SALIVARY GLAND DISORDERS

Dr. Tariq Khaled Aladwan, MD.

Consultant General, Laparoscopic and

Oncoplastic Breast Surgery .

Faculty of Medicine, Mutah University.

OBJECTIVES

- Introduction.
- Anatomy.
- Disorders of glands.
- Clinical approach.
- Surgical aspect.

INTRODUCTION

Salivary glands:

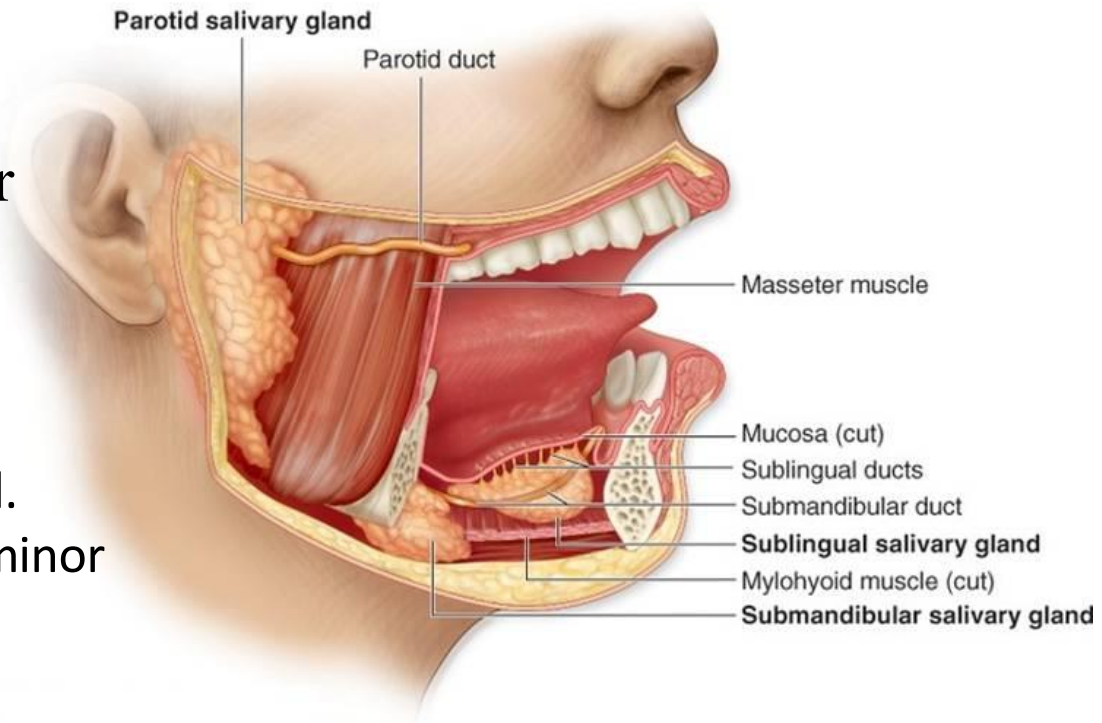
are composed of 4 major glands, in addition to minor glands.

Major:

- 2 parotid glands.
- 2subman d-ibular gland

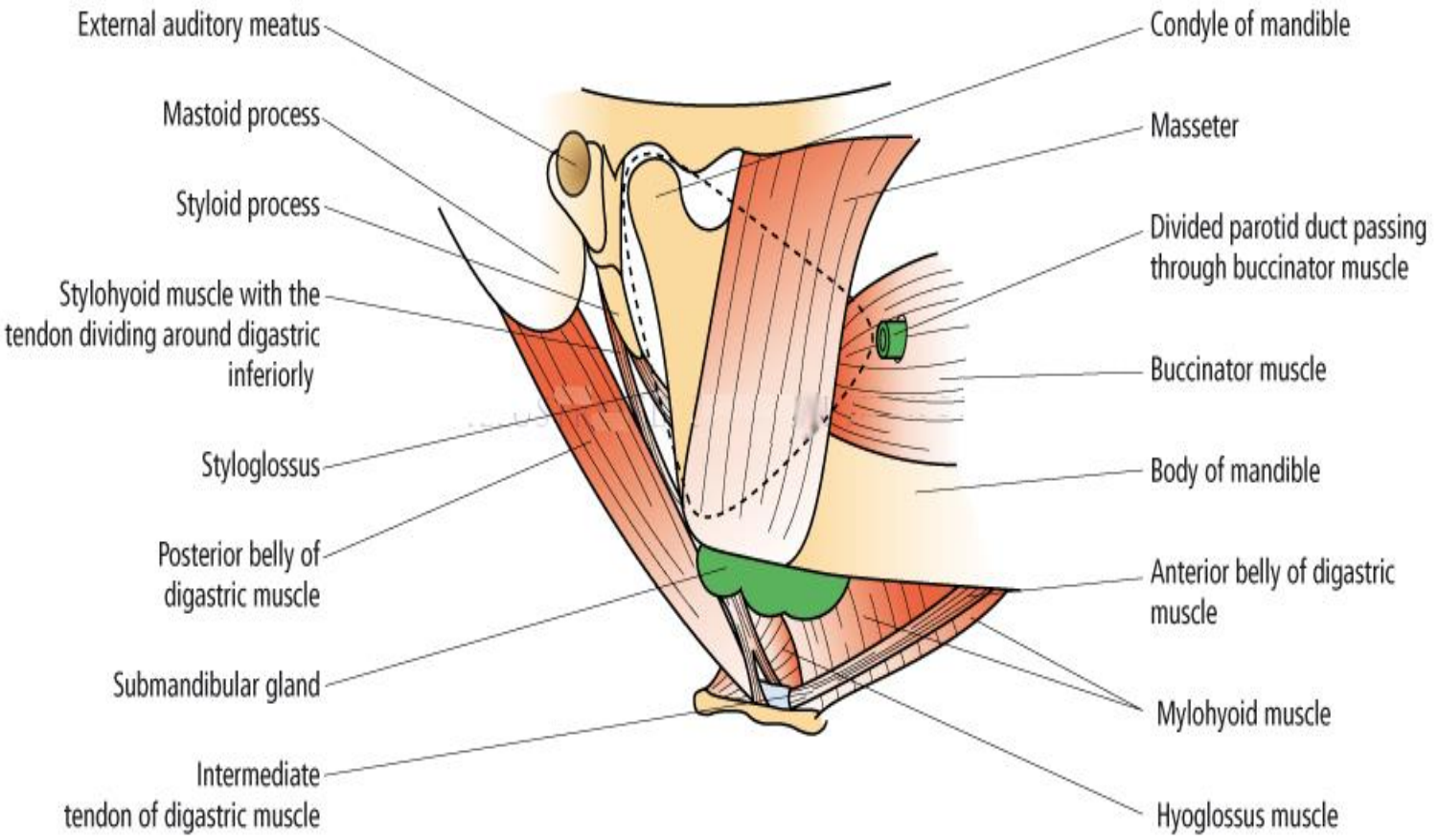
Minor:

- Sublingual.
- Multiple minor glands



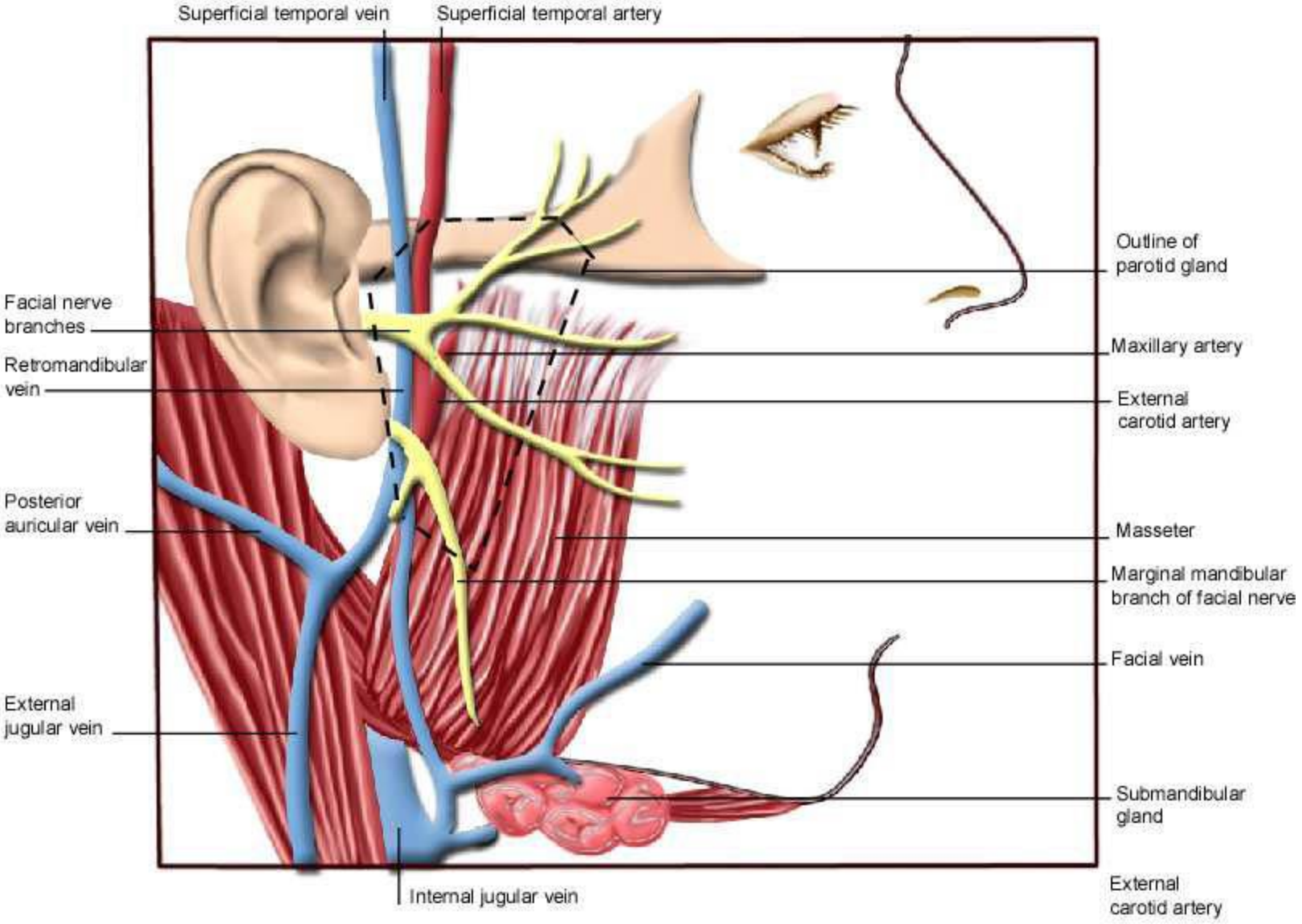
ANATOMY

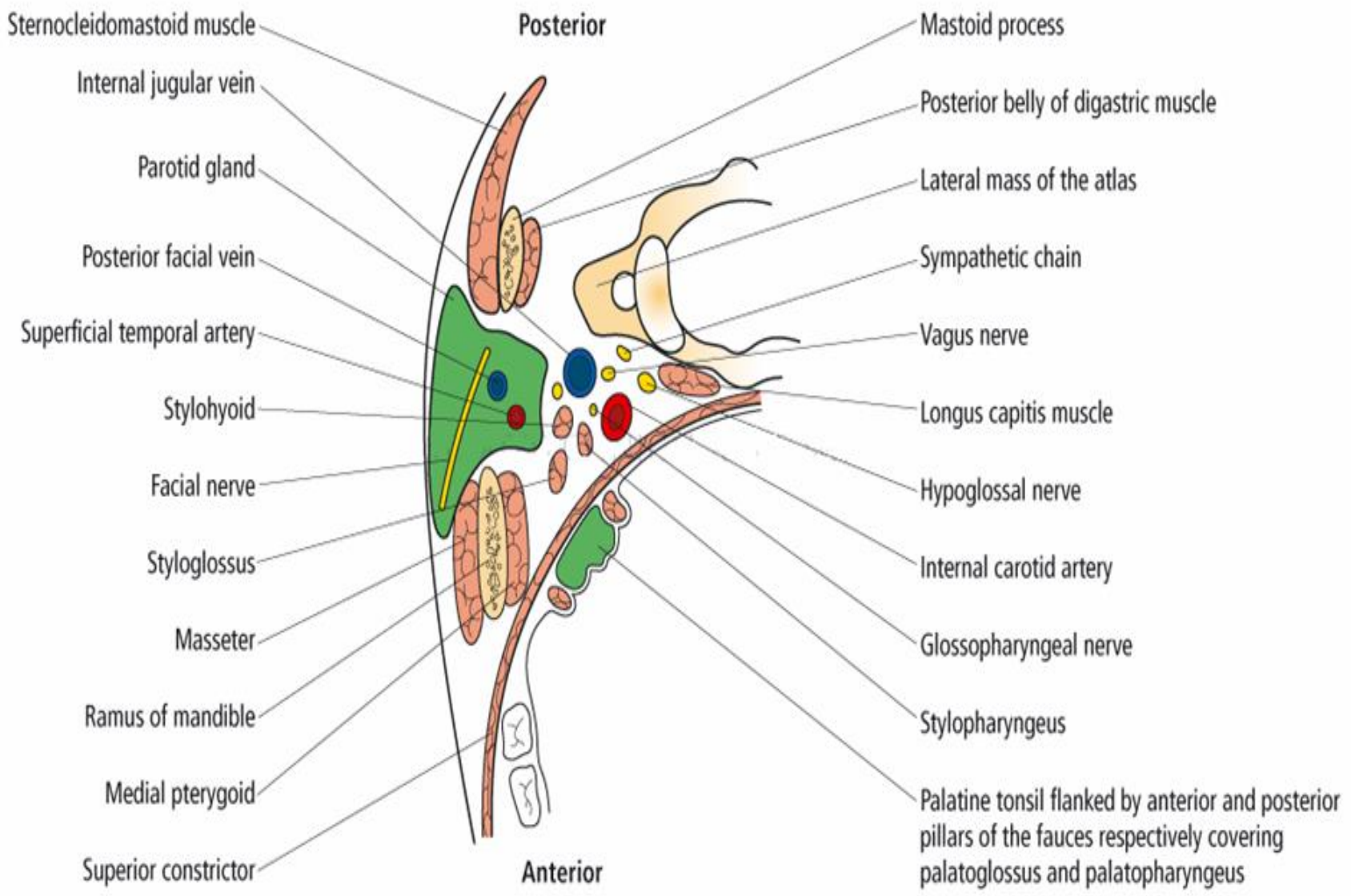
1. PAROTID GLAND



Important structure that run through the parotid gland:

1. Branches of facial nerve.
2. Terminal branch of external carotid artery that divided into maxillary & superficial temporal artery.
3. The retromandibular vein (post. Facial).
4. Intraparotid lymph node.

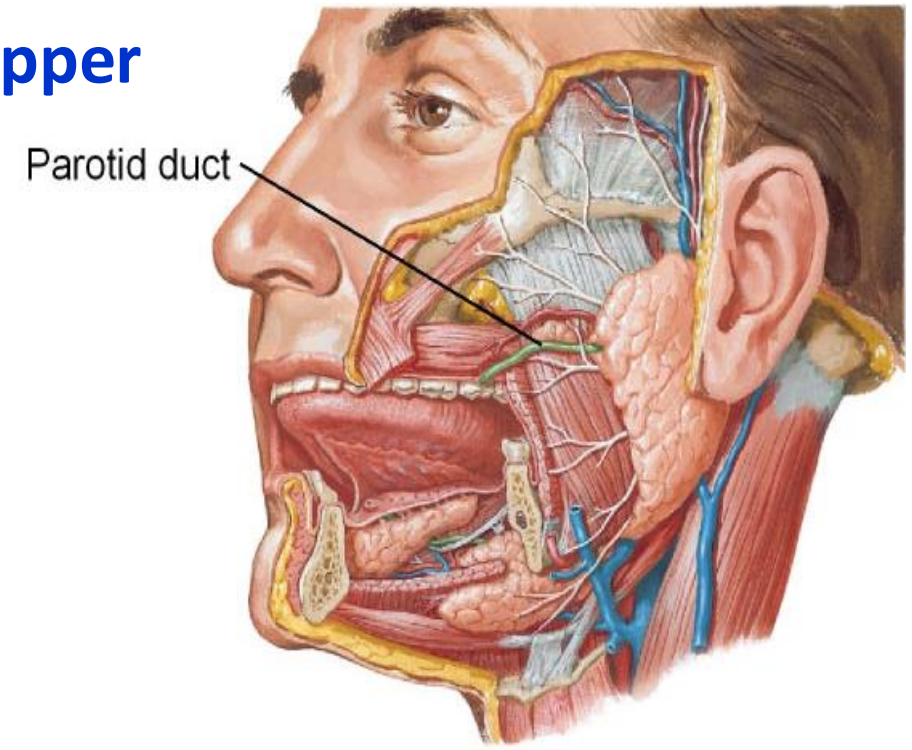

Superficial temporal vein
Superficial temporal artery
Outline of parotid gland
Facial nerve branches
Maxillary artery
Retromandibular vein
External carotid artery
Posterior auricular vein
Masseter
Marginal mandibular branch of facial nerve
Facial vein
External jugular vein
Submandibular gland
Internal jugular vein
External carotid artery


Sternocleidomastoid muscle
Internal jugular vein
Parotid gland
Posterior facial vein
Superficial temporal artery
Stylohyoid
Facial nerve
Styloglossus
Masseter
Ramus of mandible
Medial pterygoid
Superior constrictor
Posterior
Anterior
Mastoid process
Posterior belly of digastric muscle
Lateral mass of the atlas
Sympathetic chain
Vagus nerve
Longus capitis muscle
Hypoglossal nerve
Internal carotid artery
Glossopharyngeal nerve
Stylopharyngeus
Palatine tonsil flanked by anterior and posterior pillars of the fauces respectively covering palatoglossus and palatopharyngeus

THE PAROTID DUCT:

- **Stensen's duct** is 5 cm long.

- open opposite the **second upper molar tooth**

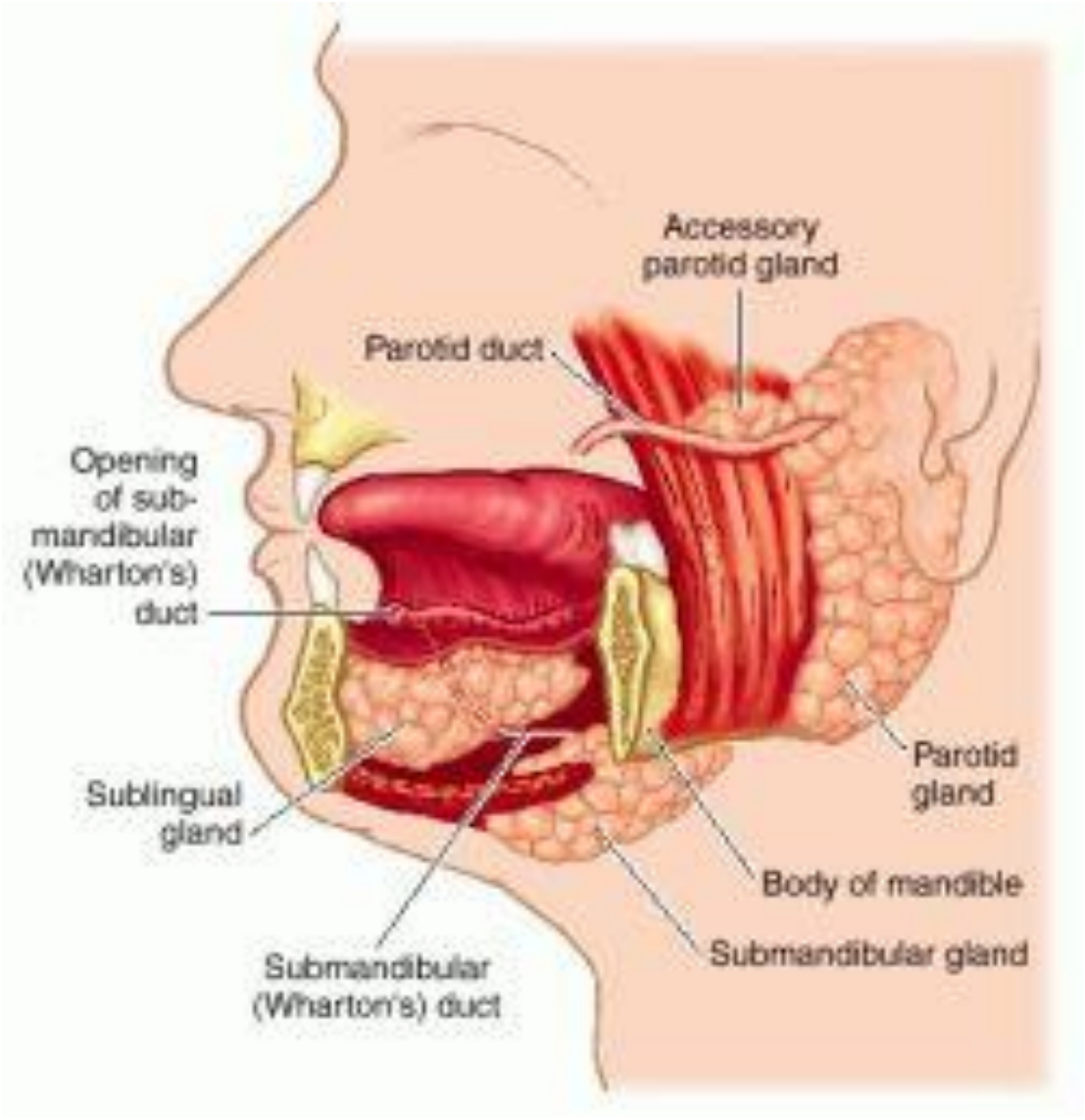


2. SUBMANDIBULAR GLAND

- It’s paired of gland that lie below the mandible on either side.
- Has 2 lobes, superficial & deep.
- **Warthon’s duct**, drained submandibular gland that opens into anterior floor of mouth.

Anatomical relationship:

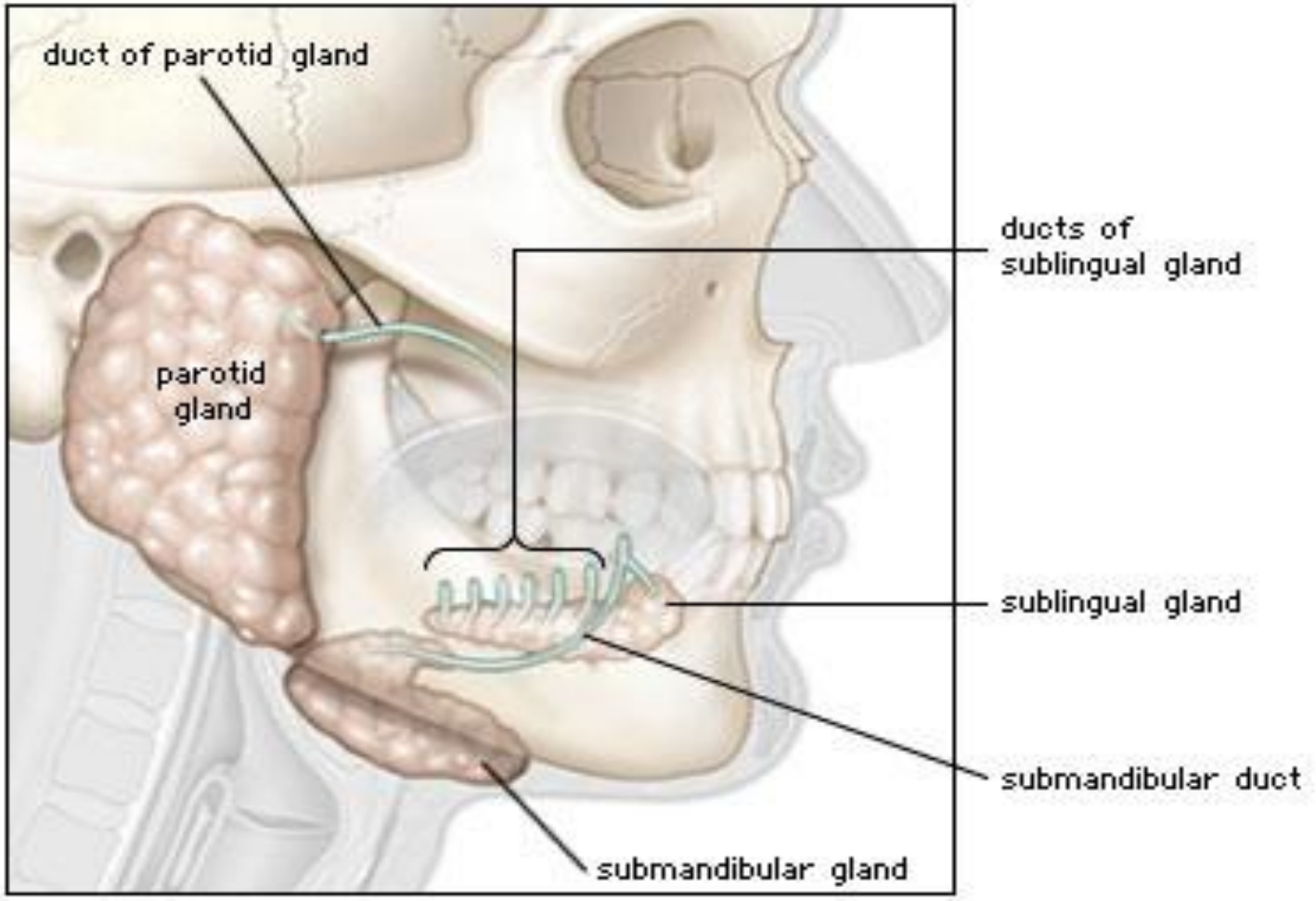
1. Lingual nerve.
2. Hypoglossal nerve.
3. Anterior facial vein.
4. Facial artery.
5. Marginal mandibular branch of facial nerve.


Accessory parotid gland
Parotid duct
Opening of sub-mandibular (Wharton's) duct
Parotid gland
Sublingual gland
Body of mandible
Submandibular gland
Submandibular (Wharton's) duct

3. SUBLINGUAL GLAND

- Lie on the superior surface of the mylohyoid muscle and are separated from the oral cavity by a thin layer of mucosa.

- The ducts of the sublingual glands are called **Bartholin's ducts**.



4. MINOR SALIVARY GLAND

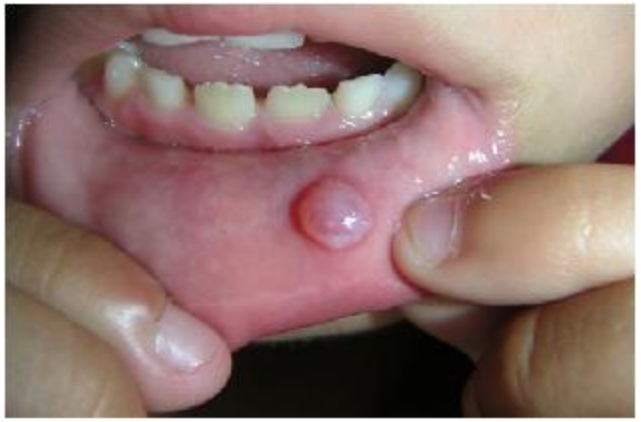
- About 450 lie under the mucosa
- They are distirbuted in the mucosa of the lips, cheeks, palate, floor of mouth & retromolar area
- Also appear in oropharyanx, larynx & trachea

DISORDERS OF MINOR & SUBLINGUAL SALIVARY GLAND

CYST

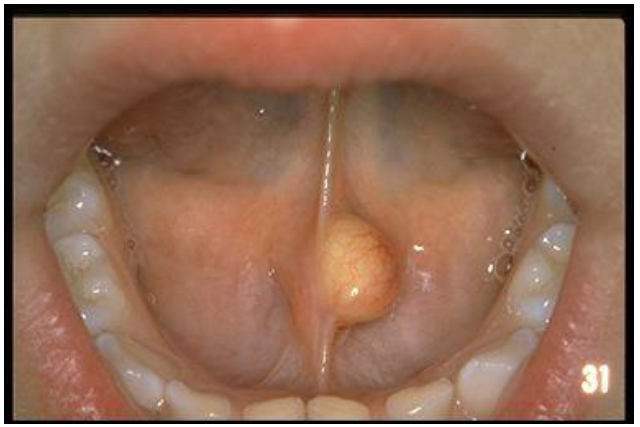
It's either:

•Extravasation cyst result from trauma to overlying mucosa.



•Mucous retention cyst in the floor of the mouth due to obstruction.

•**RANULA** extravasation cyst that arises from sublingual gland.

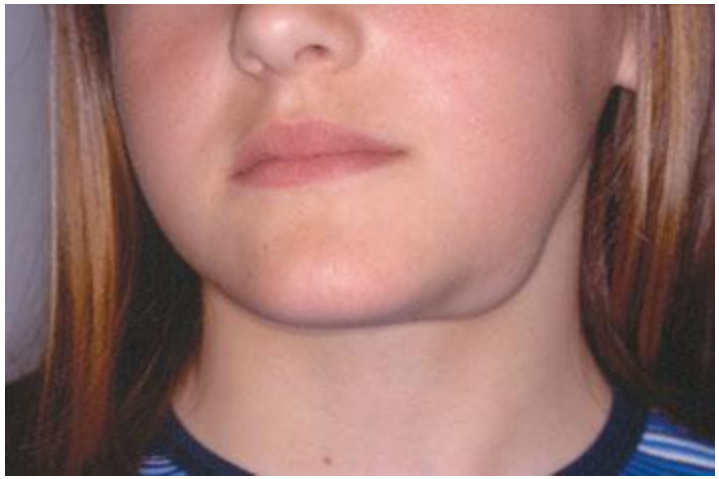


PLUNGING RANULA

- It is rare form of mucus retention cyst arise from both sublingual & submandibular.
- The mucus collects around the gland &penetrates the mylohyoid diaphragm to enter the neck.

Pt. presents with

Dumbbell shaped swelling , soft, fluctuant & painless



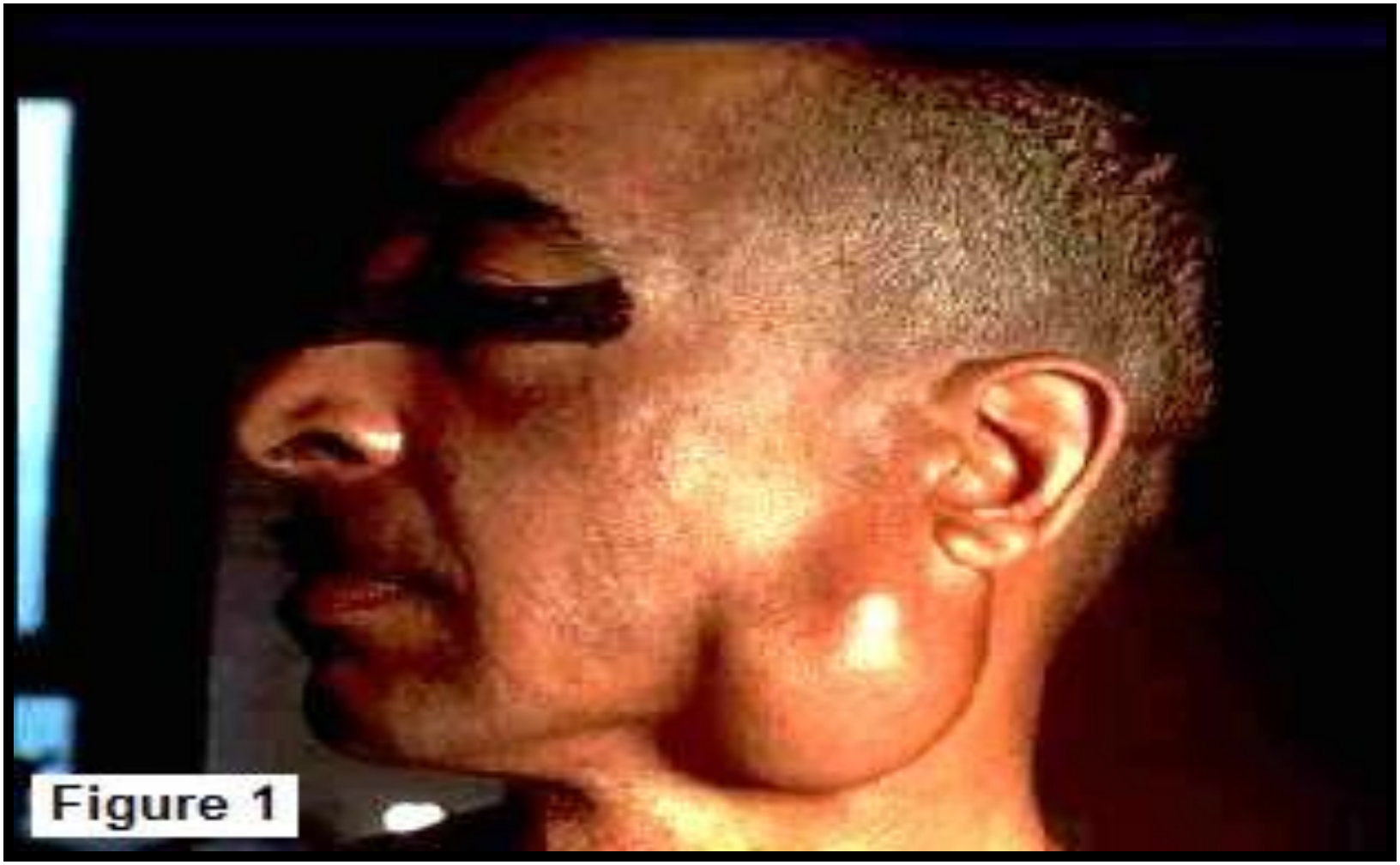
TUMORS

- Tumors of minor & sublingual salivary gland are extremely rare.

- 90% are malignant.

- Most common site: upper lip, palate & retromolar region.

SUBMANDIBULAR GLAND



* INFLAMMATORY DISEASES OF THE SUBMANDIBULAR GLAND:

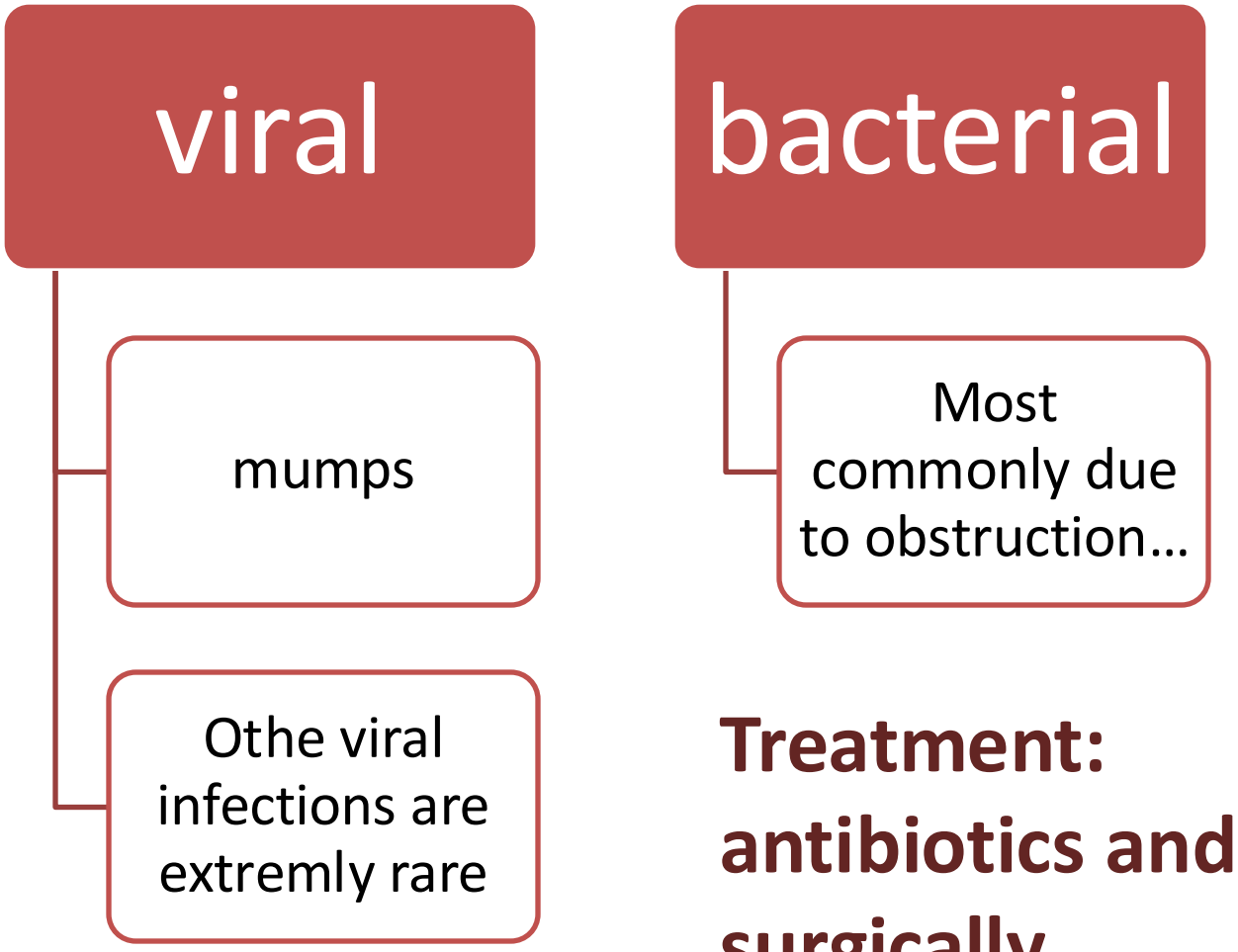
sialadenitis

Acute

chronic

Acute on chronic

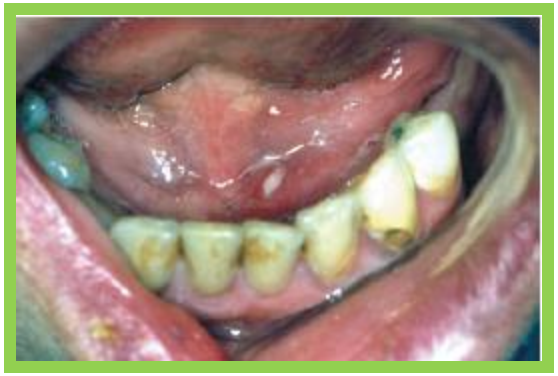
ACUTE INFECTIONS:



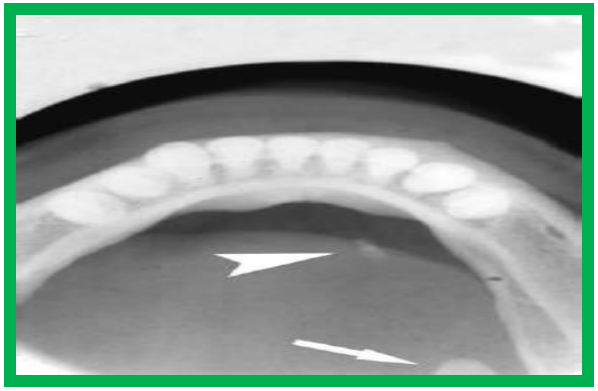
Treatment: antibiotics and surgically

* TRAUMA AND OBSTRUCTION:

- Most common cause is sialolithiasis which 80% happens in the submandibular gland…
- Presentation: painful swelling in submandibular area

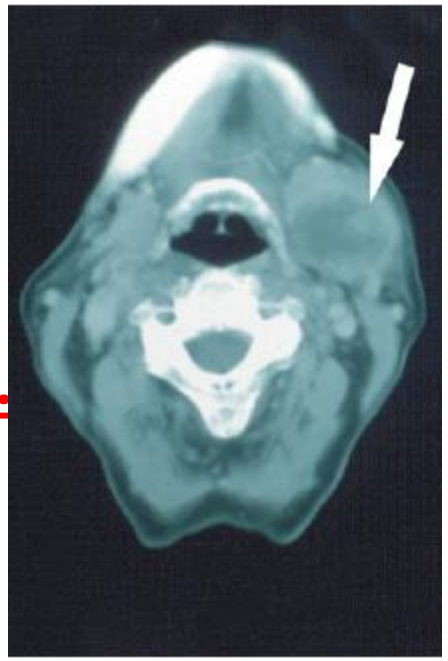


- What would aggreveate it?
- Clinical findings: tender, pus draining
- investigations : x-ray
- Treatment: surgical

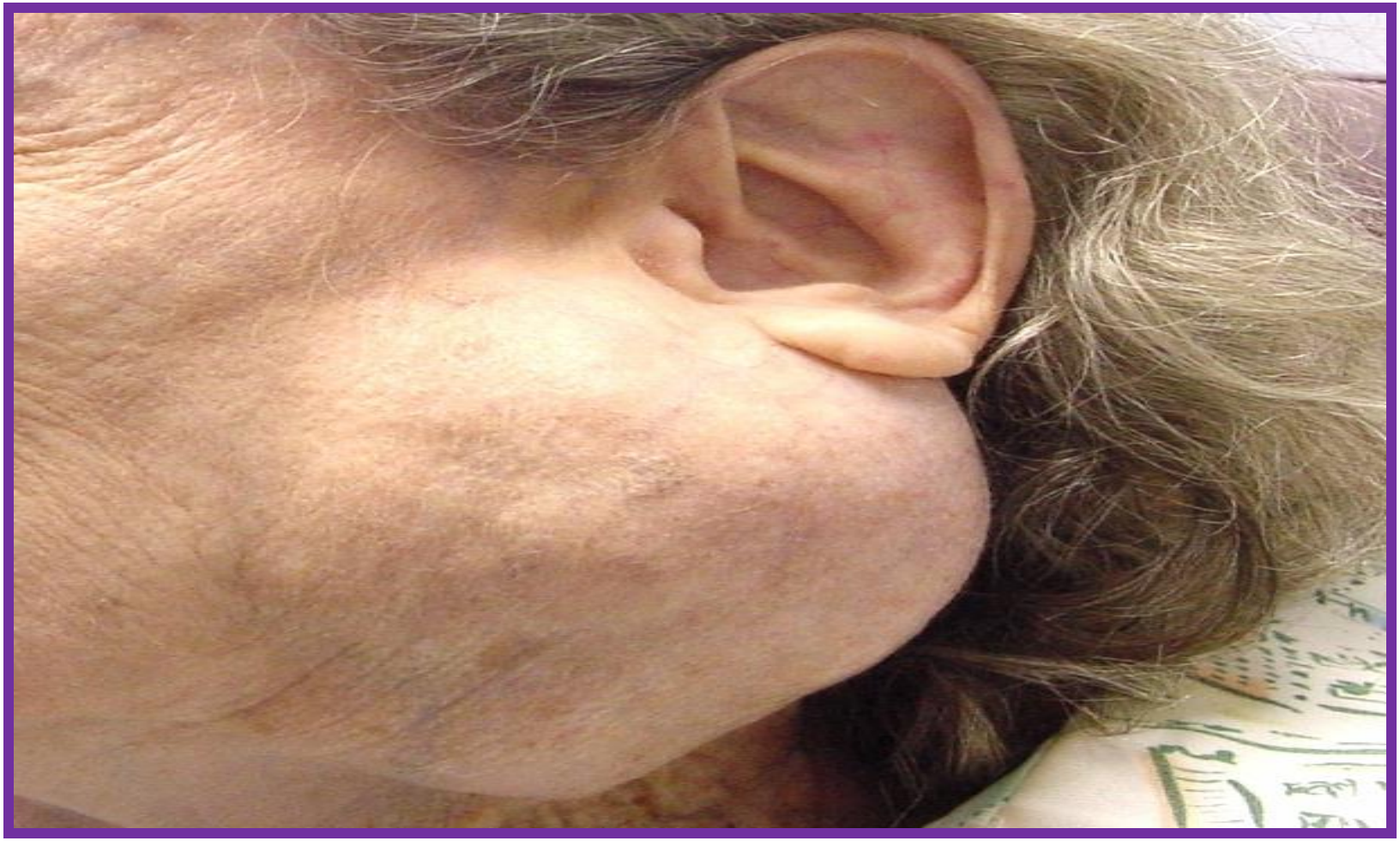


* TUMORS

- They are very rare in this gland and 50% are benign…
- Presentation
- Investigations: CT and MRI…
- Never do open biopsy but do FNA..
- Treatment is surgical…



PAROTID GLAND:



1-DEVELOPMENTAL

- They extremly rare like agenesis, , duct atresia and congenital fistula formation…

2-INFLAMMATORY DISORDERS

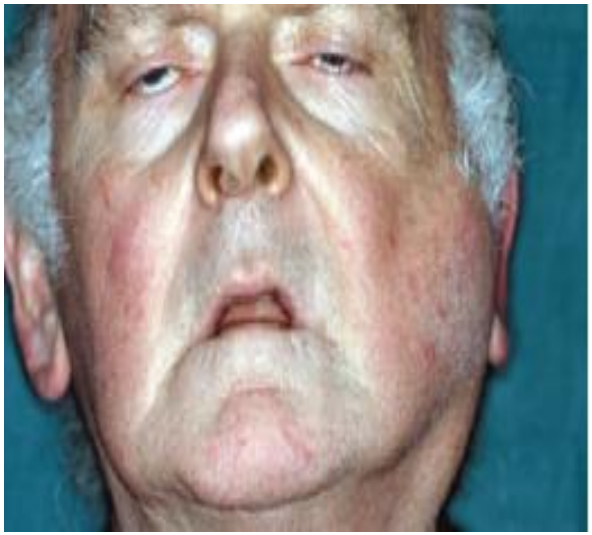
A- viral infections:

Mumps…
Mode of infection
Presentation
Diagnosis

Treatment is conservative

Complications: Orchitis, oophoritis, pancreatitis, sensorineural deafness, nemimgoencephalitis but they are rare…

2- INFLAMMATORY DISORDERS (CONT.)



B- bacterial:

Precipitating factors??!

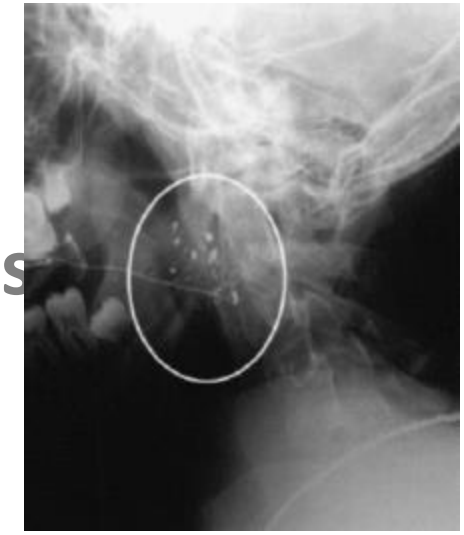
Causative organisms

Presentation

Treatment :conservative and it might need drainage…

RECURRENT PAROTITIS OF CHILDHOOD:

- This occurs in 3-6 years of age and the symptoms last for 3-7 days accompanied with fever and malaise…
- Diagnosis is made by HX and sialography showing a characteristic snowstorm appearance…
- Treatment: -antibiotics
  -prophylactic antibiotics
  -parotidectomy..



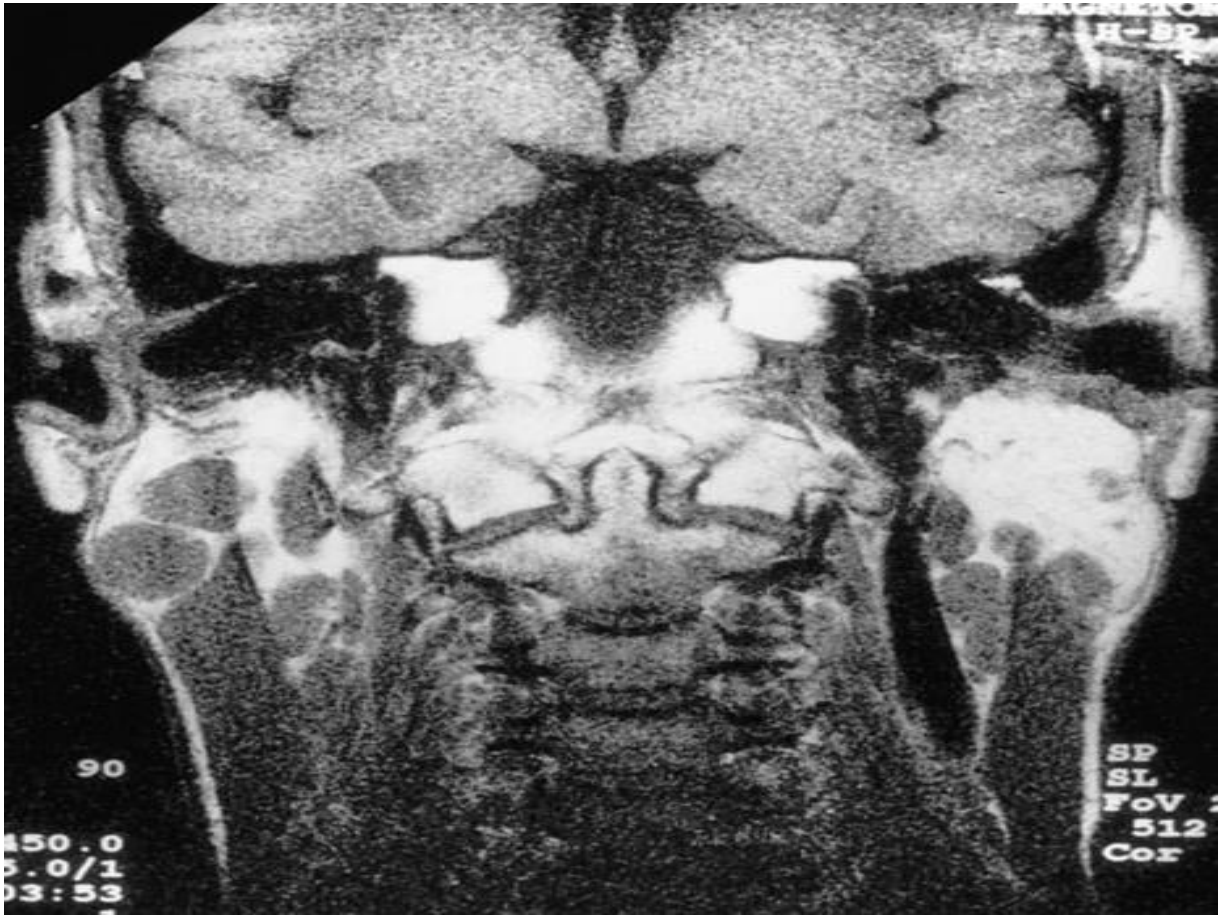
2- INFLAMMATORY DISORDERS (CONT)

C- chronic parotitis (HIV)?

- It is pathognomonic for HIV…
- Presentation : very similar to sjogran's syndrome…
- Differentiated by negative autoantibody…
- On investigation : CT and MRI show characteristic swiss cheese appearance of the cysts…

treatment:

Surgery to improve the appearance although it's painless



3-OBSTRUCTIVE PAROTITIS:

A- papillary obstruction:

It less common than in submandibular gland…

Most commonly due to trauma

Presentation

Treatment is papillotomy…

B- stone formation:

As mentioned before it is 80% in submandibular but only 20 % in parotid

Investigations:

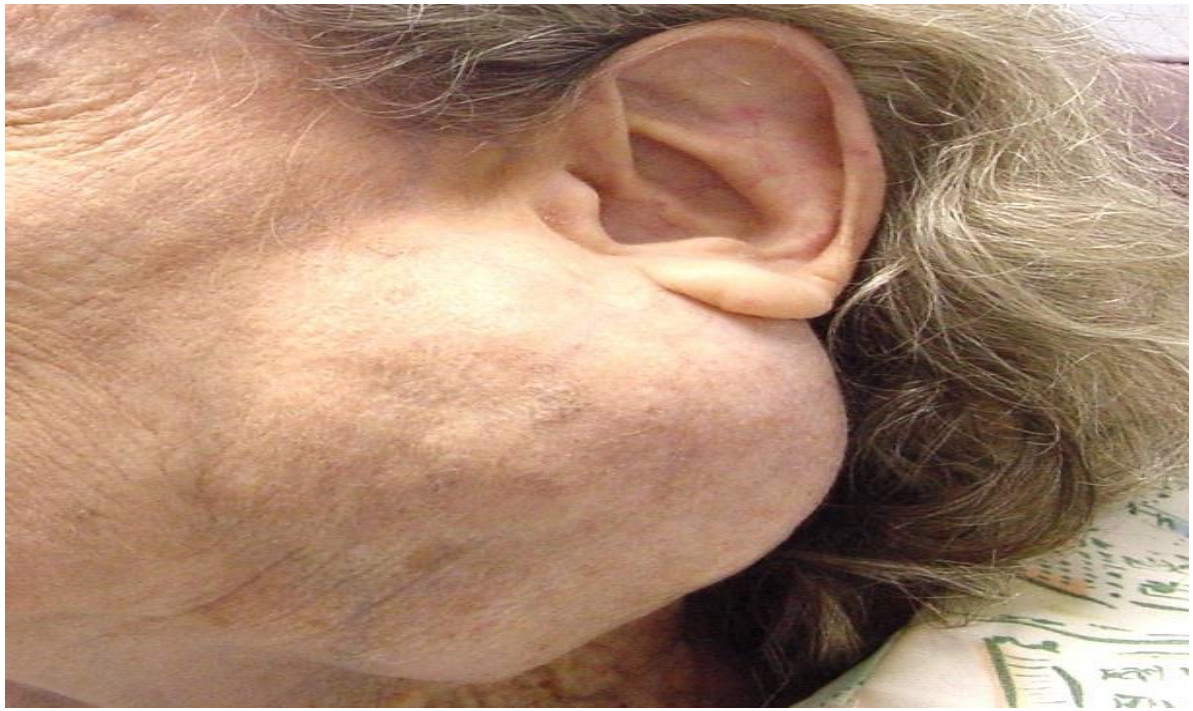
position…

Treatment is surgical…

4- TUMORS:

- The parotids are the commonest glands for tumors of salivary glands…

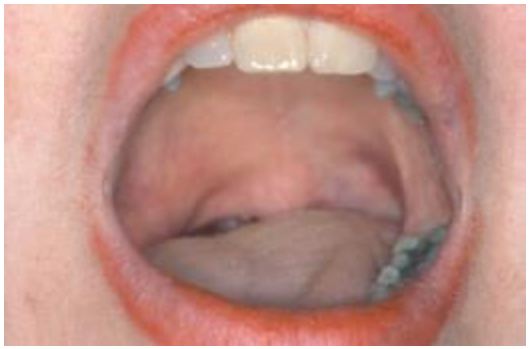
Slowly painless growing temor below the ear, or infront of it



Sometimes on the upper aspect of the neck:

4-TUMORS (CONT)

- If it arised from the accessory lobe it will look like a presistant cheek swelling…
- If it arises from the deep lobe it will present as parapharyngeal mass…
- Symptoms:
- Difficult swallowing
- Snoring
- Clinical examination…



CLASSIFICATION

Table 47.2 Classification of salivary gland tumours (simplified)

Type	Sub-group	Common examples
I Adenoma	Pleomorphic	Pleomorphic adenoma
	Monomorphic	Adenolymphoma (Warthin's tumour)
II Carcinoma	Low grade	Acinic cell carcinoma
		Adenoid cystic carcinoma
		Low-grade muco-epidermoid carcinoma
	High grade	Adenocarcinoma
		Squamous cell carcinoma
		High-grade muco-epidermoid carcinoma
III Non-epithelial tumours		Haemangioma, lymphangioma
IV Lymphomas	Primary lymphomas	Non-Hodgkin's lymphomas
	Secondary lymphomas	Lymphomas in Sjögren's syndrome
V Secondary tumours	Local	Tumours of the head and neck especially
	Distant	Skin and bronchus
VI Unclassified tumours		
VII Tumour-like lesions	Solid lesions	Benign lymphoepithelial lesion
		Adenomatoid hyperplasia
	Cystic lesions	Salivary gland cysts

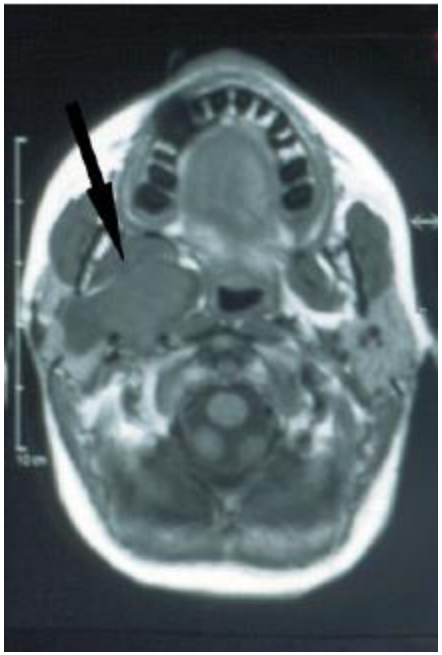
4-TUMORS (CONT)

- Investigations:

CT AND MRI

FNA

OPEN BIOPSY IS CONTRAINDICATED…



TREATMENT:

SURGICAL…

OTHER RARE DISESASES:

1-granulomatous sialadenitis:

- Mycobacterial infection:
- Sarcoidosis
- Cat scratch disease
- Toxoplasmosis
- Syphilis
- Deep mycosis
- Wgner’s granulomatosis
- Allergic sialdenitis due to radiotherapy of the head and neck…

2- TUMOR LIKE DISEASES:

- **They are a group of diseases that are hard to diagnose and are not under any group of the other diseases:**
- **Sialadenosis**
- **Adenomatoid hyperplasia**
- **Multifocal adenomporphic adenomatosis**

3- DEGENERATIVE DISEASES:

- **Sjogran's syndrome…:**
- **Benign lymphoepithilial lesions**
- **Xerostomia**
- **Sialorrhea**

A- SJOGRAN'S SYNDROME:

- It is an autoimmune condition causing progressive destruction of the salivary glands and the lacrimal glands…..
- Presentation is xerostomia and keratoconjunctivitis…
- They also present with pain and asendng infection
- .females more than males 10:1
- Parotis is more common

Primary Sjögren's syndrome	More severe xerostomia Widespread exocrine gland dysfunction No connective tissue disorder
Secondary Sjögren's syndrome	M:F: 1:10 Middle age Underlying connective tissue disorder
Benign lymphoepithelial lesion	20% develop lymphoma Diffuse parotid swelling 20% bilateral

(CONT)

- The charachtaristic feature is progressive lymphocytic infiltration acinar cell destruction and prolifration of duct epithilium…
- Diagnosis based on history…
- Treatment remains symptomatic:

Artificial tears…

Salivary substitiuants or water…

Floride to avoid dental carries…

Complications are B cell lymphoma

B-XEROSTOMIA:

- Normal salivary flow decreases with age…
- Mostly in woman postmenopausal complaining of burning tongue of mouth..
- Causes: -chronic anxiety and depression..

-dehydration…

-anticholinergic drugs…

-sjogran's syndrome…

-radiotherapy of the neck and head

C-SIALORRHEA:

- Causes: some infections and drugs…
- Drooling:

In children that are mental handicap

Also in cerebral palsy

Management is surgical…

Bilateral submandibular duct repositioning and sublingual duct excision…

Bilateral submandibualr gland excision…

Bilateral submandibualr gland excision and repositioning of the parotis duct…

HOW TO APPROACH THE PATIENT CLININALLY

- History.
- Clinical examination.
- Investigation.

HISTORY

- History of swellings / change over time?
- Trismus?
- Pain?
- Variation with meals?
- Bilateral?
- Dry mouth? Dry eyes?
- Recent exposure to sick contacts (mumps)?
- Radiation history?
- Current medications?

CLINCAL EX.

INSPECTION:

- Asymmetry (glands, face, neck)
- Diffuse or focal enlargement
- Erythema extra-orally
- Trismus
- Medial displacement of structures intraorally?
- Cranial nerve testing (**Facial , Hypoglossal nerve**)

CLINCAL EX.

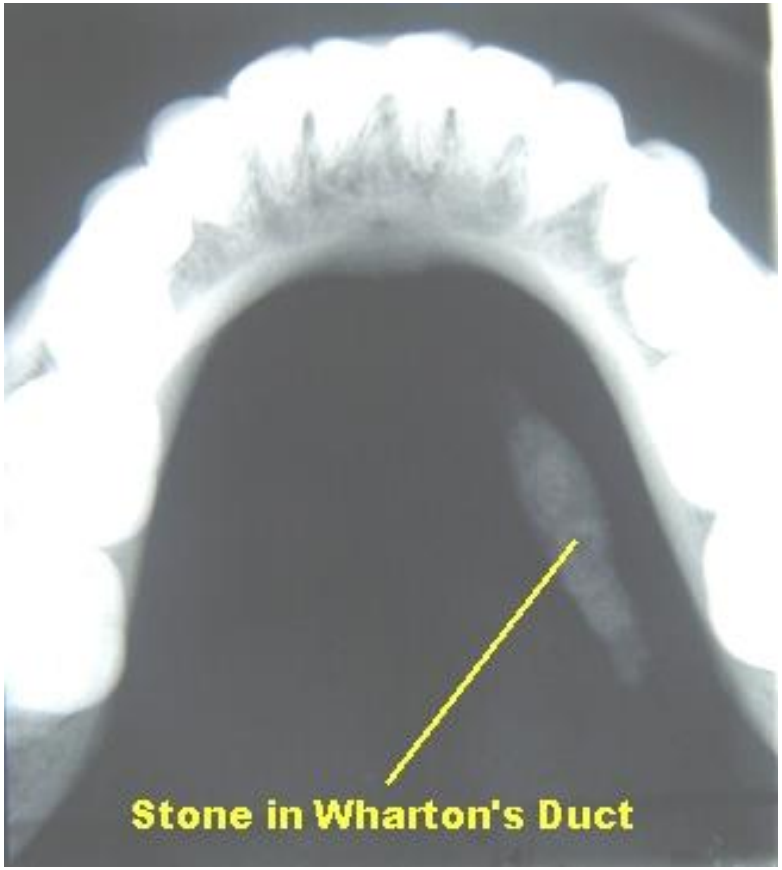
PALPATION:

- Palpate for cervical lymphadenopathy
- Bimanual palpation of floor of mouth in a posterior to anterior direction
  - Have patient close mouth slightly & relax oral musculature to aid in detection
  - Examine for duct purulence
- Bimanual palpation of the gland (firm or spongy/elastic).

INVESTIGATION

1. Plain occlusal film.
2. CT Scan.
3. Ultrasound.
4. Sialography.
5. Radionuclide Studies.
6. Diagnostic Sialendoscopy[2]

1.PLAIN OCCLUSAL FILM



- Effective for intraductal stones, while….
- intraglandular, radiolucent or

small stones may be missed.

2.CT-SCAN

- Large stones or small CT slices done.
- Also used for inflammatory disorders

3. ULTRASOUND

- Operator dependent, can detect small stones

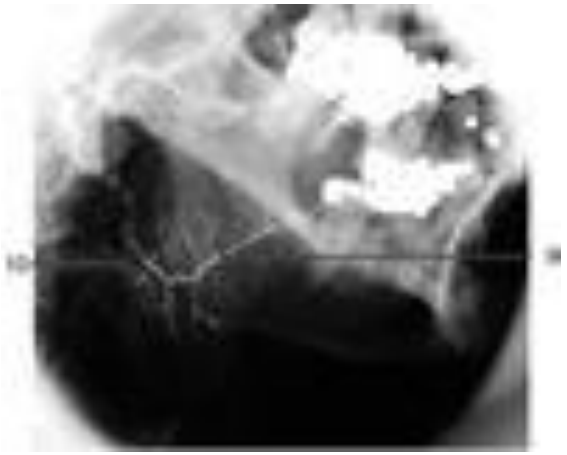
(>2mm), inexpensive, non-invasive

4. SIALAOGRAPHY

- Consists of opacification of the ducts by a retrograde injection of a water-soluble dye.
- Provides image of stones and duct morphological structure
- May be therapeutic, but success of therapeutic sialography never documented

4. SIALAOGRAPHY, CONT

- **Disadvantages:**
  - Irradiation dose
  - Pain with procedure
  - Perforation
  - Infection dye reaction
  - Push stone further
  - Contraindicated in active infection.



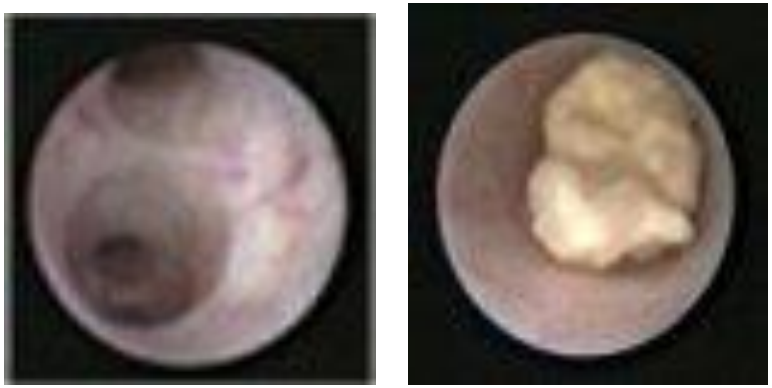
5. RADIONUCLIDE STUDY

- is useful preoperatively to determine if gland

is functional.

6.SIALENDOSCOPY

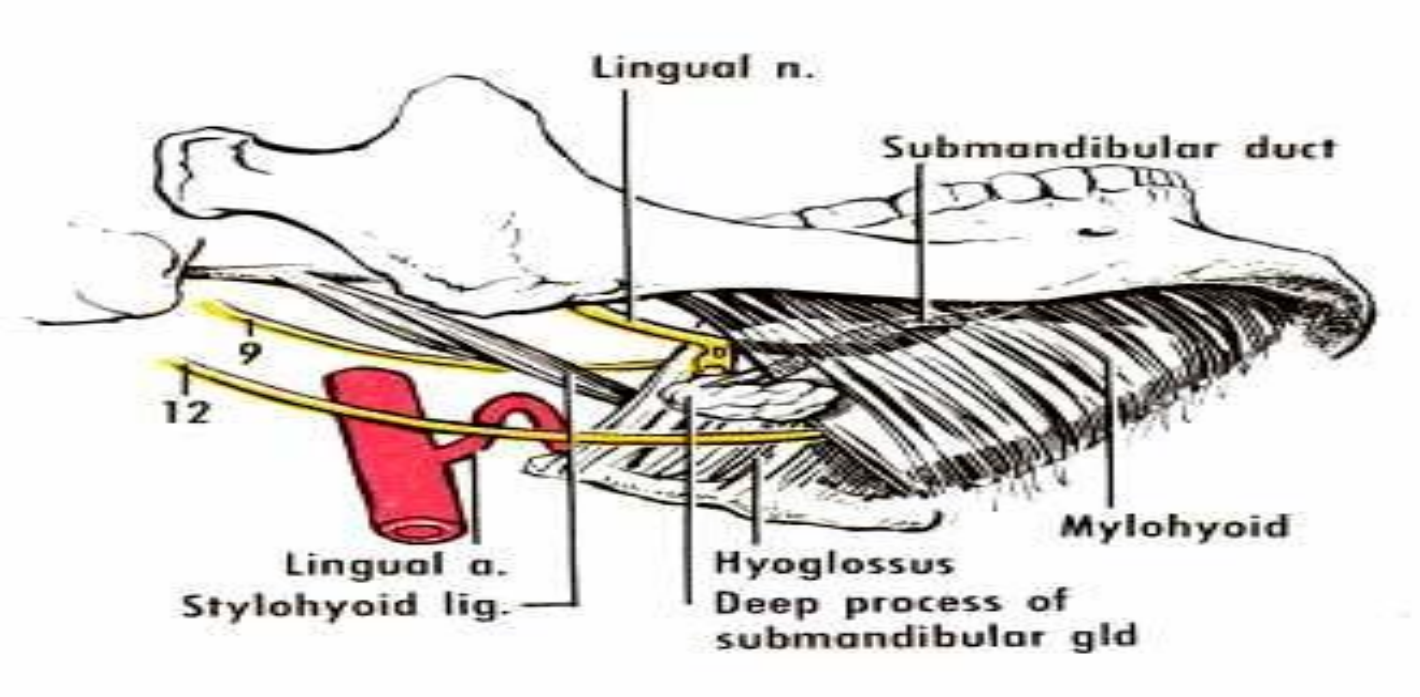
- Allows complete exploration of the ductal system, direct visualization of duct pathology
- Success rate of >95%[2]
- Disadvantage: technically challenging, trauma could result in stenosis, perforation



SURGICAL APPROACHES TO SALIVARY GLANDS:

A-stone removal:

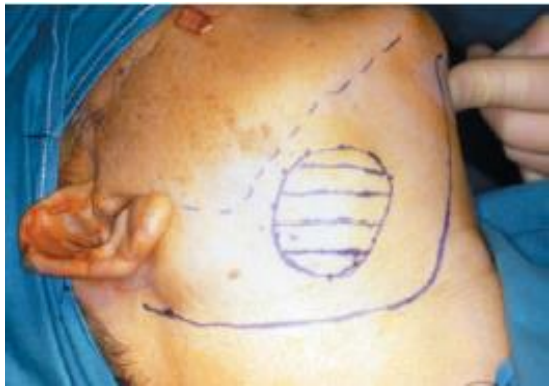
-submandibular gland

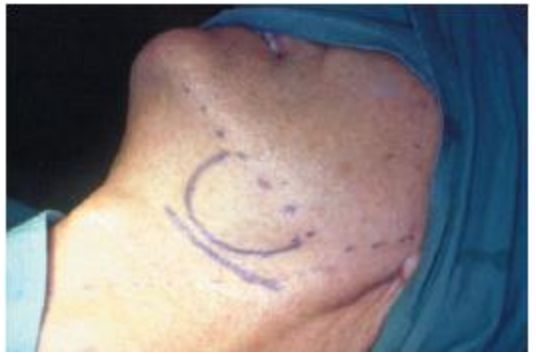


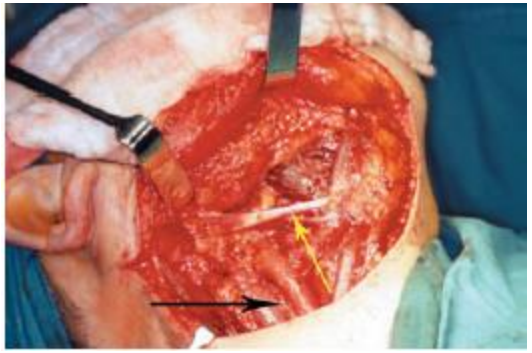
B- TUMOR EXCISION:

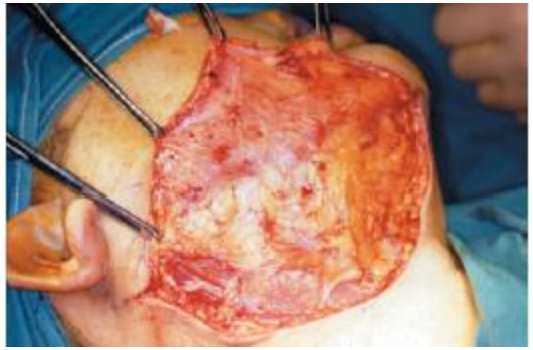
1-SUBMANDIBULAR GLAND

-intracapsular dissection -extracapsular dissection…(suprehyoid neck dissection)



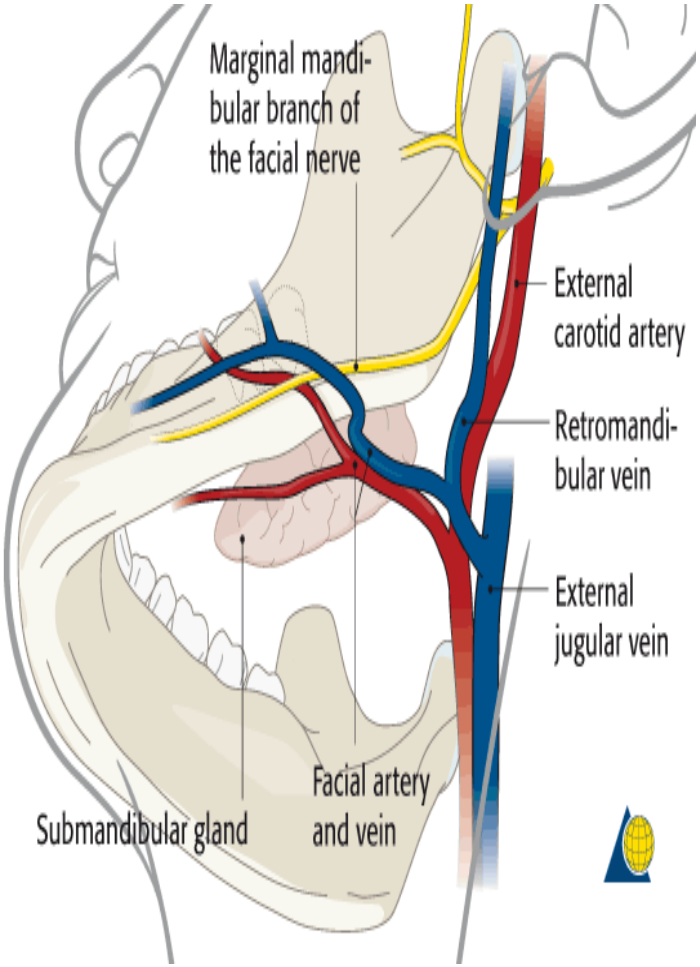






- So what are the indications of removal of the submandibular gland???

- Structures to be preserved:
- Facial nerve marginal branch
- Platysma muscle fibers…
- Facial artery
- Hypoglossal nerve…
- Lingual nerve
- Anterior facial vein should be ligated

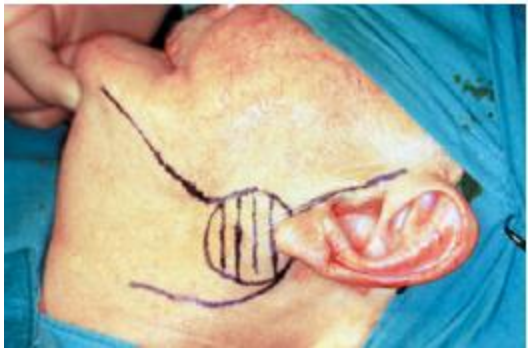


COMPLICATIONS OF THE SURGERY:

- Hematoma
- wound infection
- marginal mandibular nerve injury
- lingual nerve injusry
- hypoglossal nerve injury
- transection of the nerve to the myelohyoid muscle causing submental skin anesthesia…

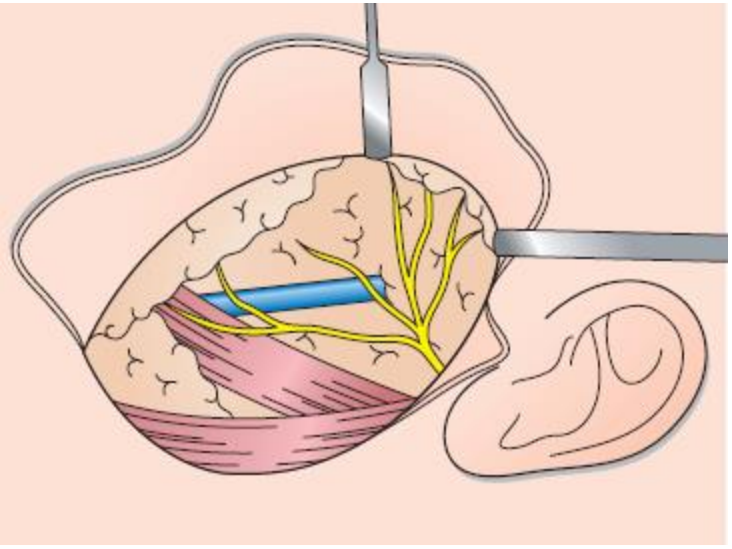
B-PAROTID GLAND:

- **Superficial parotidectomy:**
- If the tumor lies in the superficial lobe a superficial peotidectomy should be performed with preserving the facial nerve…
- It is the commonest procedure…



THE FACIAL NERVE TRUNK

- 1-the inferior portion of the cartilaginous canal called conley's pointer the facial nerve lies 1 cm deep and inferior to it's tip
- 2-the upper border of the posterior belly of the digastric muscle…
- The facial nerve is superior to it…
- A nerve stimulator might come in handy…



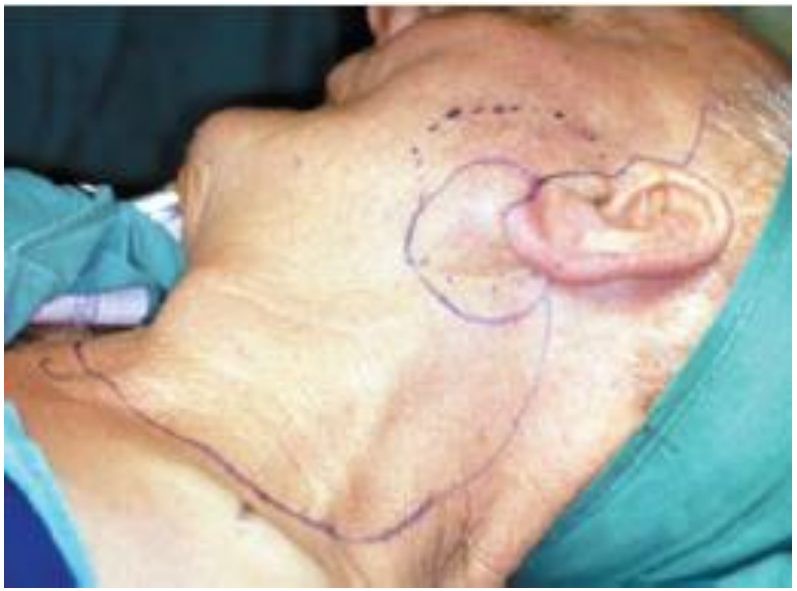
RADICAL PROTIDECTOMY:

Whole gland is remover

Facial nerve is transected

Masseter muscle removed

Neck dissection



COMPLICATIONS:

- Hematoma
- Infection
- Temporary facial nerve weakness.
- Transection of the facial nerve and permenant facial weakness..
- Sialocele…
- Facial numbness.
- Permenant numbness of the ear lobe due to transection of the great auricular nerve…
- Frey’s syndrome

FREY'S SYNDROME:

- Cause…
- Prevention…
- Treatment is incidence…
- Antiperspirants like ALCL
- Denervation by tympanic neurectomy
- Injection of botulinum toxin to the skin area

refrences

- Baily and love’s
- Schwart’s
- Browse
- Manual of clinical syrgery…