

Neoplasms Nasopharynx

- **Epithelial carcinoma = 70%-80%**
 - Keratinizing SCCA
 - Non-keratinizing
 - Undifferentiated
- **Minor salivary gland**
- **Rhabdomyosarcoma - children**

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Nasopharyngeal Cancer: Clinical Presentation

- • **Bimodal distribution**
 - 15 - 25 y.o., SE Asia (China)
 - 40 - 60 y.o. US
- **Risk factors:**
 - Genetic susceptibility Chinese
 - Epstein-Barr virus
 - AIDS in younger age group
 - **Not Tobacco, alcohol**

Role of the Radiologist

- **Determine presence of tumor**
 - Often inapparent to endoscopist (minimal mucosal, significant submucosal disease)
- **Extent of tumor**
 - Imaging upstages 50%
- **Metastatic adenopathy**
 - Especially **retropharyngeal** (not detected by physical exam)

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NPC: Role of Radiologist

- Presence of primary lesion in NP
- Extent of primary lesion (staging)
- Presence of metastatic adenopathy
 - Don't forget parotid and supraclavicular nodes!
 - Especially retropharyngeal (not detected by physical exam)
- Treatment planning
- Assessment for recurrent disease at f/u
Imaging upstages ~25-50% of patients with NPC

Nasopharyngeal Cancer

- Lat. wall (fossa RM) most common
 - Submucosal extension:
 - Parapharyngeal 60% - 80%
 - Retropharyngeal 40%
 - Sphenoid sinus 25%
 - Carotid space 25%
 - Nasal cavity 25%
 - Masticator or prevertebral 25%
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Regional Metastases in Nasopharyngeal Cancer

- 85%-90% nodes at presentation, bilateral 50%
- Drainage first to RETROPHARYNGEAL nodes
- Then levels II (jugulodigastric) & V (spinal accessory)
- Inconstant lymphatics NP to levels III, V; isolated mets

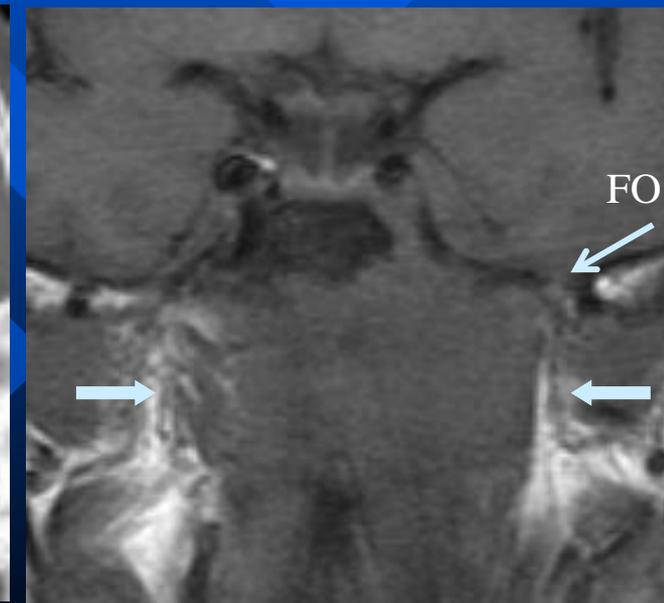
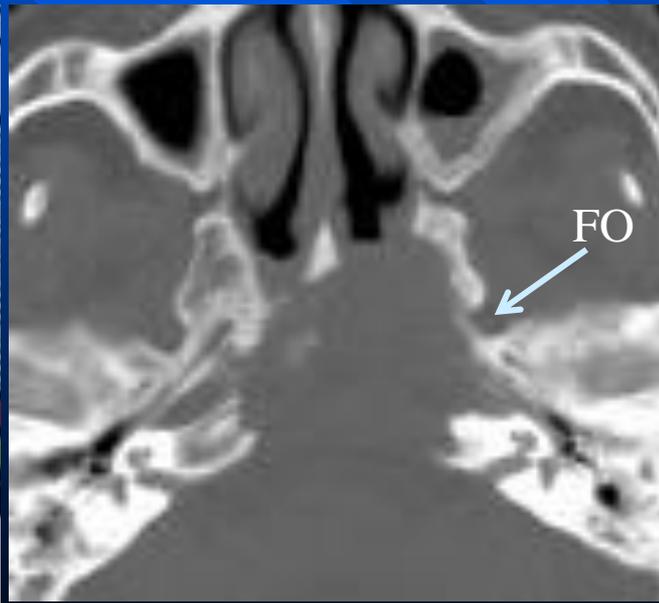
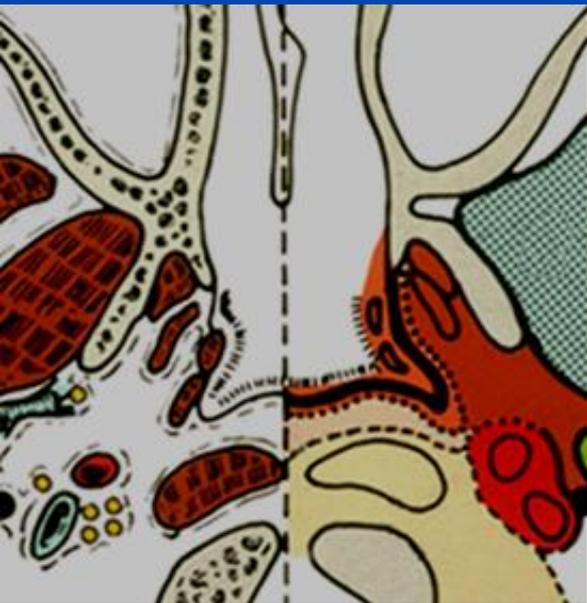
Staging of NPC: 1^o site

- T1: tumor confined to nasopharynx
- T2: tumor extends to soft tissues
 - T2a: extends to OP and/or nasal cavity w/o PPE*
 - T2b: any tumor with PPE*
- T3: involves bone and/or paranasal sinuses
- T4: intracranial extension and/or involvement of cranial nerves, infratemporal fossa, hypopharynx, orbit, or masticator space
 - T4 alters radiation contours

**PPE: parapharyngeal extension, denotes posterolateral infiltration of tumor beyond pharyngobasilar fascia*

Pharyngobasilar Fascia (PBF)

- Strong fascia with major influence on patterns of spread of NPC
- Aponeurosis of superior pharyngeal constrictor muscle, attaches to skull base medial to foramen ovale
- Limits lateral tumor growth, directs tumor up toward skull base
- Lateral tumor extension may pass through sinus of Morgagni (gap in PBF through which LVP and Eustachian tube pass on way from skull base to PMS) to reach upper masticator space, access cranial cavity via FO



Node Staging, slightly different than other head and neck

Lymph Nodes **Nasopharynx**

- **N0** = No nodal mets
- **N1** = Unilat. nodal mets \leq 6 cm
- **N2** = Bilat. nodal mets \leq 6 cm
- **N3a** = Nodal mets $>$ 6 cm
- **N3b** = Supraclavicular mets

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Key Questions for NPC

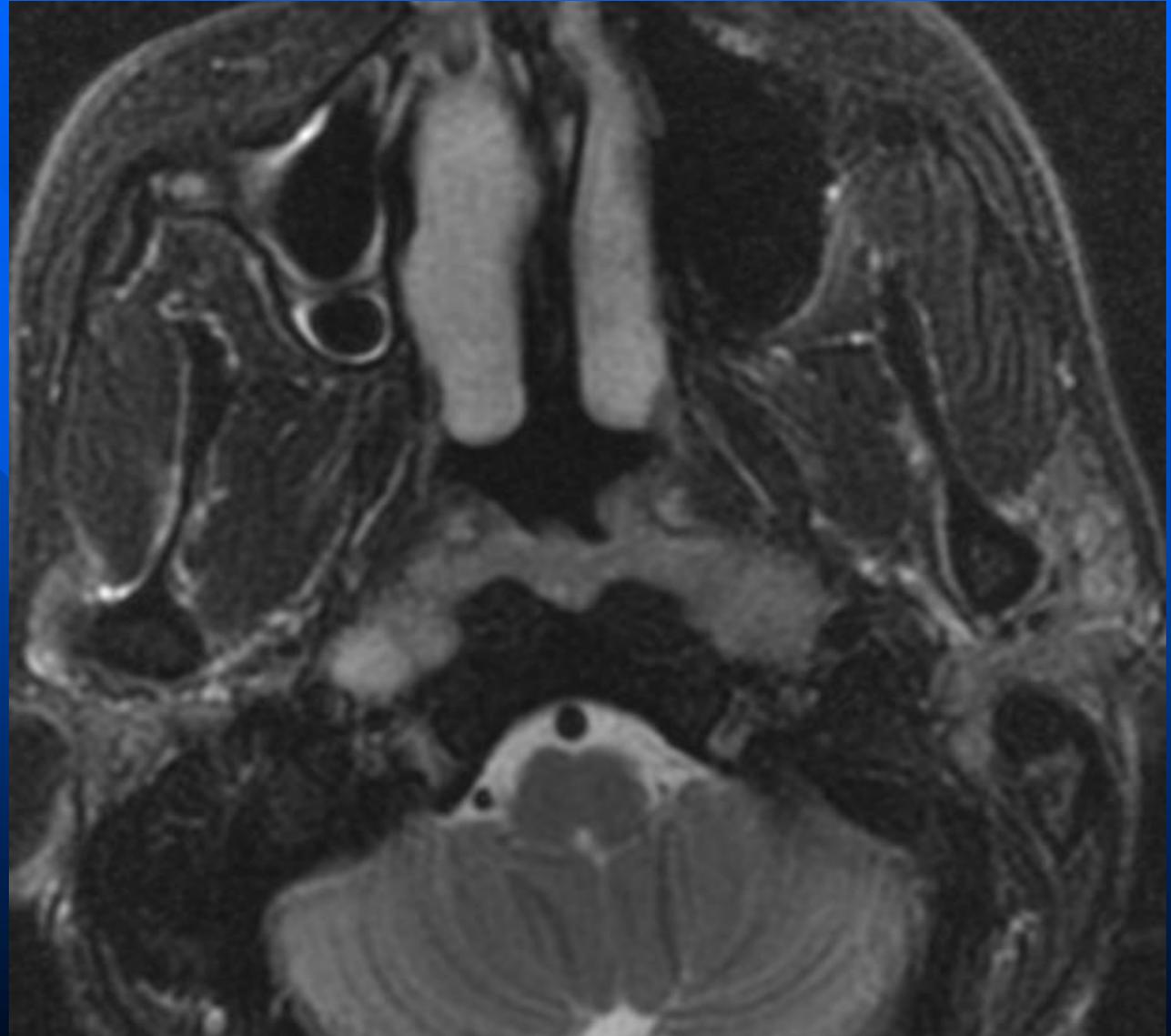
- Parapharyngeal space involvement?
 - Assess pharyngobasilar fascia, parapharyngeal fat
- Skull base involvement?
 - Check the clivus as well as pterygoid processes, GWS, petrous apices carefully
- Intracranial involvement?
 - Meckel's cave, dural enhancement, brain invasion (rare)
- Cranial nerve involvement?
 - Cavernous sinuses, foramen rotundum, foramen ovale

These things really make a difference for accurate diagnosis, staging, and appropriate treatment planning

PET-CT in NPC

30 M with new dx of NPC

- Diagnosis (unknown primary)
- Staging (nodes and metastases)
- Treatment response
- Recurrence



Nasopharyngeal Cancer: Imaging

- **CT - skull base erosion, enlarged NF**
- **MR T2W - distinguish tumor from MM**
- **MR direct marrow invasion**
 - Unenhanced T1W – fat replacement
- **MR perineural & intracranial spread**
 - Multiplanar
 - Unenhanced & enhanced T1W

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Nasopharyngeal Cancer: Neurotropic Spread



Cancer Management

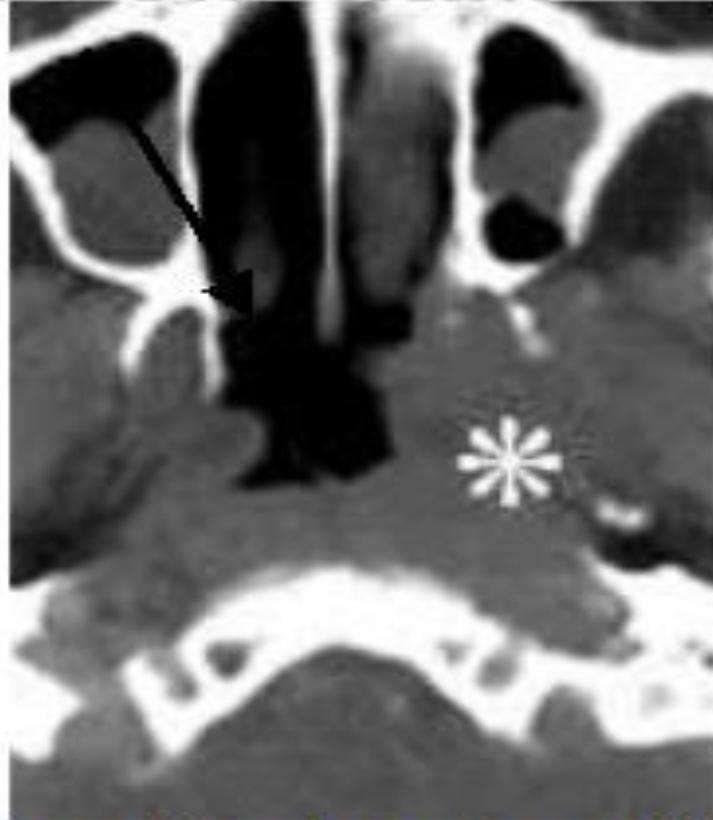
“Not surgical”

Nasopharyngeal Cancer: Management

- **XRT; Chemo (cis-Platinum)/XRT**
 - Adequate surgical margins difficult
 - External beam, (brachy in some)
- **Surgical Rx reserved for:**
 - Bulky disease
 - Small recurrences after XRT
 - Persistent nodal disease

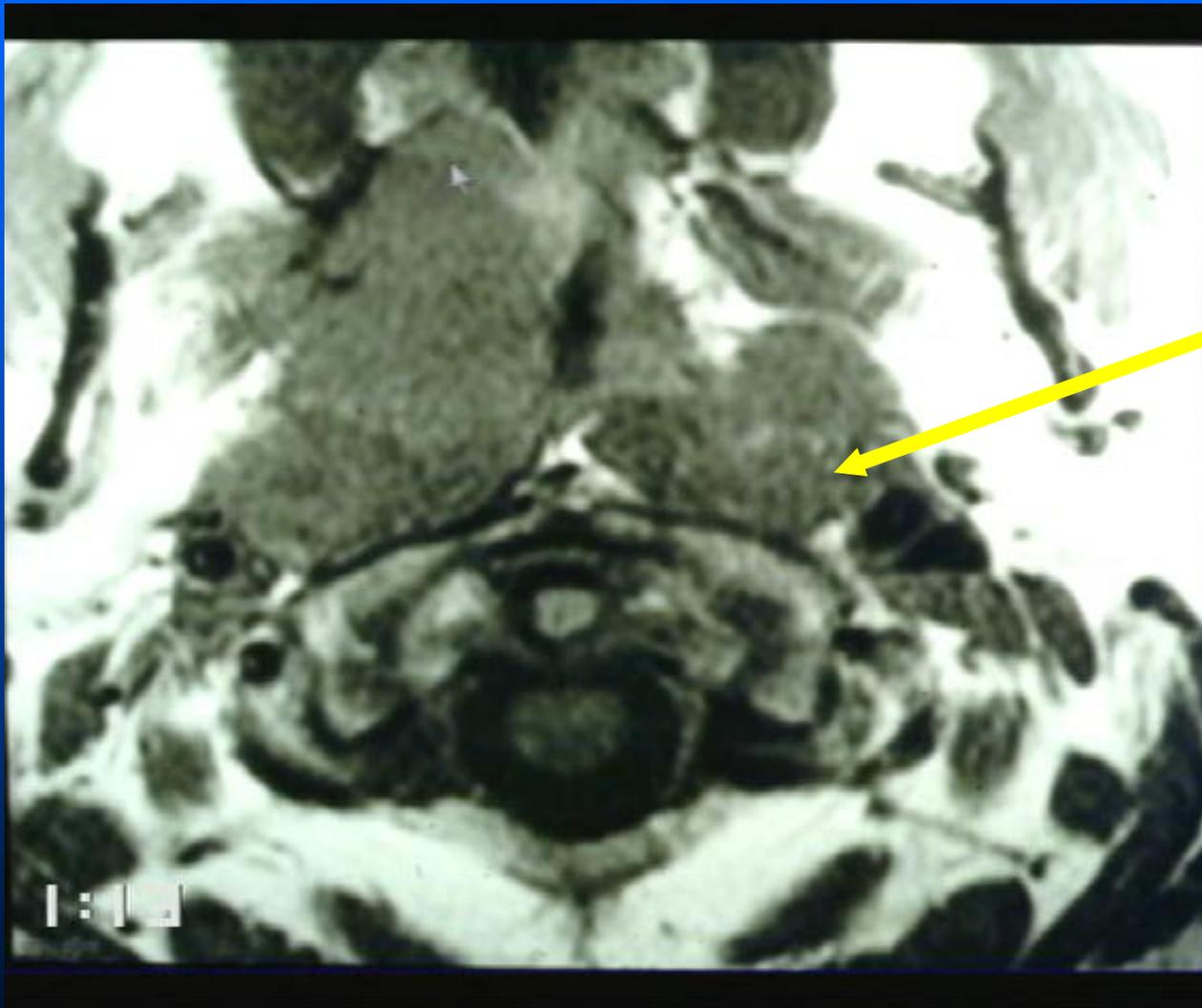
Nasopharyngeal Cancer

Mass in Fossa of Rosenmuller



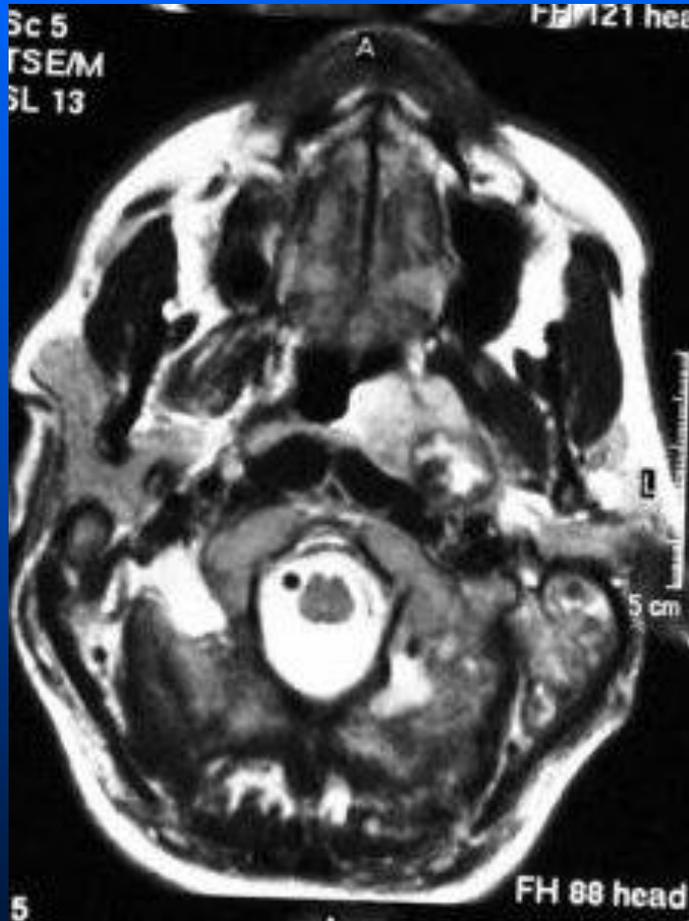
Invading the pterygoids

Carcinoma of the nasopharynx



Retropharyngeal
Node

Carcinoma of the nasopharynx

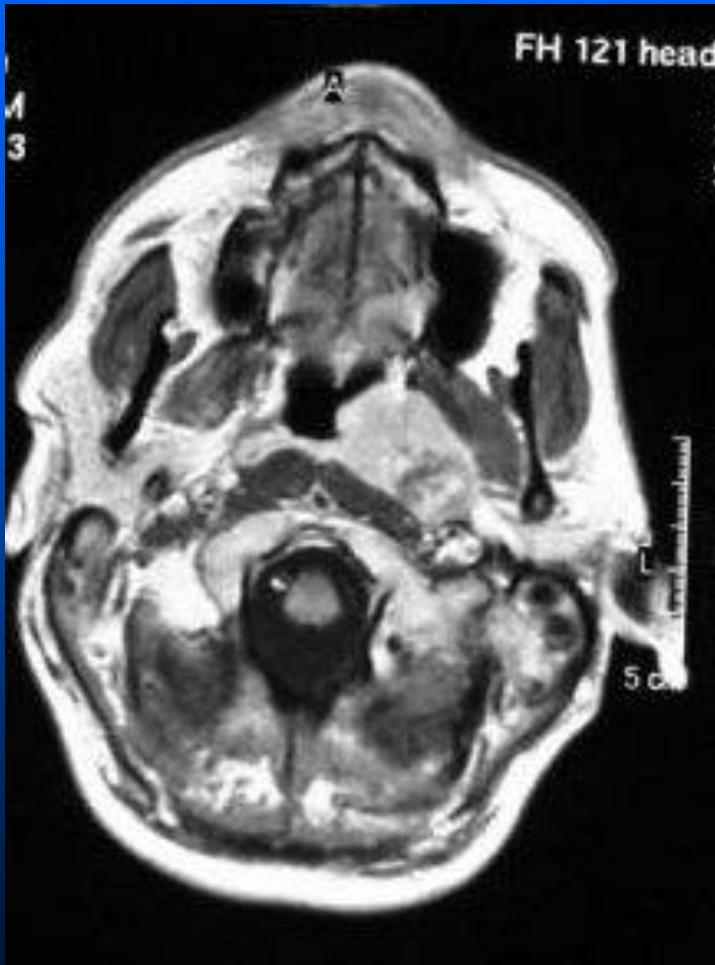


T2



T1

Carcinoma of the nasopharynx



Post T1

Supraclavicular node

- Nasopharnx
- Lung
- Or esophagus
- Typically other head and neck do not spread here.

PET

FDG PET to Monitor Therapy

- **PET can monitor therapy more accurately than CT or MR**
 - PET more accurately differentiates scar tissue from recurrent disease
- **Lymphomas**
 - Prediction of response to chemotherapy after one or two cycles
 - Head and Neck Cancer?
- **When recurrent disease known, PET has a role in restaging if surgical resection is contemplated**

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PET

Imaging Time After Therapy

Radiotherapy:

- increased uptake secondary to inflammation
- reports that PET negative immediately after therapy
- scans after 3-4 months more accurate

Surgery:

- no data in the literature
- 2-3 month wait reasonable

Chemotherapy:

- PET effective even after 1-2 weeks

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