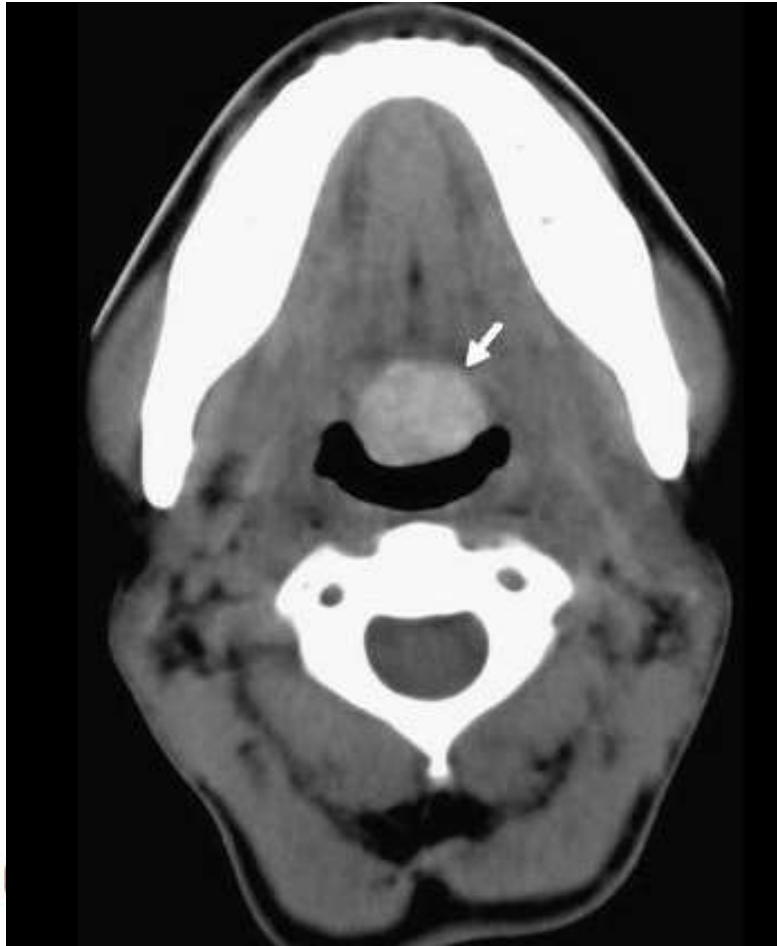
History: 3 different patients



Thyroglossal duct cyst/ Lingual thyroid/ Ranula



Thyroglossal duct cyst



Lingual thyroid



Ranula

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4	NBD	1000001071 - 33	NBDEEGCXXXX
5	Credit Agricole	81100052130	AGRIEGCXXXX
6	Credit Agricole	81110006550	AGRIEGCXXXX
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12	NBE - Main Branch	1008887777	NBEGEGCX006
13	Misr Bank	105 / 1 / 48589	BMISEGCX105
14	Al Watany Bank of Egypt	888777	WABAEGCXXXX
15	Arab Bank - Moqattam	888777 - 449	ARABEGCX
16	Arab Bank - Nozha	888777 - 448	ARABEGCX
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18	NSGB	20310202160	NSGBEGCXXXX
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20	Barklis	8887779	BCBIEGX
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27	CIB	0193301116	CIBEEGCX001
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30	Suez Canal	888777	SUCAREGCXSPH



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