

Nasopharynx and Skull Base

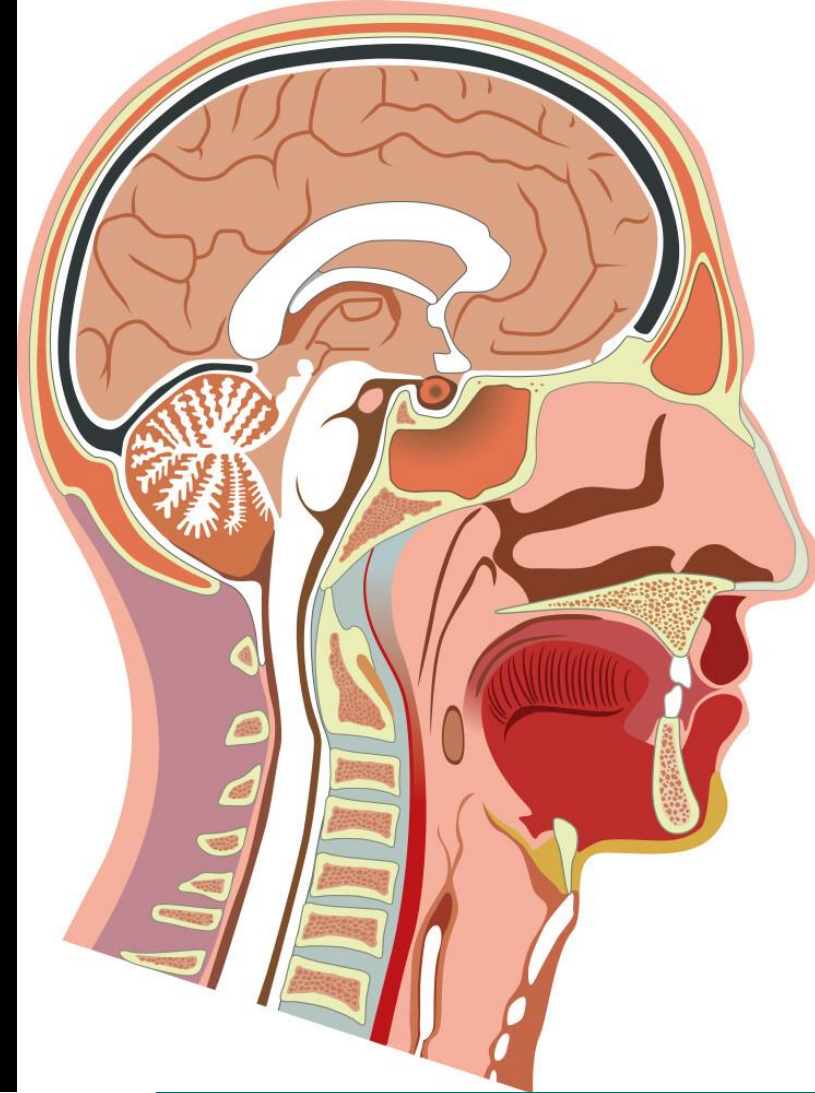
Mohit Agarwal MD

Associate Professor

Director Fellowship Program, Associate Section Chief

Founder of The Cortex Club

Medical College of Wisconsin, Milwaukee, WI



THE
CORTEx
CLUB

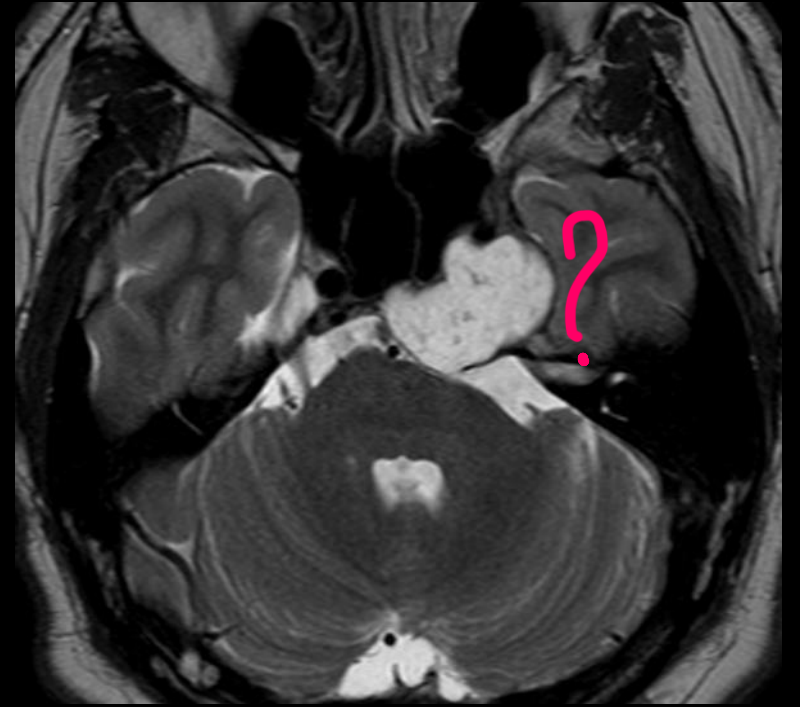
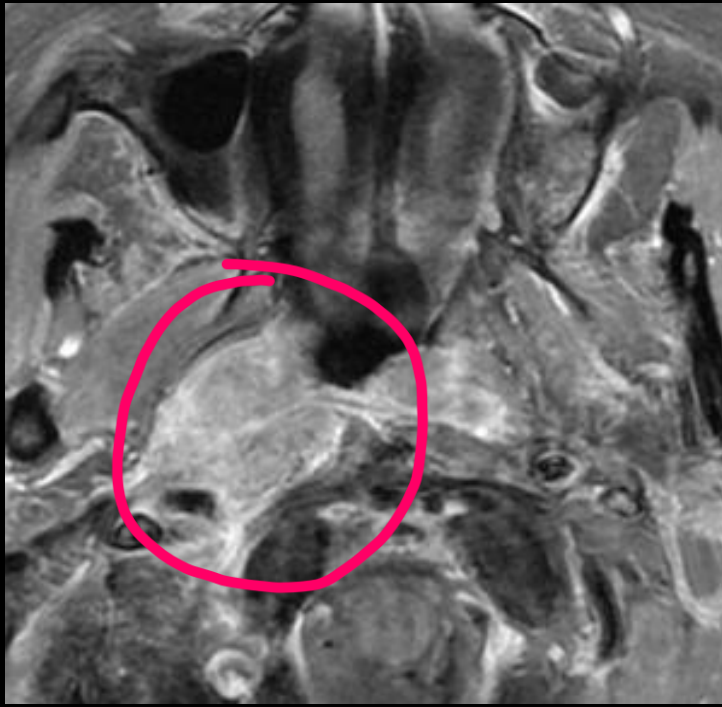


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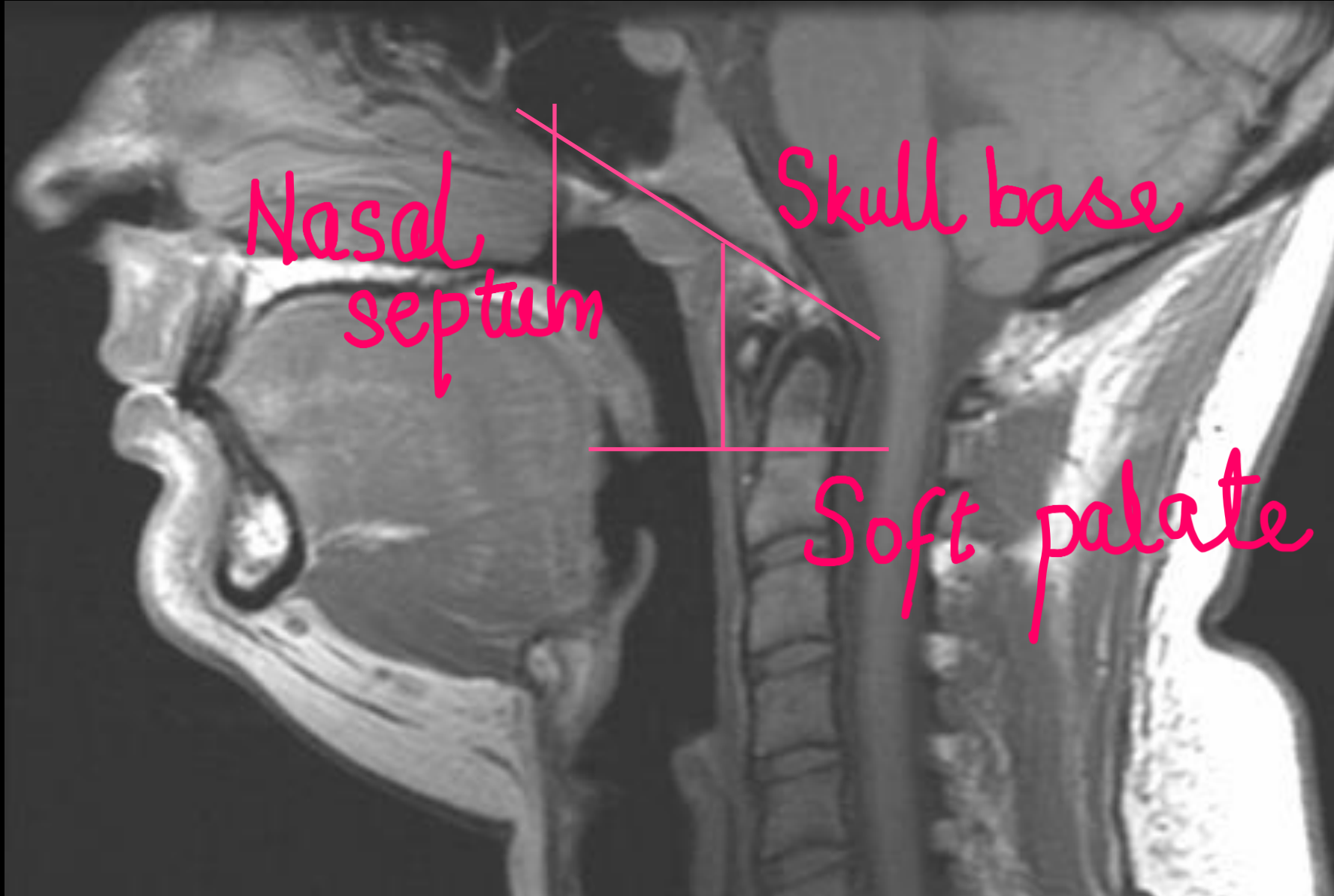
The arrow points to what structure?

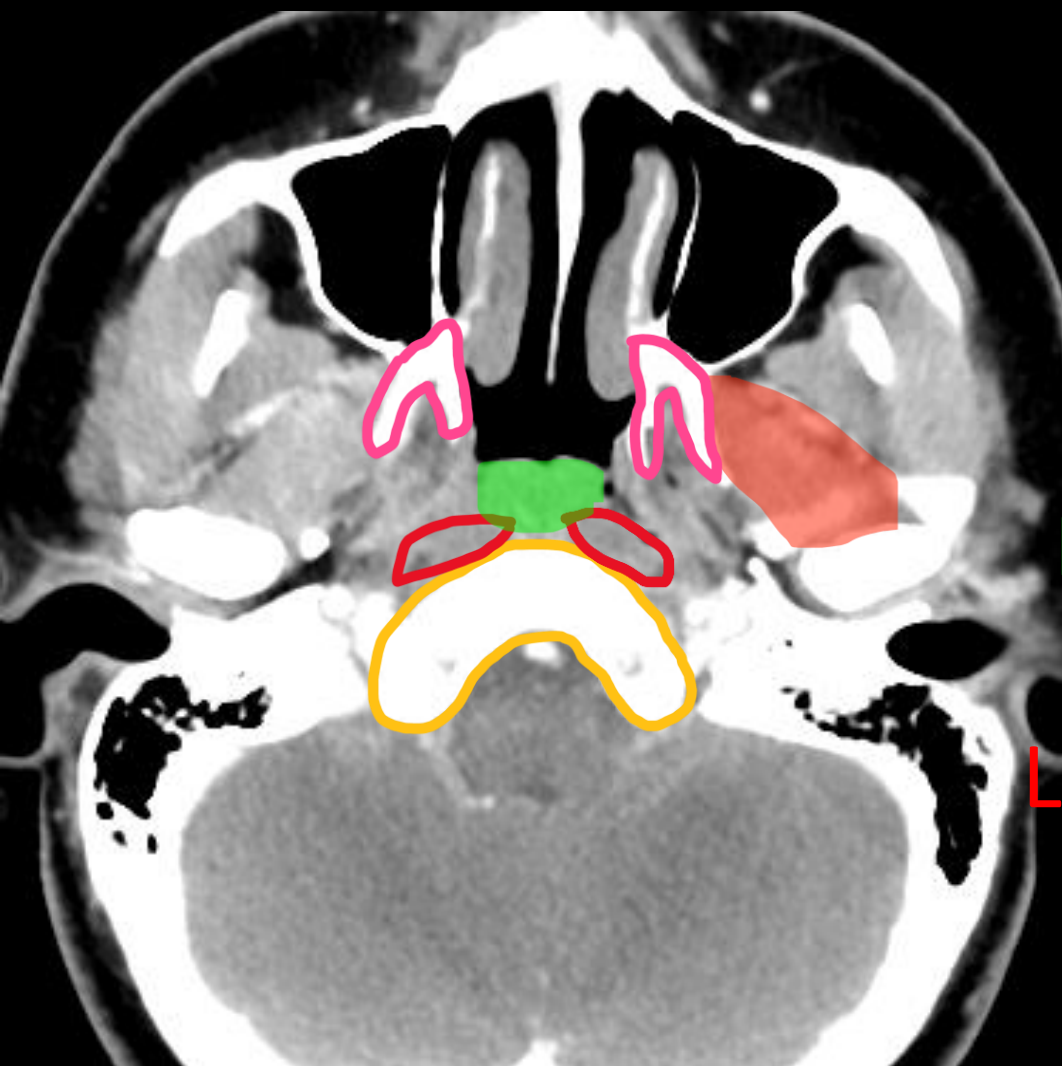
In this NPC, am I talking about all the relevant anatomy?

What is that lesion at the skull base?

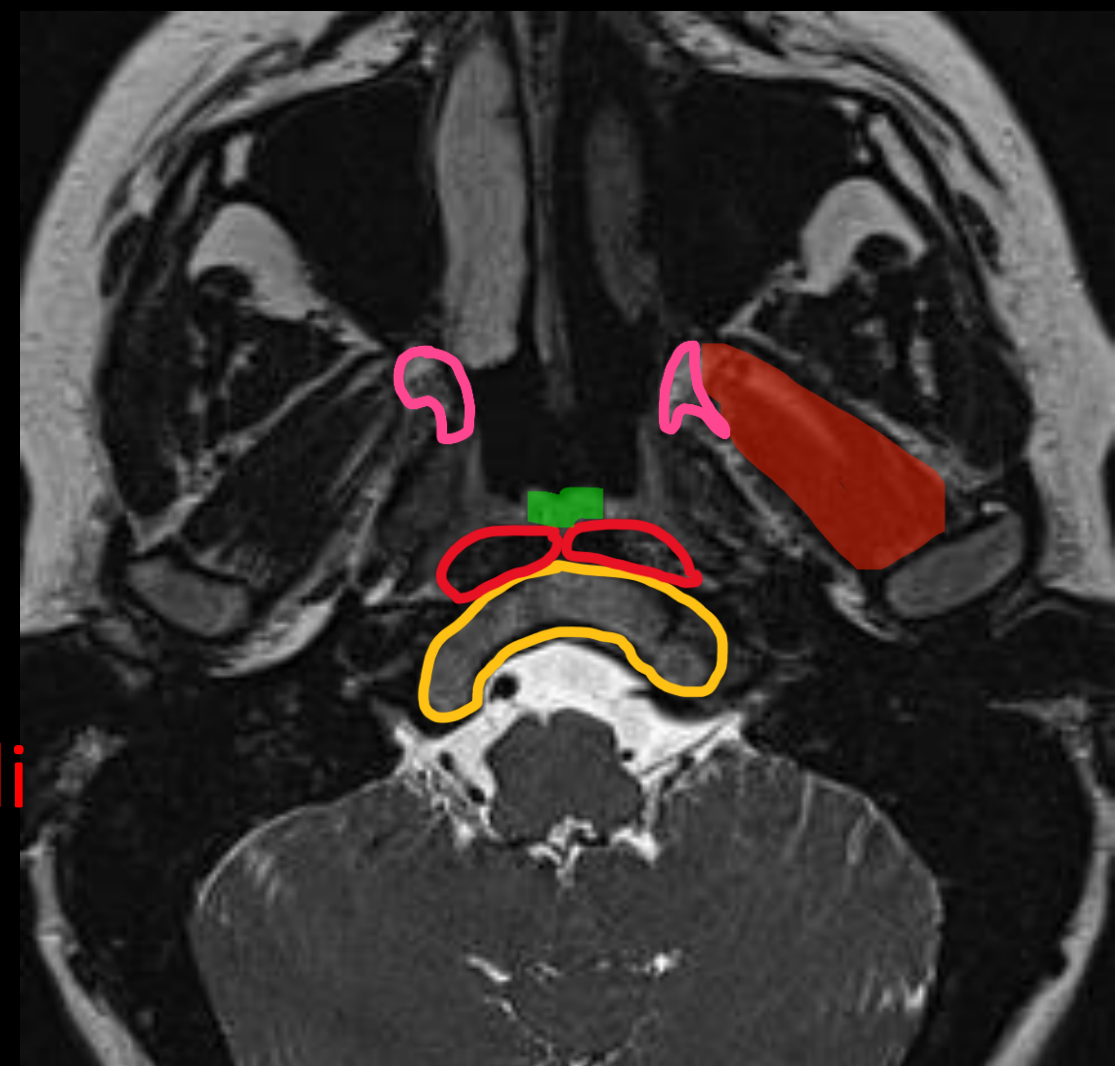
Objectives

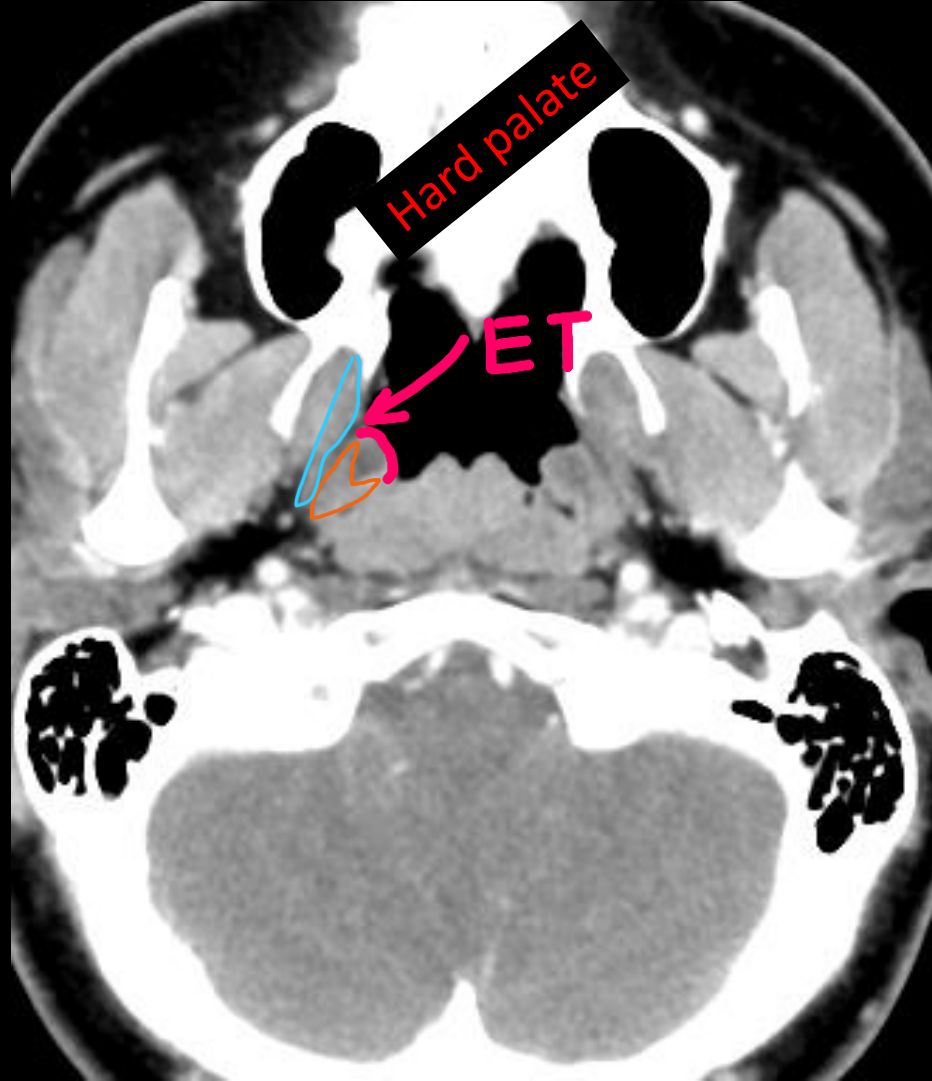
- Review the anatomy of nasopharynx and skull base
- Discuss anatomic determinants of nasopharyngeal cancer staging
- Review other common nasopharyngeal and skull base pathologies





Lateral
pterygoid
Pterygoid
plates
Lymphoid
tissue
Longus colli
Clivus

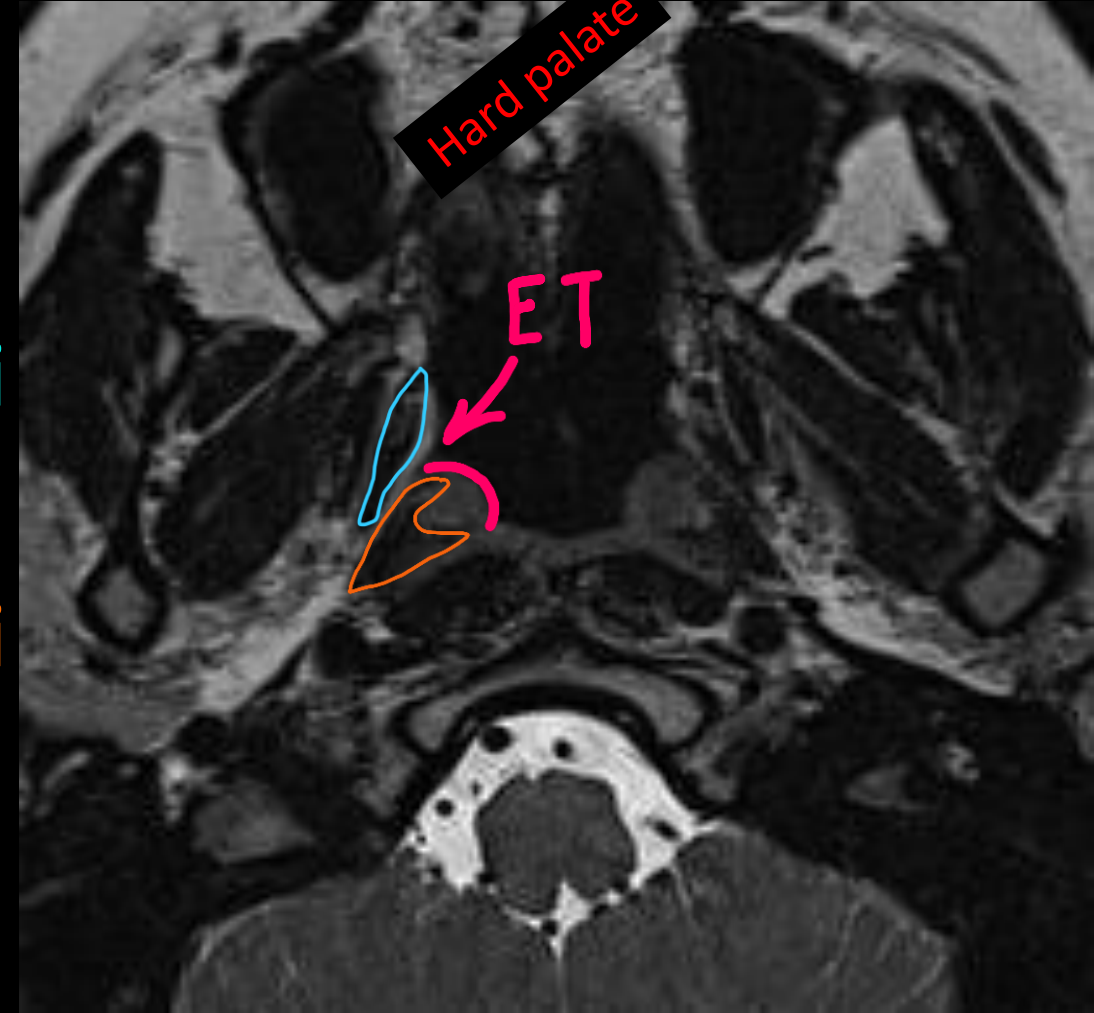


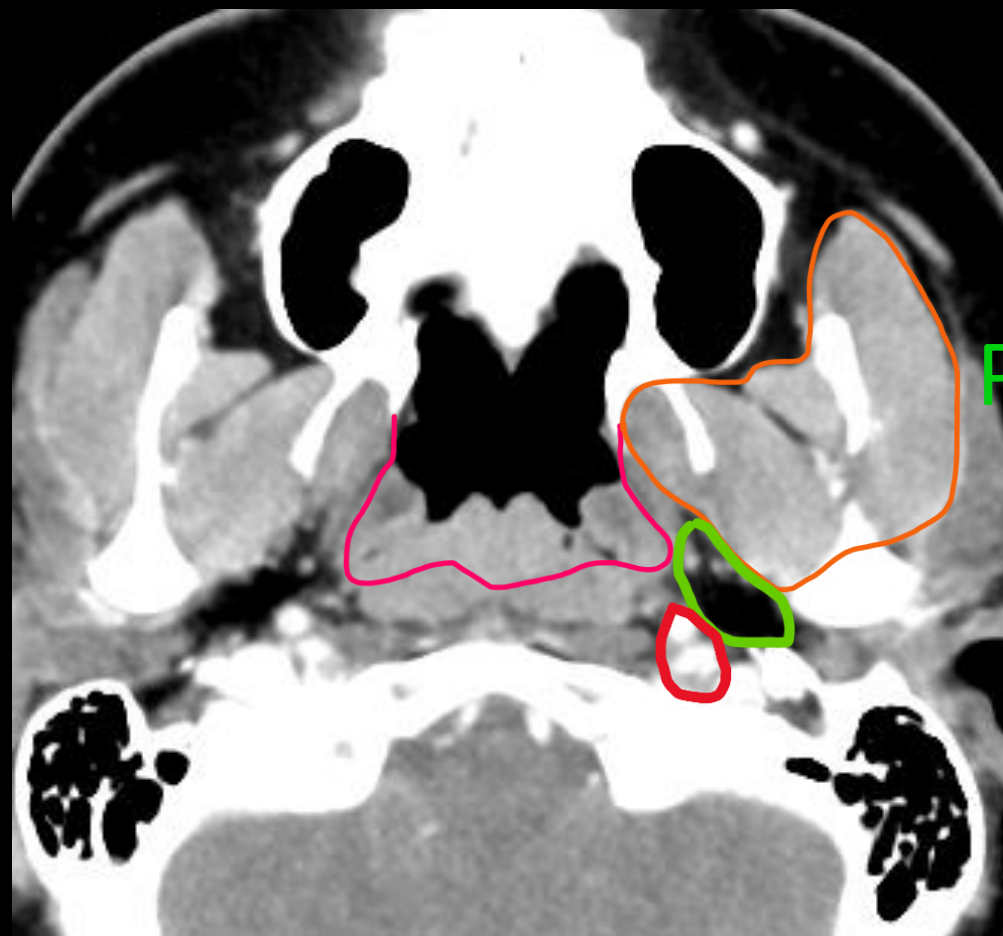


Tensor
veli palatini

Levator
veli palatini

Torus
tubarius



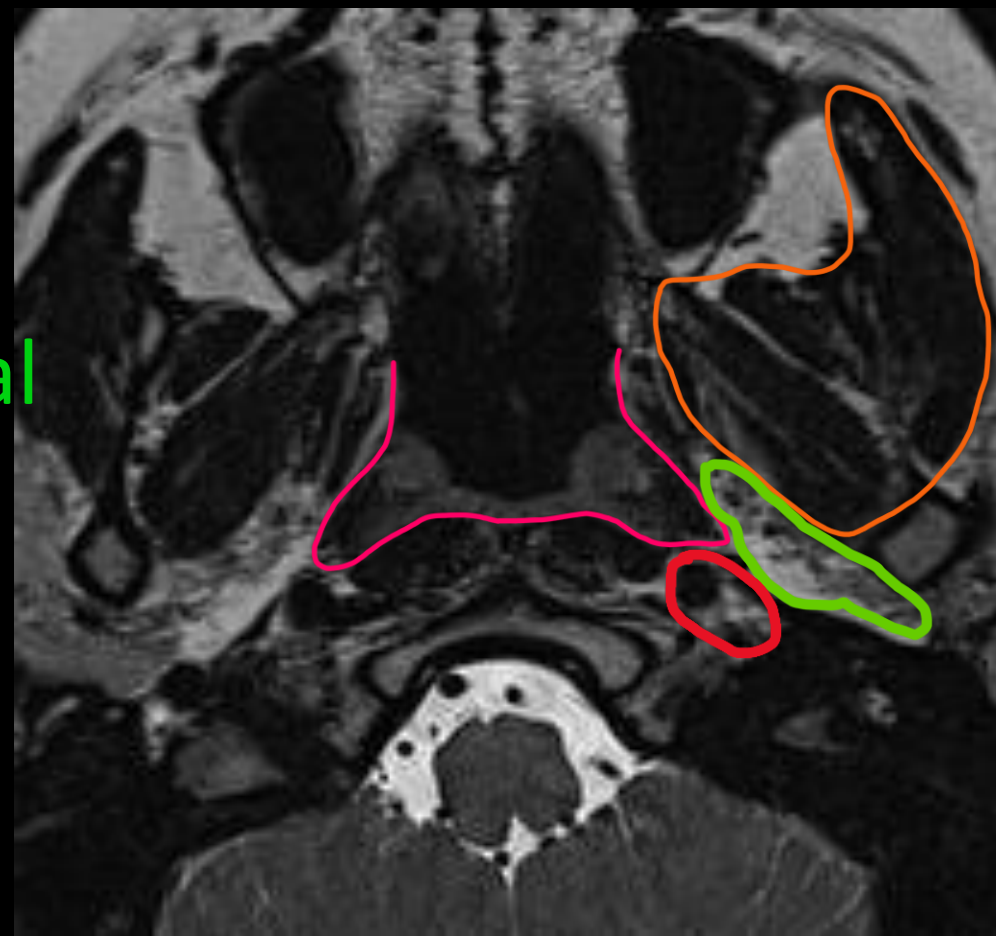


Carotid
space

Parapharyngeal
space

Masticator
space

Pharyngeal
mucosal space



Soft palate

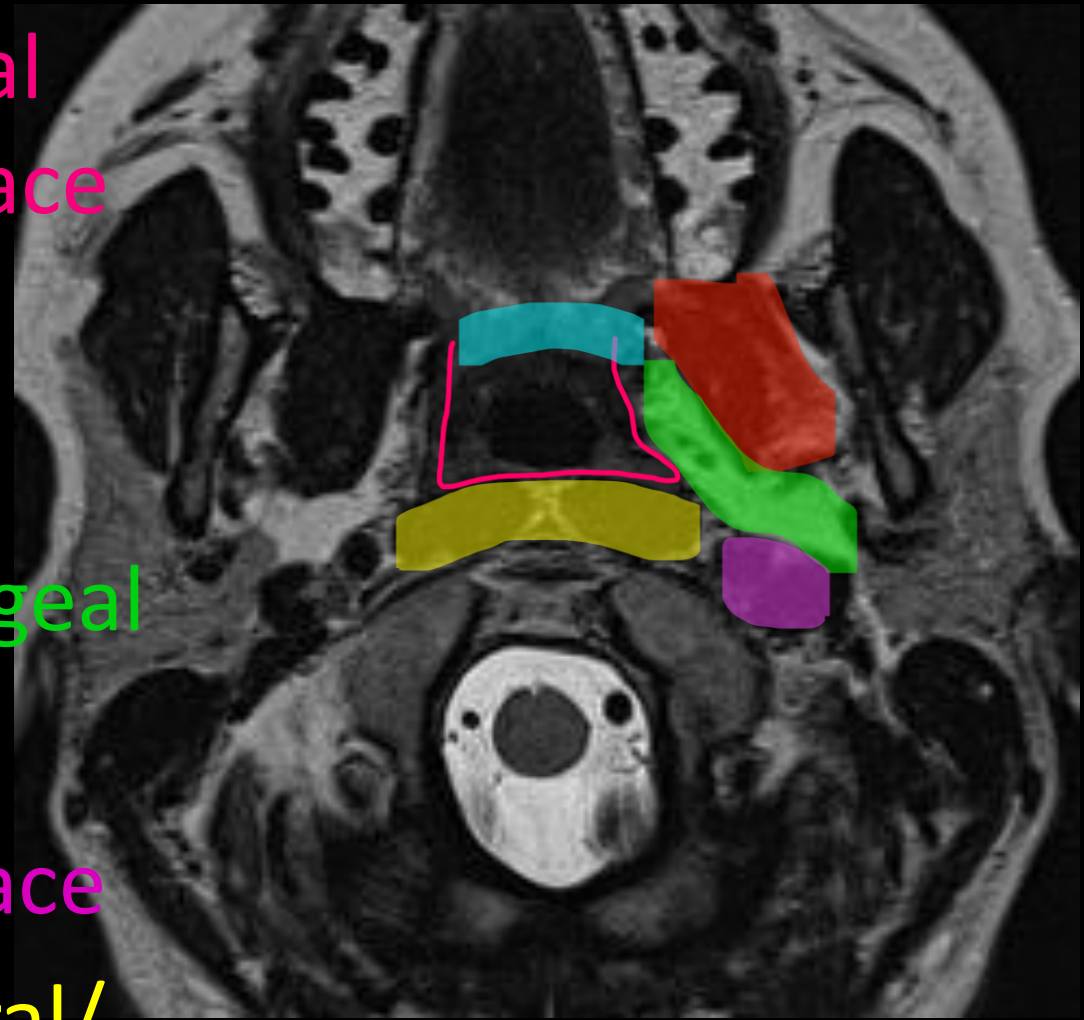
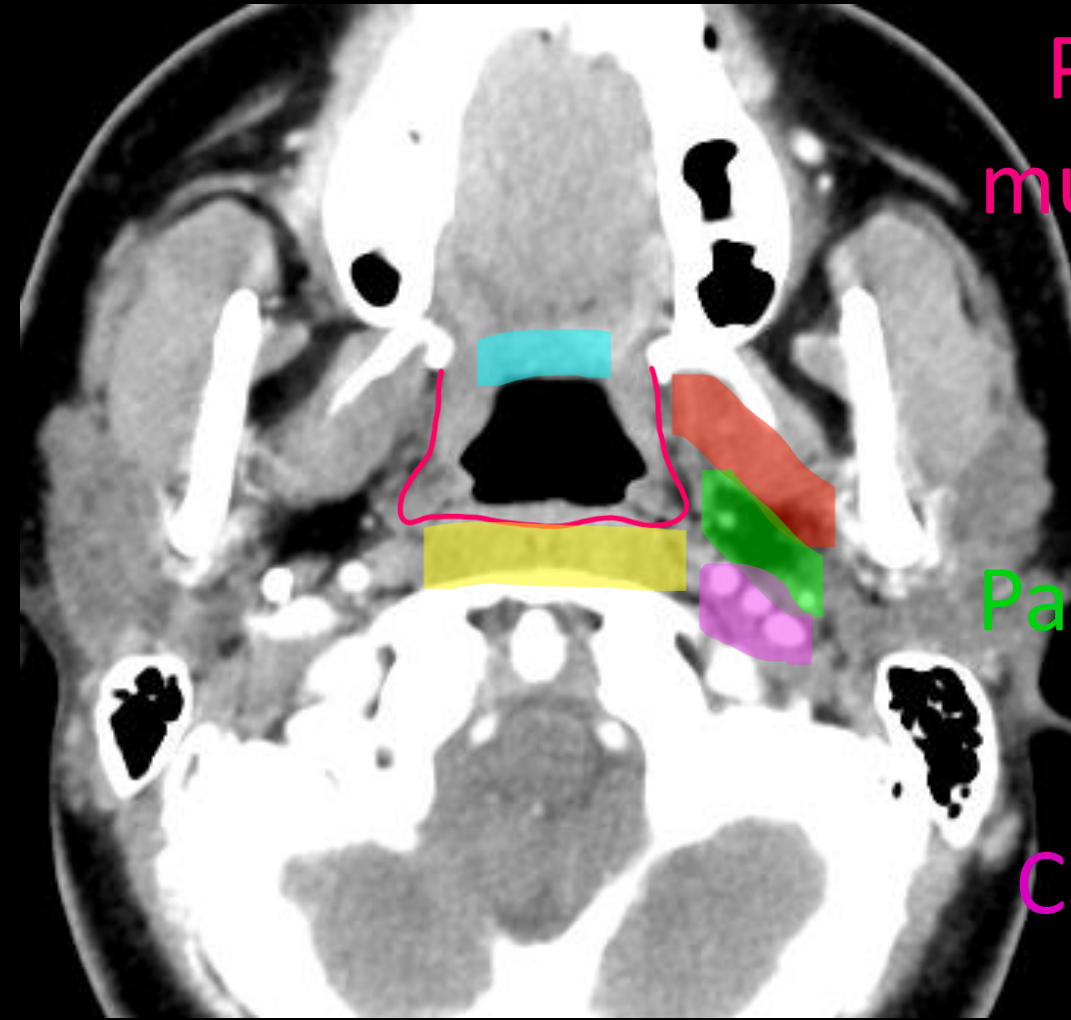
Pharyngeal
mucosal space

Medial
pterygoid

Parapharyngeal
space

Carotid space

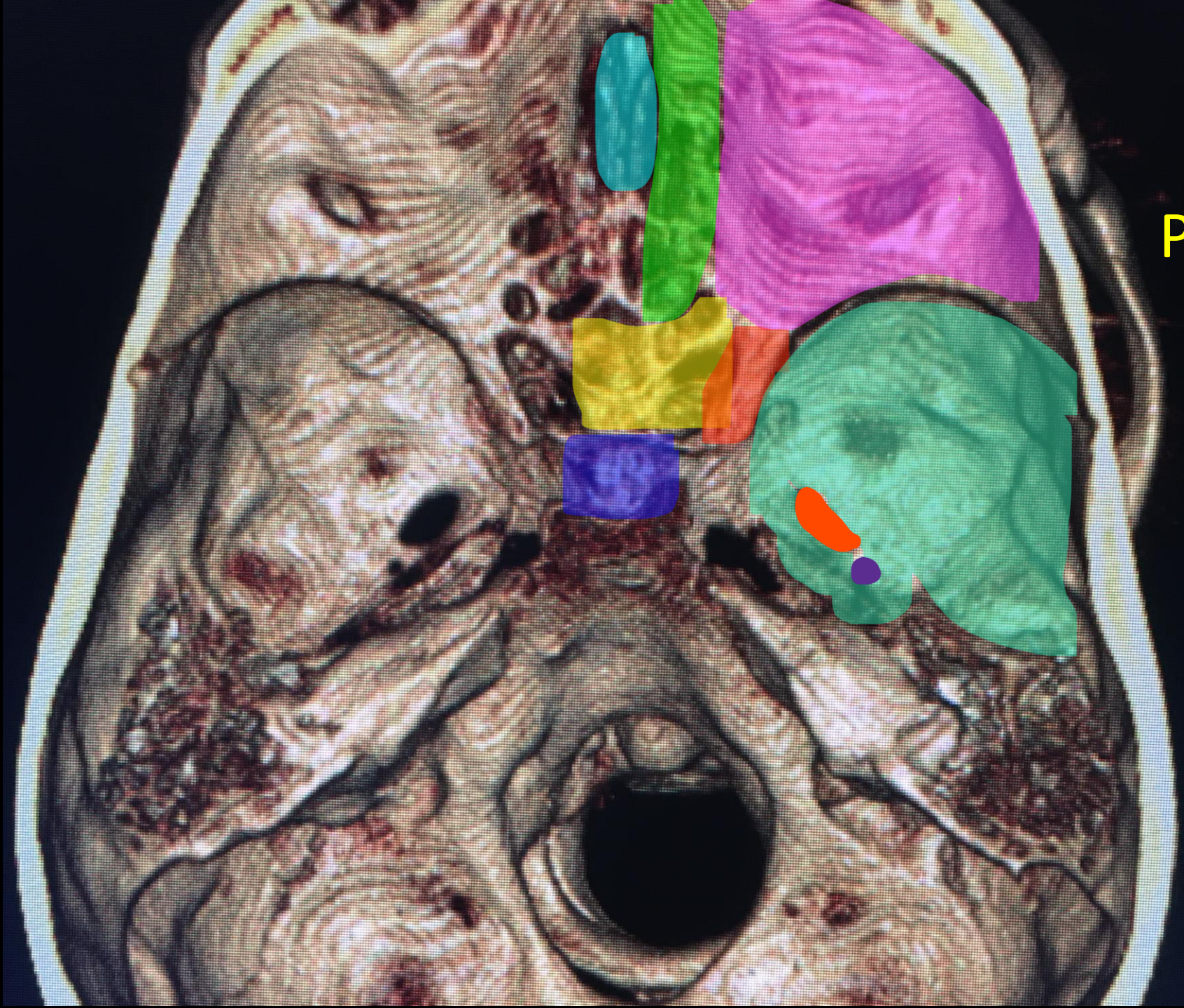
Prevertebral/
perivertebral space





Lesser
sphenoid wing

Petrous
ridge



Cribriform plate

Fovea ethmoidalis

Planum sphenoidale

Orbital roof

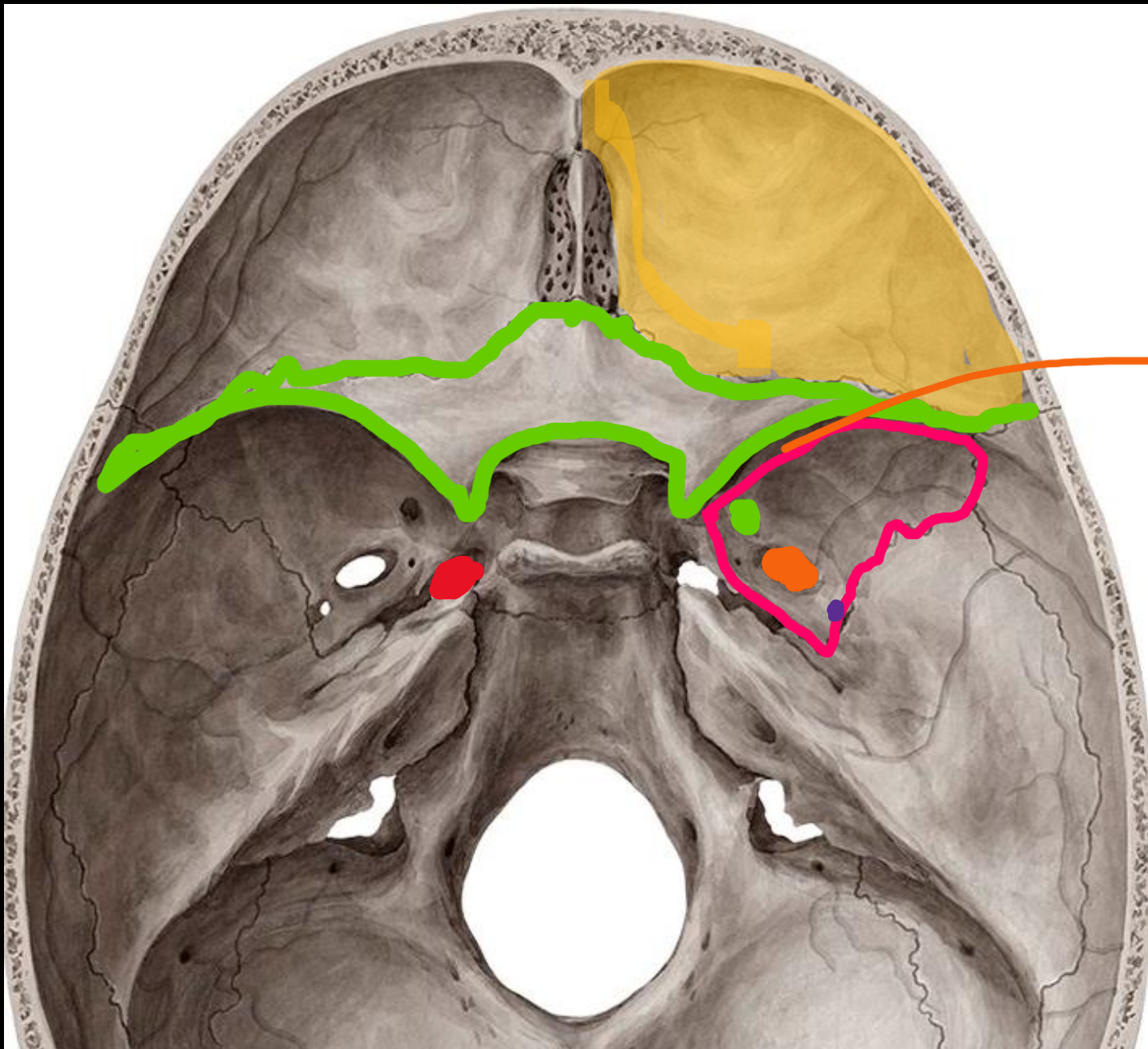
Anterior clinoid
process

Sella turcica

Floor of middle
cranial fossa

Foramen ovale

Foramen spinosum



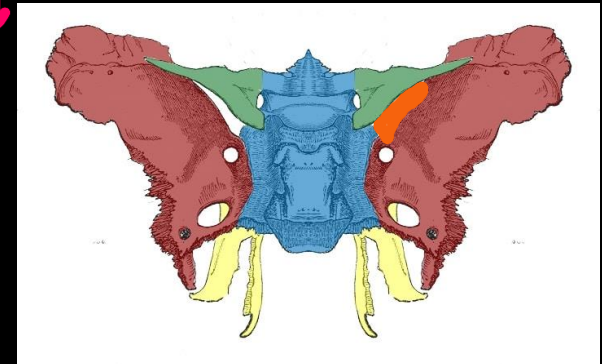
Frontal bone

Lesser sphenoid wing

Greater sphenoid wing

Foramen spinosum

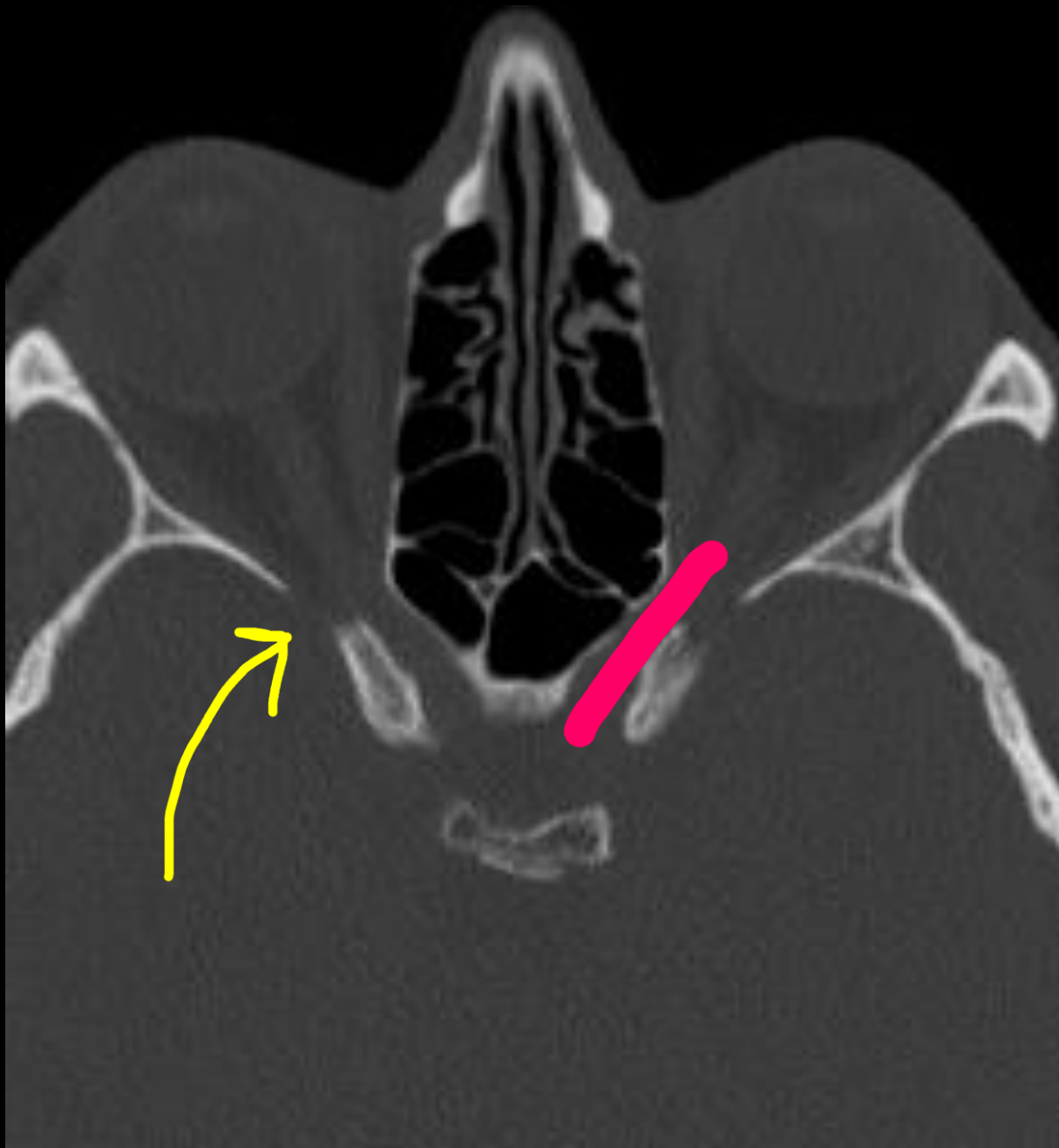
Sup. Orbital fissure



Foramen ovale

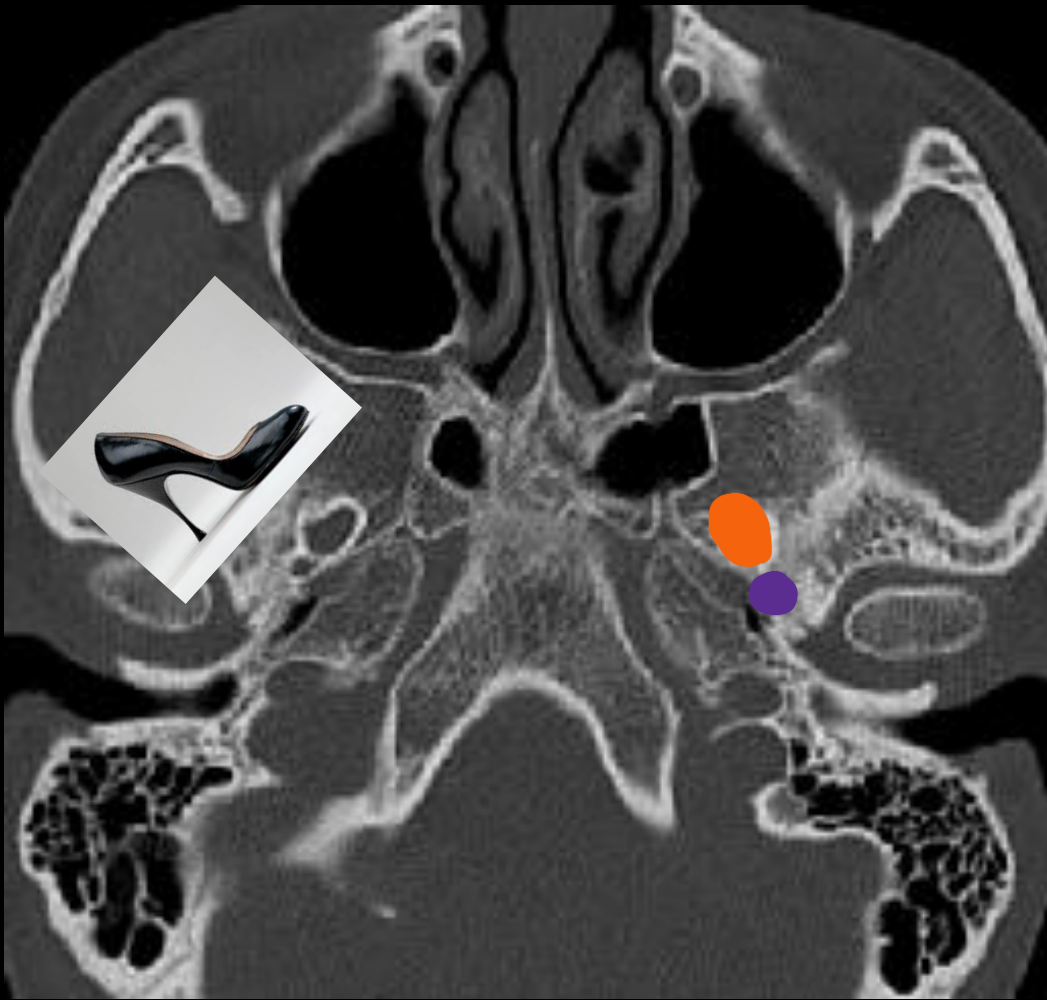
Foramen rotundum

Carotid canal



Optic canal
(CN II)

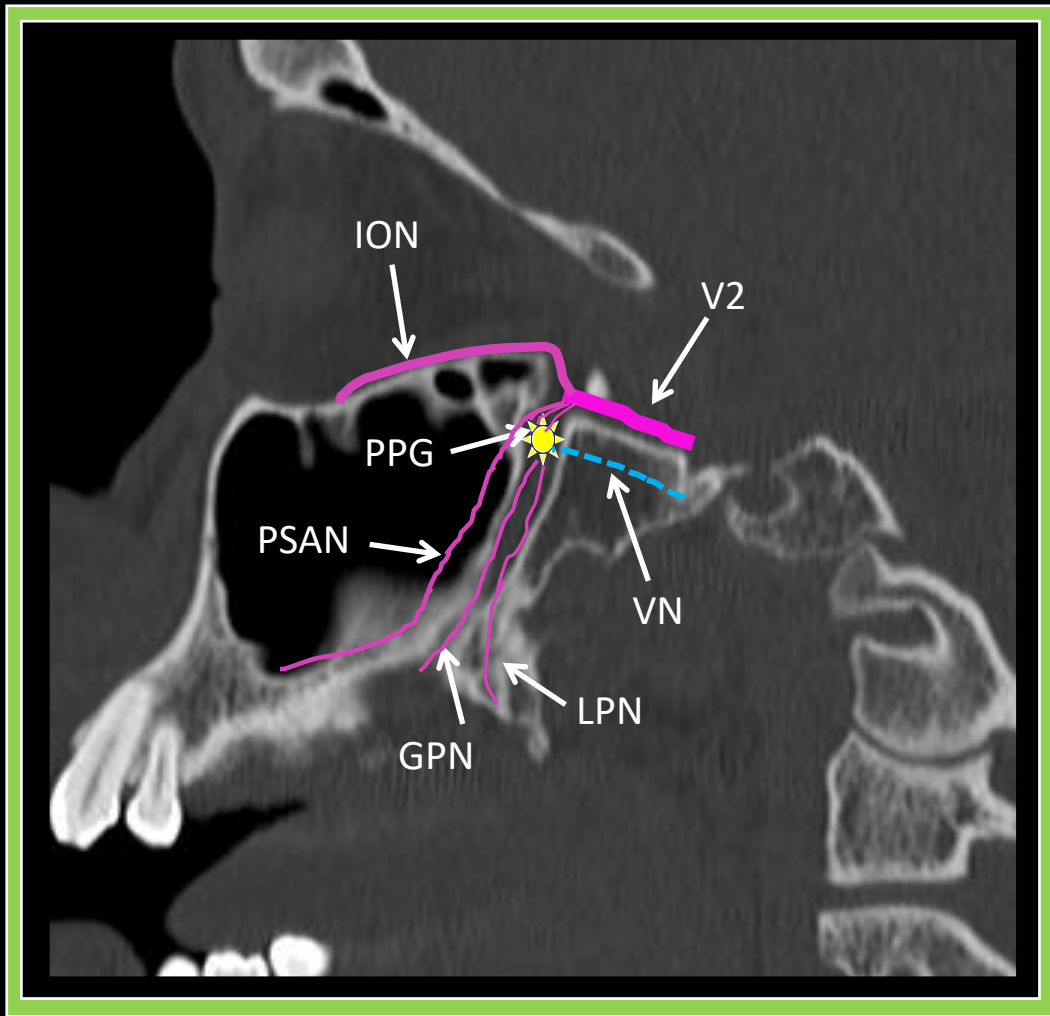
Superior orbital
fissure
(CN III, IV, VI, V1)



Foramen ovale (V3)
Foramen spinosum (MMA)



Foramen rotundum (V2)



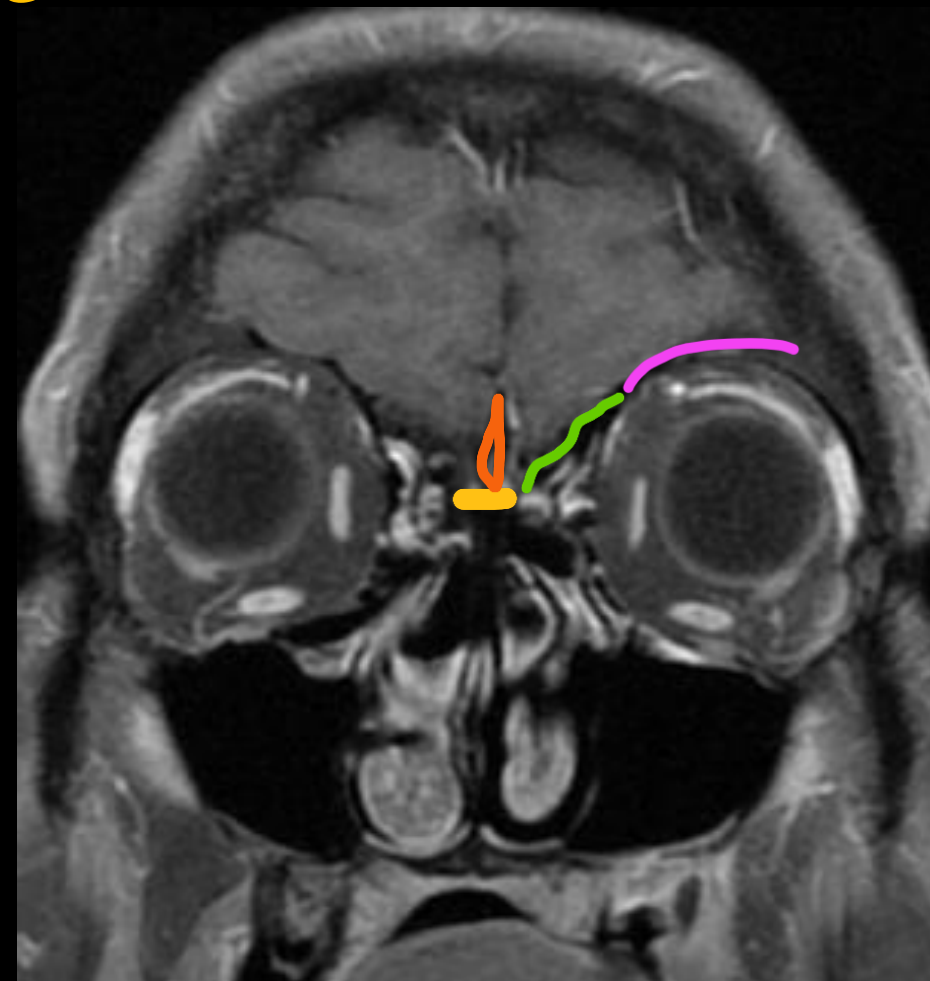
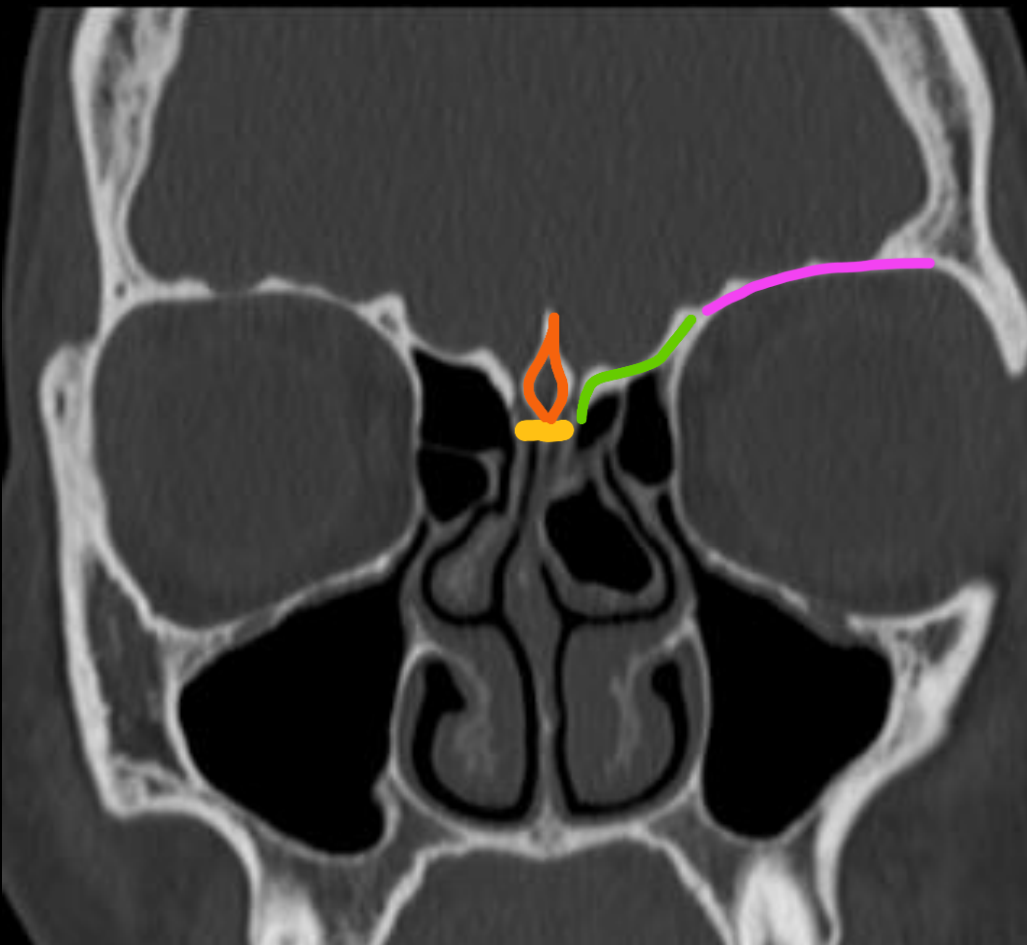
Pterygopalatine fossa

Cribriform plate

Crista galli

Fovea
ethmoidalis

Orbital roof



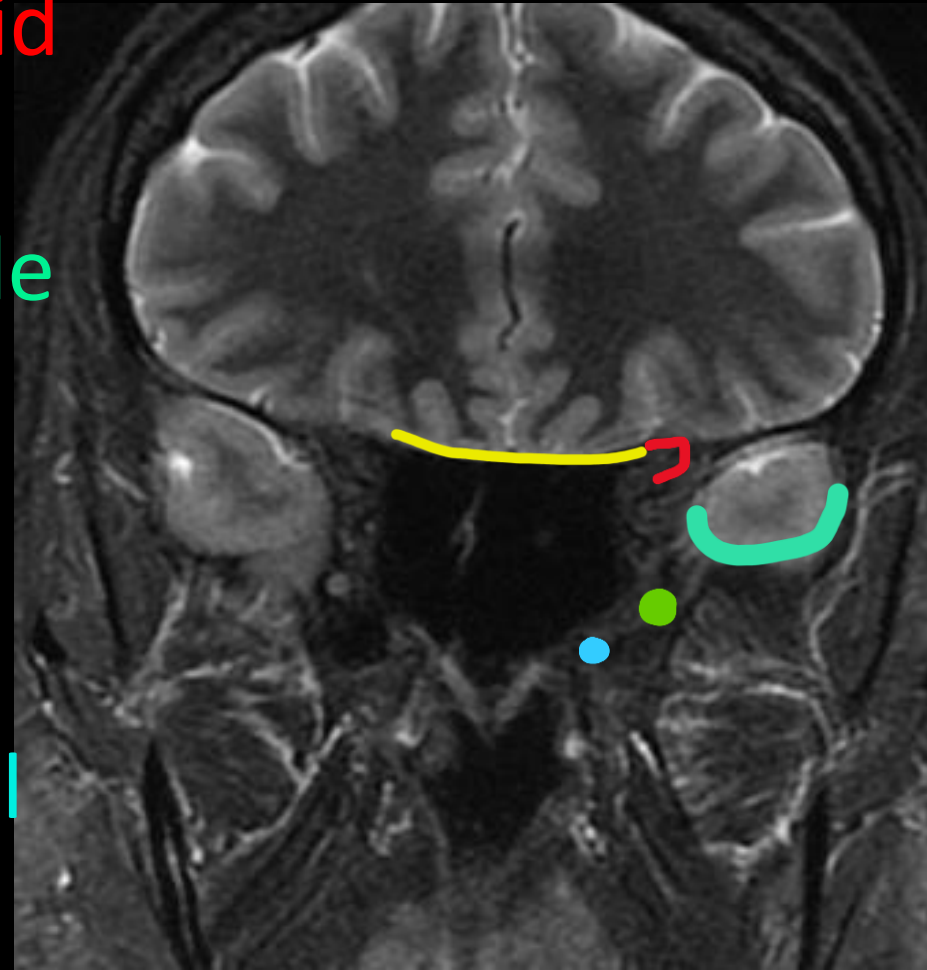
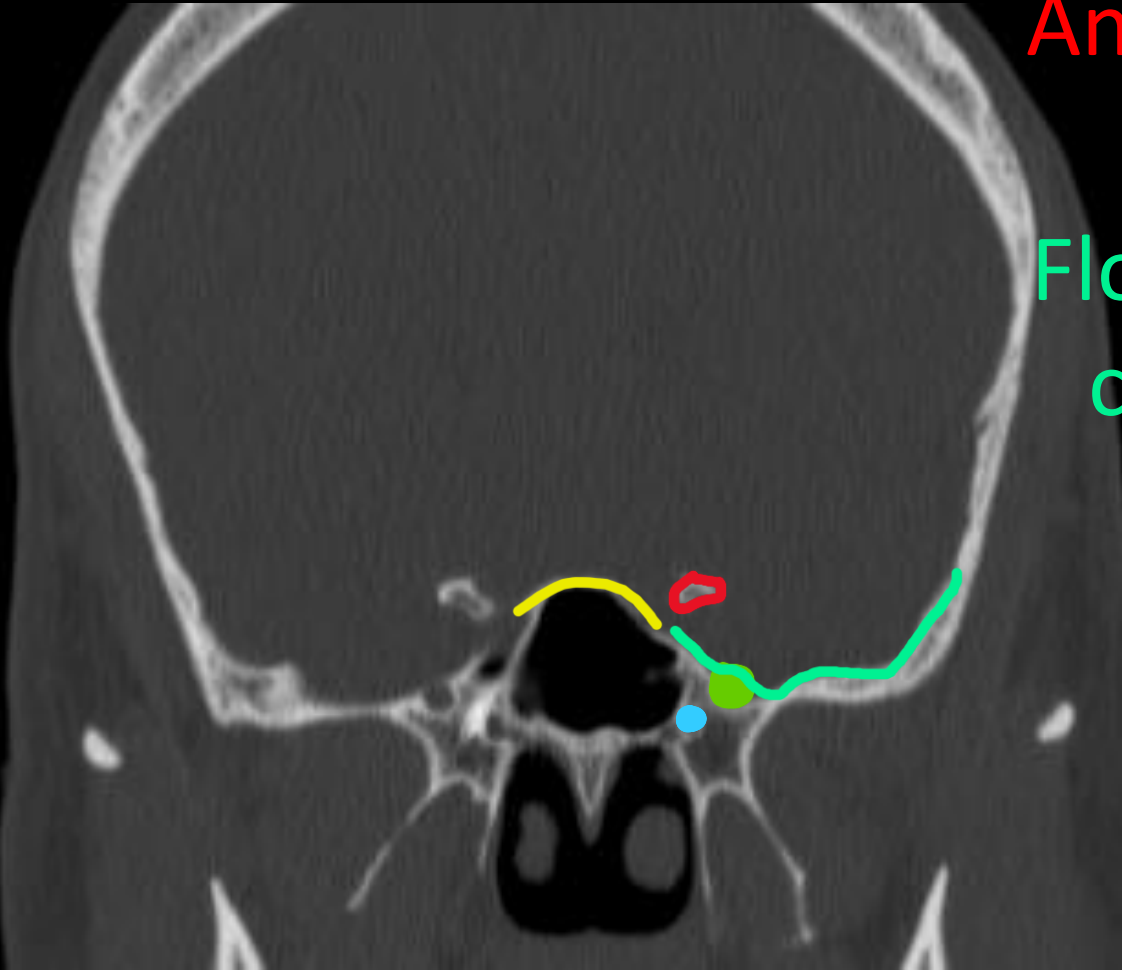
Planum sphenoidale

Anterior clinoid
process

Floor of middle
cranial fossa

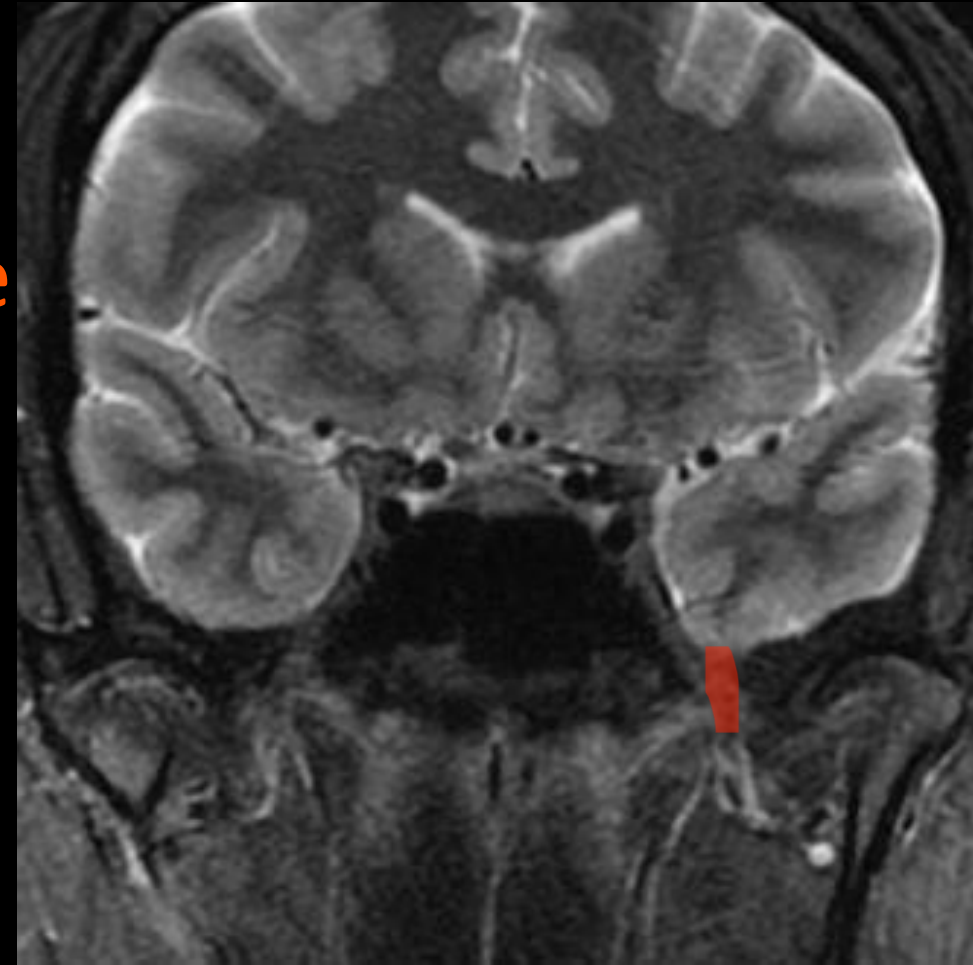
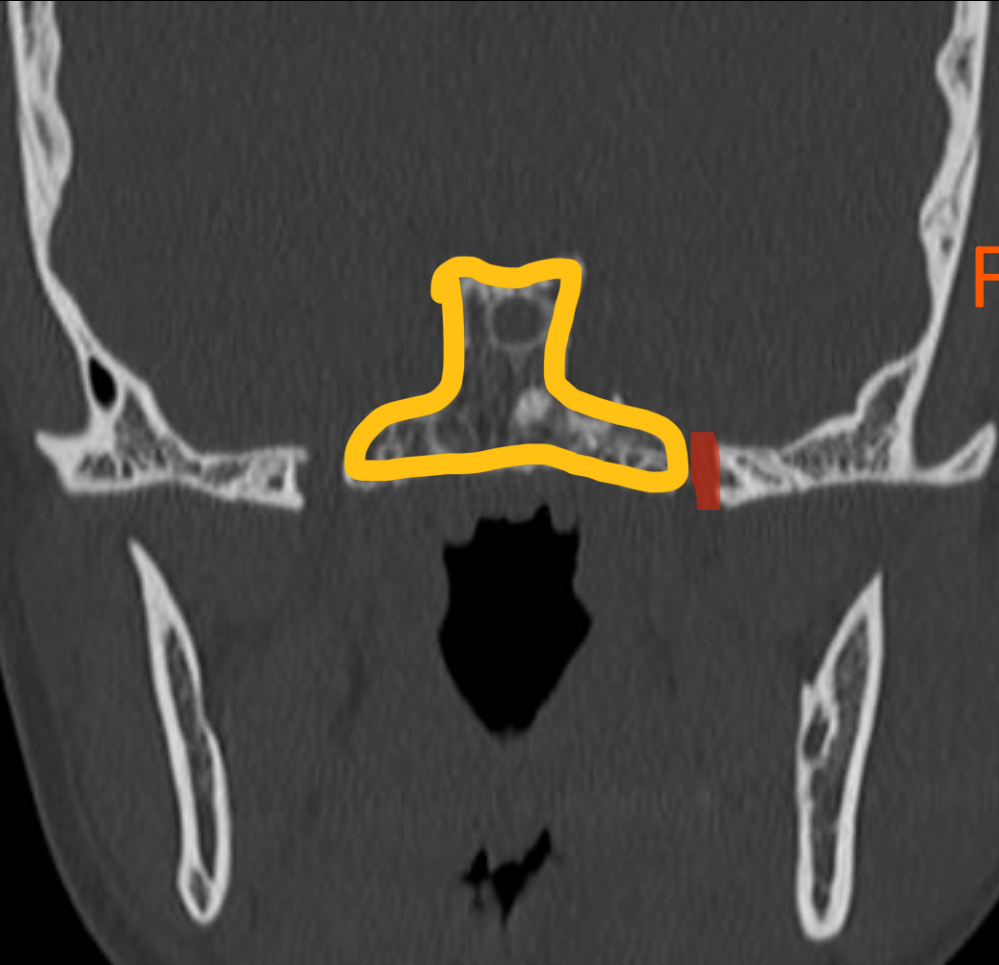
Foramen
rotundum

Vidian canal



Clivus

Foramen ovale



Objectives

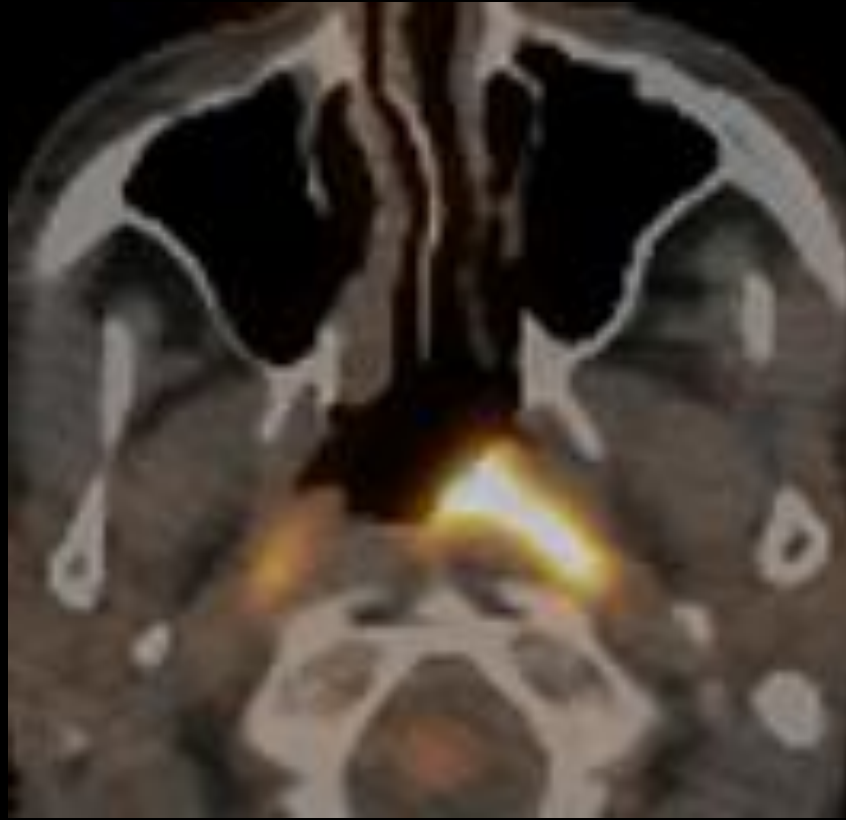
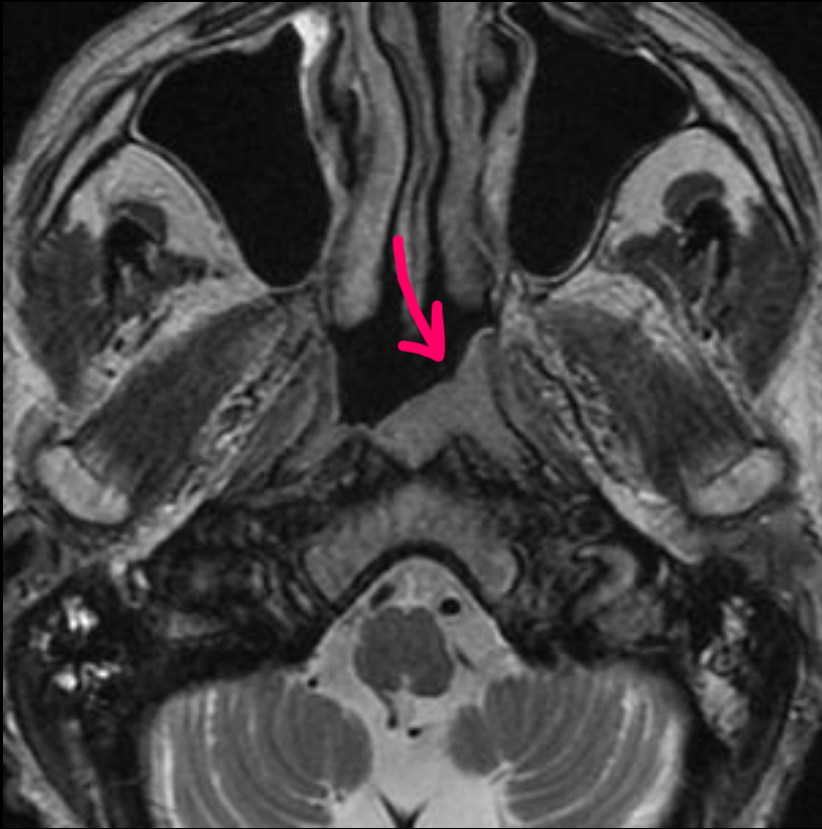
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Nasopharyngeal carcinoma

- Most common adult nasopharyngeal malignancy
- Associated with EBV
- Prevalent in Asian population
- 30-40 and 50-60 years
- Male predominance

T1 NPC anatomic determinants

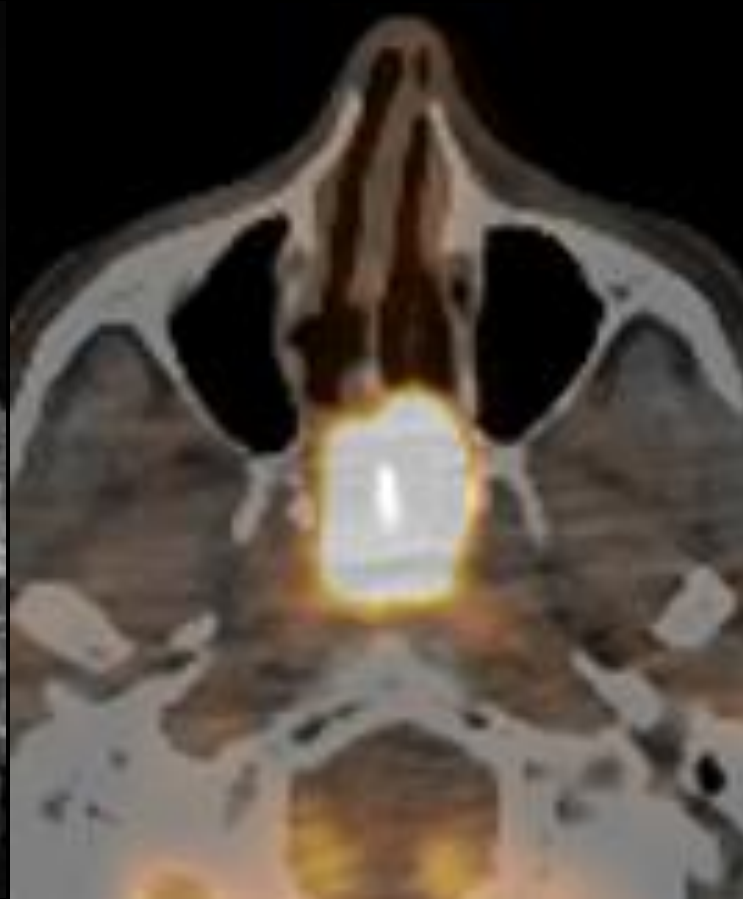
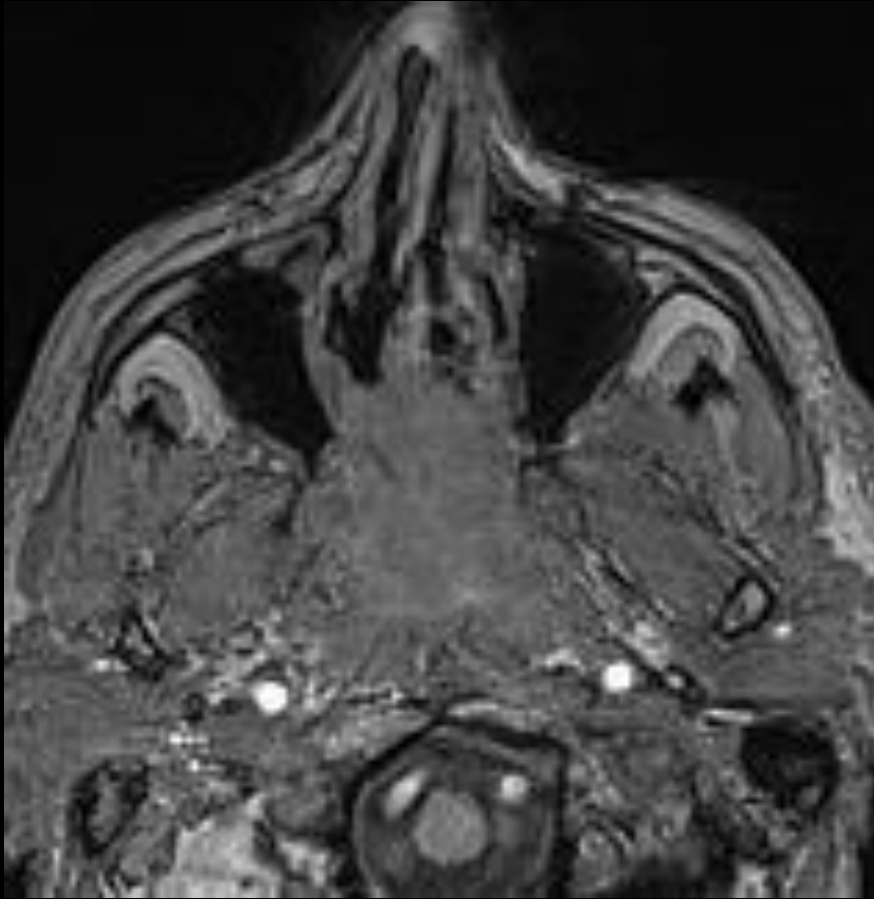
Tumor confined to nasopharynx



PPS 
Muscle 
Bone 
CN 

T1 NPC anatomic determinants

Oropharynx/nasal cavity extension



PPS 

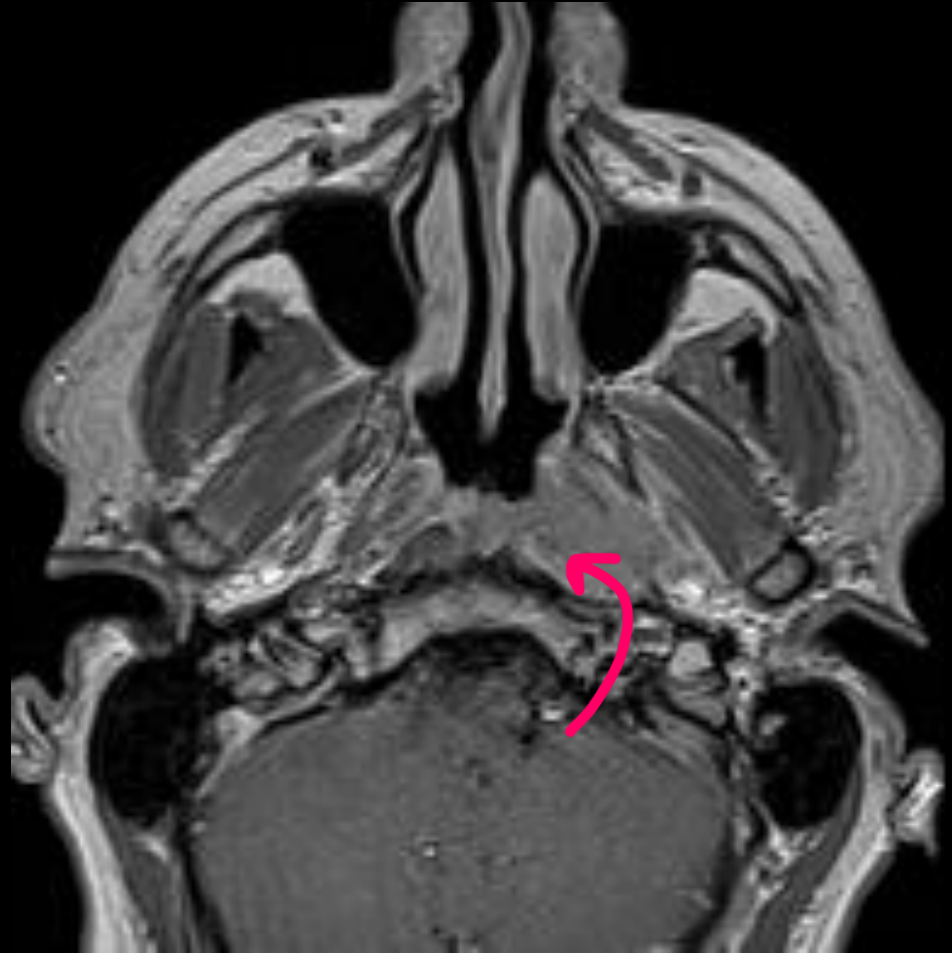
Muscle 

Bone 

CN 

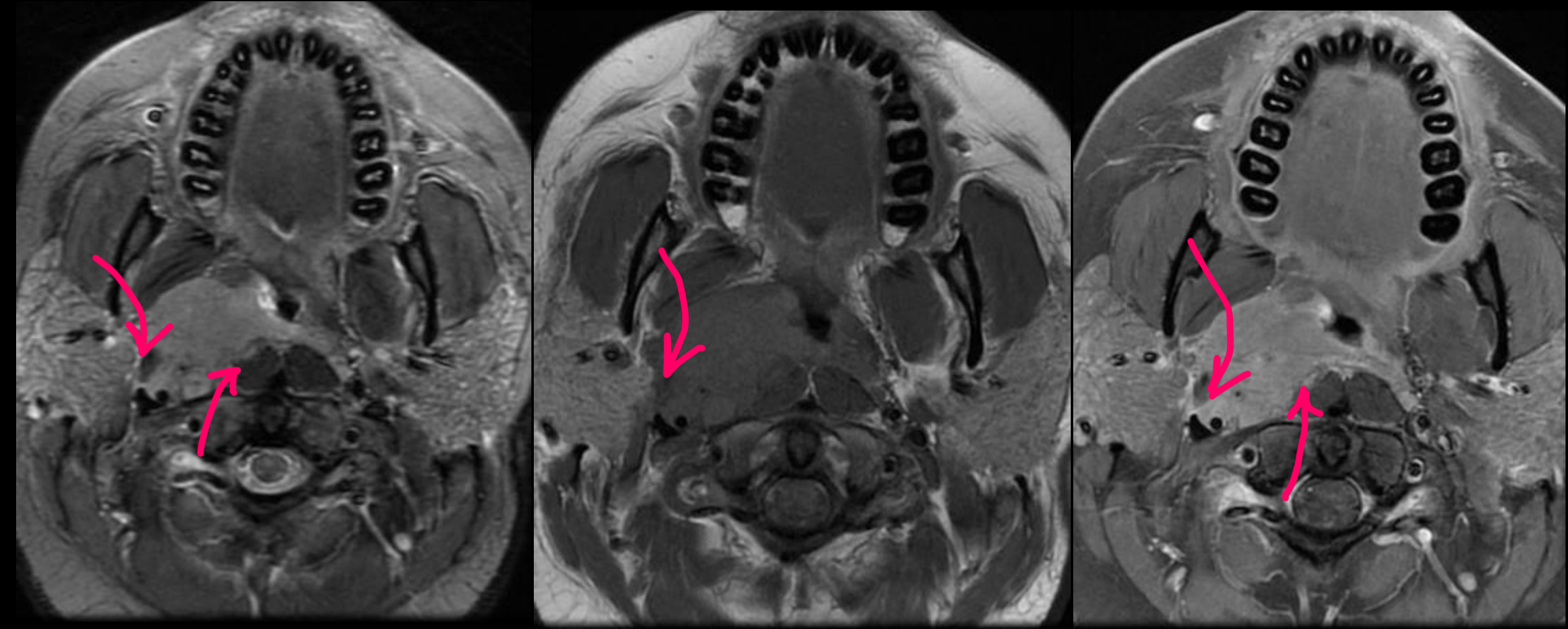
T2 NPC anatomic determinants

Tumor extends to PPS and/or muscle



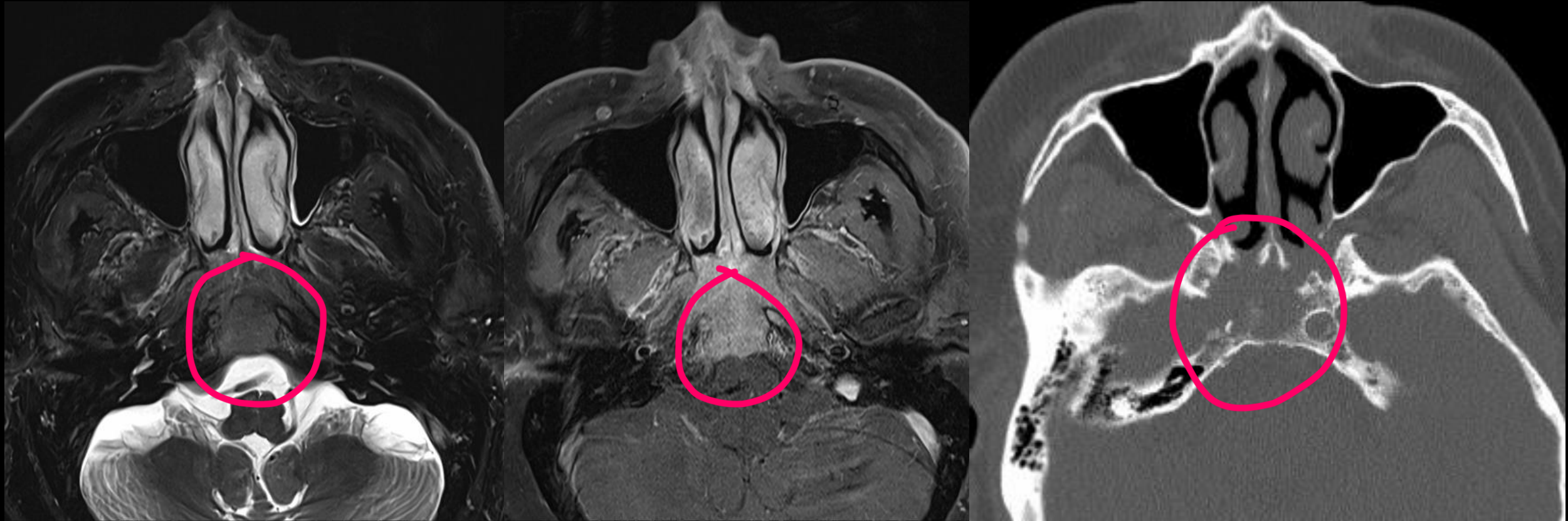
T2 NPC anatomic determinants

Tumor extends to PPS and/or muscle



T3 NPC anatomic determinants

Tumor extends to bone

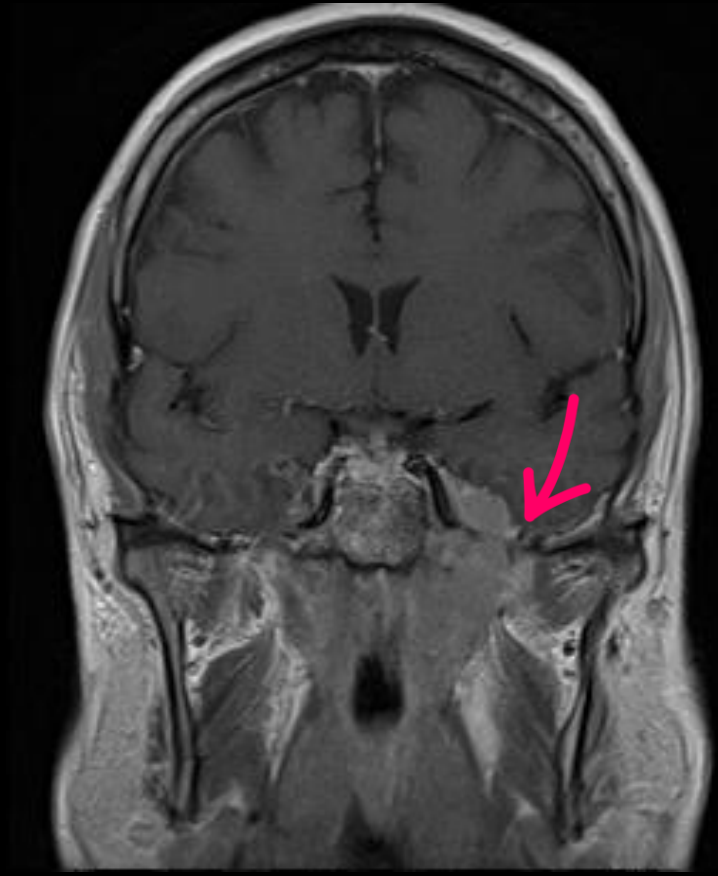
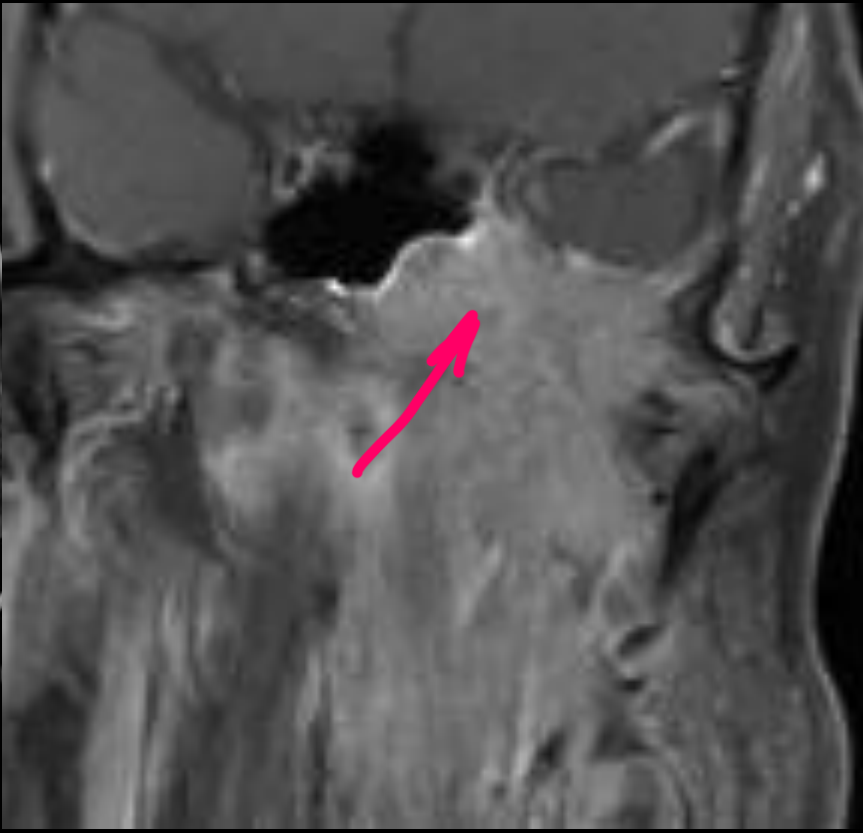


T4 NPC anatomic determinants

Tumor extends intracranial or involves CN



Multiple CN

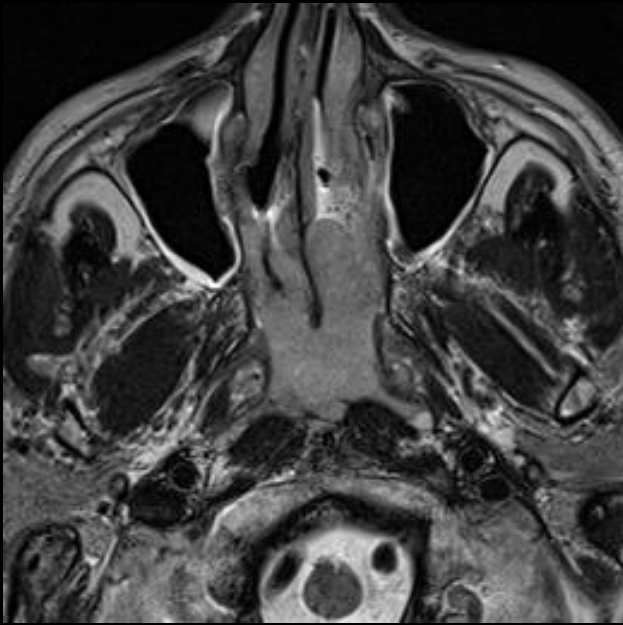


V3

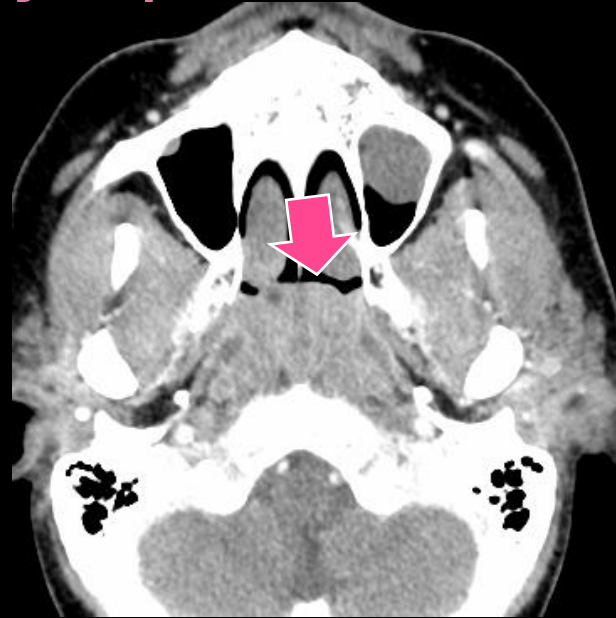
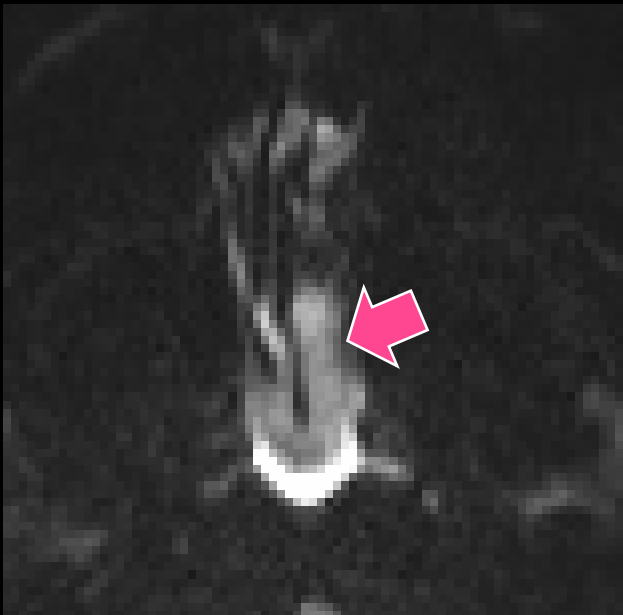
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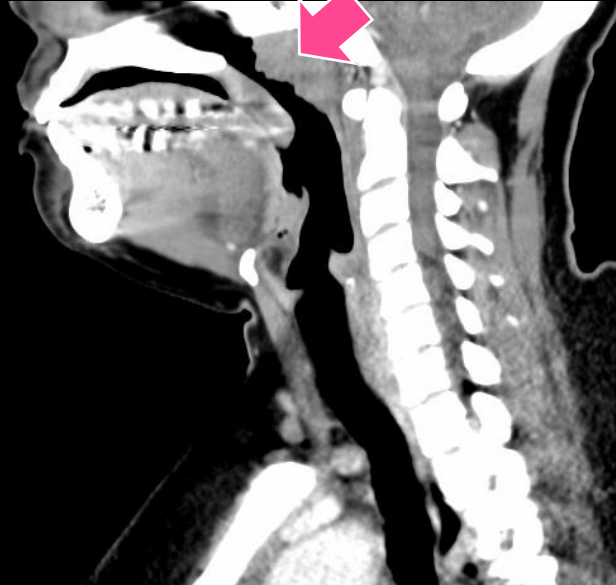
Lymphoid lesions



Lymphoma (low diffusion)



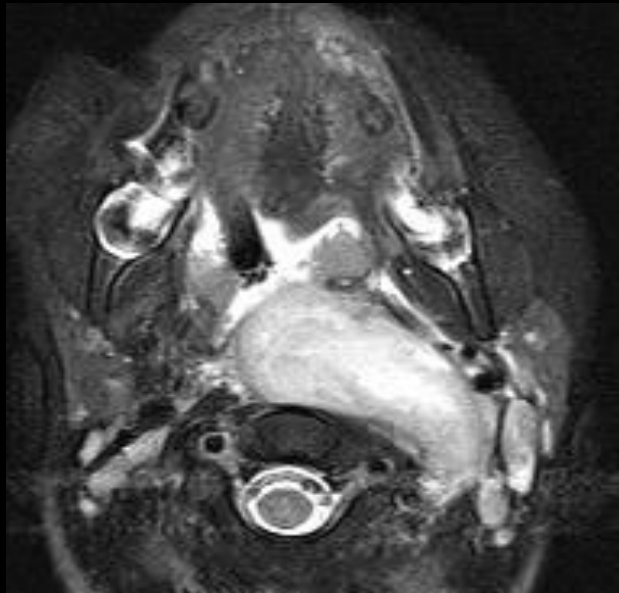
Lymphoid hyperplasia (septa and fluid filled crypts)



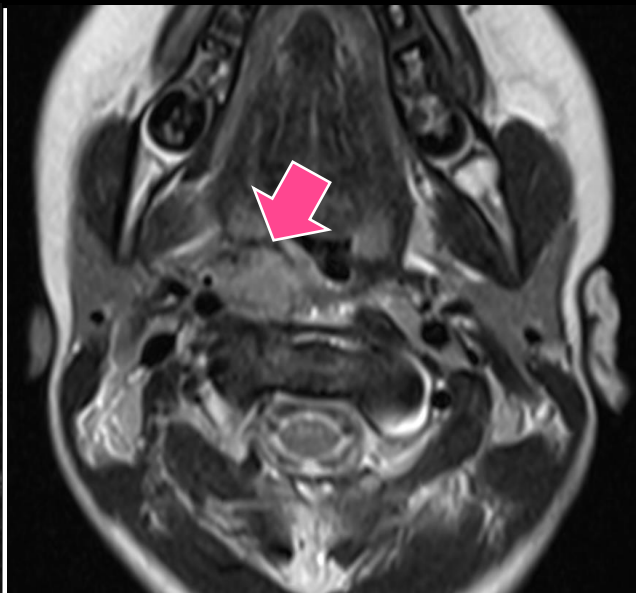
PTLD (hx of transplant, mimics lymphoma)



Infection/inflammation



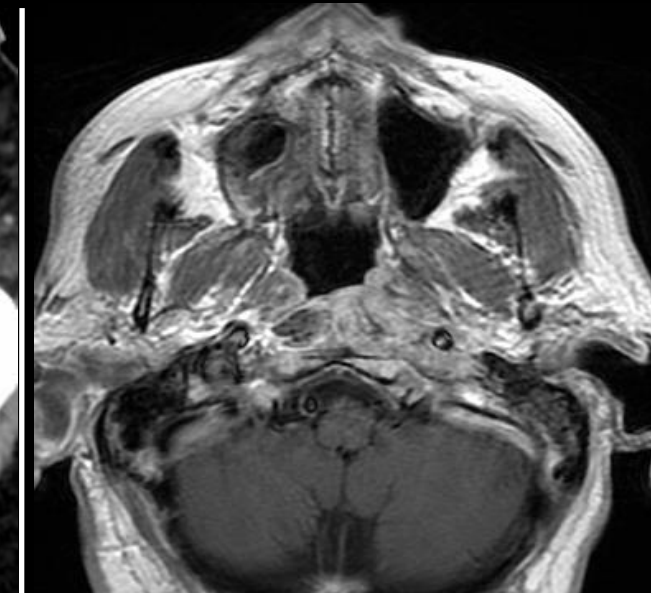
Retropharyngeal
abscess



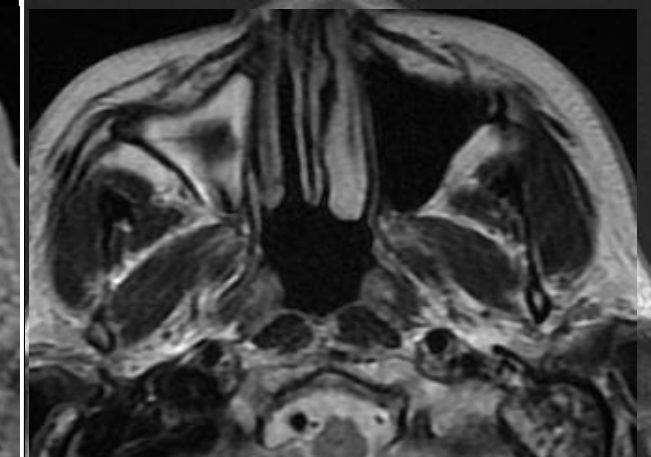
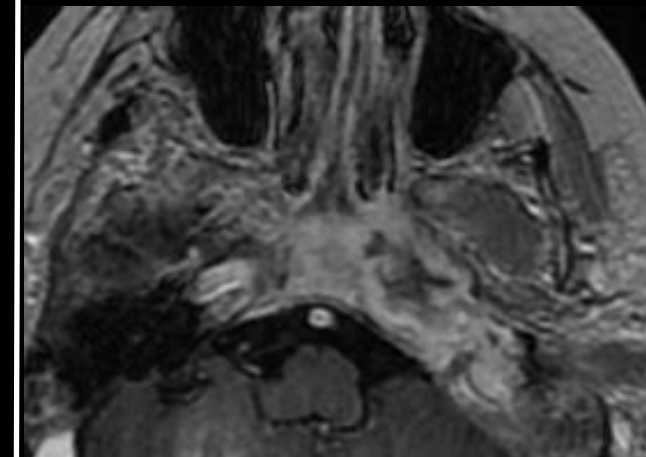
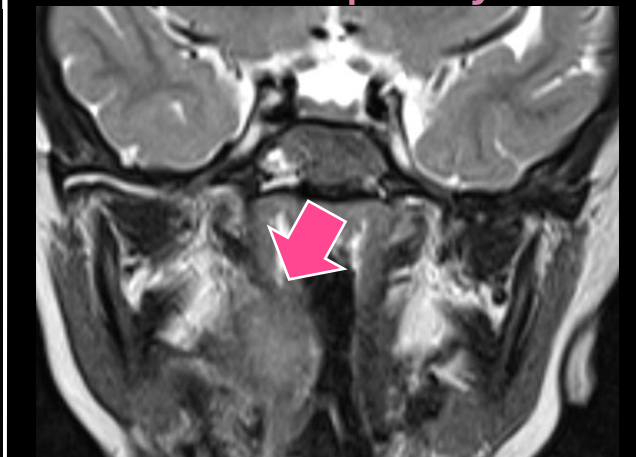
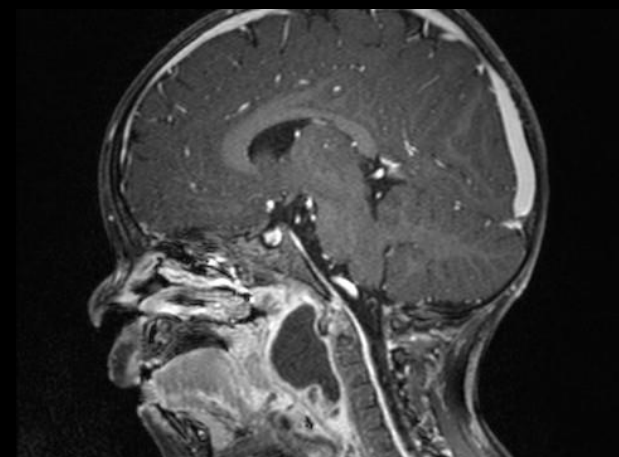
Suppurative
adenopathy

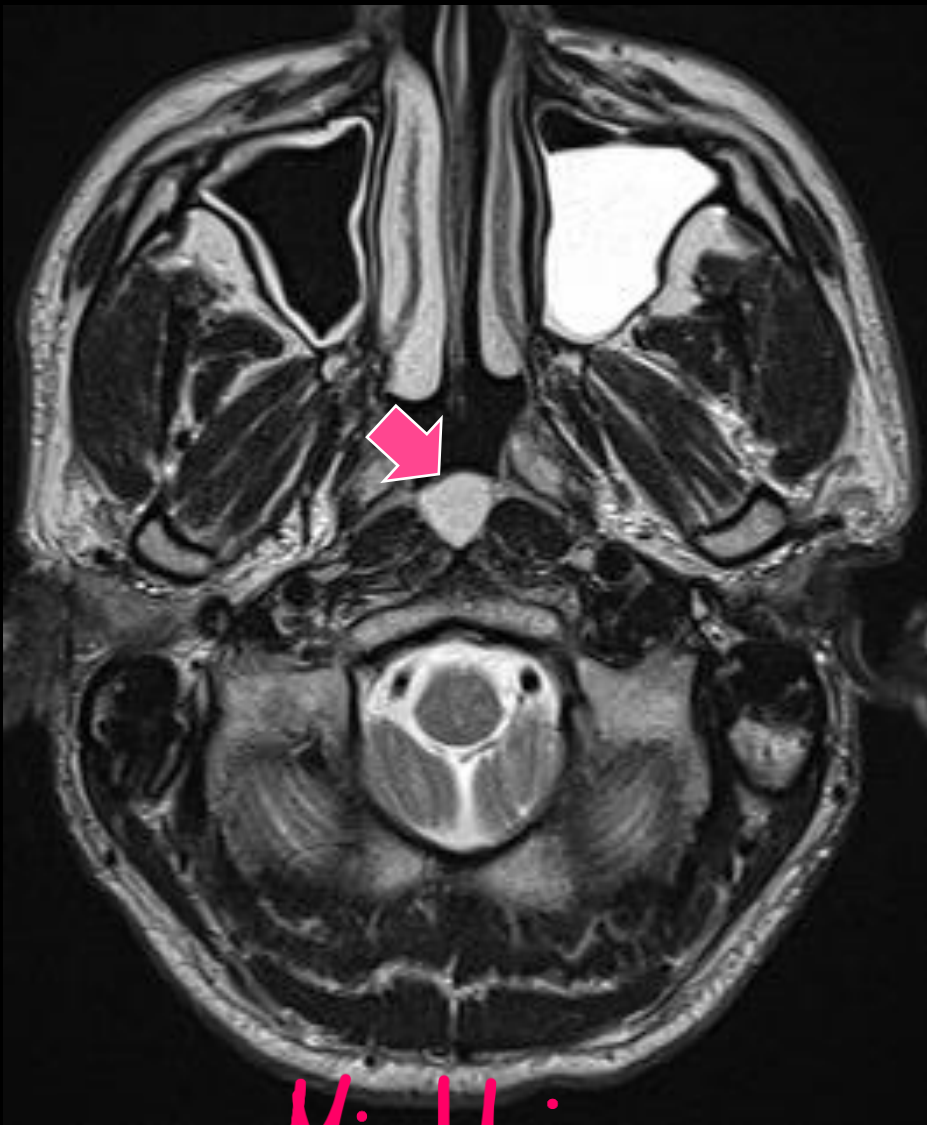


Skull base osteo



Pseudotumor





Midline

Tornwaldt cyst



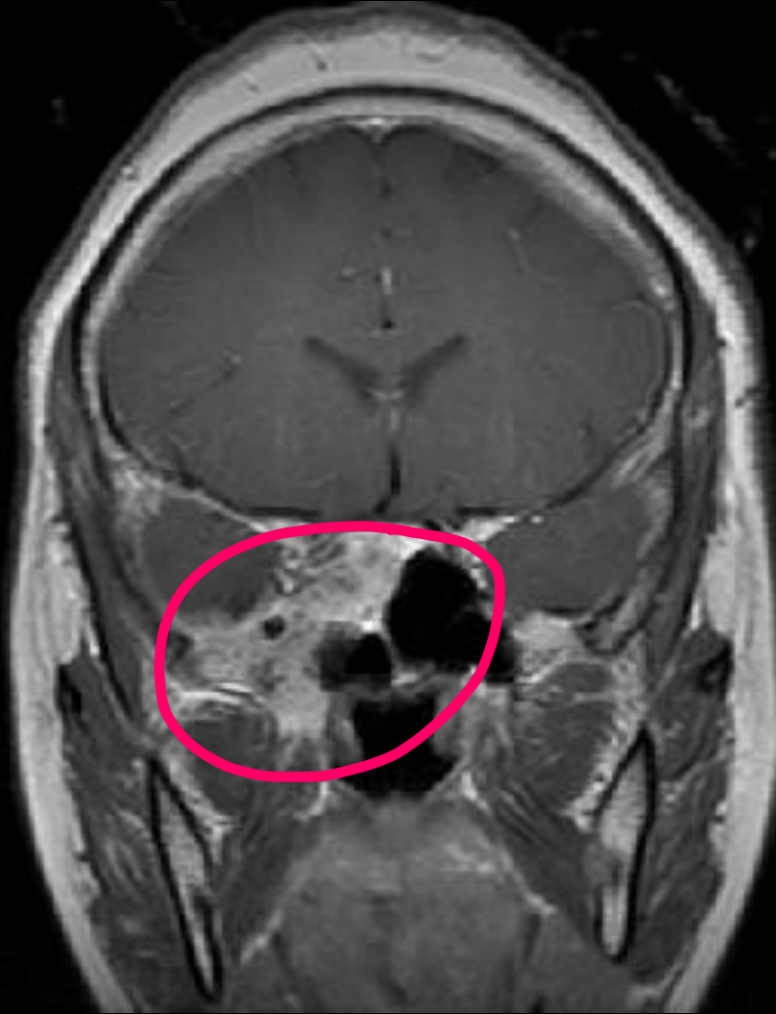
Off-midline

Retention cyst

Skull base lesions



‘Ascending’

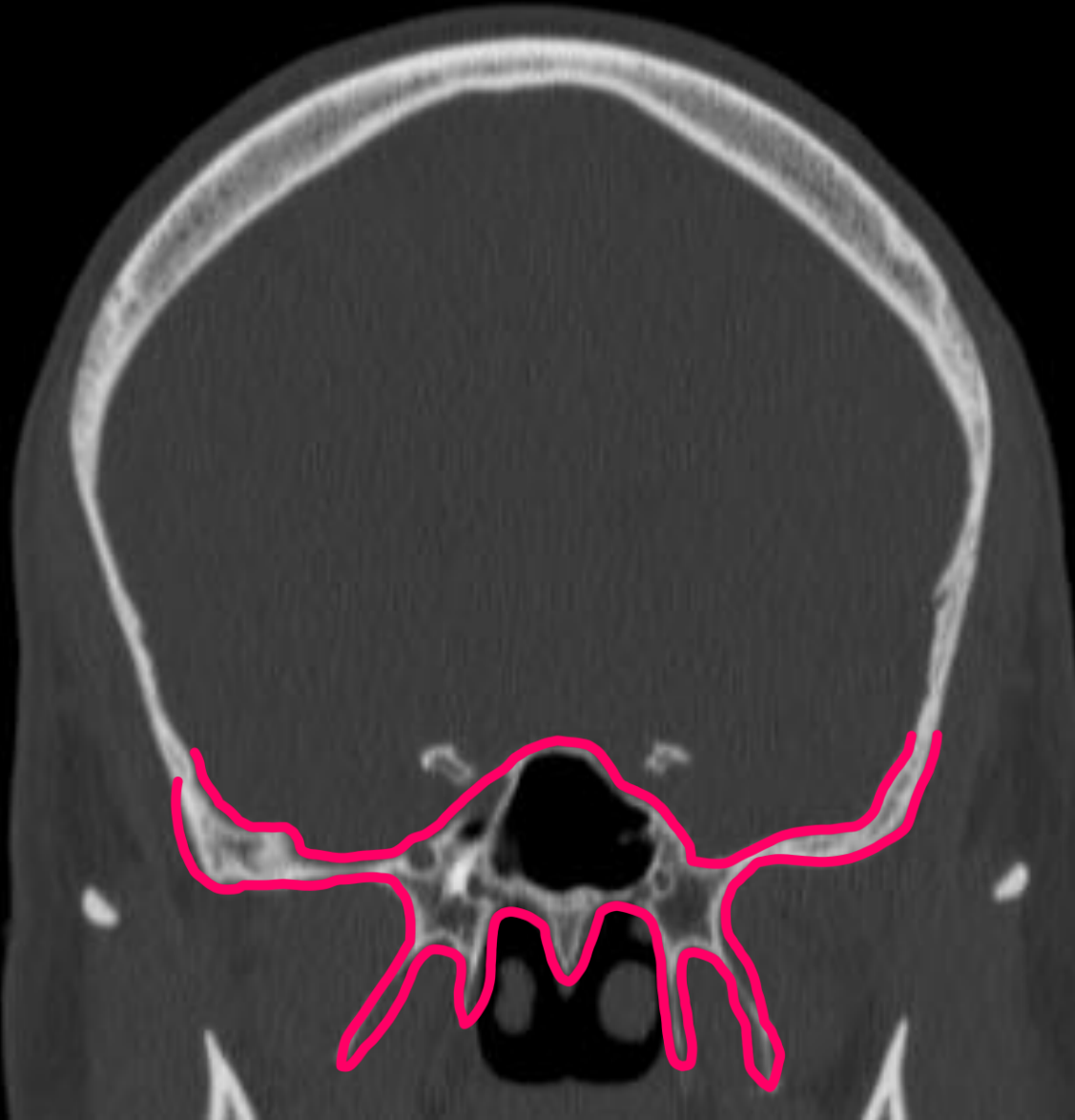


Intrinsic



‘Descending’

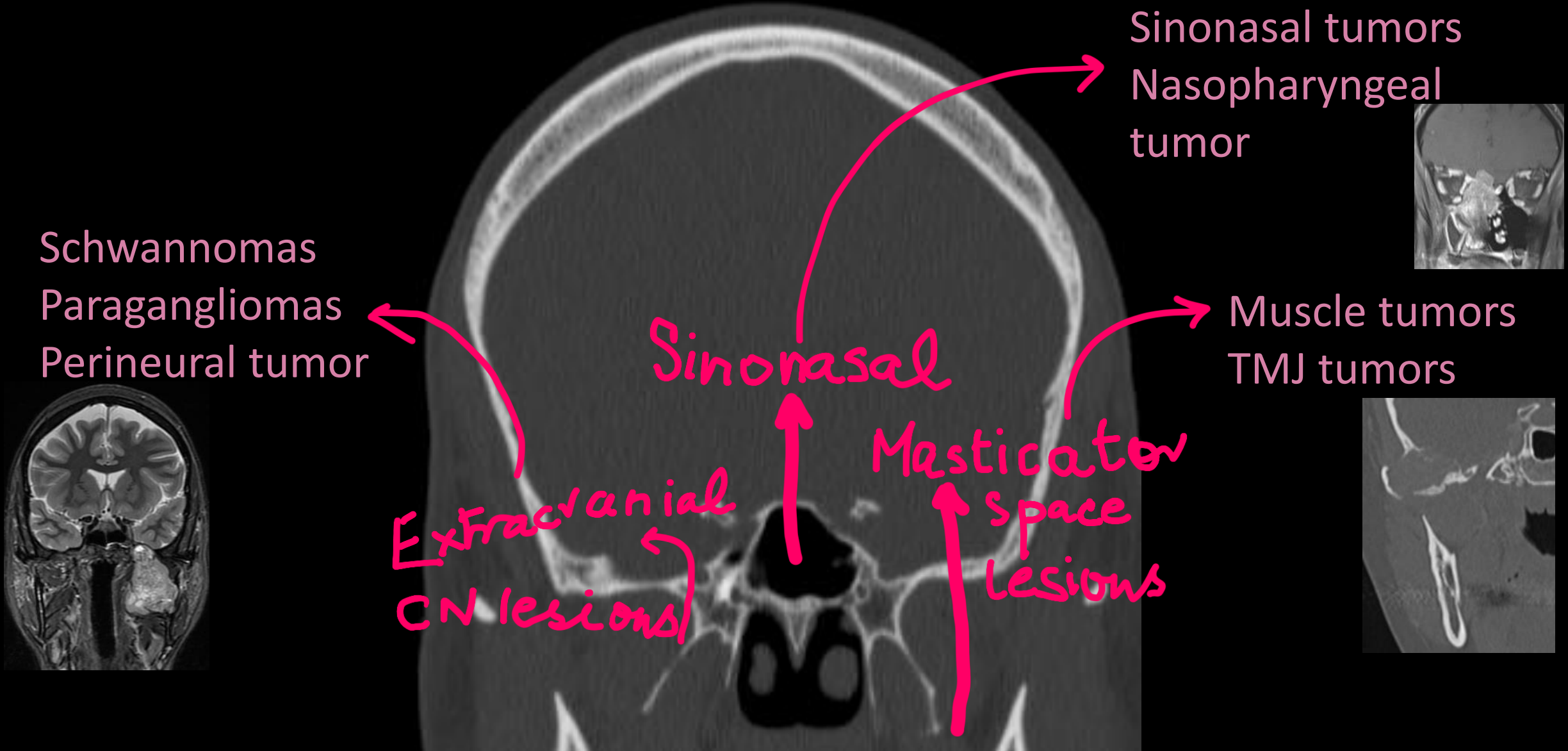
Skull base (intrinsic lesions)



Bone/cartilage

- Metastasis
- Multiple myeloma
- Lymphoma/plasmacytoma
- Osteosarcoma
- Paget disease
- Fibrous dysplasia
- Langerhans cell histiocytosis
- Chondrosarcoma
- Chordoma

Skull base (ascending lesions)



Skull base (descending lesions)

Schwannomas
Paragangliomas



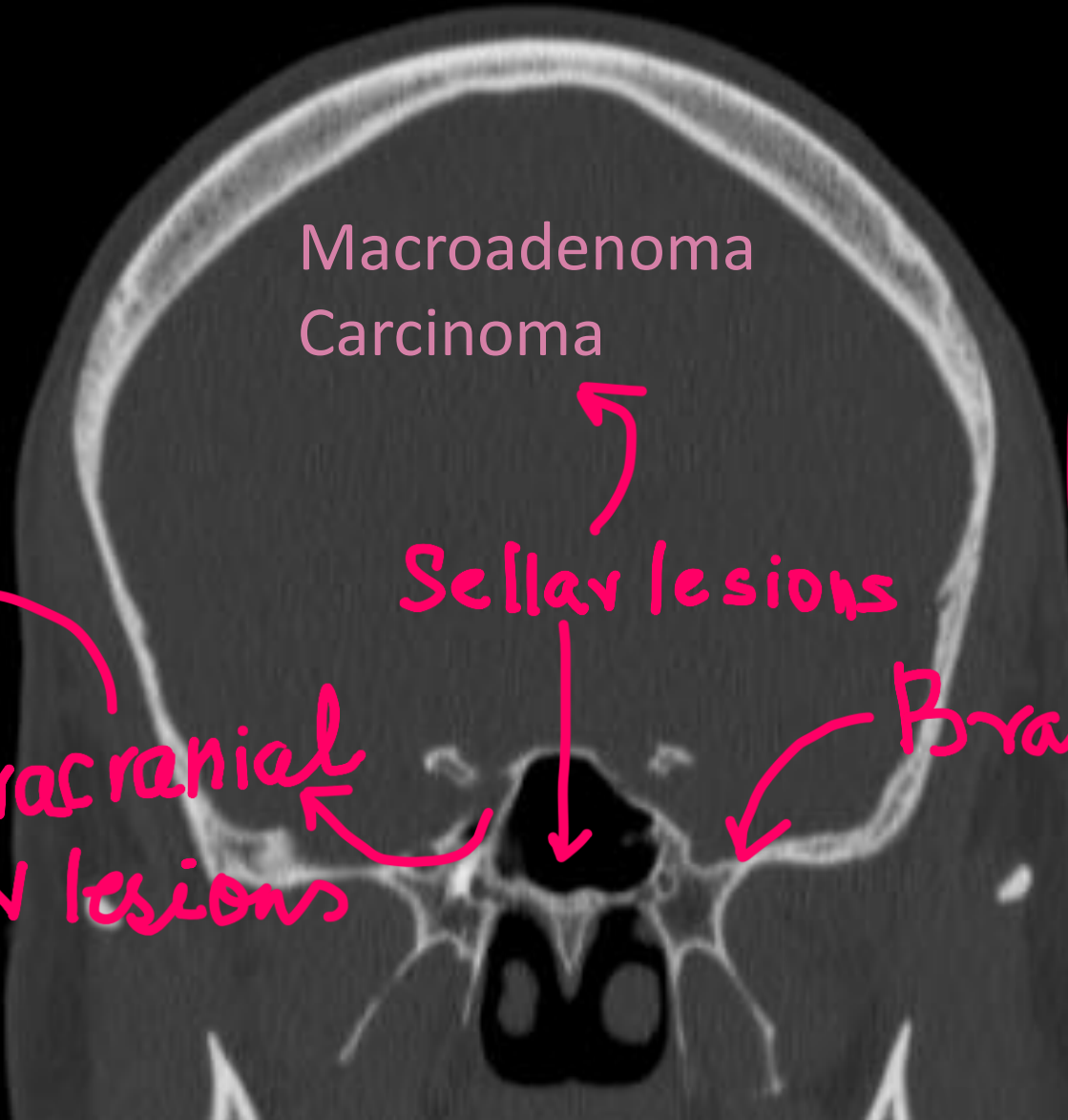
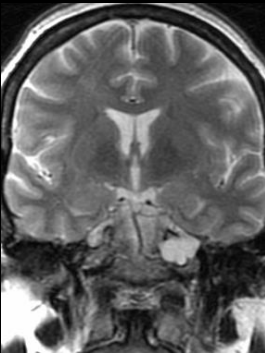
Macroadenoma
Carcinoma

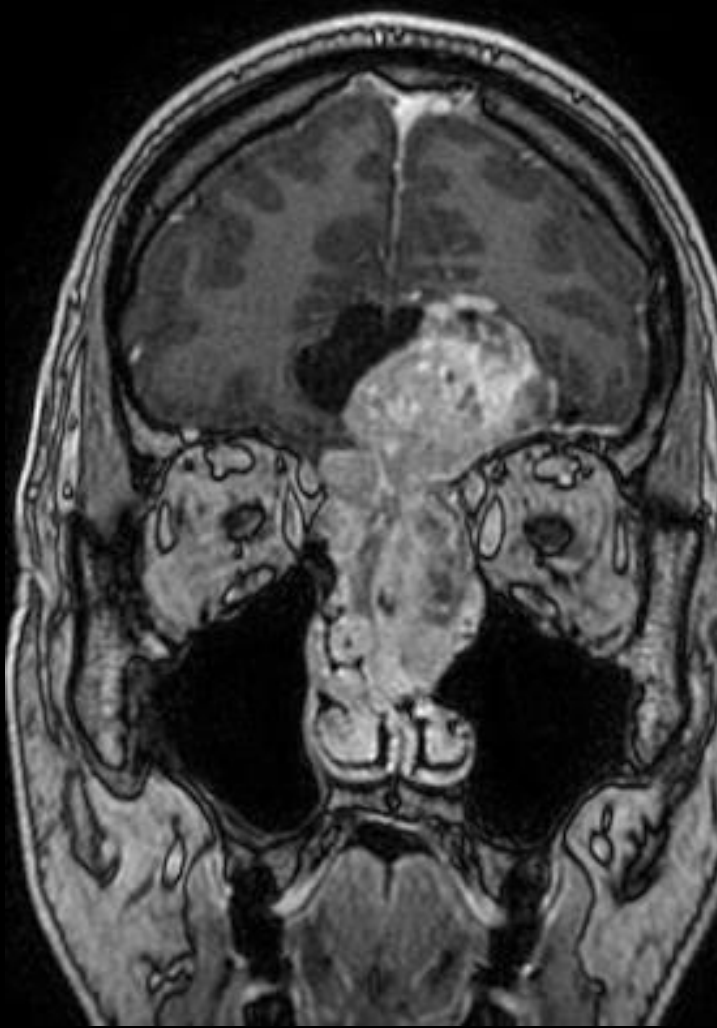
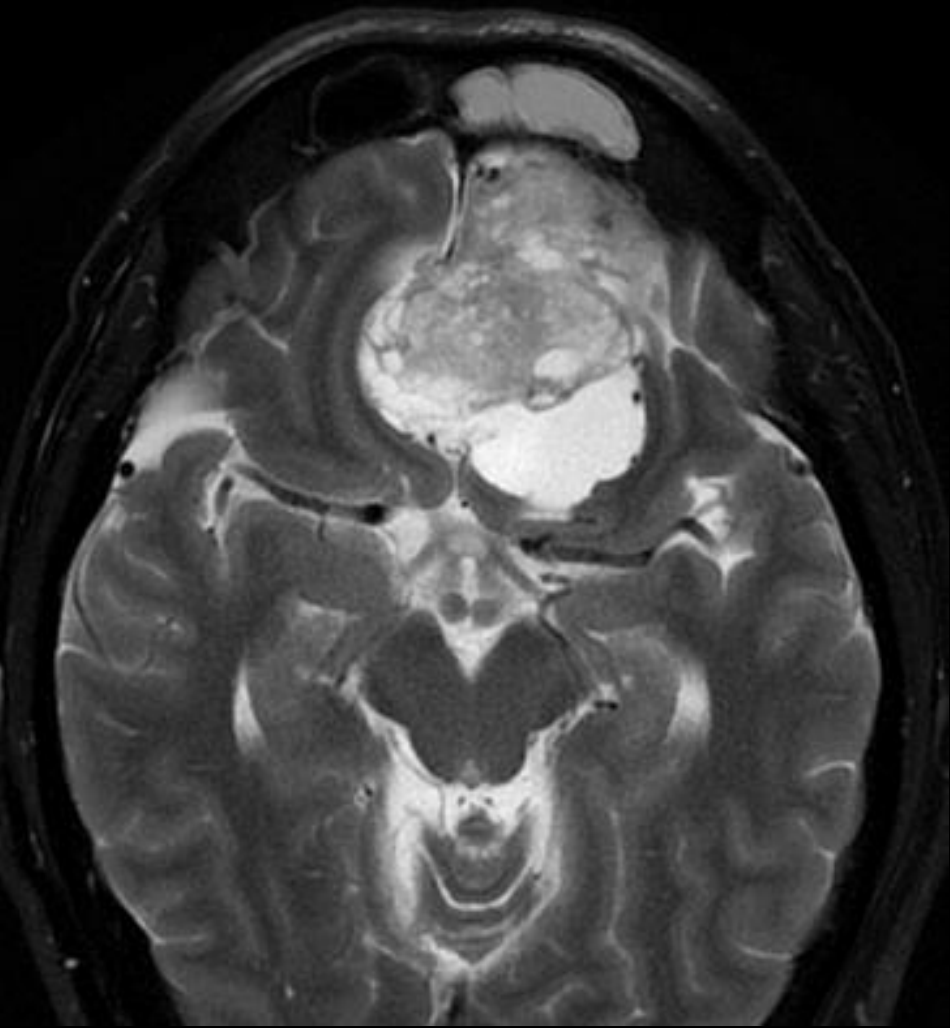
Sellar lesions

Intracranial
CN lesions

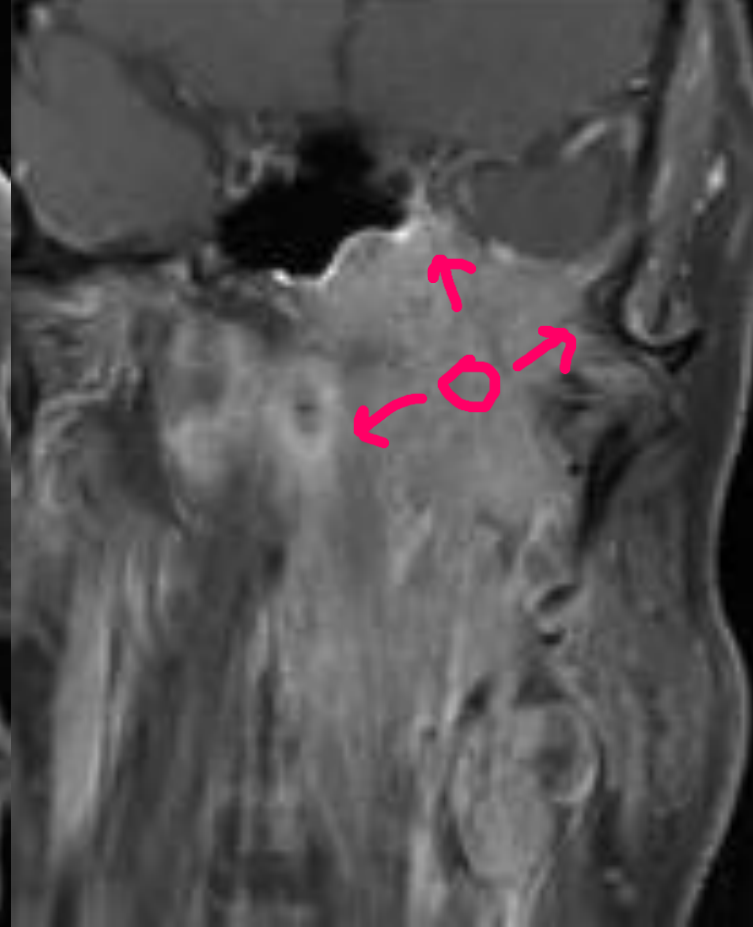
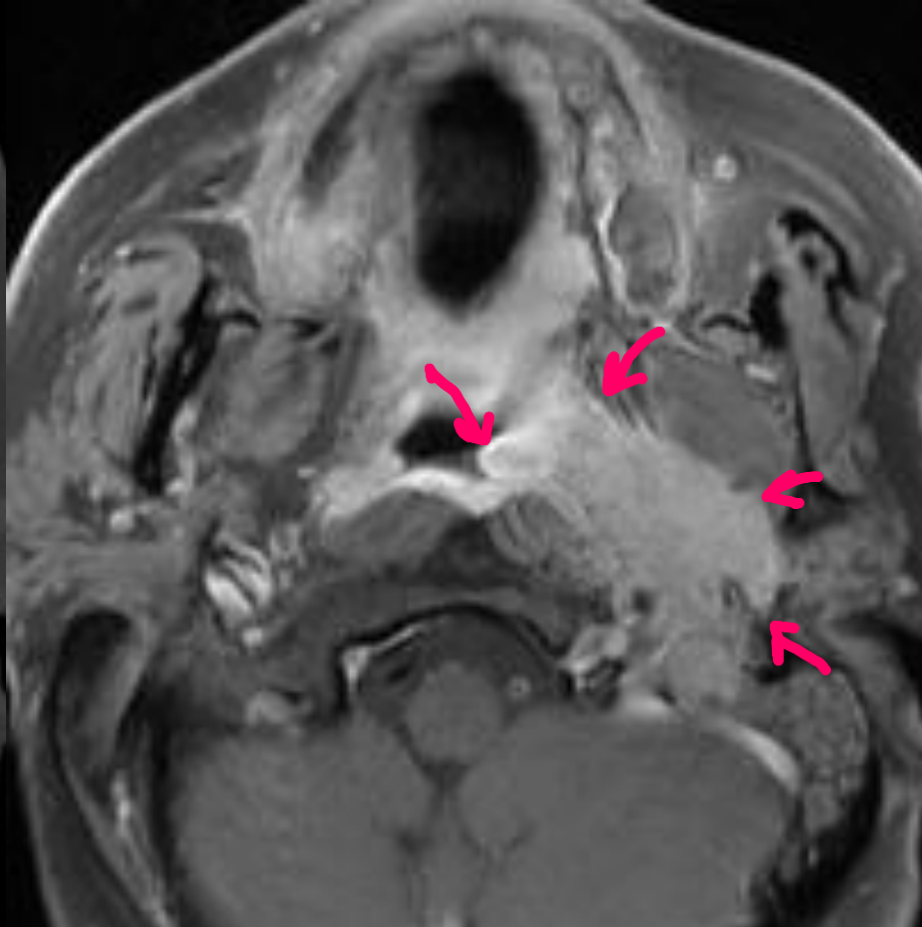
Brain/dural
lesions

Cephalocele
Meningioma
Pseudotumor

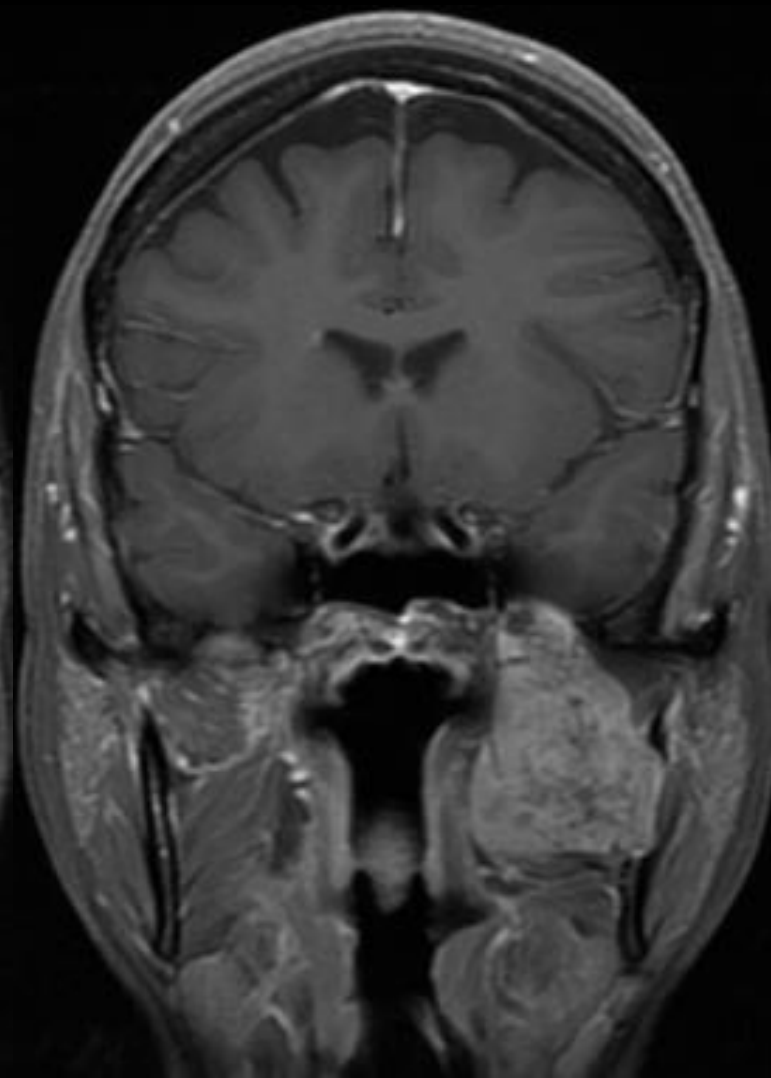
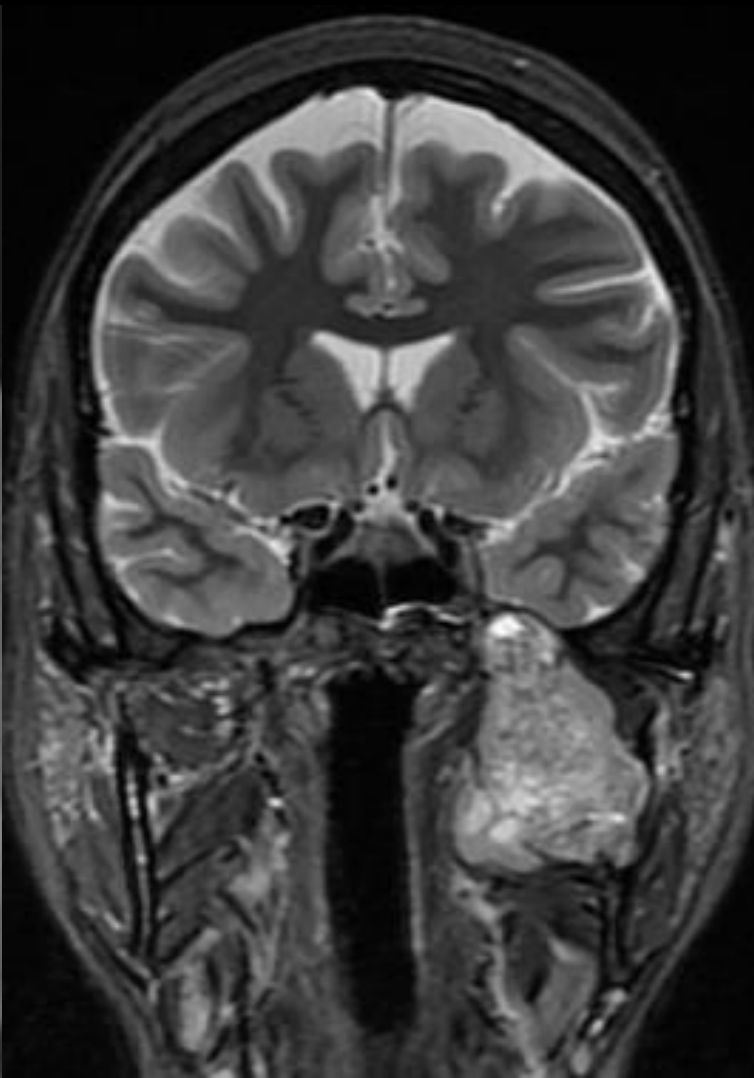




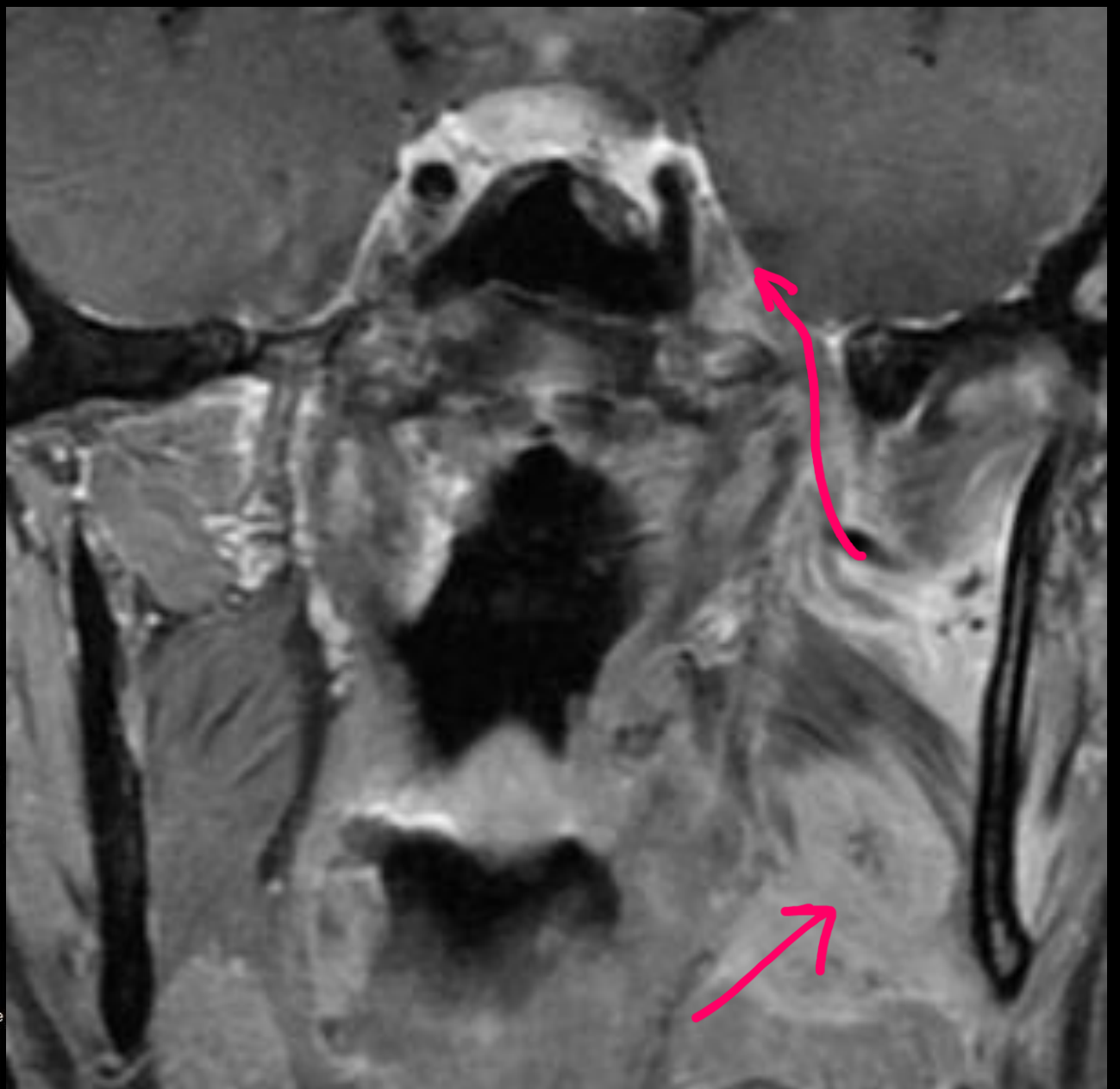
Esthesioneuroblastoma/ Olfactory neuroblastoma



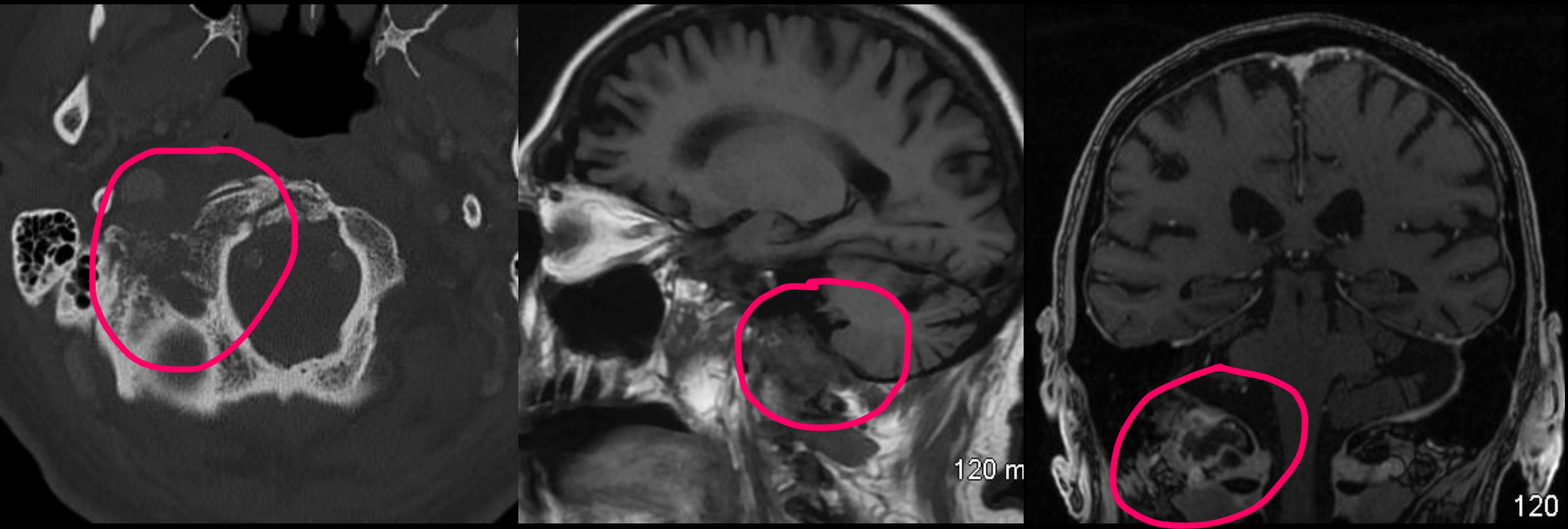
Nasopharyngeal SCC



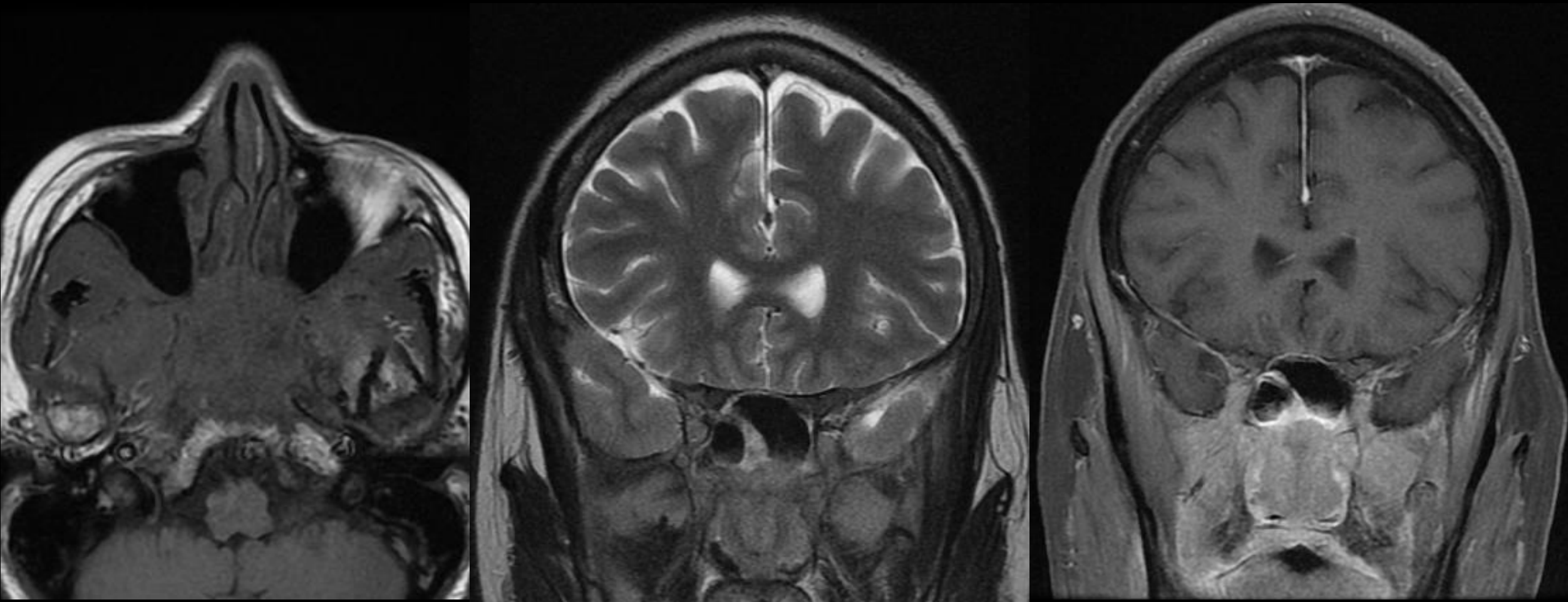
V3 Schwannoma



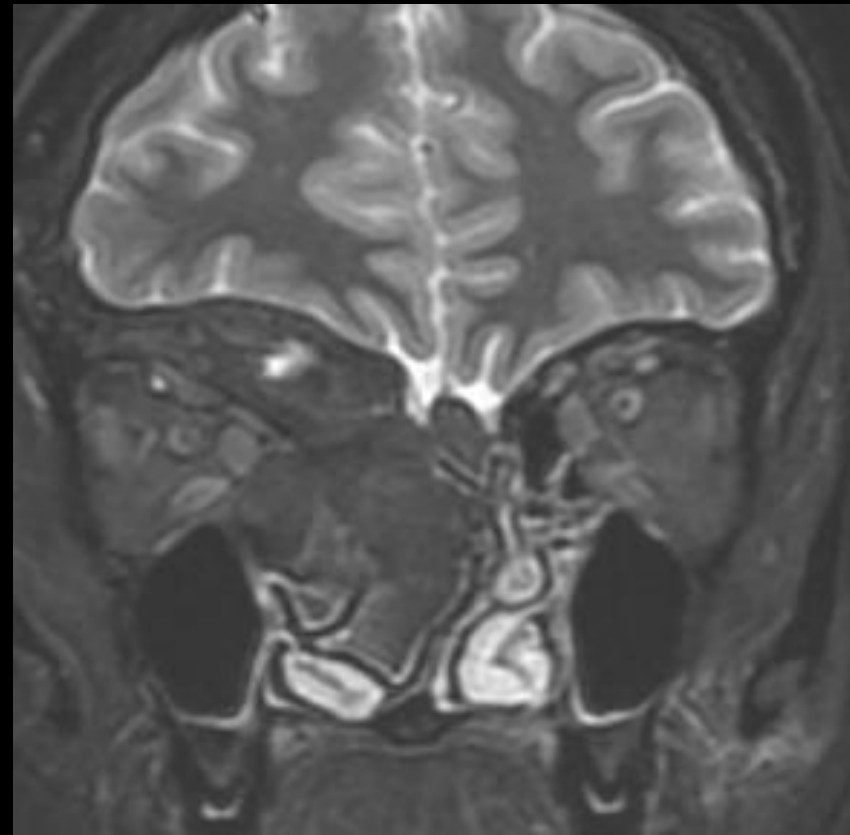
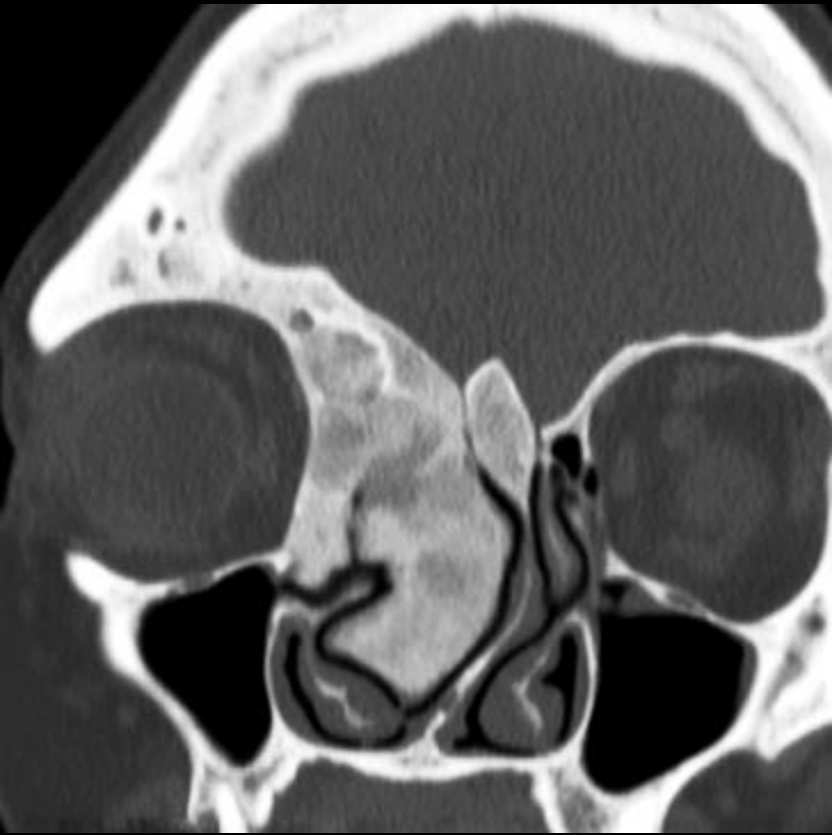
Perineural tumor along V3 from oral cancer



Metastasis

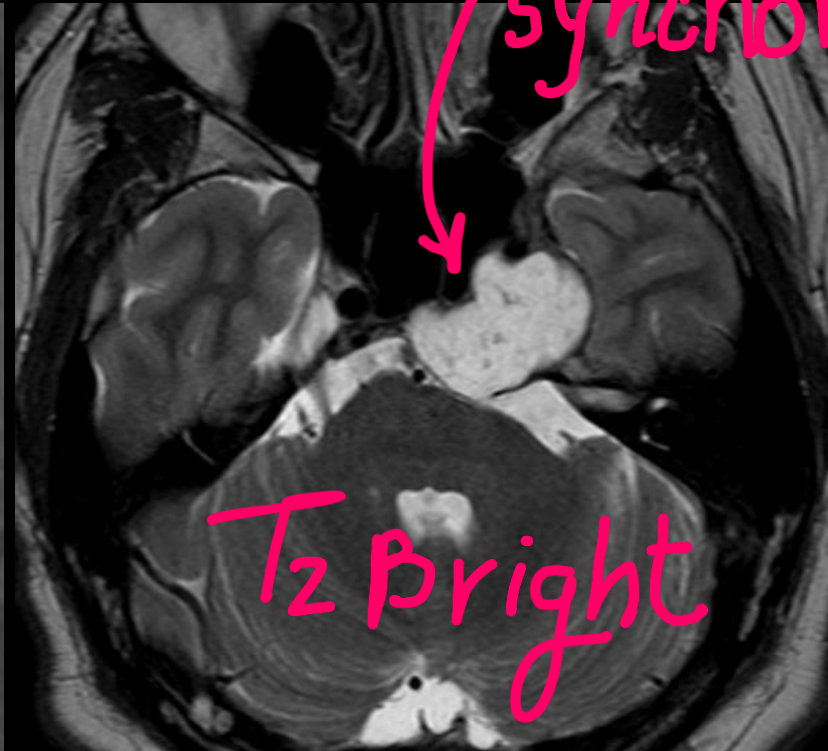
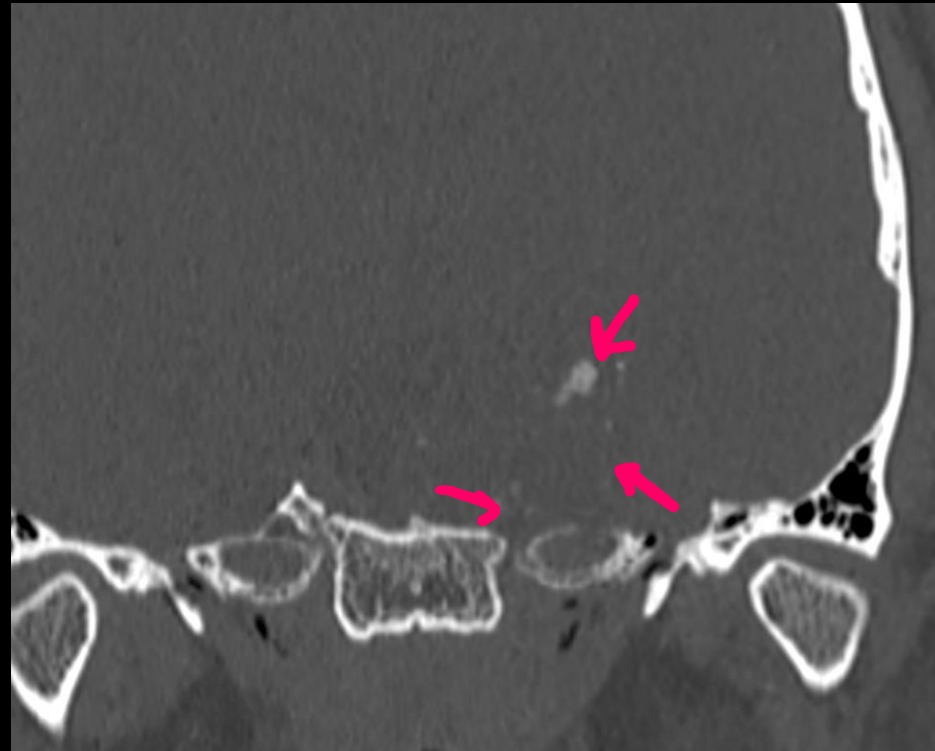


Lymphoma

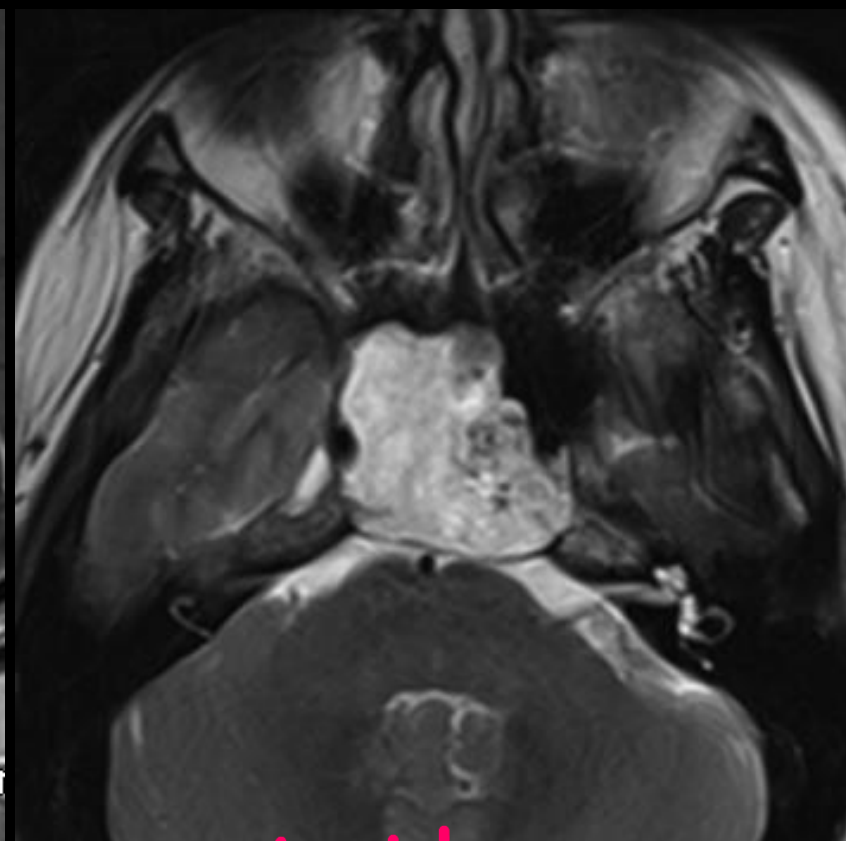
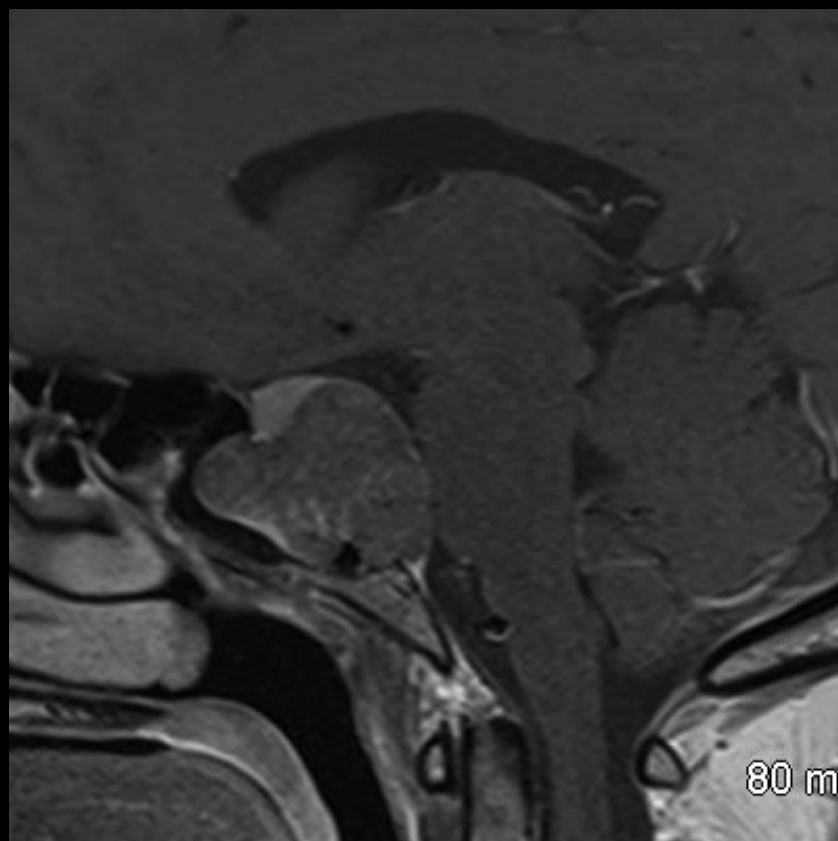
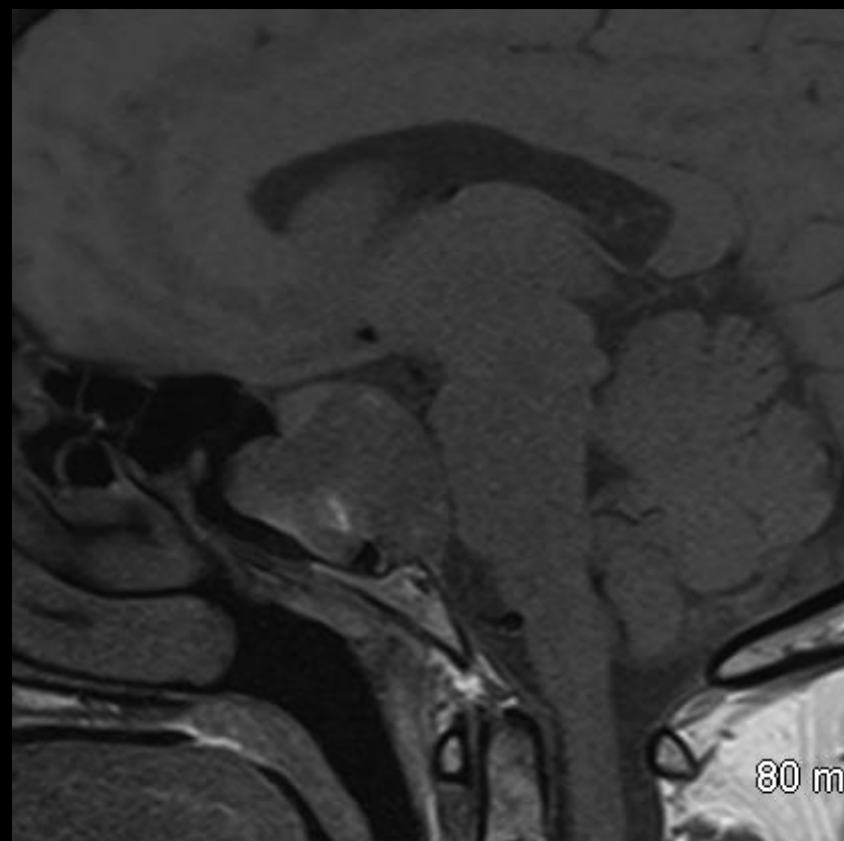


Ground Glass

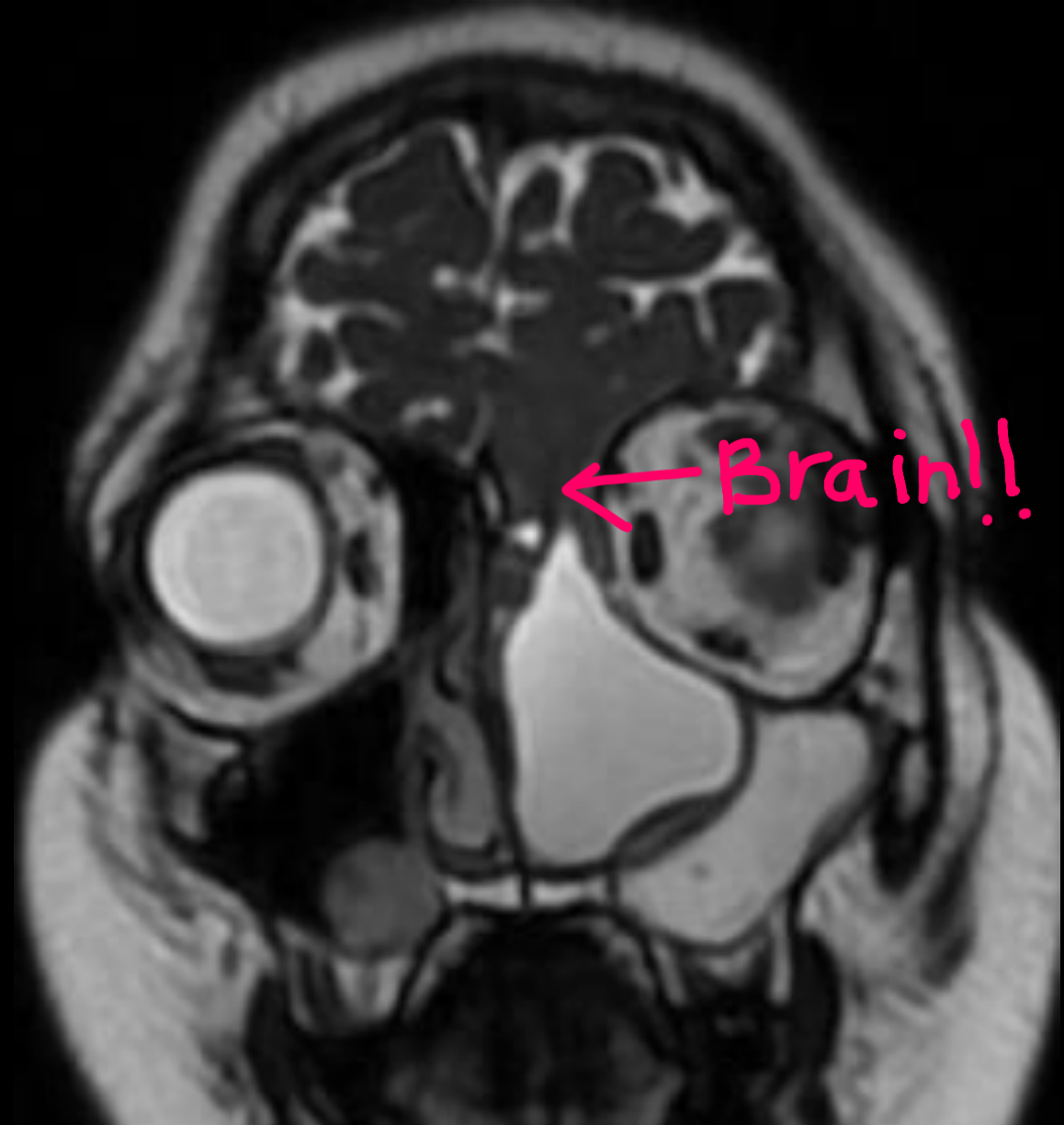
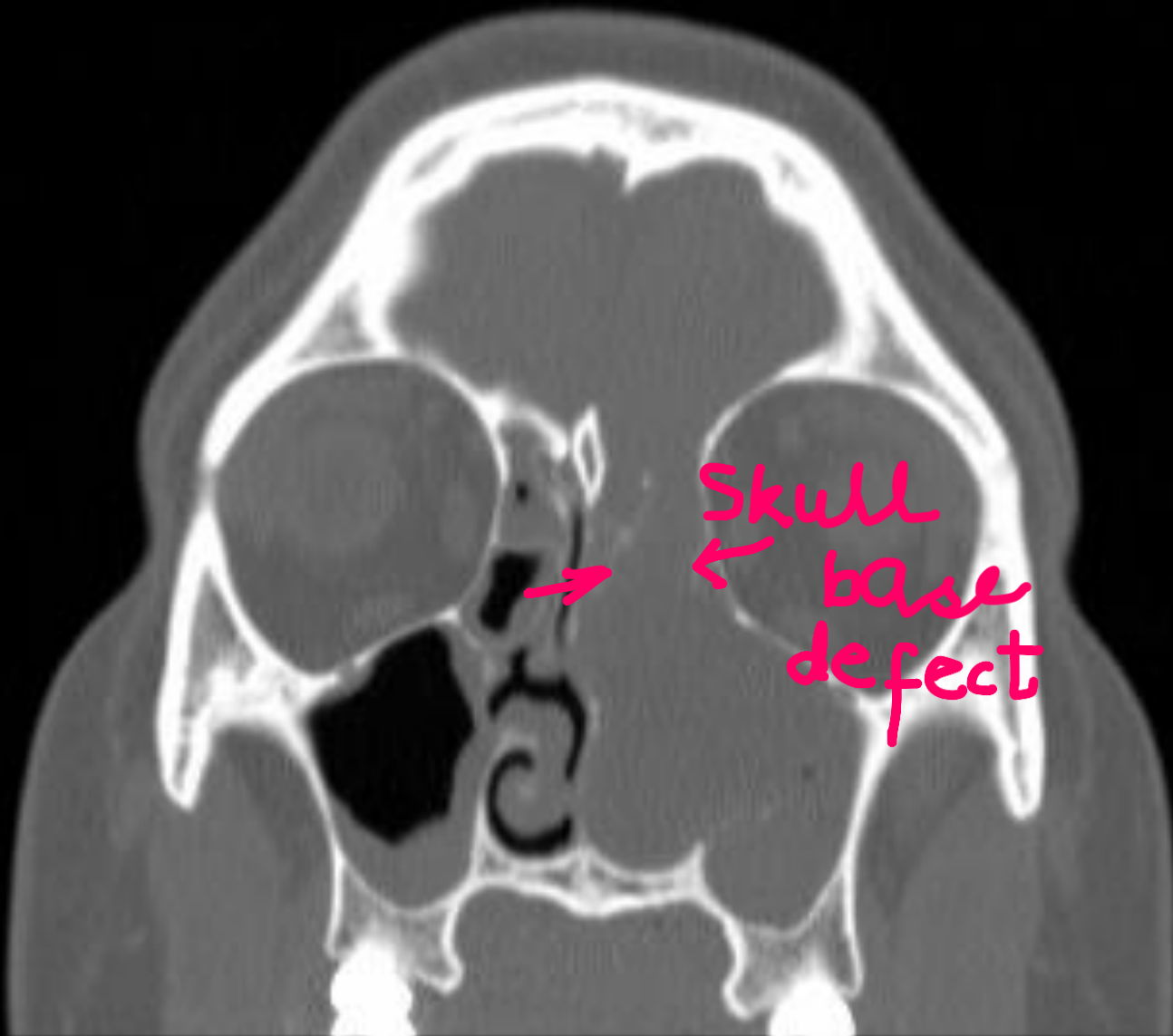
Fibrous dysplasia



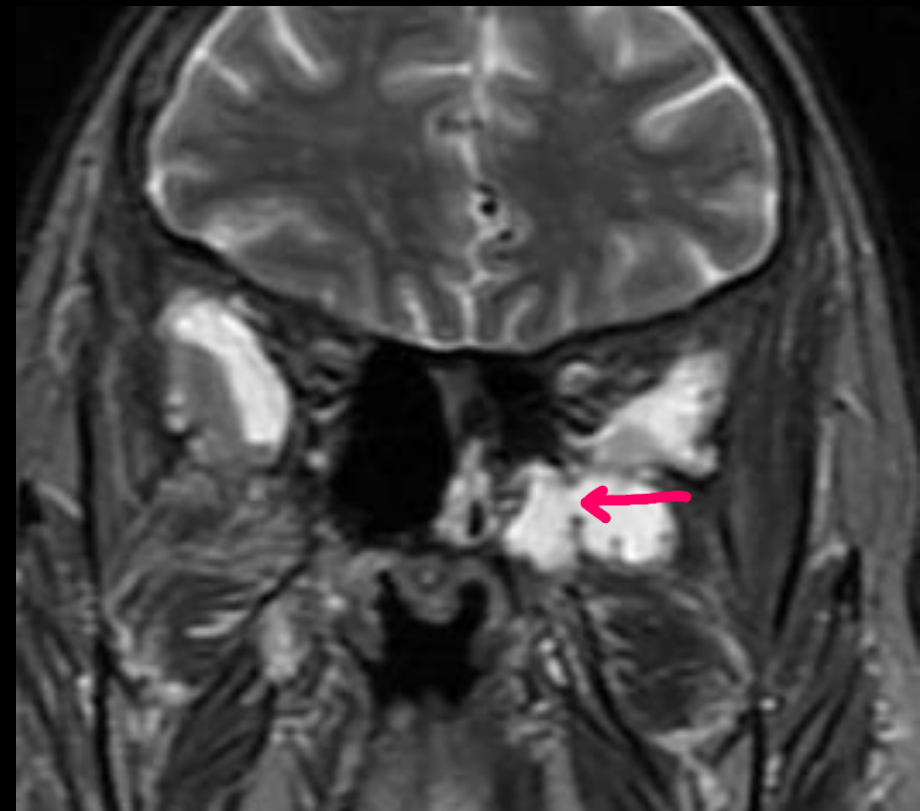
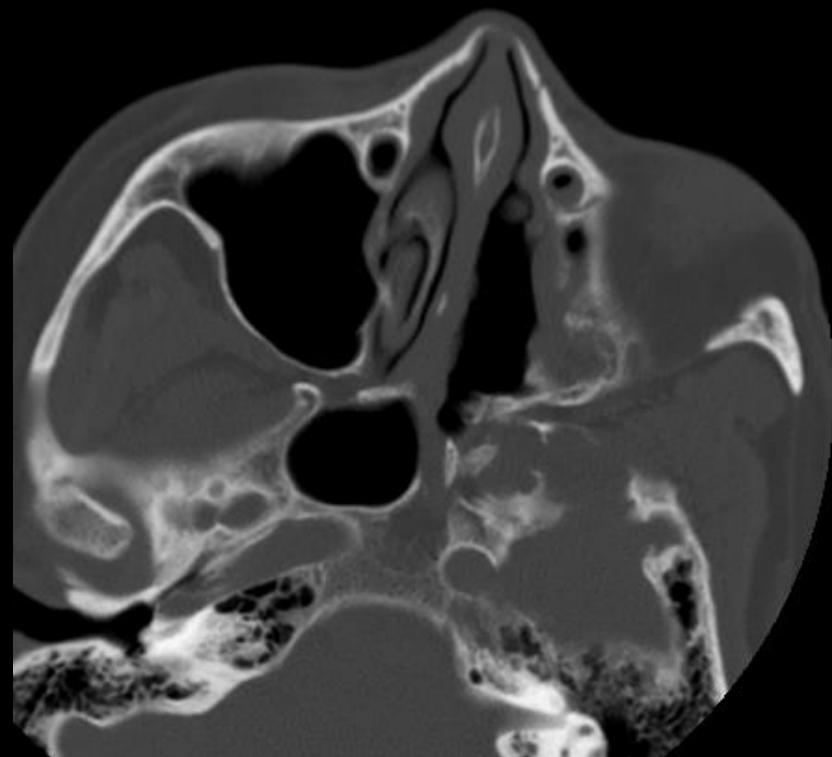
Chondrosarcoma



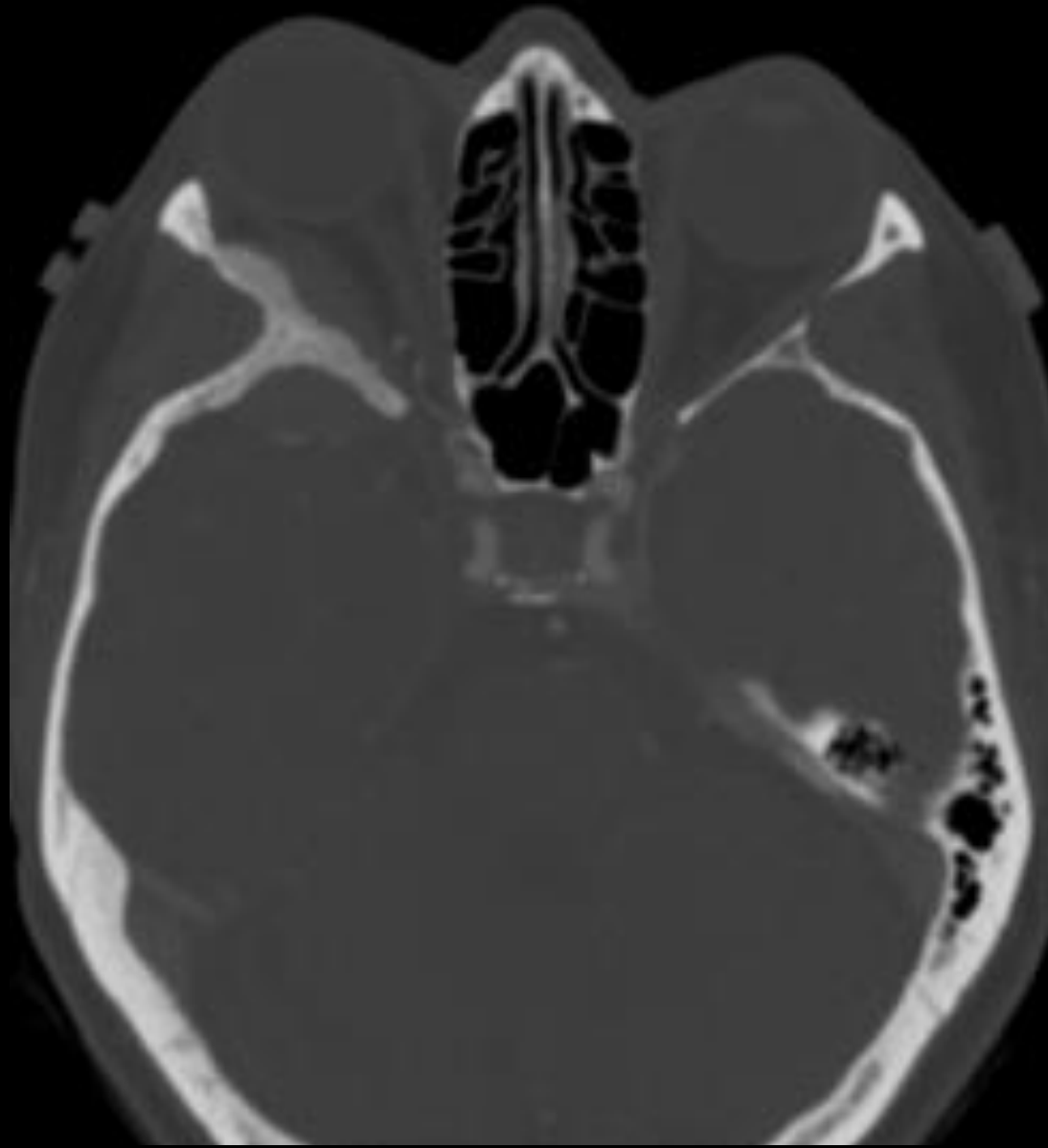
Midline
Chordoma



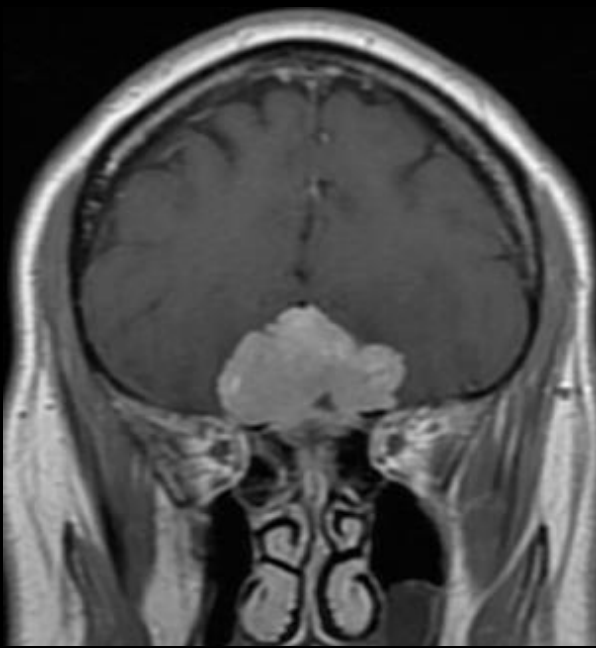
Cephalocele



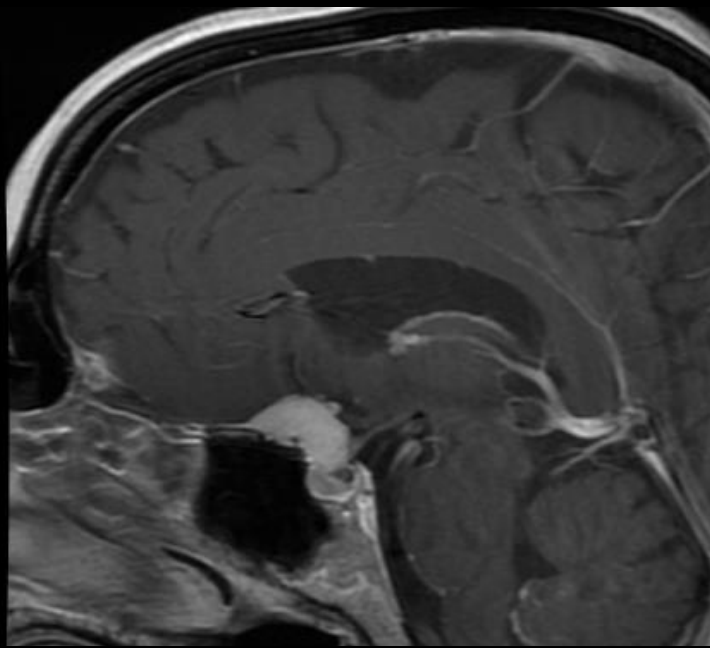
Sphenoid sinus cephalocele



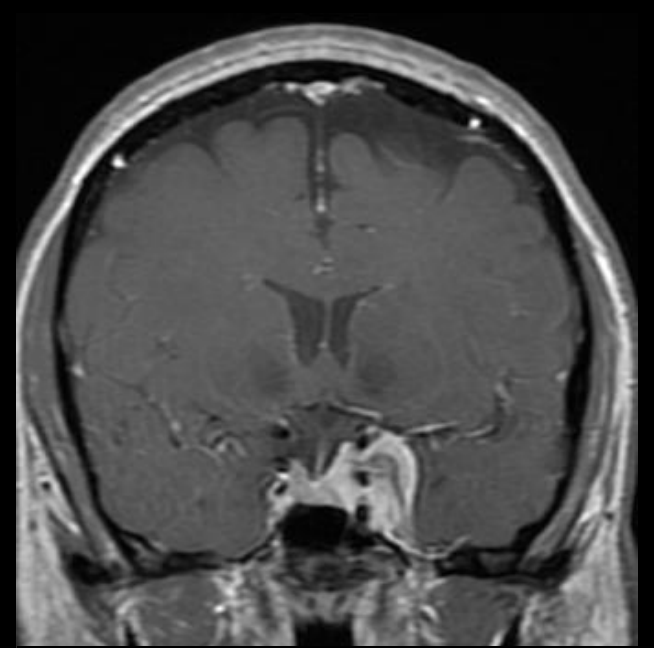
Sphenoid wing meningioma



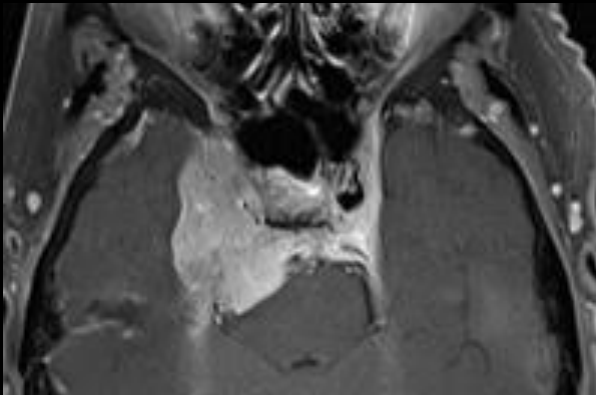
Olfactory groove



Planum sphenoidale



Parasellar



Central skull base

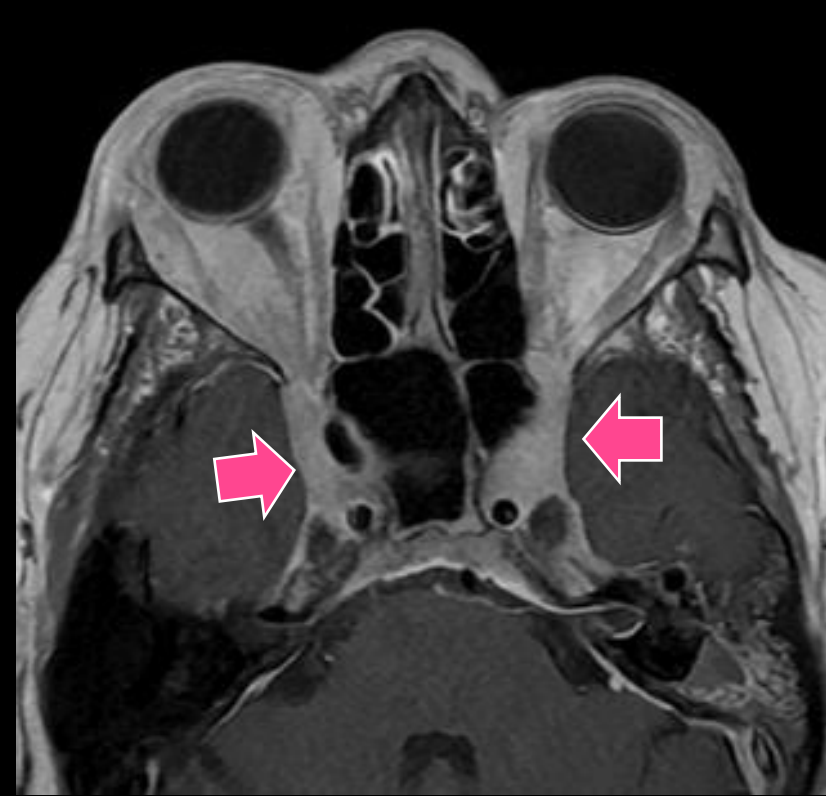
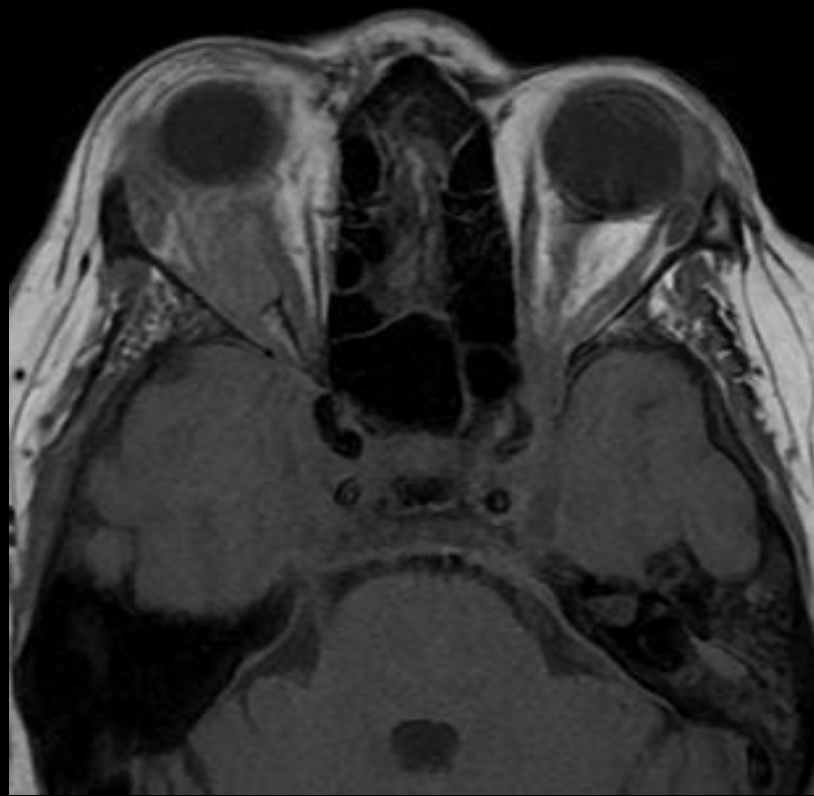
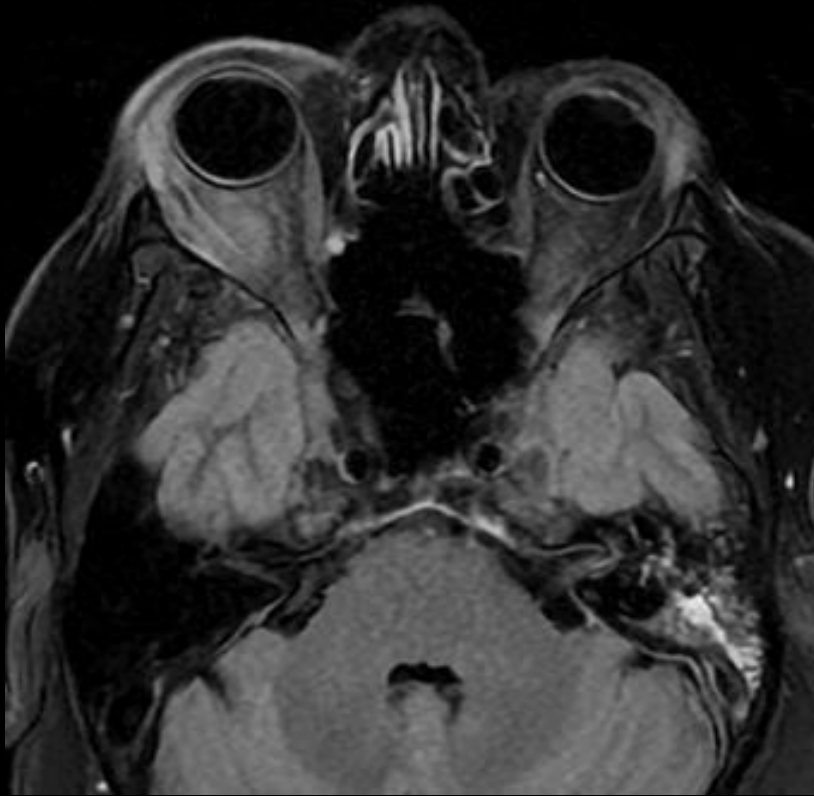


Clival

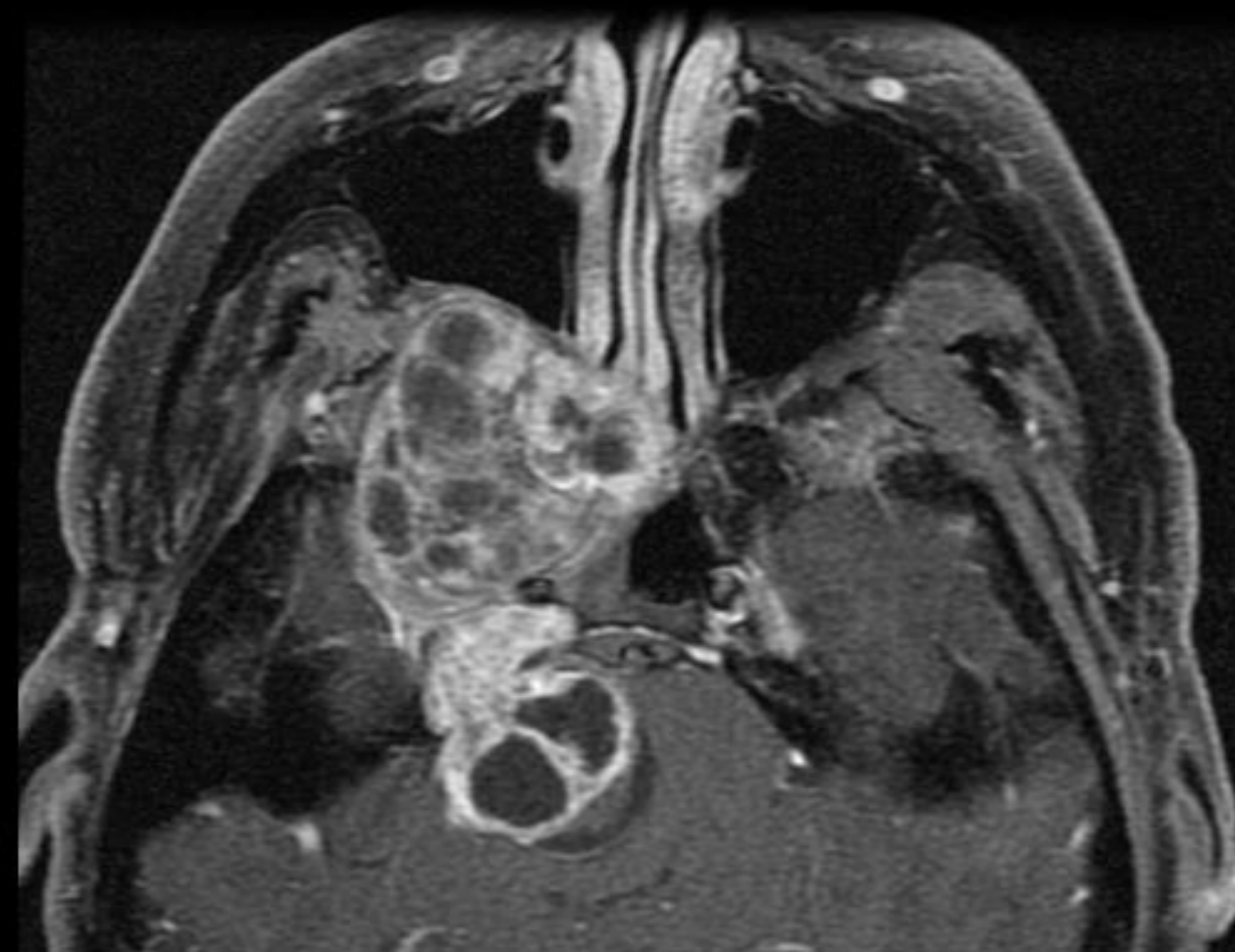


Posterior fossa

Skull base meningiomas

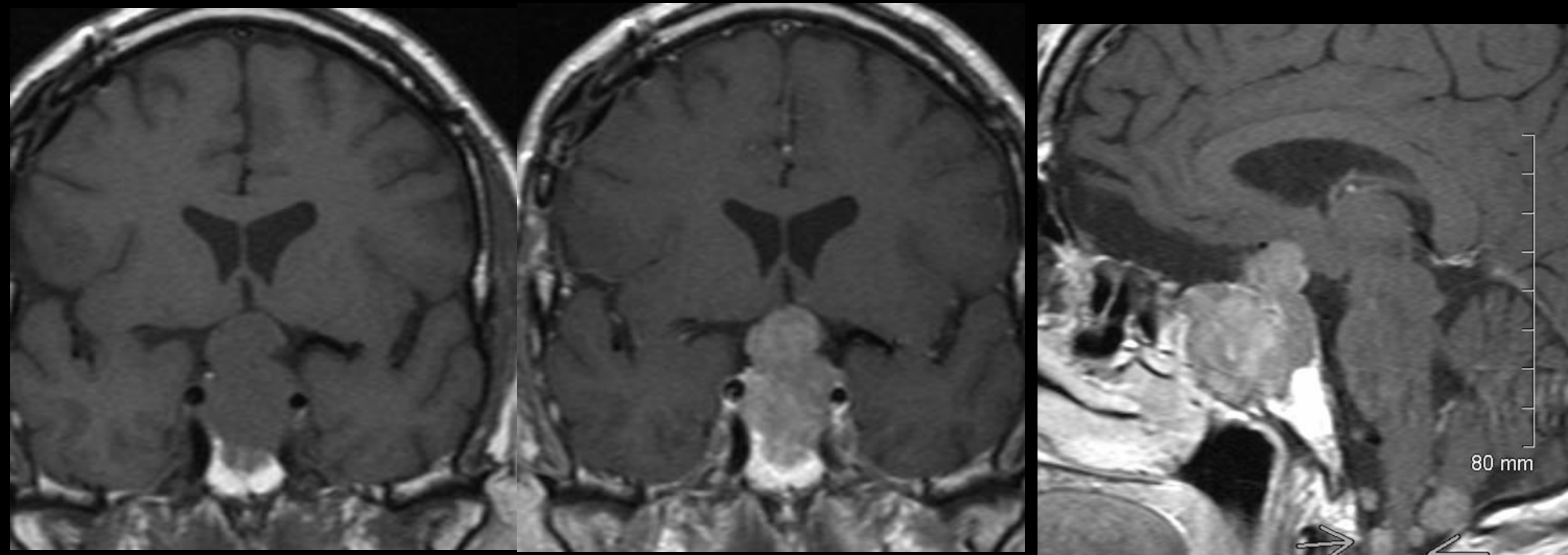


Pseudotumor/IgG4-RD



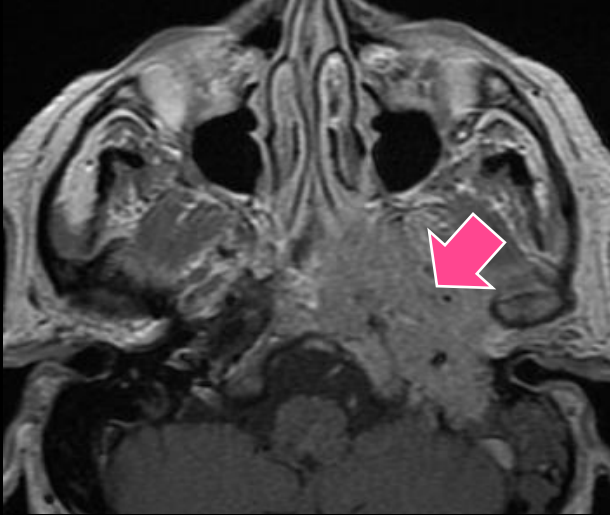
Trigeminal schwannoma

Case courtesy: Tanya Rath

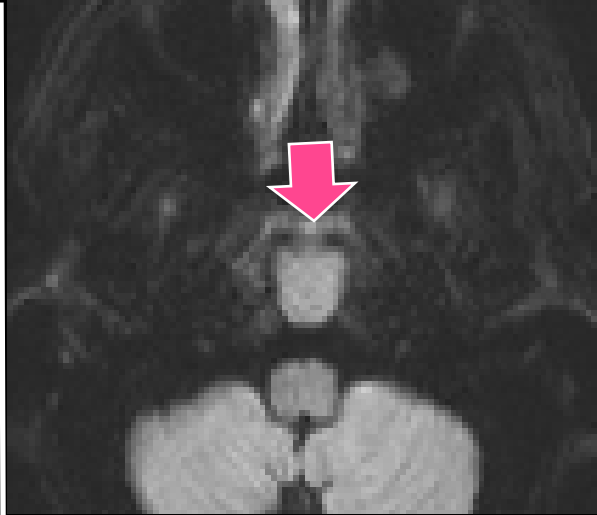


Invasive pituitary adenoma

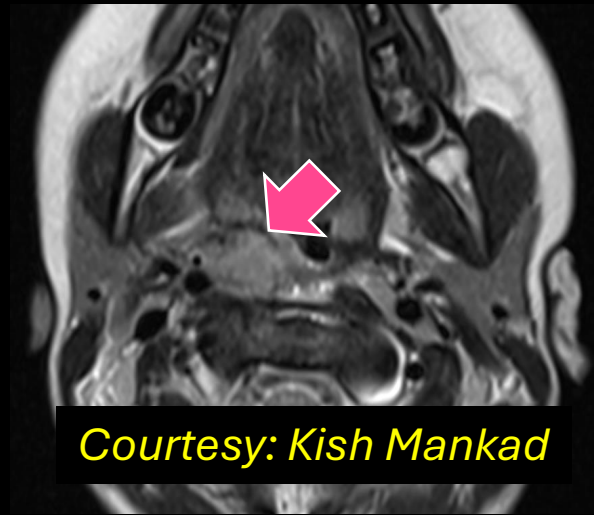
Nasopharyngeal lesions



NPC

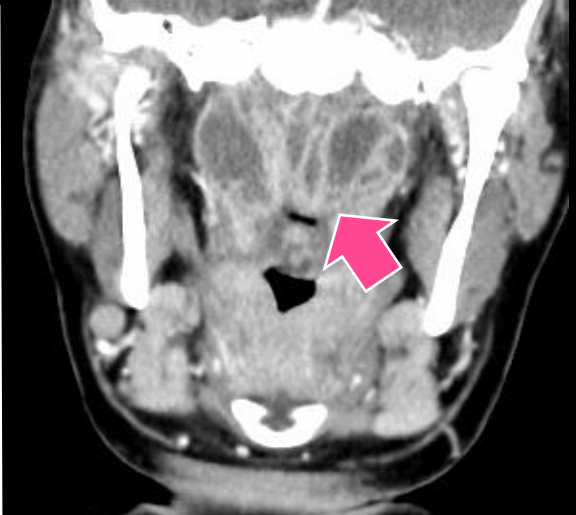


Lymphoma

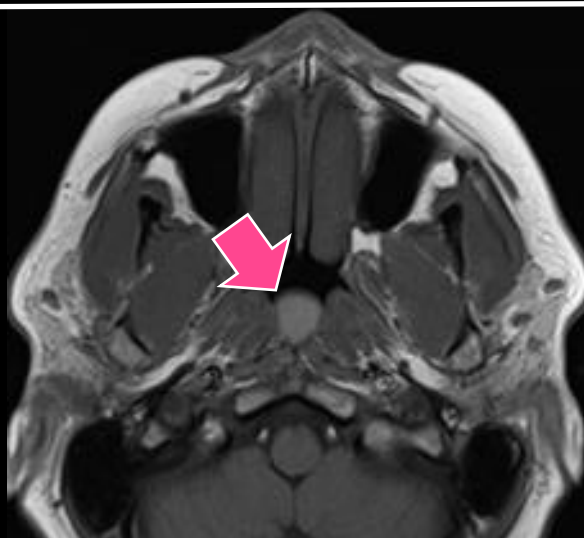


Courtesy: Kish Mankad

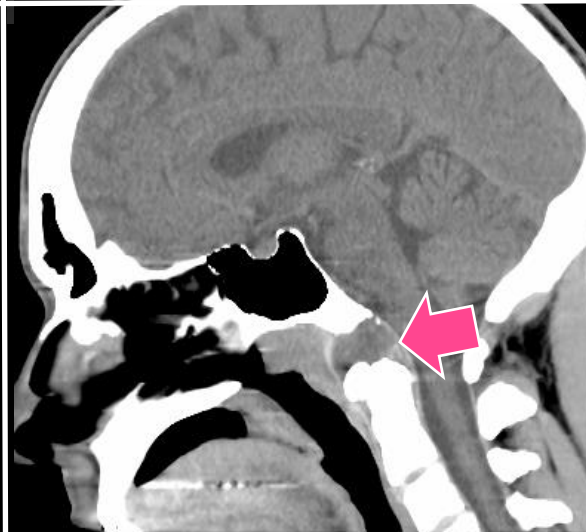
Suppurative adenitis



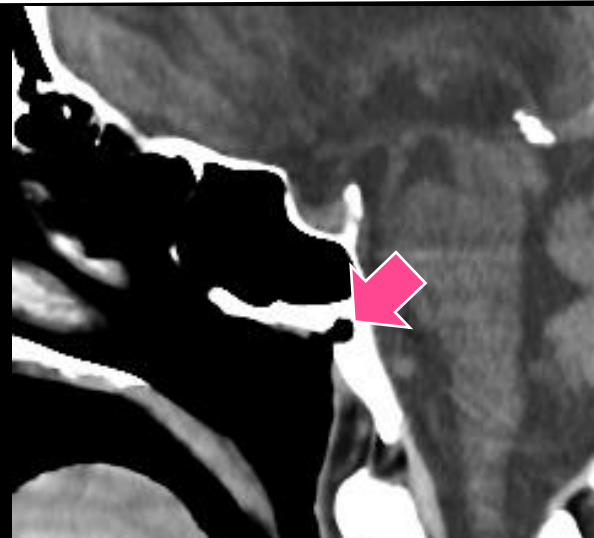
Abscess



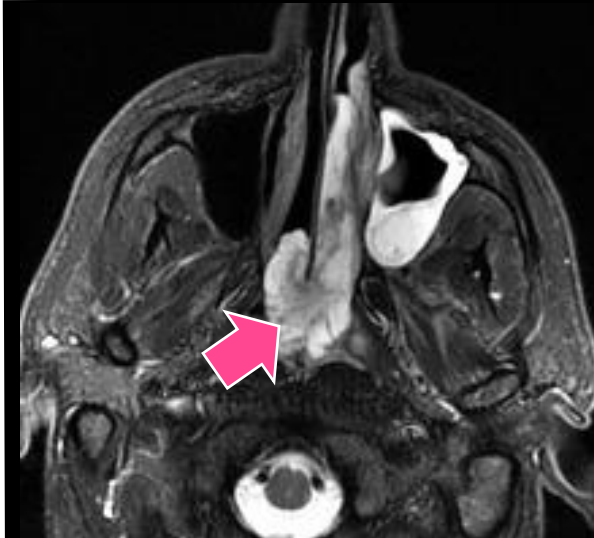
Tornwaldt cyst



Chordoma

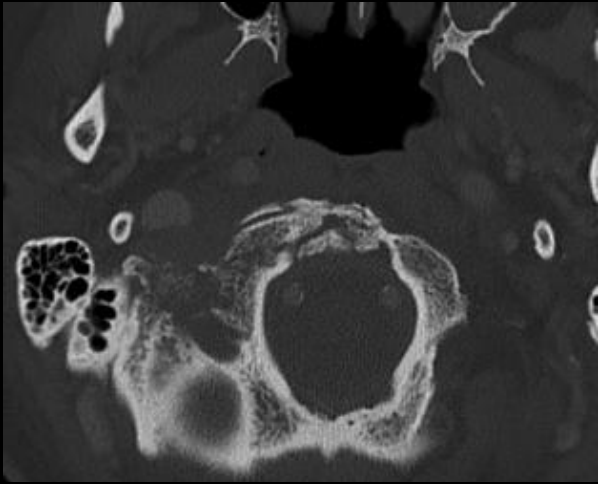


Fossa navicularis

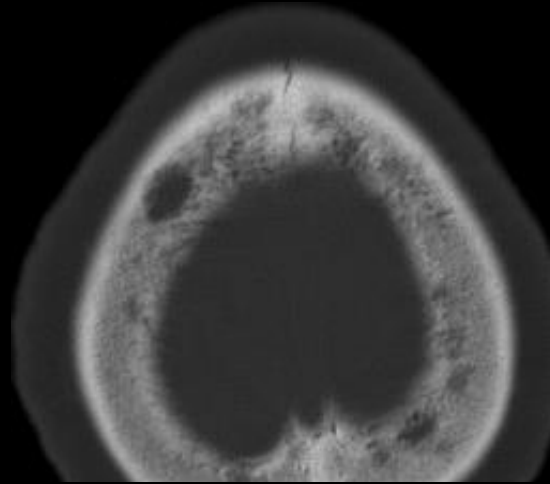


Inverted papilloma

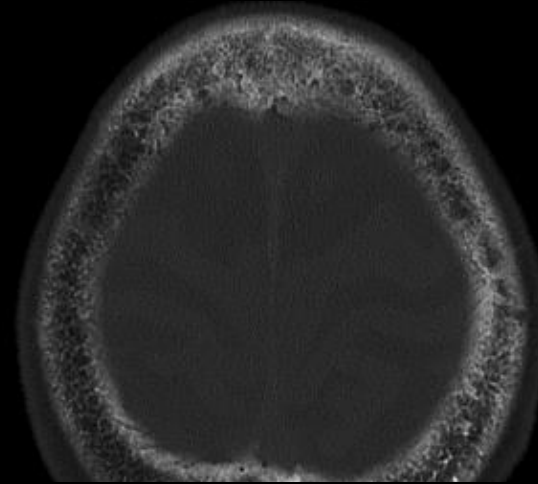
Intrinsic skull base lesions



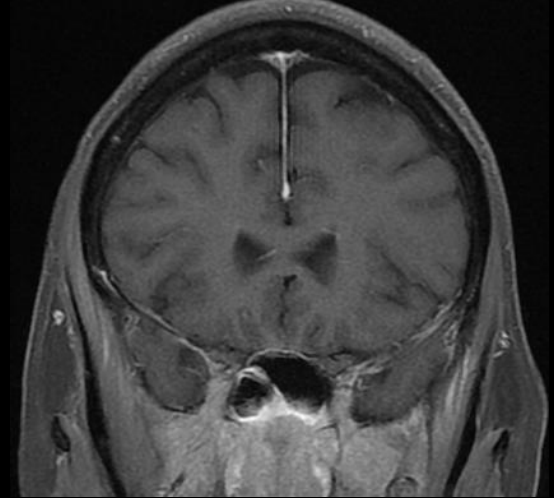
Metastasis



Myeloma



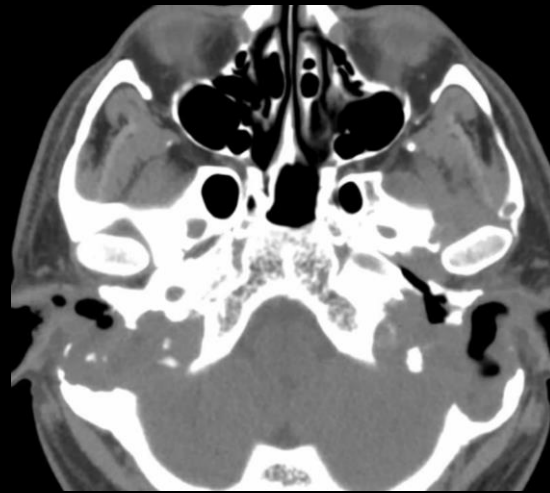
Paget



Lymphoma



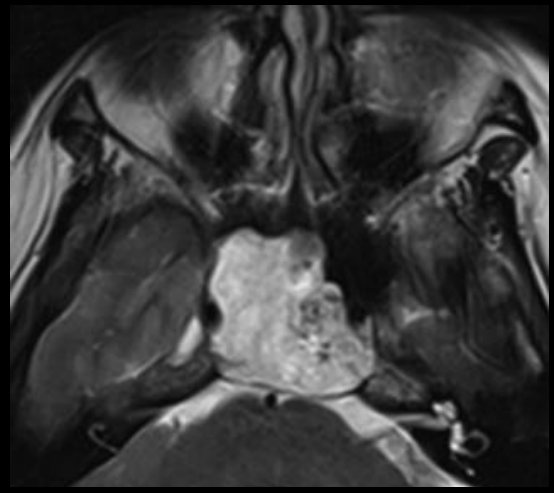
Fibrous dysplasia



LCH

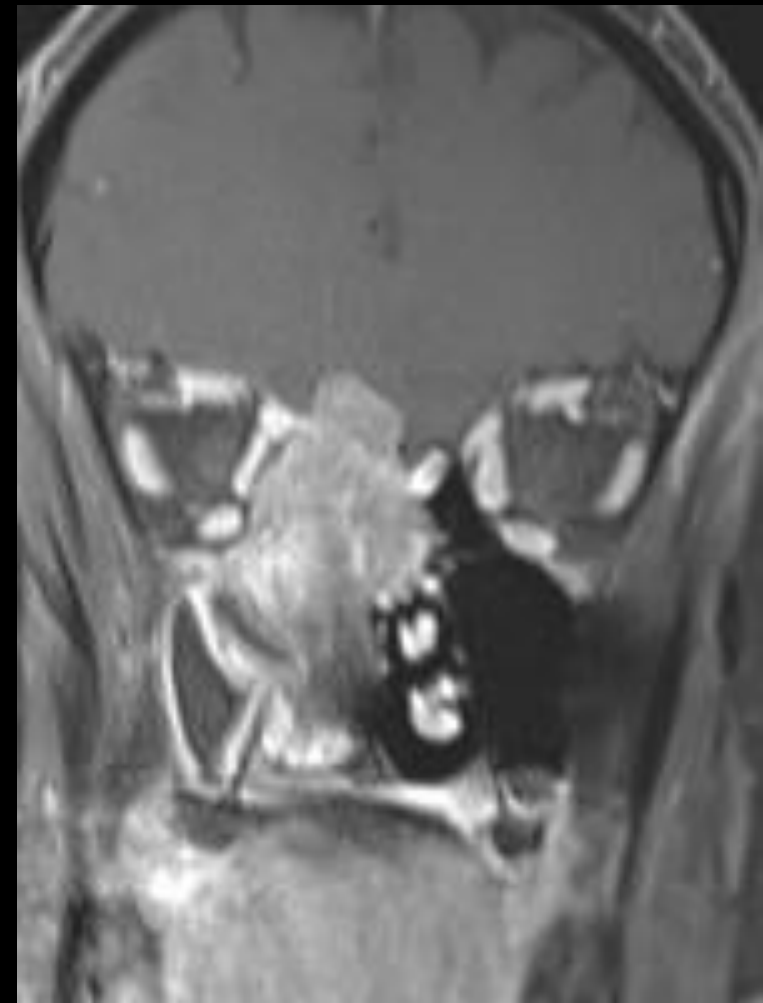


ChondroSa

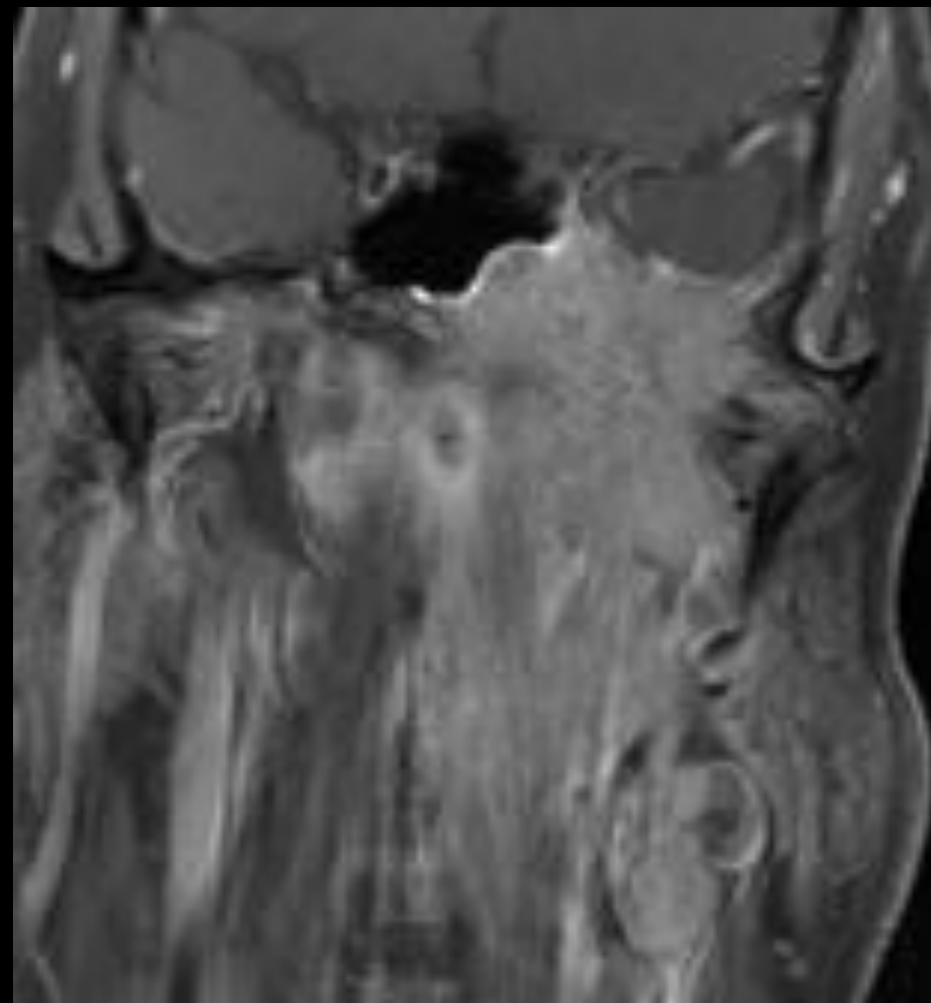


Chordoma

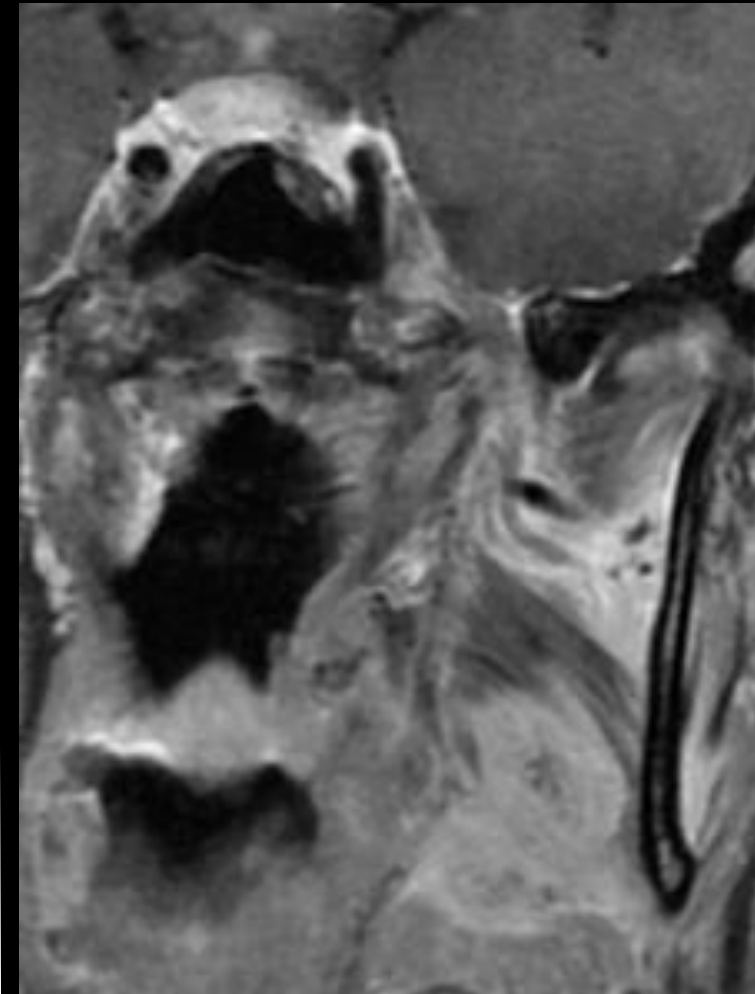
‘Ascending’ skull base masses



Sinonasal

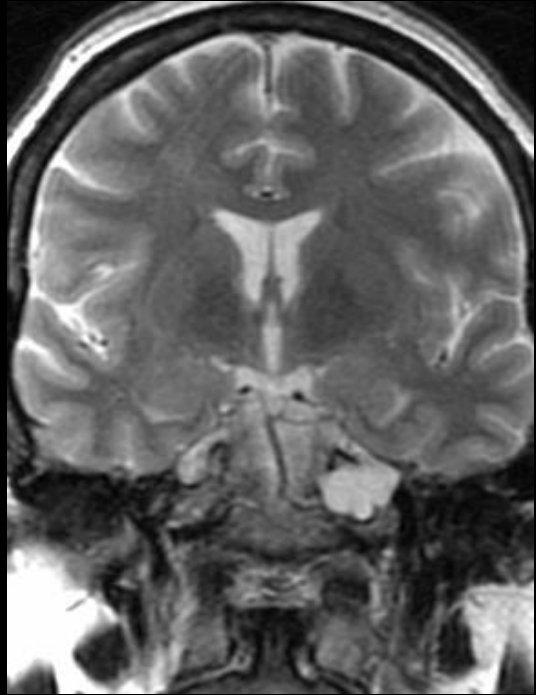


NPC

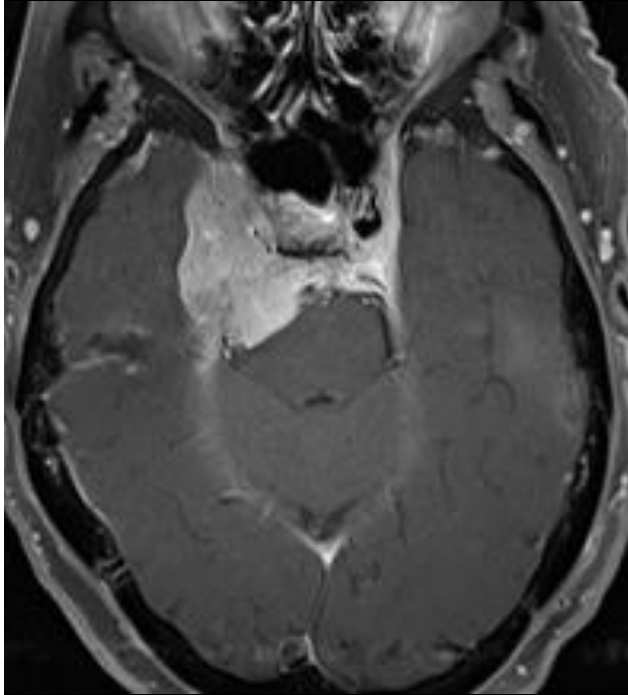


PNTS

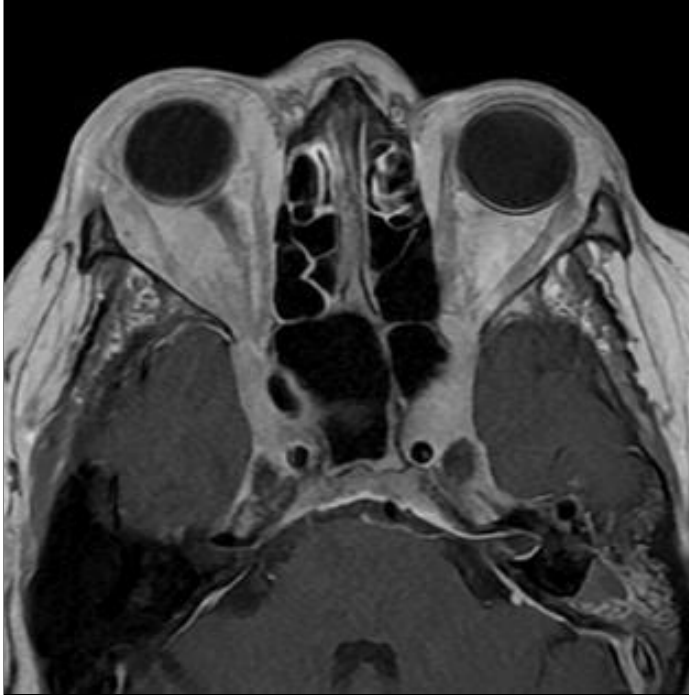
‘Descending’ skull base masses



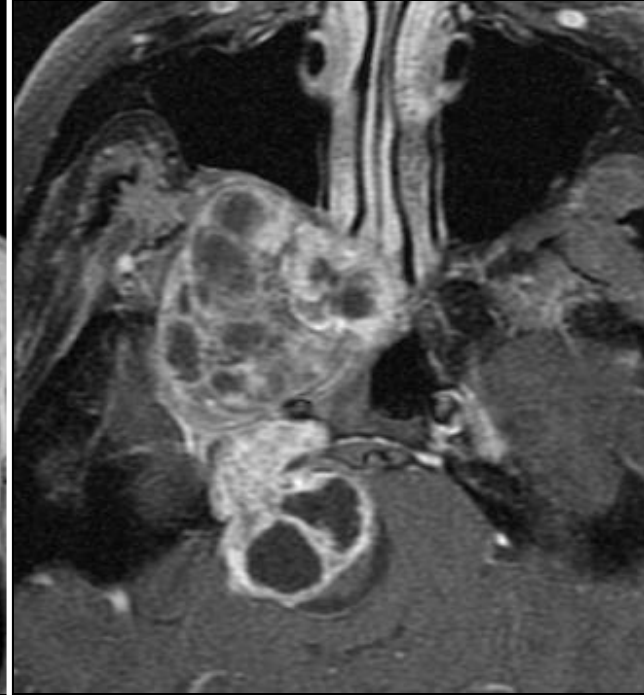
Cephalocele



Meningioma



IgG4-RD



Schwannoma

Objectives

- Review the anatomy of nasopharynx and skull base
- Discuss anatomic determinants of nasopharyngeal cancer staging
- Review other common nasopharyngeal and skull base pathologies

Thank You

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