

A bridge to more advanced techniques

Sara Samiee MD FRCPC
Radiation Oncologist

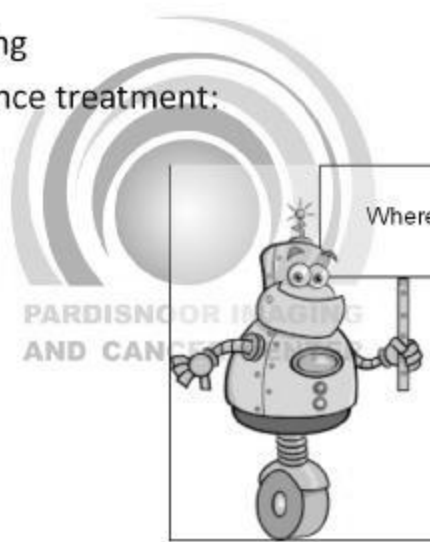
PARDISNOOR IMAGING
AND CANCER CENTER

Physician's role as a Radiation Oncologist

- Robust decision making
- Back bone of an advance treatment:
 - Volumes
 - Do's
 - Don'ts

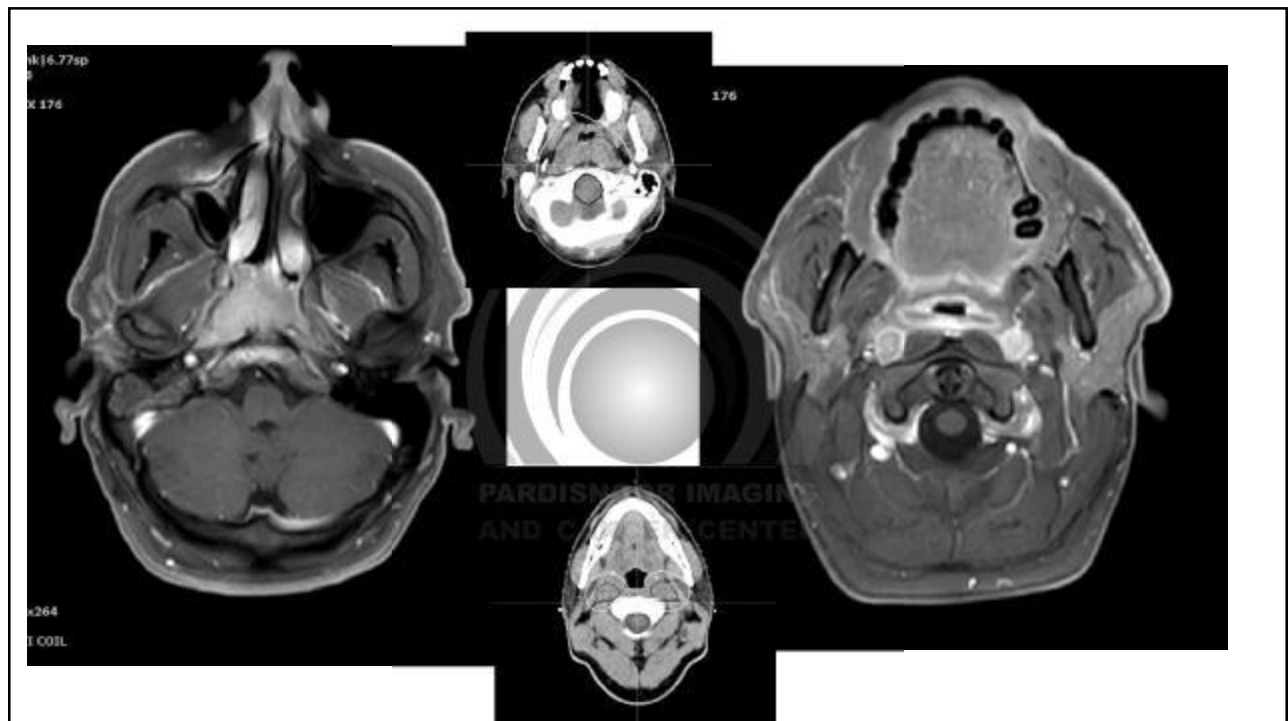
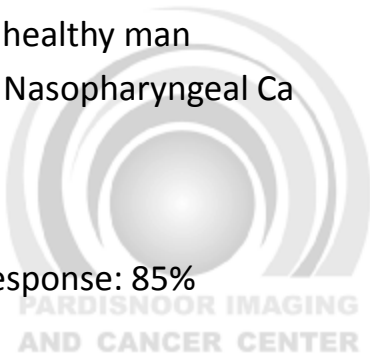
Paying attention to every single detail matters

Otherwise patient wouldn't benefit any technique



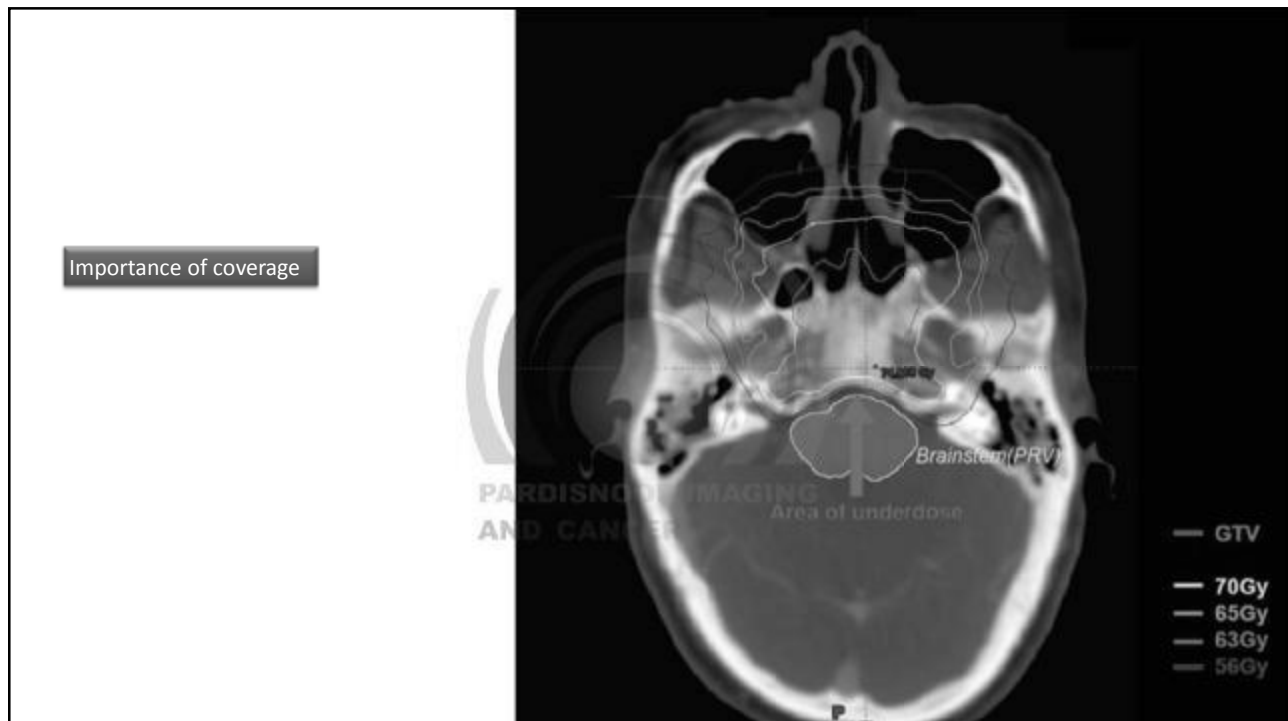
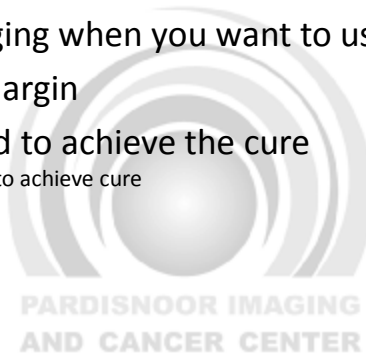
Step by step for an advance technique A case of Nasopharyngeal Ca

- 47 year old otherwise healthy man
- Recent diagnosis with Nasopharyngeal Ca
- Staging → PET CT
 - No distant met
- T1N2M0
- Chance of complete response: 85%

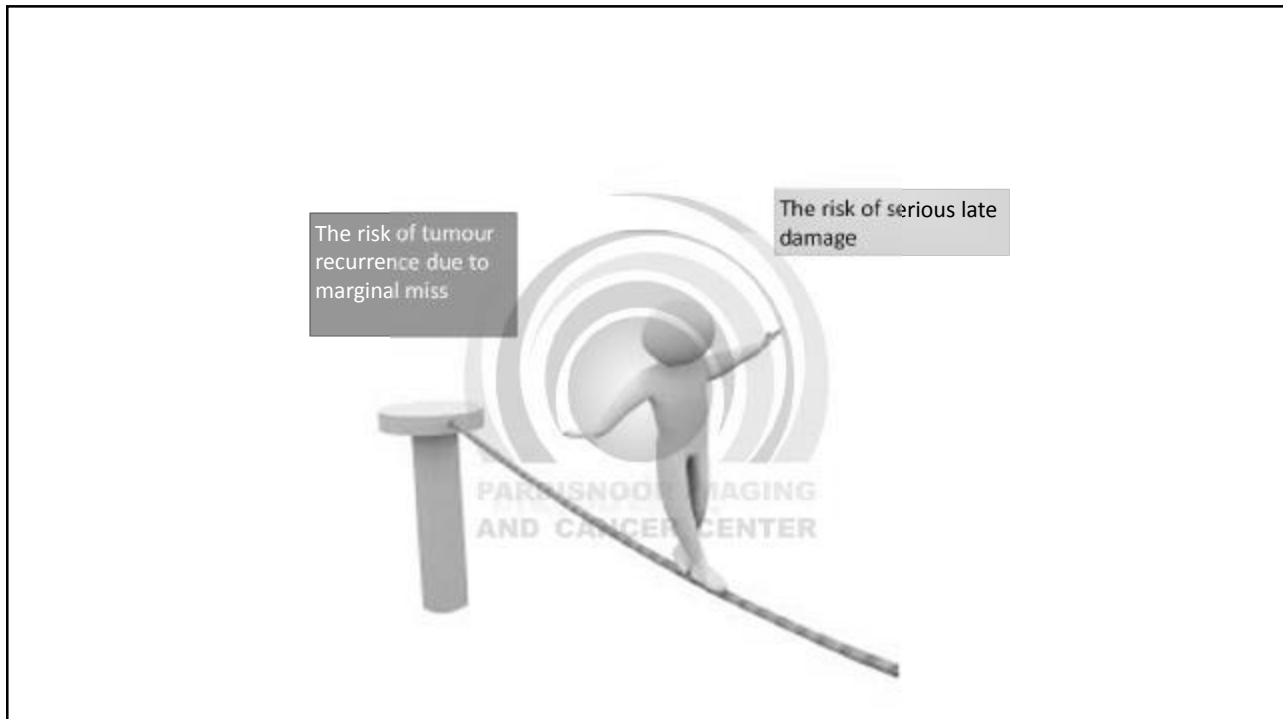
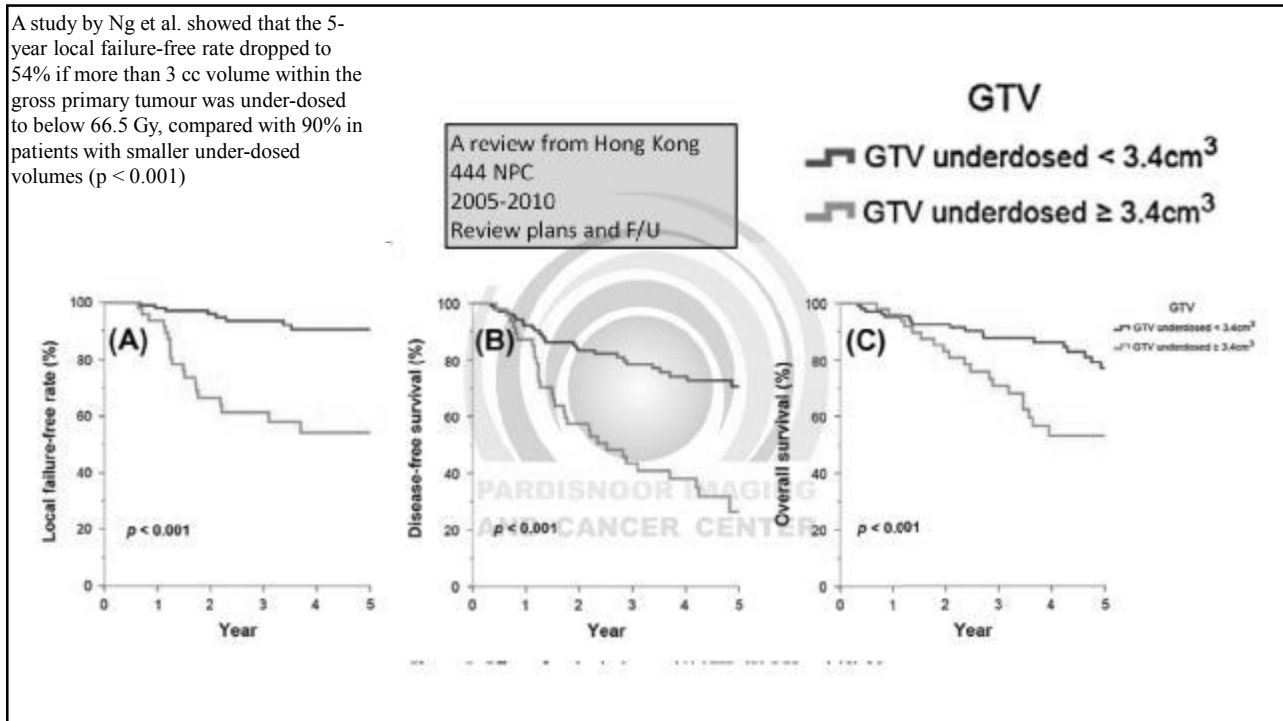


Nasopharyngeal Ca, Rad Onc Challenge

- And it's more challenging when you want to use Tomo!
- Narrow therapeutic margin
- High doses are needed to achieve the cure
 - And it's actually pretty likely to achieve cure

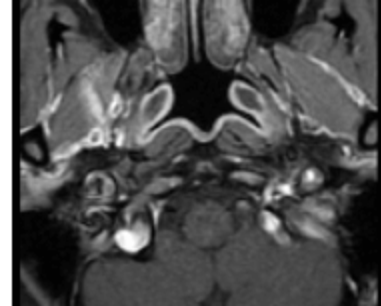
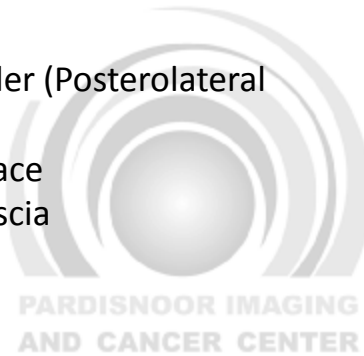


A study by Ng et al. showed that the 5-year local failure-free rate dropped to 54% if more than 3 cc volume within the gross primary tumour was under-dosed to below 66.5 Gy, compared with 90% in patients with smaller under-dosed volumes ($p < 0.001$)

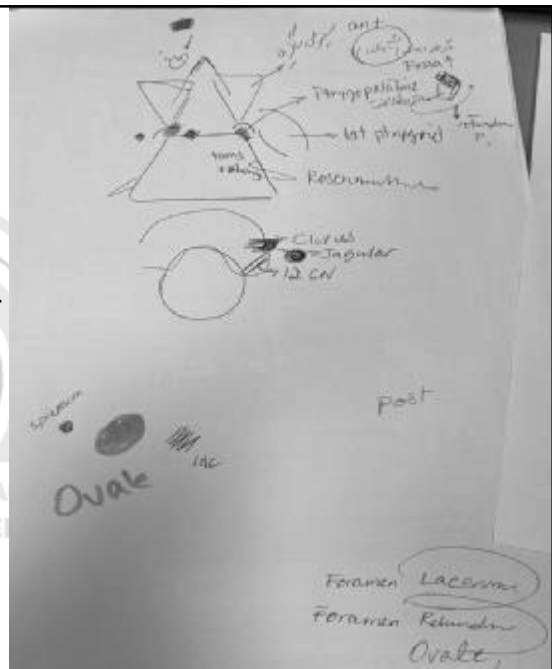
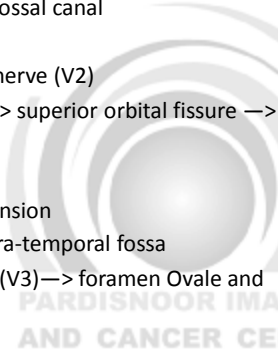


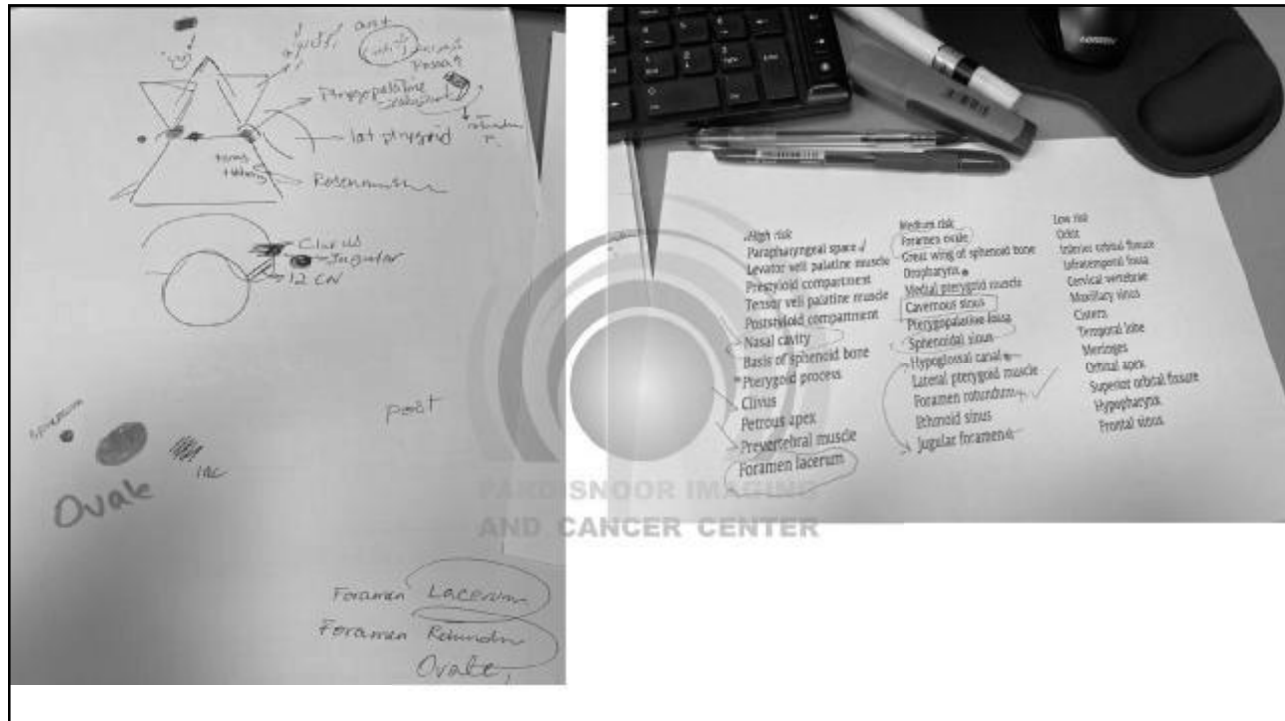
Anatomy, anatomy, anatomy

- Area of easy spread:
 - Fossa of Rosenmüller (Posterolateral pharyngeal recess)
 - Parapharyngeal space
 - Pharyngobasilar fascia
 - Neural pathways



- Anteriorly
 - Nasal fossa
 - —> Pterygopalatine fossa via the Sphenopalatine foramen
- Postero-lateral —> Jugular foramen; hypo-glossal canal
- Superiorly
 - Foramen Rotundum along the maxillary nerve (V2)
 - Inferior orbital fissure —> orbital apex —> superior orbital fissure —> intracranial invasion
 - Foramen Lacerum
 - —> cavernous sinus and intracranial extension
- Laterally —> Para-pharyngeal spaces —> Infra-temporal fossa
 - Perineurally along the mandibular nerve (V3)—> foramen Ovale and upwards into the cavernous sinus.





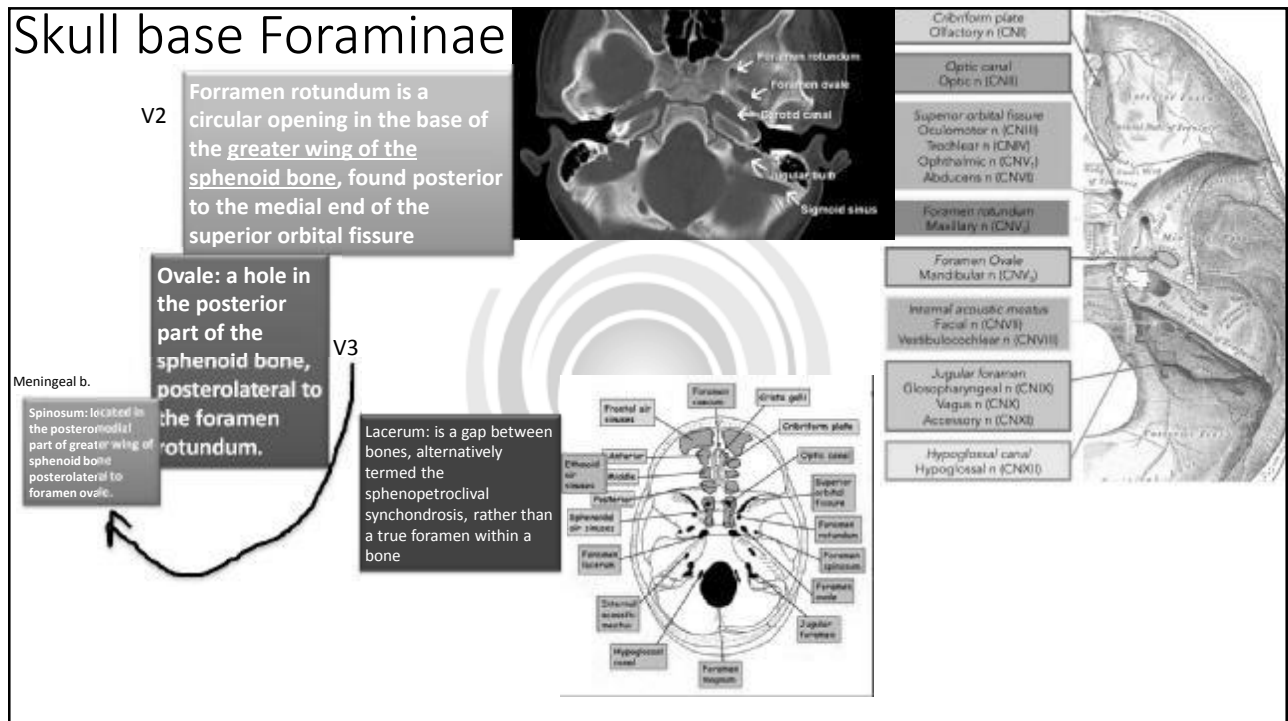
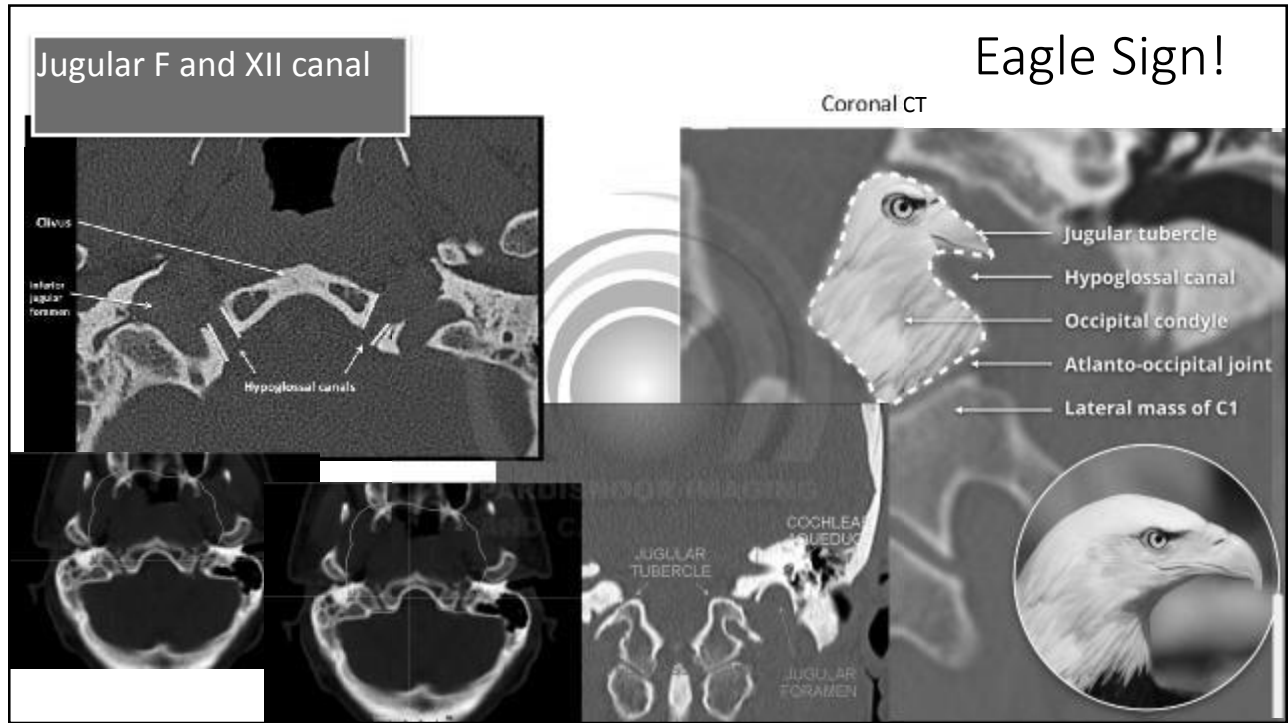
Pterygopalatine Fossa

Case courtesy of Dr Sachintha Hapugoda, Radiopaedia.org

- Roof:**
 - part of greater wing of sphenoid bone
 - inferior orbital fissure
- Posterior:**
 - pterygoid plates and part of lesser wing of sphenoid bone
 - foramen rotundum, vidian and palatovaginal canals
- Medial:**
 - perpendicular plate of palatine bone
 - sphenopalatine foramen
- Lateral:**
 - pterygomaxillary fissure (narrowing)
- Anterior:**
 - maxillary sinus (posterior wall)
 - inferior orbital fissure (superiorly)
- Contents:**
 - pterygopalatine ganglion
 - descending palatine artery
 - CNV (maxillary division)
 - nerve of the pterygoid canal
 - vidian nerve and artery
- Floor:**
 - pyramidal process of palatine bone
 - palatine canals (narrowing)

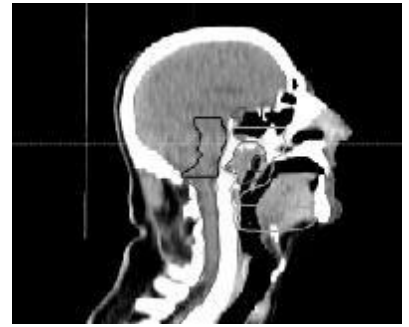
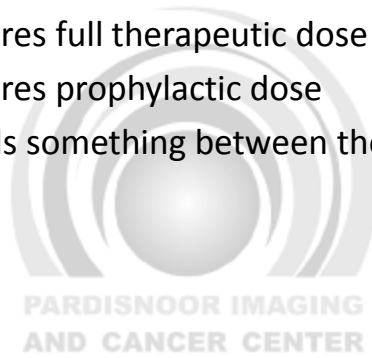
S Hapu
CC BY-NC-SA
Radiopaedia.org

PTERYGOPALATINE FOSSA
INFERIOR ORBITAL FORAMEN
SPHENOPALATINE FORAMEN
PTERYGOMAXILLARY FISSURE
FORAMEN ROTUNDUM
MAXILLARY SINUS
LATERAL PTERYGOID MUSCLE



Nasopharynx Ca

- Think of volume requires full therapeutic dose
- Think of volume requires prophylactic dose
- The volume that needs something between these



Pardis Noor Yildiz Center
Department of Radiation Oncology
Planning Approval Form



15-11-2022

CT No: 1	Date: 06 Jun 21	Accession: 685-1000-1	Date: 16+ 7, 1V	Name: G. K. 2020
	Time: 11:00	Tomography: 58, 21	PTV Dose: 54130	Diagnosis: Nasopharyngeal Ca
			60130	
			66130	

Organ Priority	Organ Dose/ Dose Constraint	Approved Constraints	Physician Plan Approval
① Brainstem	< 52.8		
② Optic tracts	< 53		
OC	< 53		
Rov	< 54		
Lorv	< 54		
③ Spinal Cord	< 49		
④ PTV66	780	To be covered by AST PD	
	154		
⑤ Parotid	L → 24	mean → 25	
	R → 24	mean → 25	
⑥ Cochlea	L → 45		
	R → 45		

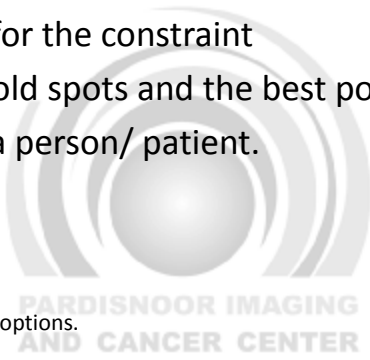
Lens < 25

• Now to the challenge of physics planning

Path to review a plan

- It is beyond checking for the constraint
- Check for hot spots, cold spots and the best possible plan.
- Think of your plan as a person/ patient.
 - Co-morbidities
 - Social Status
 - Habits
 - Co-operation
 - Age
 - AND choose wisely between options.



PardisNoor Imaging and Cancer Center
Department of Radiation Oncology
Planning Approval Form

Plan #	28 Jan 2022	562-1000-1	Plan 11.00.1.1	Name	Alireza
Site	1156	Tomo	PTT Date	09/20	Approval
Age	65		PTT Date	09/20	

Organ at Risk	Organ at Risk Constraint	Approved Constraint	Previous Plan Approved
① Lung Sten	≤ 53.8	≤ 53.8	
② Heart	≤ 53	≤ 53	
③ Spinal Cord	< 49	< 49	
④ Myel	≤ 45	≤ 45	
⑤ Prostate	≤ 65	≤ 65	
⑥ Bowel	< 45	< 45	

(Handwritten notes: 11.00.1.1, 11.00.1.1, 11.00.1.1)