



NASOPHARYNX MALIGNANT NEOPLASM

MOHAMMED ALESSA MBBS , FRCSC
ASSISTANT PROFESSOR , CONSULTANT
OTOLARYNGOLOGY, HEAD & NECK SURGRY
KING SAUD UNIVERSITY




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- **Epidemiology**
 - **Anatomy**
 - **Histopathology**
 - **Clinical presentation**
 - **Diagnosis --- serology**
 - **Imaging studies**
 - **Staging**
 - **Treatment**
 - **Persistent / recurrent disease Rx (Re- irradiation)**

Epidemiology

- 2nd most common head & neck malignancy in Saudi Arabia.
- 0.7% of all cancers.
- It occurs more frequently in southern province
- Younger age group , (M:F , 3:1)
- Genetic, ethnic , environmental factors (salted fish) .
- HPV & EBV has also been considered to play an oncogenic role in this tumor --- Ab (EA, VCA)
- Tumor suppressor genes :
 - Losses on chromosomes 3p, 9p, 11q, 13q, and 14q

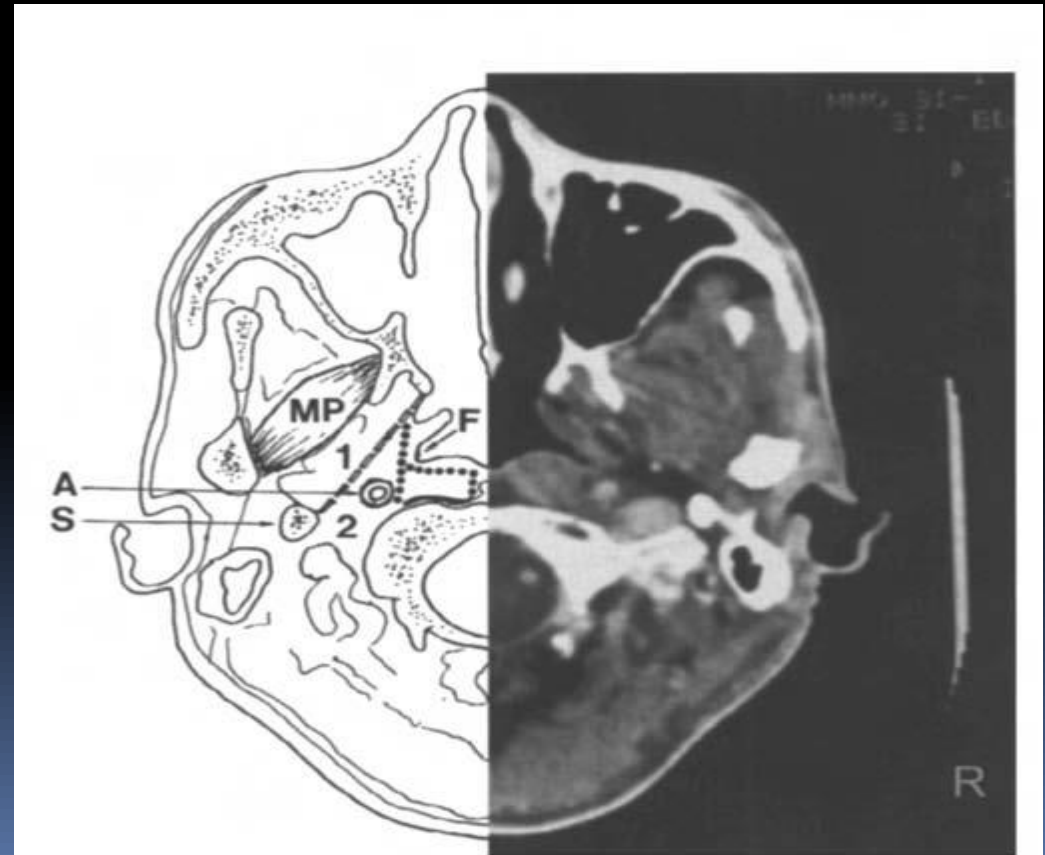


Epidemiology

- High index of suspicion required for early diagnosis .
 - Nasopharyngeal malignancies :
 - **SCCA (nasopharyngeal carcinoma)**
 - Lymphoma
 - Salivary gland tumors
 - Sarcoma
 - Brain tumor (extracranial extension)
 - Mets
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Anatomy subsites

- Postero-superior wall
- Lateral wall (including the fossa of Rosenmüller)
 - **Most common site NPC**
- Inferior wall (=superior surface of the soft palate)



Anatomy

- Retropharyngeal nodes
(nodes of Rouviere).

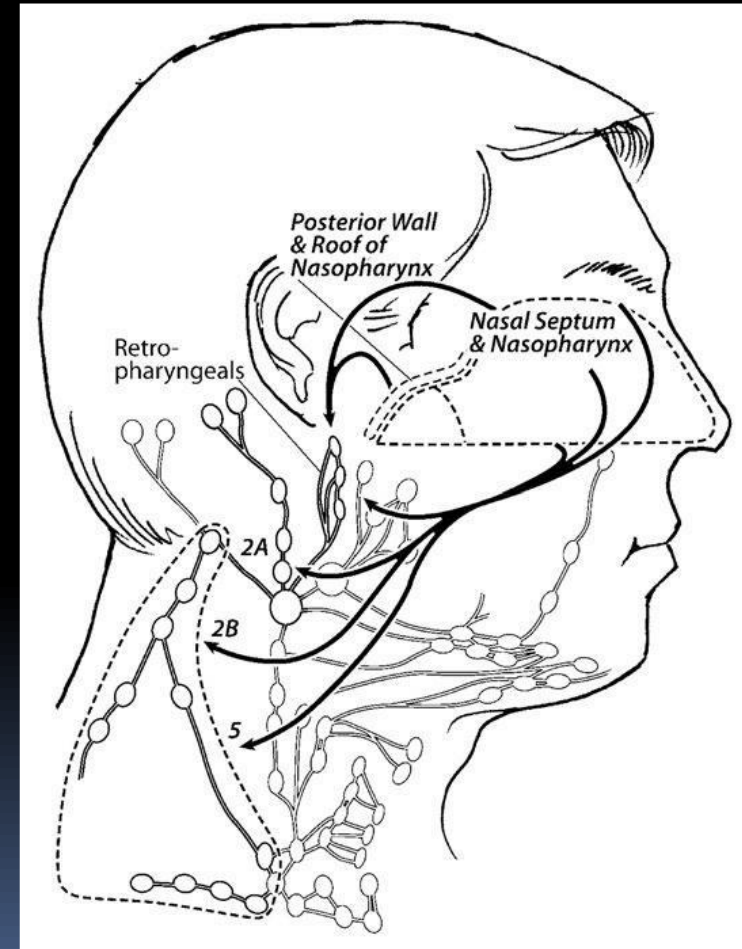
- Level II .

- Level VA.

***Bilateral disease is common.**

- most common site of distant Mets
(highest rate in Head & Neck):

- Bone



Histopathology

World Health Organization (WHO) 1978:

- Type I : keratinizing SCCs
- Type II : non keratinizing epidermoid carcinomas.
- Type III: undifferentiated carcinomas or poorly differentiated carcinoma.(most common subtype in Saudi Arabia , Southern China , North America) .


▪ WHO 1991

- Group 1 : SCC or non keratinizing CA
- Group 2 : Differentiated and
- Undifferentiated carcinomas

**** EBV titre , local control , distant metastasis .**



Diagnosis

- Clinical examination ---- Neck , ear & CN exam
 - Nasal endoscopy
 - Imaging studies
 - FNA Cytology
 - NP biopsy
 - Serology
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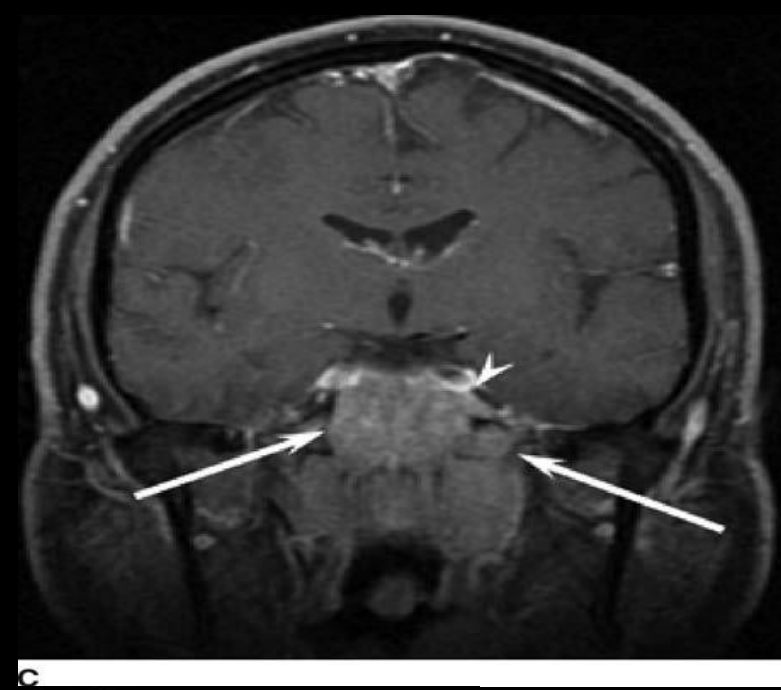
Clinical presentation

- Delay in Dx (advanced stage on presentation) :
 - Nonspecific nature of the nasal and aural symptoms
 - Painless cervical lymph node.
- Adult ,unilateral SOM
 - NPC until proven otherwise (Nasal endoscopy is mandatory)

Cervical LAP	76%
Nasal symptoms	73%
Aural symptoms	62%
Cranial N	20%

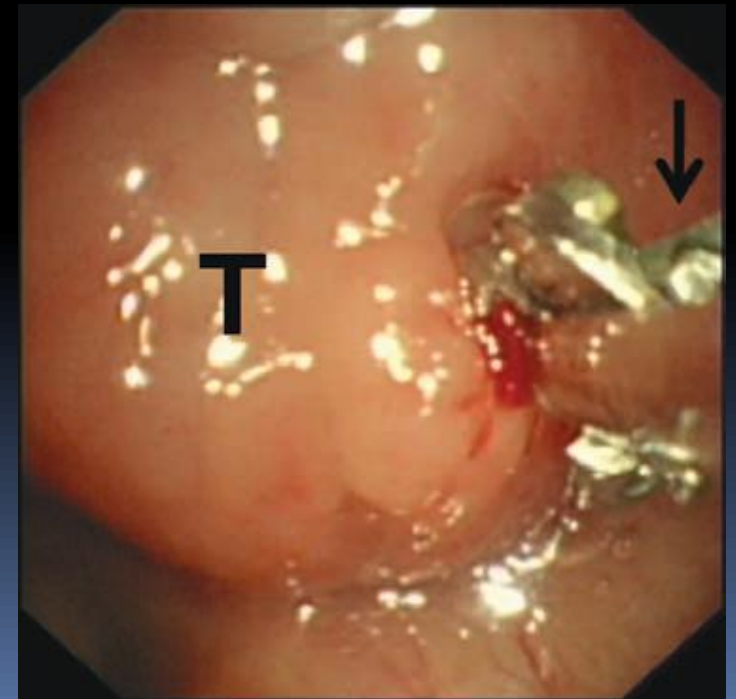
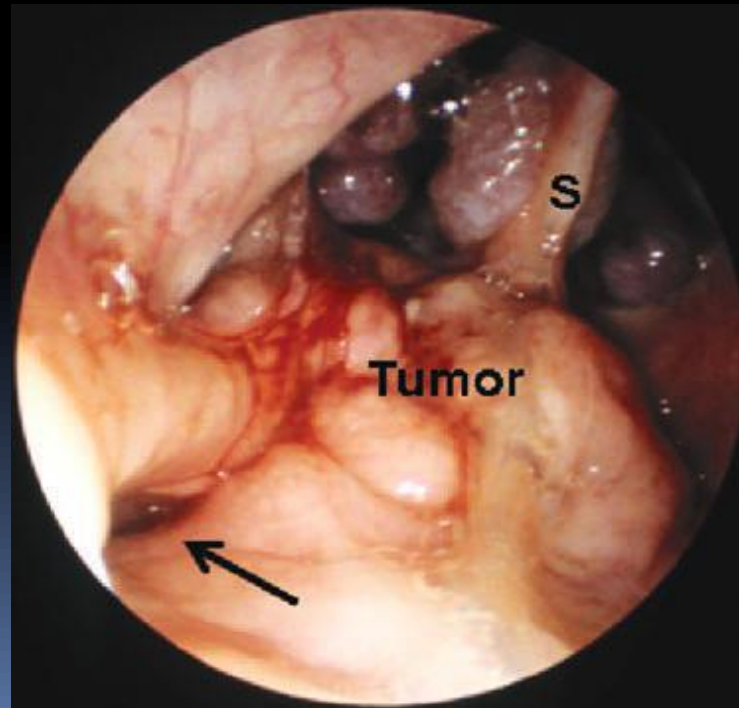
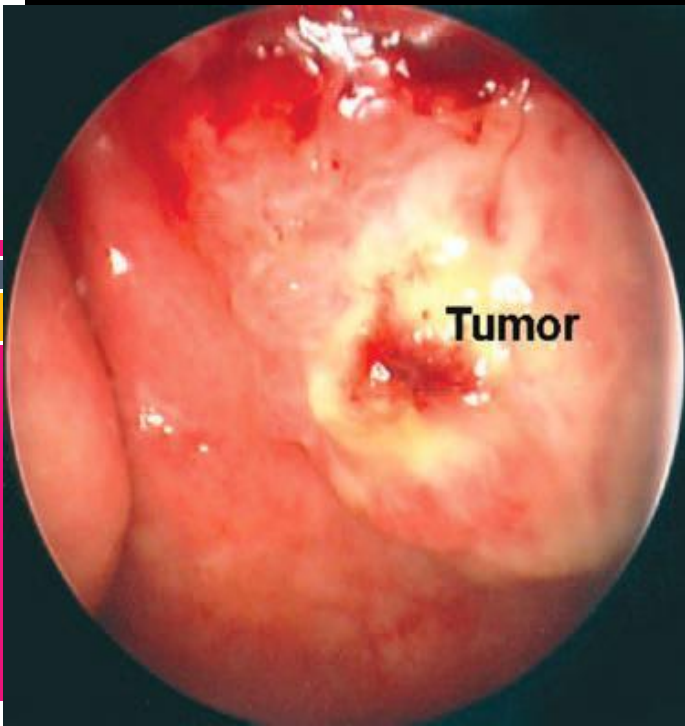
Clinical presentation

- Xerophthalmia – greater sup. petrosal n
- Facial pain - Trigeminal n.
- Diplopia - CN VI (**most common**)
- Ophthalmoplegia - CN III, IV, and VI – cavernous sinus or superior orbital fissure
- Horner's syndrome - cervical sympathetics
- CN's IX, X, XI, XII - extensive skull base



Nasal endoscopy

- Obtain adequate decongestant as well as topical anesthesia
- Flexible vs rigid endoscopy
- Same sett diagnostic biopsy should be done .




Nasal endoscopy

	Flexible	Rigid
Size	Pedia , adult	2.5 , 3 , 4 mm
Angle	----	0 , 30 , 70
Image resolution	----	Superior
Side port (suction , biopsy forceps)	yes	-----

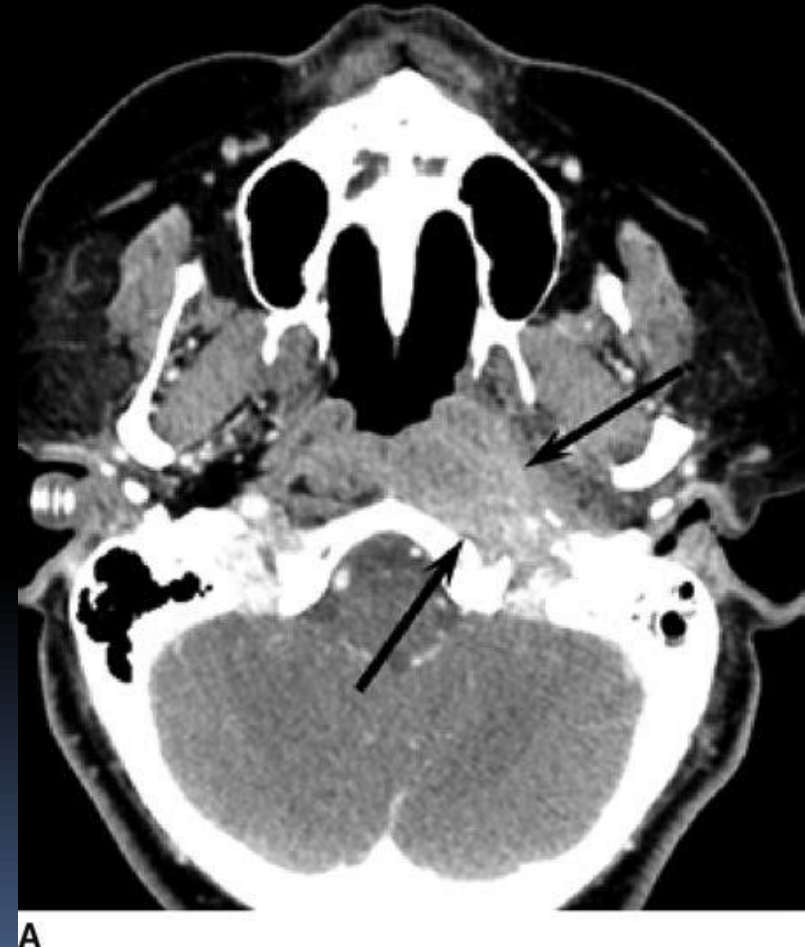


Imaging

- Computed Tomography (CT scan)
 - Magnetic resonance imaging (MRI)
 - Positron emission tomography (PET)
 - Bone scan
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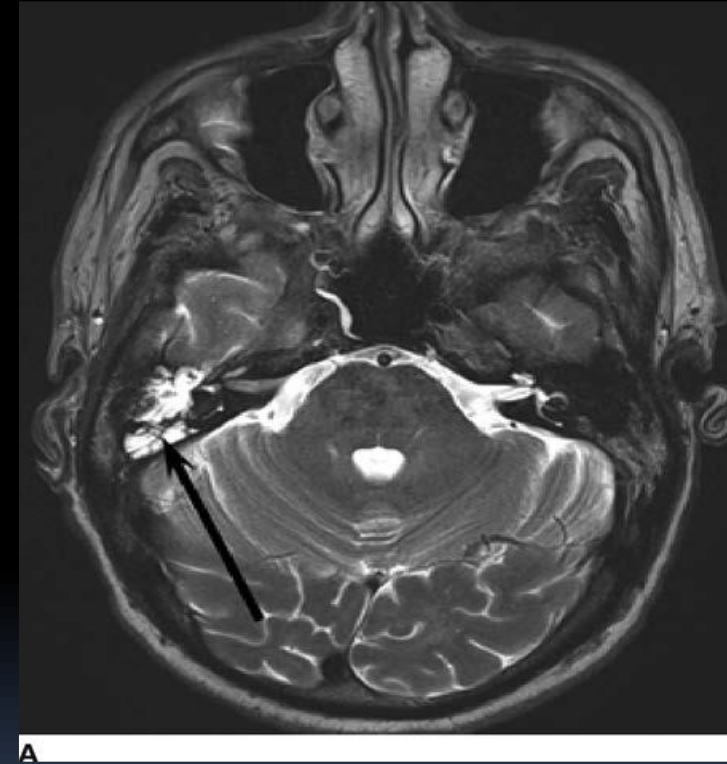
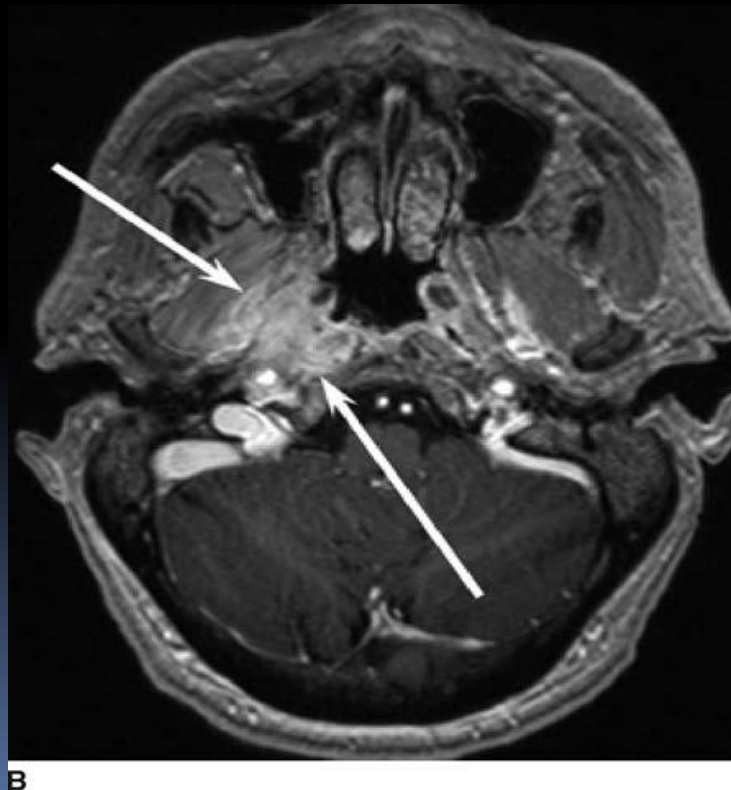
Computed tomography (CT)

- Sensitive in detecting bone **erosion** (skull base) & intracranial extension.
- Bone regeneration after therapy
 - complete eradication of tumor .
- Better assessment of cervical lymphadenopathy



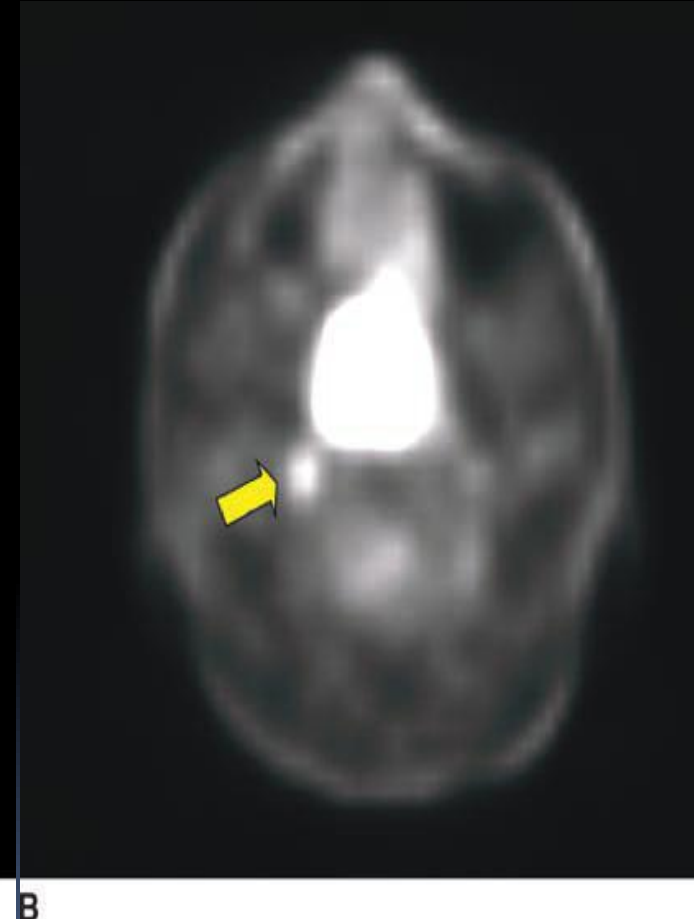
Magnetic resonance imaging (MRI)

- Better assessment of tumor enhancement as well as perineural invasion .
- Sensitive in differentiation of tumor vs inflammatory process .



Positron emission tomography (PET)

- Assessment of distant metastasis.
- valuable modality in prognostic evaluation
 - SUV max > 5 ----- poor outcome
- Provide functional information of loco regional recurrence



Serology – EBV

- IgG EA ---- diagnosis
- IgA VCA ---- Rx response as well as tumor recurrence .
- (ADCC) ---- higher titers indicate a better long-term prognosis
- EBV DNA
 - More sensitive than Ab in diagnosis & distant Mets.
 - Initial RT phase , increase serum level
 - Monitor tumor recurrence.
- LFT --- liver Mets

Cyto-pathology

- FNA Cytology :
 - EBV ISH → occult UNPC
- Nasopharyngeal biopsy (endoscopic) :
 - IHC helpful to differentiate nasopharyngeal malignancies .
 - EBV Staining ---- EBER
 - HPV staining --- P 16 & HPV DNA



Staging

- American Joint Committee on Cancer Staging (AJCC)--- North America
- Union International Contre le Cancer (UICC) --- Europe
- Ho system ---Asia.

Staging : nasopharynx (T)

classification T stage	Ho	AJCC (2010)
T₁	Nasopharynx	Nasopharynx - Oropharynx , nasal cavity - w/out PPS extension
T₂	Nasal fossa, oropharynx, parapharynx, muscle/nerves below base of skull	PPS extension
T₃	A: Bone below base of skull; B:. bone at base of skull; C: cranial nerve; d. orbit, infratemporal fossa, laryngopharynx	Skull base PNS
T₄	-----	CN , orbit , hypopharynx ITF , masticator space.

Staging: nasopharynx(N)

N / classification	Ho	AJCC (2010)
No	None	None
N₁	Upper neck	Unilateral < 6 cm retropharyngeal lymph nodes
N₂	Mid neck	Bilateral < 6 cm
N₃	SCF	A: > 6 cm B : SCF


Staging : nasopharynx groups

classification Group	HO	AJCC (2010)
I	T ₁ No	T ₁ No
II	T ₂ No T ₁ N ₁	A: T _{2a} No B: T _{2b} No , T _{1,2a} N ₁
III	T ₃ No-2 T ₁₋₂ N ₂	T ₃ No-2 T _{1-2b} N ₂
IV	T ₁₋₃ N ₃ T ₁₋₄ N ₃ T ₁₋₄ No-3M ₁	A: T ₄ No-2 B: Any N ₃ C: Any M ₁
V	T ₁₋₄ No-3M ₁	




Treatment

- Multidisciplinary plans
 - Medical plans
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Treatment multidisciplinary plan

- Dental evaluation
 - Swallowing & speech assessment
 - Nutritional status
 - Audiological assessment
 - Psychological counseling .
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Treatment

- Primary tumor treatment
 - Neck (lymph node) treatment .
 - Persistent /recurrent (loco regional) disease.
 - Eustachian tube dysfunction (ETD).
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Treatment

Nasopharynx

■ Radiation therapy (RT)

- Conformal RT --- evolution
- Intensity modulated (IMRT) -- treatment of choice
- Brachytherapy ----- booster does
- Stereotactic (SRT) --- booster does
- 65-75 Gy
- Local control :
 - 75-90% ----- T1&2
 - 50-75% -----T3,4

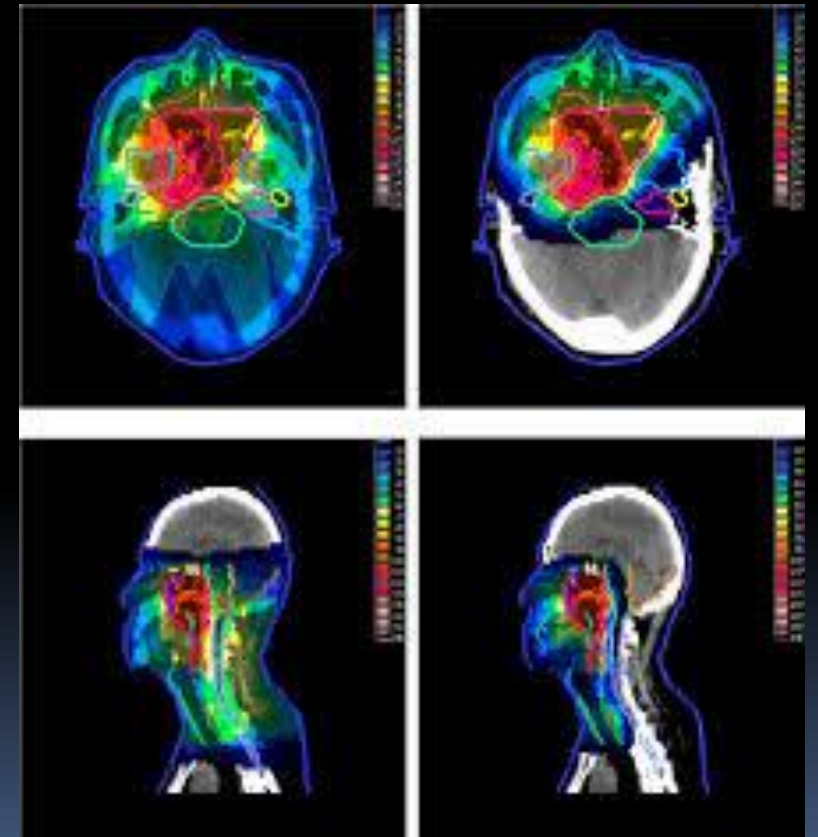
■ Surgery --- nasopharyngectomy

- Challenging with Major morbidities
- Inferior result in comparison to RT

IMRT

Advantages :

- The dose differential between the tumor and the dose-limiting organs.
- High dose can be conformed to match the target while selective avoidance of dose to critical structures can be achieved at the same time.
- Ability to treat primary and regional lymphatic in one volume.
- local control rate of 92% to 97% at 3 to 4 years.



IMRT

Disadvantages :

- Precision of determining the junction of tumor and the adjacent normal structures .
- Accurate determination of the safety margin

Treatment

Lymph nodes

- RT

- Conformal RT
- IMRT

- Surgery :

- Neck dissection – treat according to primary tumor

➤ **Bilateral drainage mandate treatment of both neck**

Treatment lymph nodes

■ N0:

- Is observation an option ?
- **Rate of occult Mets : 20-30%**
- 50-60 Gy
- Regional control : 90%

■ >N0:

- 65-70 Gy
- Control : 70%




Chemotherapy

Indication :


- Primary : T3,4
- Lymph node : >N0

- Mode of administration :

- Neo, concurrent or adjuvant
 - Concurrent CRT Improve survival in comparison to RT alone :
 - (56% to 62%) , 5 years survival
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Chemotherapy

- **Cisplatin**-based regimens have been found to be the most effective, multiple phase III trials.
 - Dose : (100 mg/m² q three weeks) to radiation therapy , (70 Gy/seven weeks).
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Persistent , Recurrent NPC (local) Diagnosis

- Incidence of failure was around 8.3%
- Successful salvage rate :
 - Early detection & administration of the appropriate therapy.
- PET /CT scan --- imaging of choice.
- Presence of malignancy
 - Biopsy through endoscopic examination.

Persistent , Recurrent NPC (local) management

- RT (small & localized disease)
 - **IMRT**
 - Salvage rate : 32%
 - Post-re irradiation sequelae : 24%
 - Mortality of : 1.8%
 - **SRT ---- 83% , 3 years local control**
 - **Brachytherapy**
- Surgery ---- nasopharyngectomy
 - Extension into the paranasopharyngeal space .
 - Too bulky for brachytherapy to be successful.

Persistent , Recurrent NPC (local) nasopharyngectomy

- Endoscopic :
 - Small , posterior pharyngeal wall
- External approaches
 - Infratemporal fossa
 - Transparotid temporal bone approach
 - Transmaxillary
 - Transmandibular
 - Transpalatal

Persistent , Recurrent NPC (regional) diagnosis

- Notoriously difficult to confirm,
 - lymph nodes : clusters of tumor cells were present.
- PET/CT --- superior to CT & MRI
- FNA Cytology --- 50% diagnostic
- Is excisional biopsy has a role in diagnosis ?

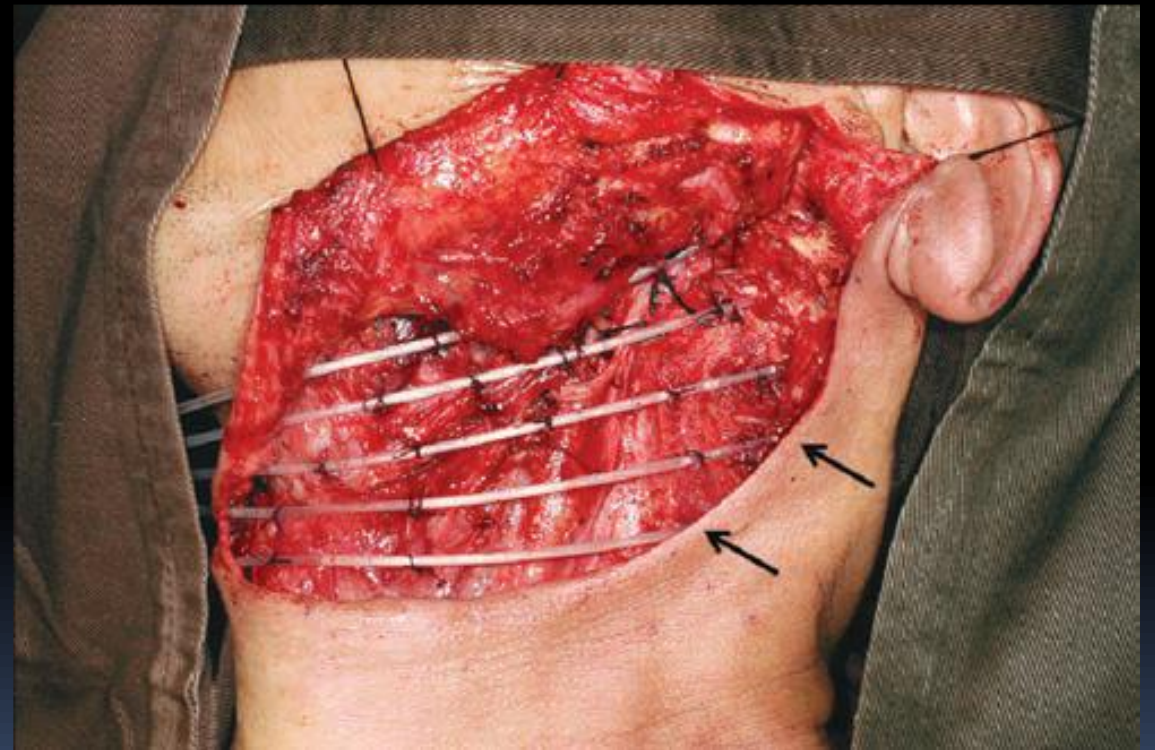
Persistent , Recurrent NPC (regional) management

■ Surgery

- Radical neck dissection (salvage)
- 66% , 5 years regional control

■ RT

- Brachytherapy (intra operative , adjuvant):
 - Extension beyond the confines of the lymph node(floor of the neck)
 - 60 % , 5 years control






ETD

- Bilateral tube insertion if symptomatic prior to RT
- Post RT
 - observation period if symptoms not severe
 - amplification may be more appropriate




Conclusion

- NPC is common among southern Chinese, and a combination of genetic, viral, and environmental factors contributes to the etiology.
 - The diagnosis of NPC depends on the clinical features, serologic tests, and imaging features.
 - The confirmation of the disease is through endoscopic examination and biopsy.
 - The extent of the disease is determined by clinical examination, imaging studies, and endoscopic findings.
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Conclusion

- The treatment of early stage NPC is by radiation alone while for advanced stage disease, concurrent chemoradiation gives the best outcome.
 - The incidence of local/regional residual of recurrent disease after radiation/chemoradiation is around 10% .
 - Outcome of salvage with further radiation, brachytherapy, and surgery depends on the extent of the disease.
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Conclusion

- For salvage of localized lymph nodes confined to the neck, surgery with neck dissection gives satisfactory results.
 - The choice of surgical approach for resection of recurrent NPC in the nasopharynx depends on the size, location, extent of disease, and condition of the patient.
 - In general, the 5-year local tumor control rate following surgical salvage is around 74% and the 5-year disease-free survival rate is 56%.
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THANK YOU