

# Salivary Glands

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# Anatomy

## Paired Major Salivary glands

↳ organs with their own blood supply, lymph, ducts

- Parotid: Stenson duct → 2° molar tooth.

↳ serous thinner saliva

- Submandibular: Warton duct → lateral to frenulum.

↳ mucinous, thicker

- Sublingual: in Warton duct. → mucinous, thicker

saliva → has enzymes, amylase to help in carb digestion

→ 0.5-1.5 L, present all over mouth except dorsal 1/3 tongue (taste is affected by saliva)

→ prevent dryness, help in moving tongue, eating, speech

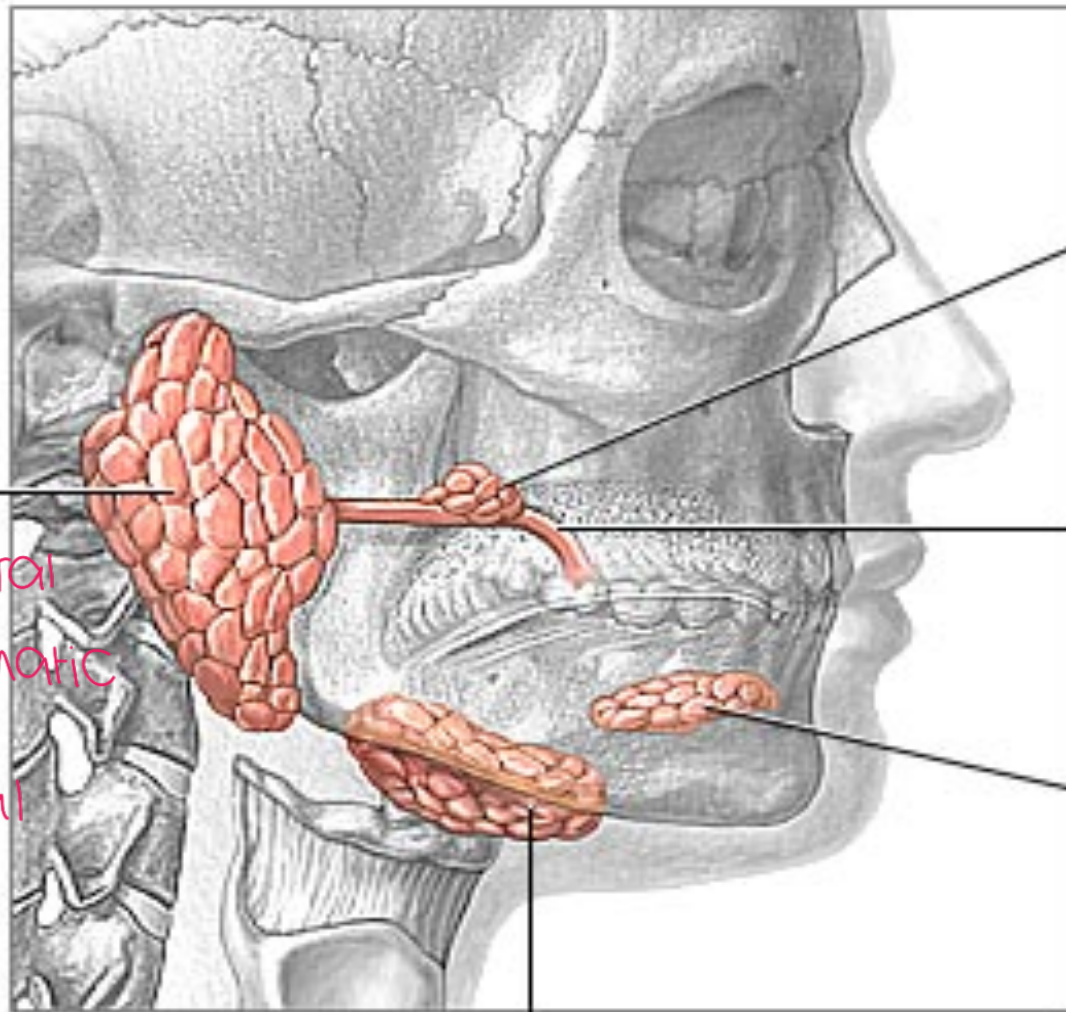
# Anatomy

## Minor Salivary Glands

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- In Soft palate, Hard palate , gingiva, lips.
- In all oral mucosa except the upper surface of the tongue.

facial N passes through it → traumatic injury of parotid can cause LMN lesion → palsy (hemifacial or depending on the injured branch)



Accessory parotid gland

Parotid duct

Sublingual gland

Submandibular gland

ADAM.

Parotid gland

→ temporal

→ zygomatic

→ buccal

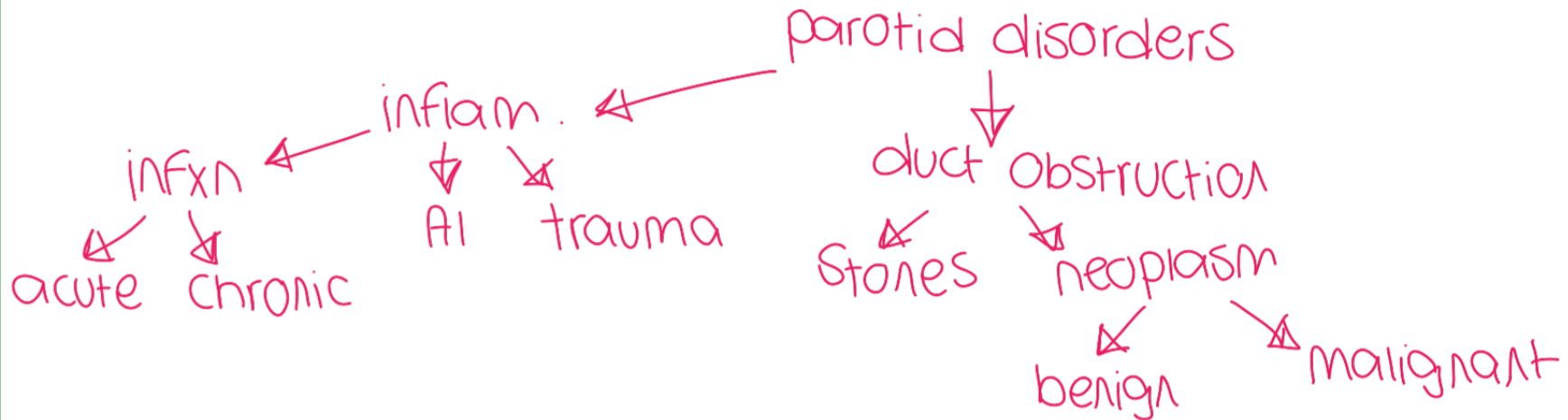
→ mandibular

→ cervical

facial N  
→ zygomaticofacial  
→ zygomaticofacial  
→ buccal  
→ mandibular  
→ cervical

any swelling in the area bet. zygomatic arch, angle of mandible, hyoid bone, mastoid process is a parotid mass until proven otherwise

Saliva: 1000 – 1500 ml/day



# Sialadenitis

- Acute
- Chronic

# Acute

- Viral: Mumps (mc acute)
  - Self limited viral infection.
  - Common in children.
  - Diffuse inflammation of one or both parotid glands.
  - May be associated with pancreatitis, orchitis in adults, oophritis is rare. (complications), infertility

- Acute Bacterial:

- Dryness of mouth.
- Ascending infection.
- Cause Staphylococcus aureus.
- Seen in (elderly post.op) and common in Parotid gland. ↳ ICU pts w/ poor Oral hygiene & dry mouth

\*complication : abscess → treatment : antibiotics & drainage



# Chronic

- Autoimmune (sjogren syndrome) (MC CHRONIC)
  - Inflammation causes destruction of major and minor salivary glands) & lacrimal glands (dry eyes & mouth)
  - 90 % women 35- 45 years of age.
  - 60% associated with SLE, Rheumatoid arthritis or scleroderma.

\* life long disease → need eyedrops & ↑ oral fluid intake

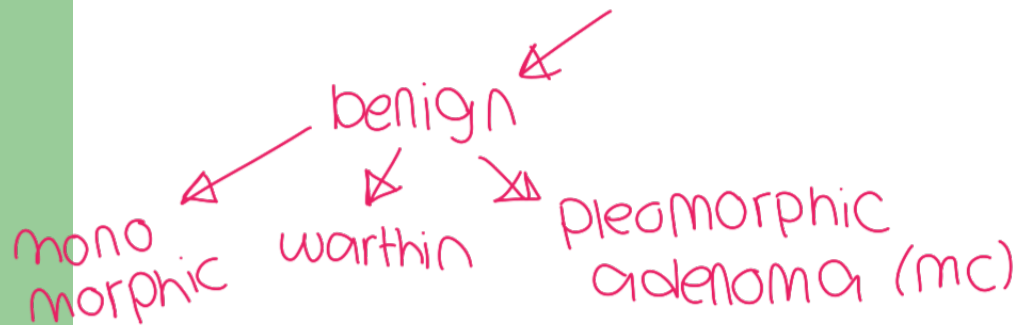
→ Stones in Salivary glands

## Sialolithiasis

Stones are more common in Submandibular gland (thicker secretions + gravity effect leads to more saliva accumulation)

- Most common in the duct of submandibular salivary glands.
- Intermittent obstruction → chronic sialadenitis → dilatation of the ducts and atrophy of acinar cells → superimposed infection and microabscesses . → Sialogram reveals Chain of lakes / ball & socket phenomena
- \* Complications: pain (related to eating, cuz ↑ salivation)  
تألم في duct الفم وخصوصاً بعد الأكل  
stone
- \* treatment: extract stone (Sialoscope, surgery)

# SALIVARY NEOPLASMS



mostly [ bigger gland → benign disease  
smaller gland → malignant

- 70-80% of Salivary tumors → Parotids.
- 70-80% of Parotid tumors → benign.
- 80% of benign tumors → pleomorphic adenoma.

multicolor, Not well defined (with pseudopods)  
we need to do extracapsular excision or superficial  
parotectomy to have a safety margin & prevent  
recurrence & further progression to adenocarcinoma

## Pleomorphic adenoma

- Most common.
- Peak age: 5<sup>o</sup> decade.
- Proliferation of: - epith.
  - myoepith.
  - stroma tissue → resemble cartilage and bone.

5-10% turn into adenocarcinoma

# presentaion

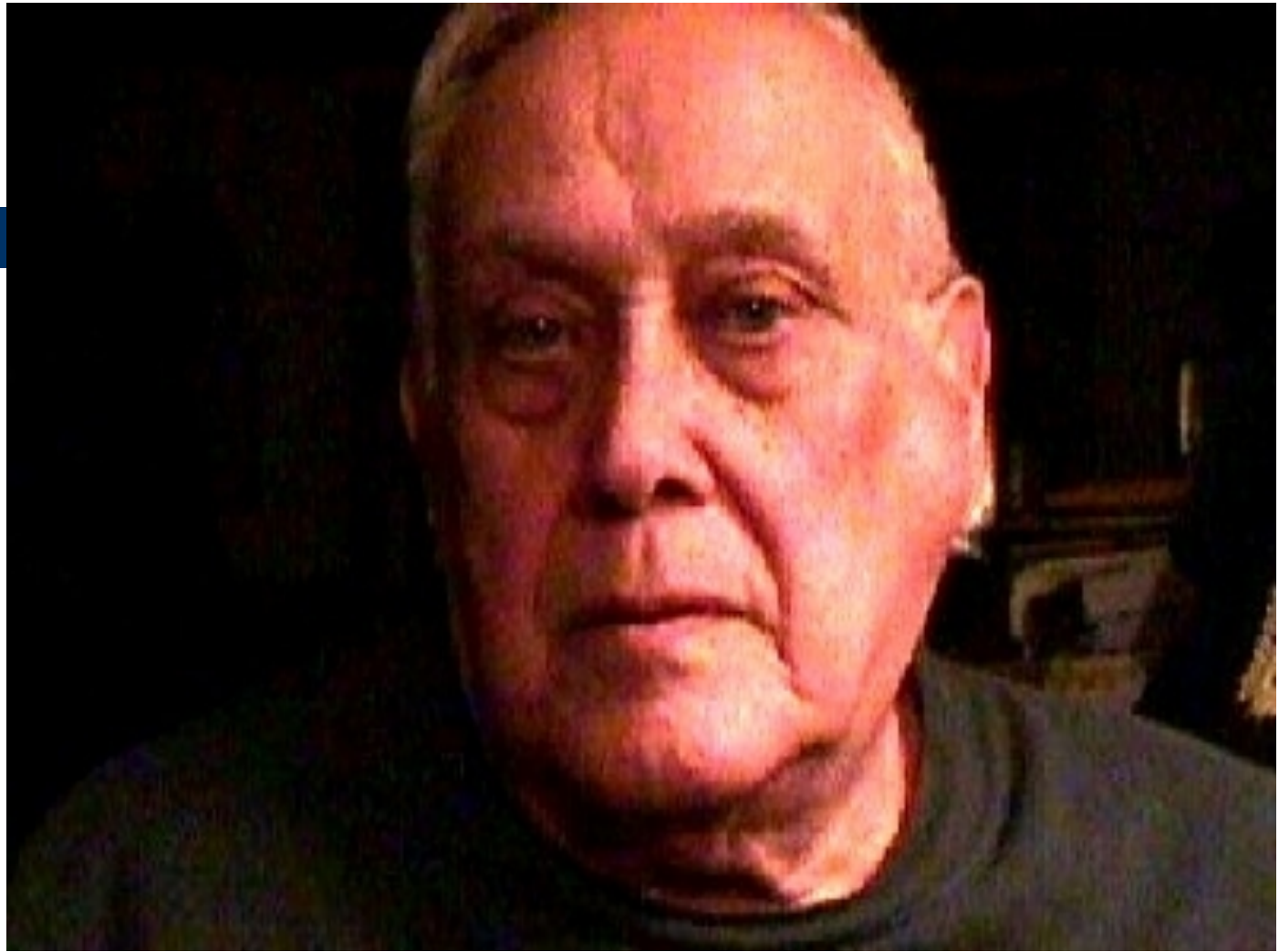
- Solitary Painless mass in Parotid area, firm, slowly growing, mobile.
- Intraoral pharyngeal mass extending from parapharynx (deep lobe)
- 2-10% may turn into malignant (usually adenocarcinoma)




8/23/2002 3:08 PM








- 
- A decorative graphic on the left side of the slide, consisting of a light green vertical bar and a dark blue horizontal bar with rounded ends.
- Gross appearance: irregular round to ovoid mass, well defined borders, white to tan cut surface.
  - Sometimes have haemorrhage and infarcted areas.

pleomorphic adenoma



# Papillary Cystadenoma Lymphomatosum(Warthin)

- Occurs only in Parotid.
- 10% bilat.
- More in males(90%) *& old ages*
- More in smokers.
- Cystic mass(may be fluctuant)
- Doesnot change into malignancy.

- 
- Gross appearance: ovoid to spherical mass with variable no. Of cysts that excude a clear fluid.



# Rare Benign Types

- Oxyphilic adenoma, oncocytic adenoma, basal cell adenoma, sebaceous adenoma, canalicular adenoma.

# Benign non epithelial tumors

- Haemangioma: most common in children, compressible mass, ttt include steroids, angiogram & surgery, spontaneous regression may occur.  
→ risk of bleeding (↑vascular)  
→ embolization
- Lipoma  
laser therapy if superficial,  
cortisol
- Lymphangioma (cystic hygroma): 50% manifest at birth, 80% by 2 years.



# Malignant Tumors

- 96% → discrete mass.
- 4% → diffuse enlargement.
- 12-24% → painful.
- 17% → fixed to masseter.
- 8-26% → fascial nerve dysfunction.
- 9% → skin ulceration.
- Formication: parasthesia described as feeling of ants crawling on skin.

<b>Age</b>	
<50 yrs	38(65.5%)
>50 yrs	20(34.5%)
Median age	42 yrs
Range	13 yrs- 72 yrs
<b>Sex</b>	
Males	29(50%)
Females	29(50%)
<b>Symptoms</b>	
Painless swelling	(79.3%)
Swelling,VII nerve inv	(8.6%)
Painful swelling	(15.5%)
<b>Histopathology</b>	
Mucoepidermoid ca	23(39.7%)
Pleomorphic adenoma	6(10.3%)
Acinic cell tumor	7(12.1%)
Adenocarcinoma	5(8.6%)
Adenoidcystic ca	4(6.9%)
Basal cell adenoca	7(12.1%)
Myoepithelial tumor	4(6.9%)
Squamous cell ca	2(3.4%)
<b>Postop residual disease</b>	
Present	20(34.5%)
Absent	38(65.5%)
<b>Stage</b>	
I	1(1.7%)
II	17(29.3%)
III	19(32.8%)
IV	21(36.2%)
<b>Grade of tumor</b>	
Low	23(39.7%)
Intermediate	10(17.2%)
High	19(32.8%)
Unknown	6(10.3%)
<b>Nodal status</b>	
Positive	11(19%)
Negative	47(81%)

- LN metastases increase with high grade mucoepidermoid and squamous cell ca.

↳ mc (mostly affects parotid)

- Less with adenoid cystic acinic cell ca.

↳ local invasion around nerves & vessels is more common than LN involvement  
(mostly affects submandibular)



## Risk of malignancy:

20% in Parotids.

40% in submandibular.

60% in minor salivary glands

# Malignant Tumors

- Mucoepidermoid:
  - most common.
  - usually in parotid, 2° site is palate.
  - peak age 5° decade.
  - high or low grade.
  -

# Malignant Tumors

- Adenoid cystic :2° most common, but is the most common in other glands than parotid.
- Usually well defined but not encapsulated.
- Rarely involves lymph nodes, may have perineural invasion, may reach base of skull.
- Has a tendency for distant mets. specially lung.

# Malignant Tumors

- Acinic cell Ca.: 2° most common parotid and paediatric ca.
- Has a good prog.:
  - 5 years-----85%
  - 10 years-----68%
  - 25 years-----50%

# Malignant Tumors

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- Adenocarcinoma and Squamous Cell Carcinoma are rare and aggressive types.



# Evaluation

- A complete hx. Including onset (first time the mass was noticed, uni or bilat., progression, hx. Of pain, hx. Of trauma, contact hx. ....etc) , relation to food

# Evaluation

- P/E. Should include in addition to the mass : → SPACE SPIT!
  - The rest of salivary glands. (esp. inflammatory & tumors)
  - Fascial Nerve examination with all its branches.
  - Oral examination for pharyngeal bulge, and orifices of salivary ducts.
  - Cervical lymphnodes.

# Evaluation

- In Diffuse Swelling: to rule out sialadenitis
  - Antibiotic trial for 10 days.
  - Sialogram.

# Radiological Evaluation

- CT Scan and MRI:

To determine the extension of the  
disease.

LightSpeed QX/i SYS#CT01\_0C0 A 133  
Ex: 15061  
Se: 4  
SN S140.56  
Im: 15

QXI

M 58  
DOB: May 12 1943  
Aug 27 2001  
512  
MF:1.1

DFOV 23.8cm  
STND

R  
1  
0  
6

L  
1  
0  
7

parotid  
(bulky but  
normal)

Mastoid

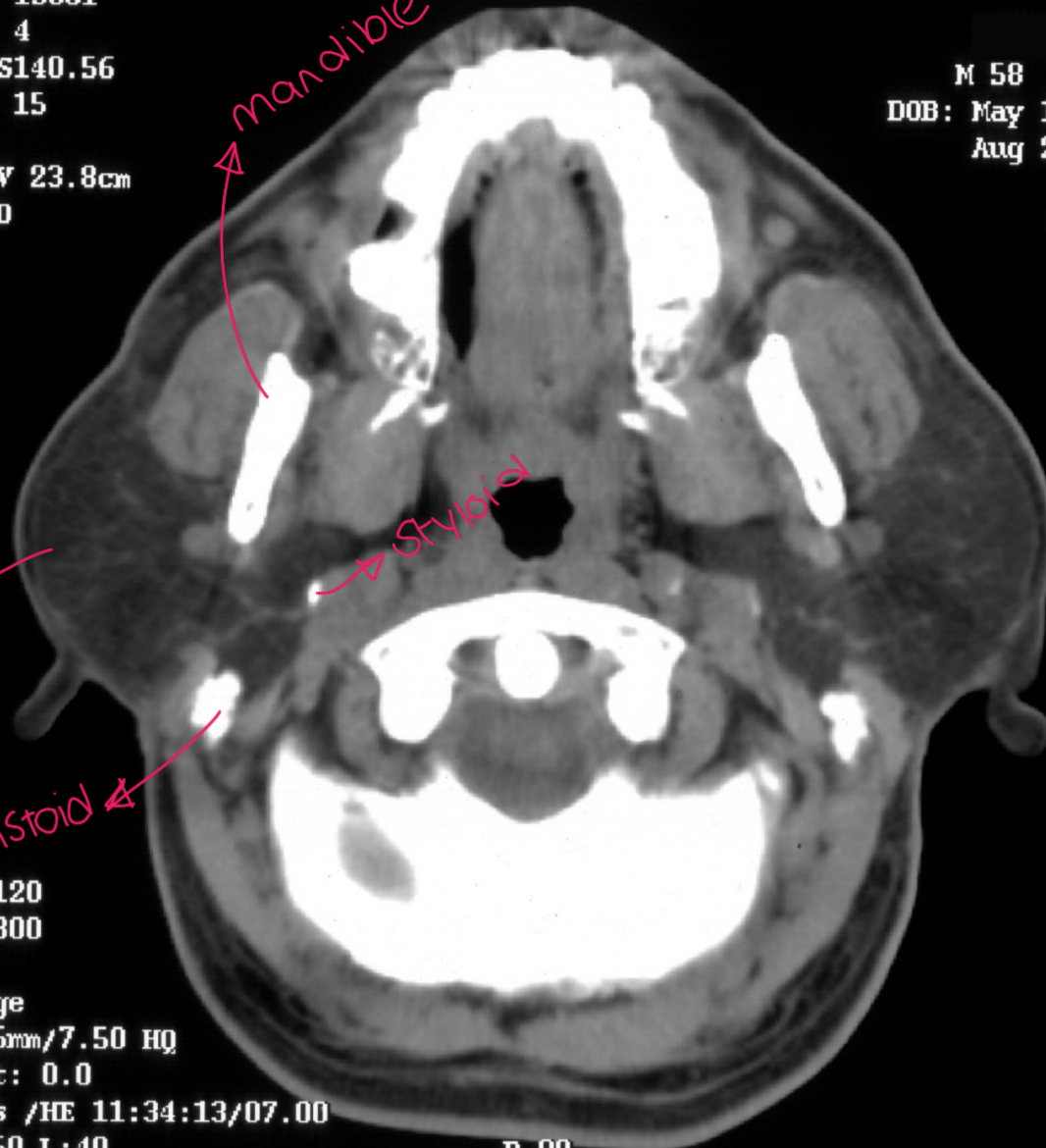
mandible

styloid

kV 120  
mA 300

Large  
3.75mm/7.50 HQ  
Tilt: 0.0  
1.0s /HE 11:34:13/07.00  
W:350 L:40

P 80



LightSpeed QX/i SYS#CT01\_0C0 A 103

QXI

Ex: 11498

Se: 2

SN S235.13

Im: 6+C

M 34

May 11 2001

512

MF:1.1

DFOV 20.7cm

STND

R

9

1

L

1

0

1

kV 120

mA 200

Large

3.75mm/7.50 HQ

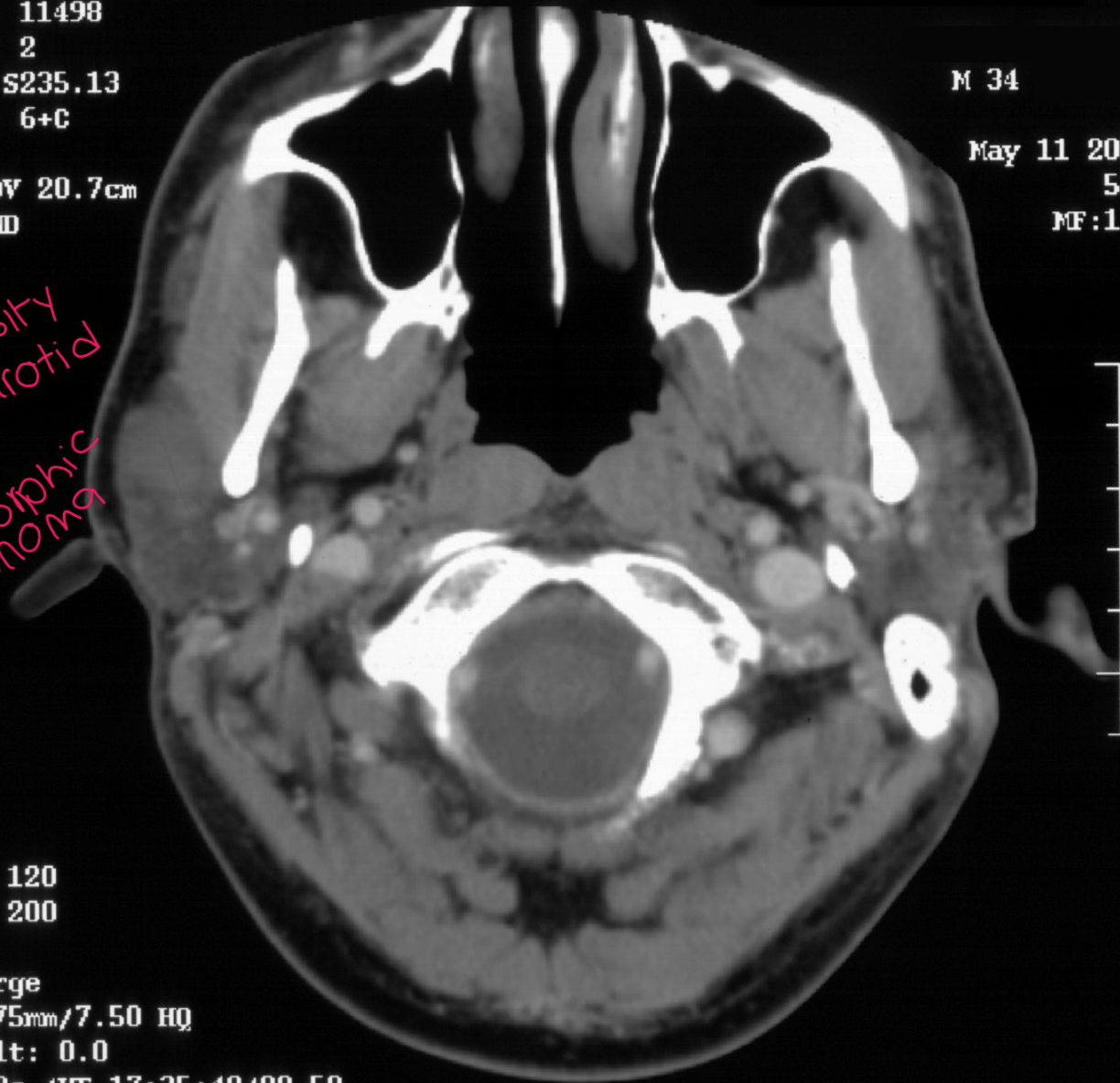
Tilt: 0.0

1.0s /HE 17:35:48/02.50

W:350 L:40

P 81

hyperdensity  
of ant. parotid  
↓  
pleomorphic  
adenoma



LightSpeed QX/i SYS#CT01\_0C0 A 121  
Ex: 8064  
Se: 2  
SN S77.92  
Im: 14+C

F 84  
DOB: Dec 15 1916  
Jan 24 2001  
512

DFOV 20.8cm  
STND

R

1  
8  
4

*well circumscribed  
(hyperdense)  
pleomorphic*

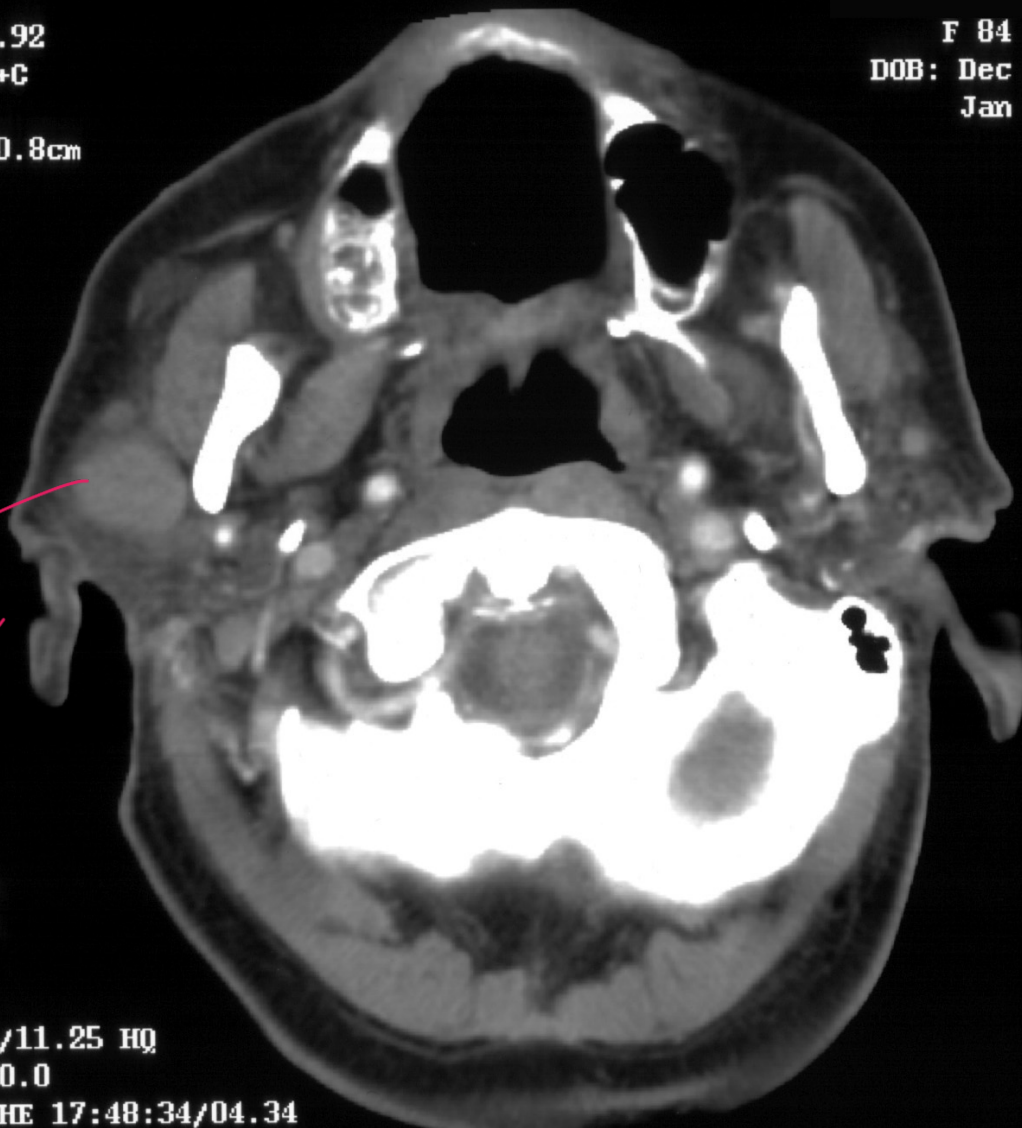
kV 120  
mA 240

Large  
3.75mm/11.25 HQ  
Tilt: 0.0  
1.0s /HE 17:48:34/04.34  
W:350 L:40

P 69

L

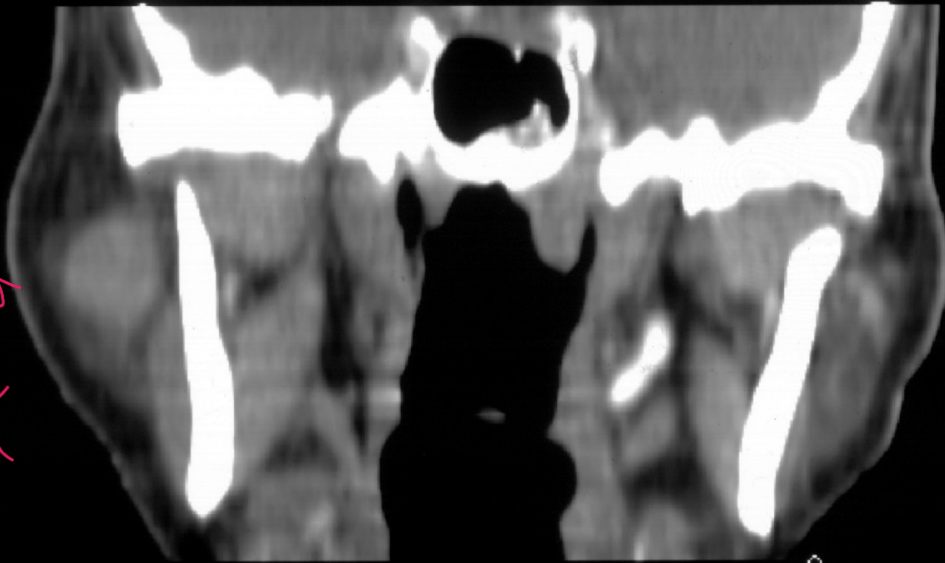
1  
0  
0



*Coronal section  
Pleomorphic  
adenoma*

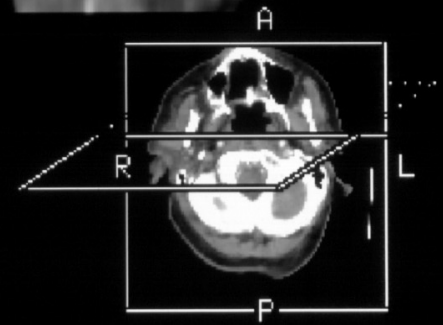
R  
1  
2  
8

L  
8  
0



0.4/  
kv 120  
mA 240  
1.8  
3.8 mmHQ/1.2sp  
Tilt: 0.0  
05:48:34 PM  
W = 300 L = 35

I 22



Reformat 21  
Ex: 8064  
Se: 102 +c  
A: 42.9

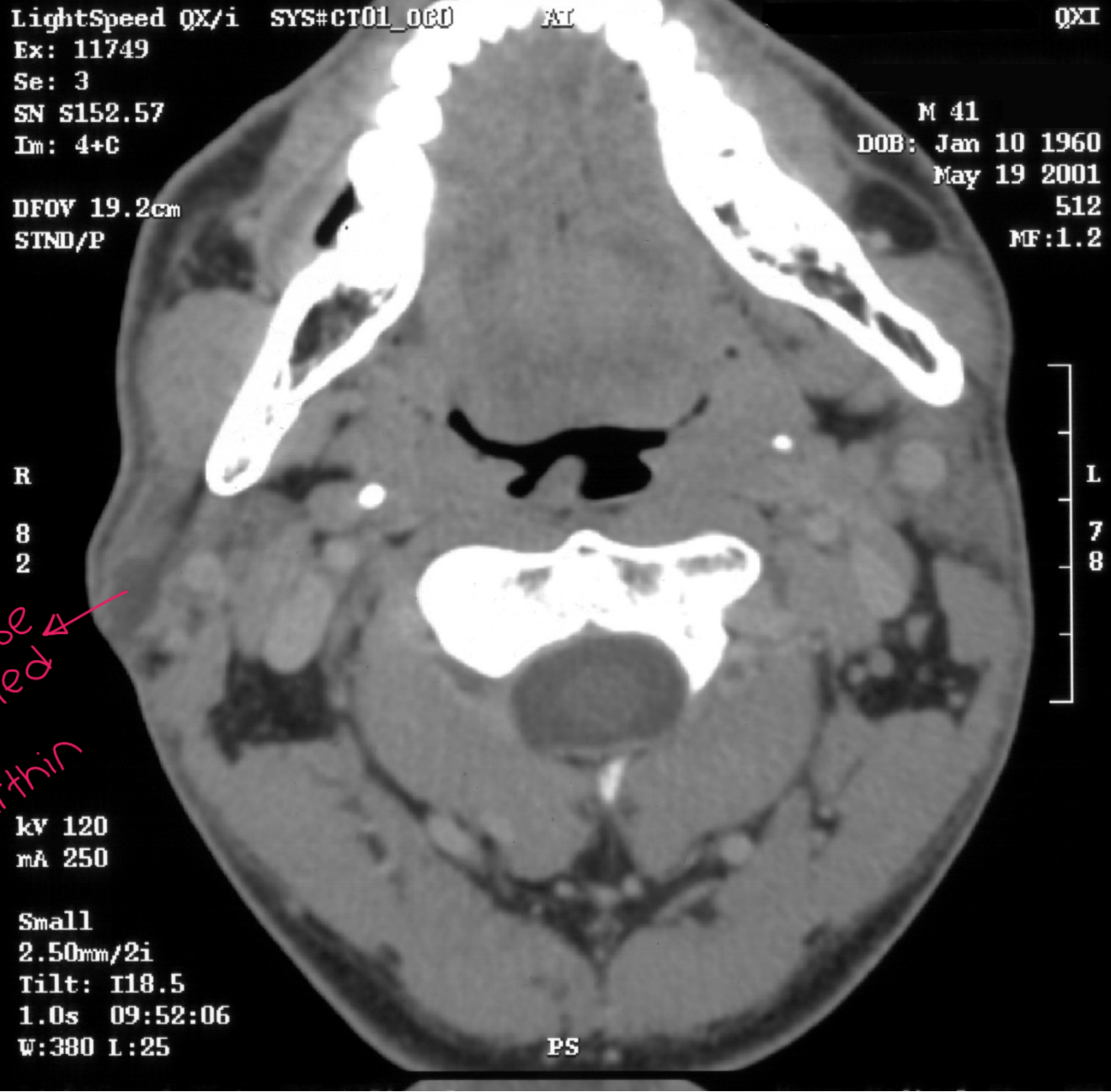
S 186

QXI

F 84  
Jan 24 2001

DFOV 20.8 cm  
STANDARD





parapharyngeal  
mass of deep  
parotid caused  
deviation of  
oral cavity



# Fine Needle Aspiration

- The accuracy, sensitivity and specificity reported in the literature vary from 84-97%, 54-95% and 86-100% respectively.
- Some surgeons argue its importance:
  - ttt always surgery.
  - tumor implantation.

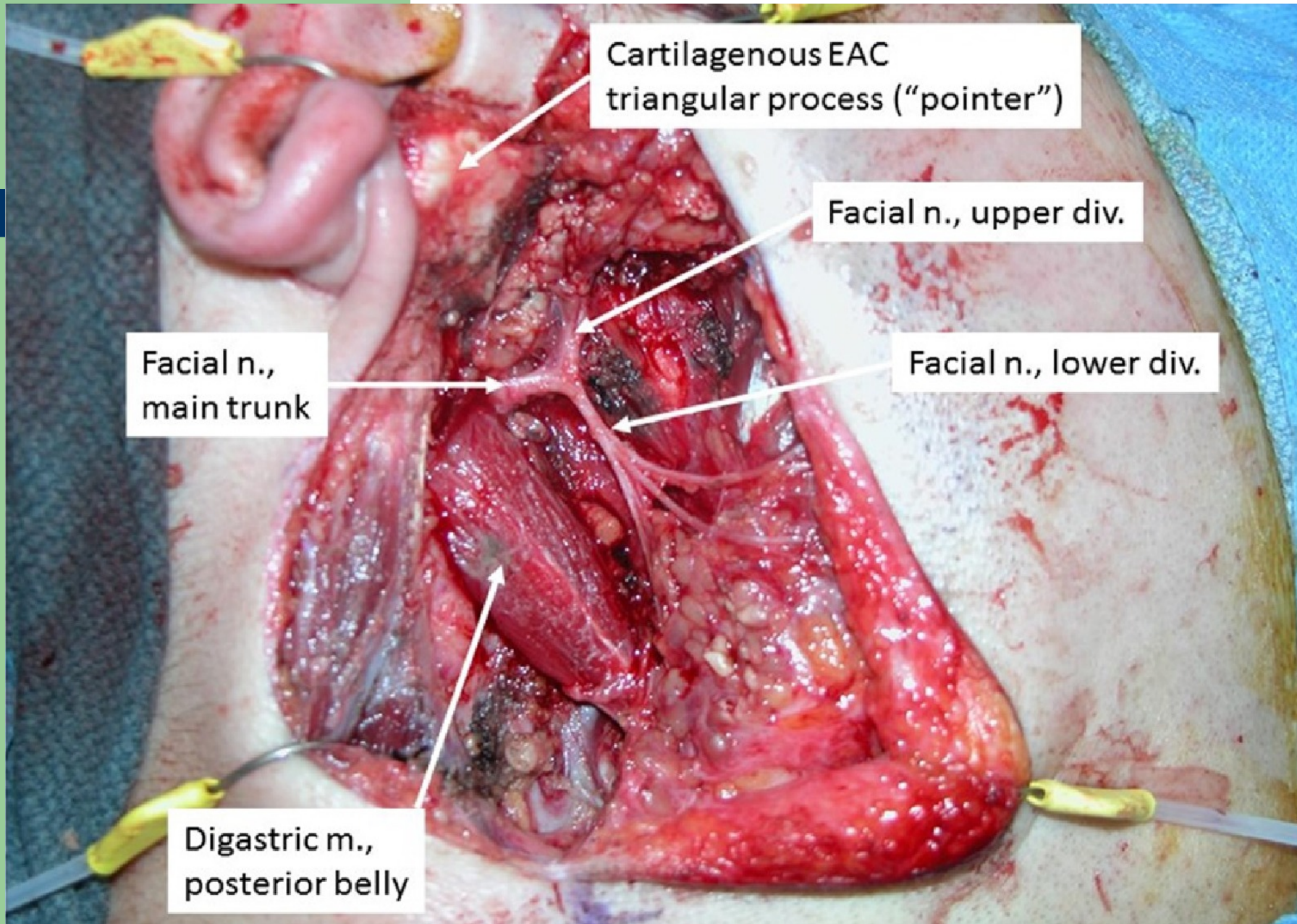
Warthin → NO need for surgery

Pleomorphic → extraCapsular excision

Carcinoma → safety margin

# Treatment

- Problem: fascial nerve passes through the Parotid.
- Benign: superficial parotidectomy with nerve preservation.
- Malignant: total parotidectomy with nerve preservation.  
if one branch is involved → excision of that branch.



Cartilagenous EAC  
triangular process ("pointer")

Facial n., upper div.


Facial n.,  
main trunk

Facial n., lower div.

Digastric m.,  
posterior belly

# Neck Dissection

- If positive LNs → Neck Dissection.
- No consensus on neg LNs.
  - in high grade mucoepidermoid, squamous or adenocarcinoma → prophylactic neck dissection may be justified.

- 
- Chemotherapy: not effective.
  - External beam radiotherapy: effective.

# Submandibular

- Total excision of the mass with preservation of marginal mandibular, hypoglossal, lingual nerves if possible.
- If involved should be sacrificed, sometimes with platysma and skin.



# Minor Salivary Glands

- Excised sometimes with adjacent bone as hard palate. *(safety margin)*
- Necrotizing sialometaplasia: a self limiting disease between hard and soft palate that may ulcerate and mimic malignancy.