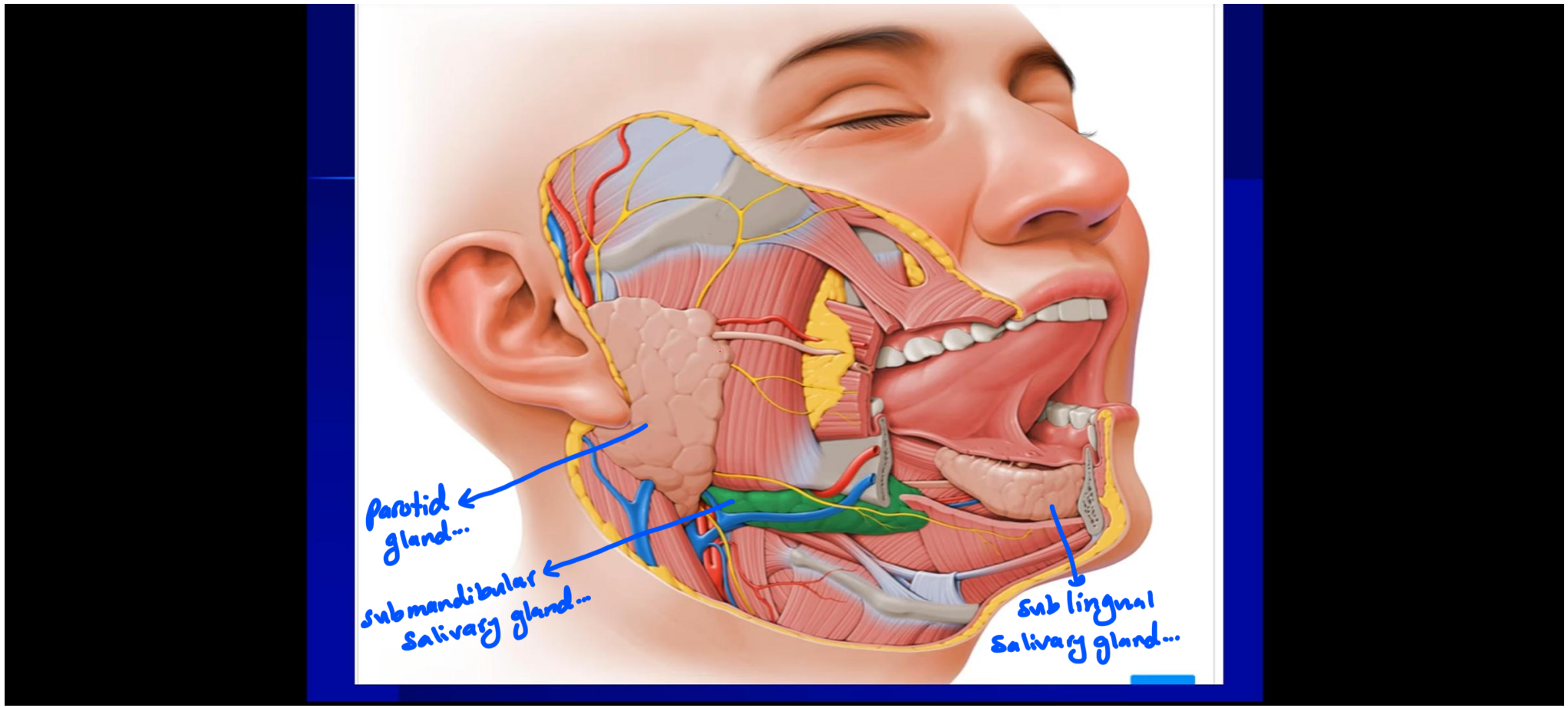
Salivary gland surgery

E J Arteen
FRCSI

Salivary glands

- Exocrine gland with ducts that produce saliva, Pour their secretion to oral cavity.
- Major salivary glands(3Paired). 90%
- Parotid gland. largest one
- Submandibular gland.
- Sublingual gland.
- Minor salivary glands: Tongue ,palate ,palatine tonsil , lip ,cheek..- pharynx - larynx 10% especially the post half of hard palate.

may be 450 gland or more

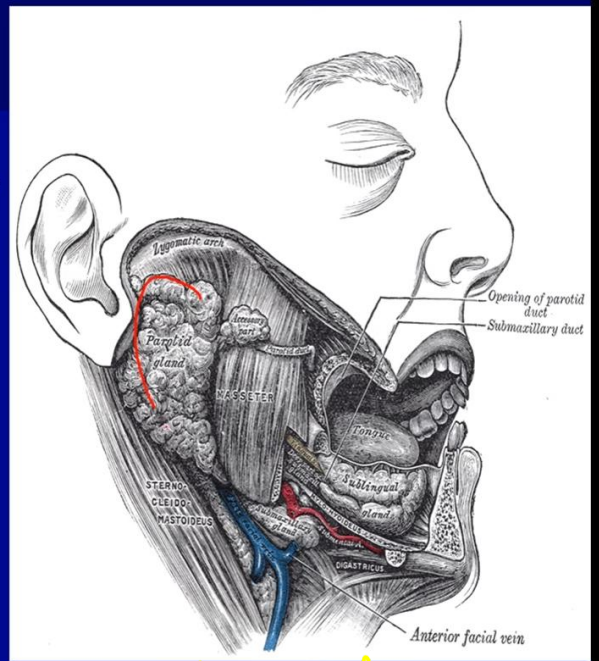

Parotid gland...
Submandibular Salivary gland...
Sub lingual Salivary gland...

* The parotid gland divided by fascial nerve into → deep lobe [20% of the size]
→ superficial lobe [80% of the size]

* The fascial nerve exist from the stylomastoid foramen and penterate the parotid gland. then divided into 5 Branches:-
1- Temporal [to the temporal bone] 3- Buccal [to the mouth]
2- zygomatic [to the eye] 4- cervical 5- mandibular [most important supply the muscle of the lower lip]..
6 if it injured the saliva released from mandibular angle [nerve آلان عكس ينجرح]...

Parotid Gland

- Largest S. G 25 gm in weight .
- Wedge-shaped gland Occupy deep hollow between SMM , and angle of mandible . (SMM = sterno mastoid muscle)
- Anterior part is wrapped, around ramus of the mandible
- Covered by a tough capsule sheath derived from ***ILDCF.*** (called parotid capsule)

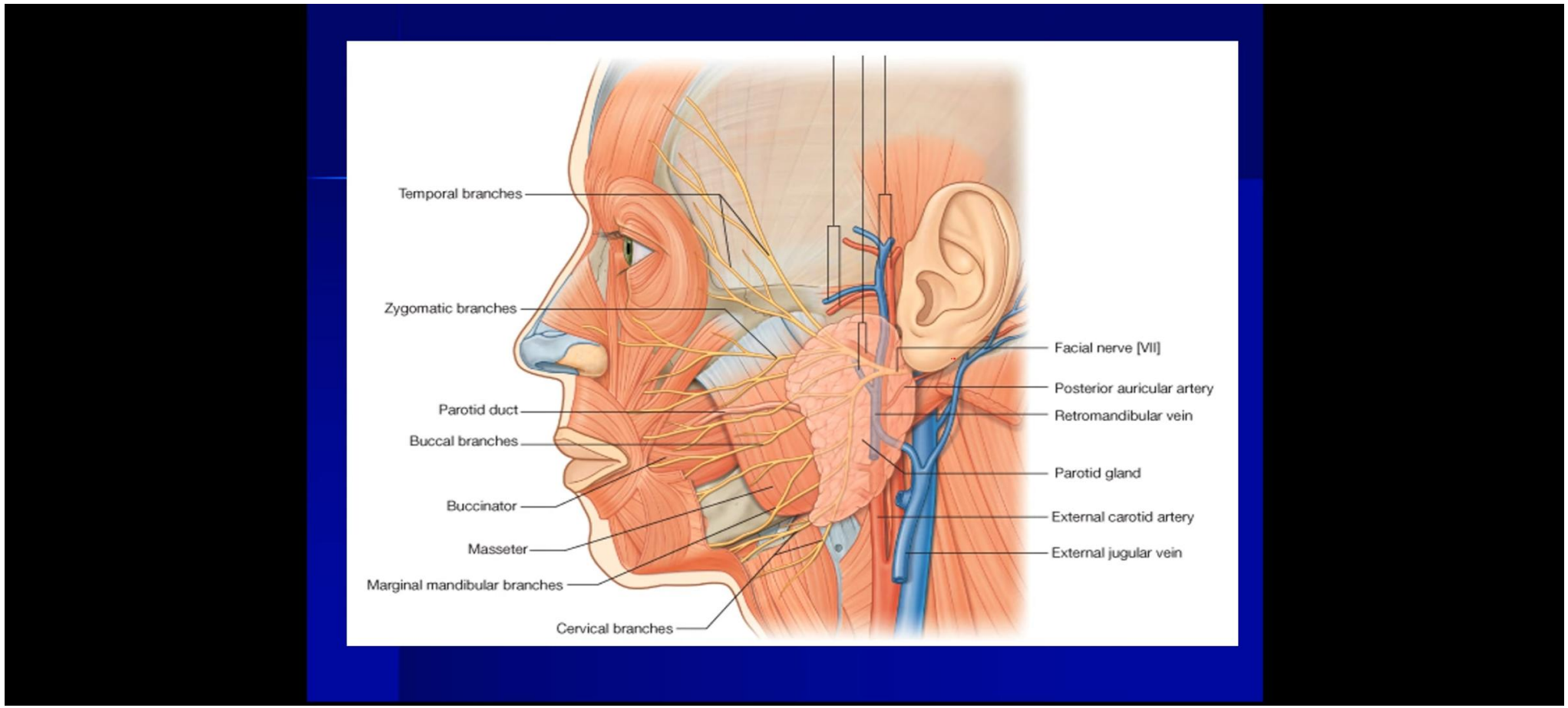


parotid جاي يعمل very severe pain [pus متقيح يطلع منو] — parotid بالـ very tough capsule — capsule فلا تكبر بسبب هيك parotid

* The parotid abcesses is very painfull due to it's location [closed compartment by the deep cervical fascia]

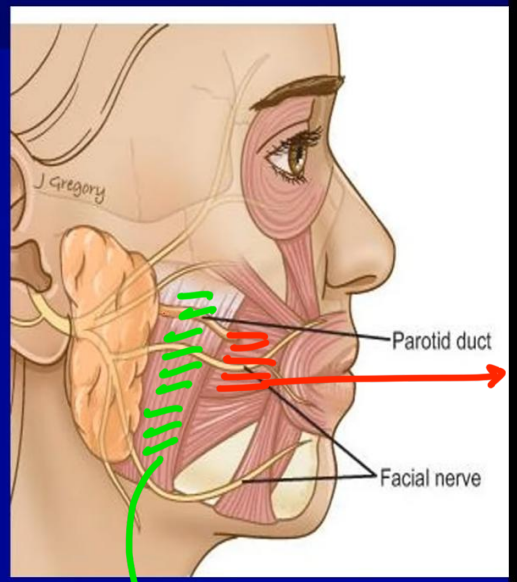
*P. Gland is Divided by Facial n. into superficial 80% & deep part 20%

* The facial nerve is the most superficial structure in the parotid gland... [ant. to it there is 80% of the gland]...
* Below the facial nerve there is retromandibular vein..
* The ext. carotid A. the deepest structure in the parotid gland...
* The mc parotid surgery is:- superficial parotidectomy [sup. to the facial n. بنشيلها]



Parotid Duct (Stensen's duct)

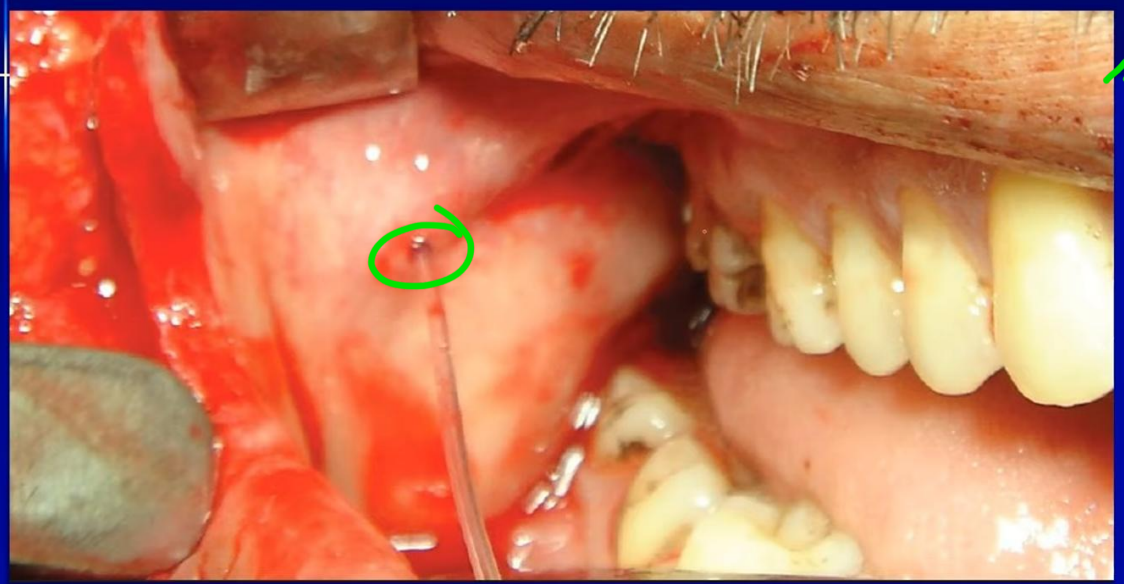
- 6 cm long 3mm in diameter.
- Appear at anterior border of gland thick wall narrow lumen.
- Middle third of a line between zygomatic arch & angle of mouth.
- Pass ant. & horizontal over the massseter m.
- At ant. Border of masseter: pierces buccinators m. to enter the oral cavity.
- Opens into oral cavity opposite to *upper 2nd molar tooth.*



Buccinator muscle

Masseter muscle

Parotid



Cyanogram → put the canula in the Stensen duct [upper 2nd molar tooth]

* If we cut the facial nerve during parotid surgery lead to facial nerve palsy...

lead to eye ulcer ← عيونه بيكون بطلوا قادر يقفلوا - رفع الحواجب لفوق - بيطلع تجاعيد في الجبهة [loss of wrinkles] ← راح يتم فقدان تعابير الوجه

+ the mouth deviated to the normal site ← + بقدرتش ينفخ خده + بقدرتش يضحك



* we close our eye By facial nerve and open it by oculomotor nerve...

* To Know if the parotid mass involved the fascial nerve or not so we ask the pt to rise the eyebrow - close eyes - يغمض [fascial expression M. / يعبر تعبيرات الوجه] etc - يبتسم -

* The lingual nerve origin:- post devision of the mandibular nerve...
  - sensory nerve... + sensory ← [inf. alveolar N. (ده اللي بيدي الاسنان) / reticular N. / one motor N.]

has triple relation with the lingual nerve...

← Submandibular salivary gland

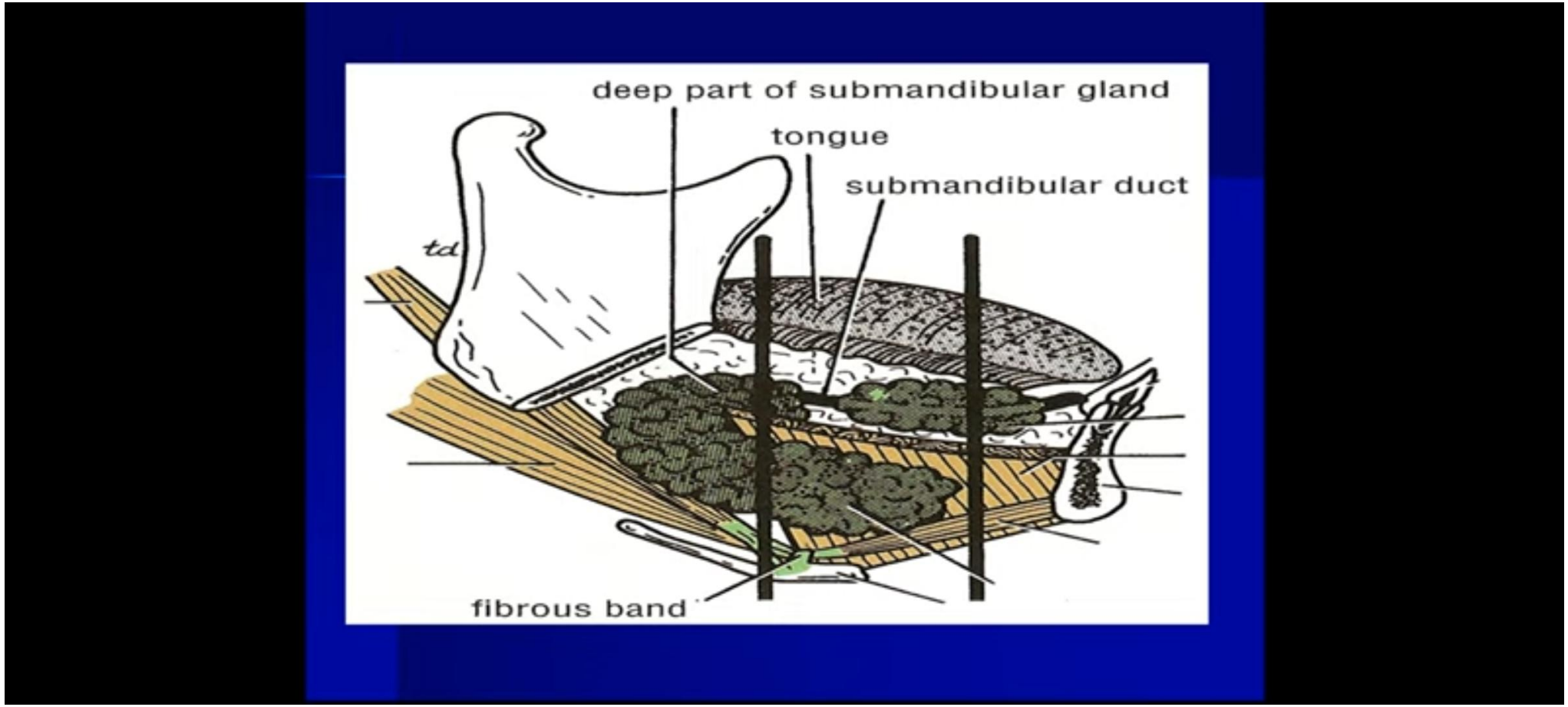
- Lie beneath angle of mandible (half size of parotid G). (15 gm)
- Produce mixed mucus and serous saliva.
- Deep part give rise to Submandibular duct ***(Warton's Duct),*** which can be felt beneath floor of the mouth. → originate from the deep lope of parotid and open in the site of frenulum of the tounge.
- Divided by mylohyoid muscle into superficial and deep lobes. ↳ form the floor of the mouth called diaphragm of the mouth...
- Duct open at the side of frenulum of the tongue.
- Gland supplied by ***Chorda Tympani*** of facial nerve Secreto-motor.

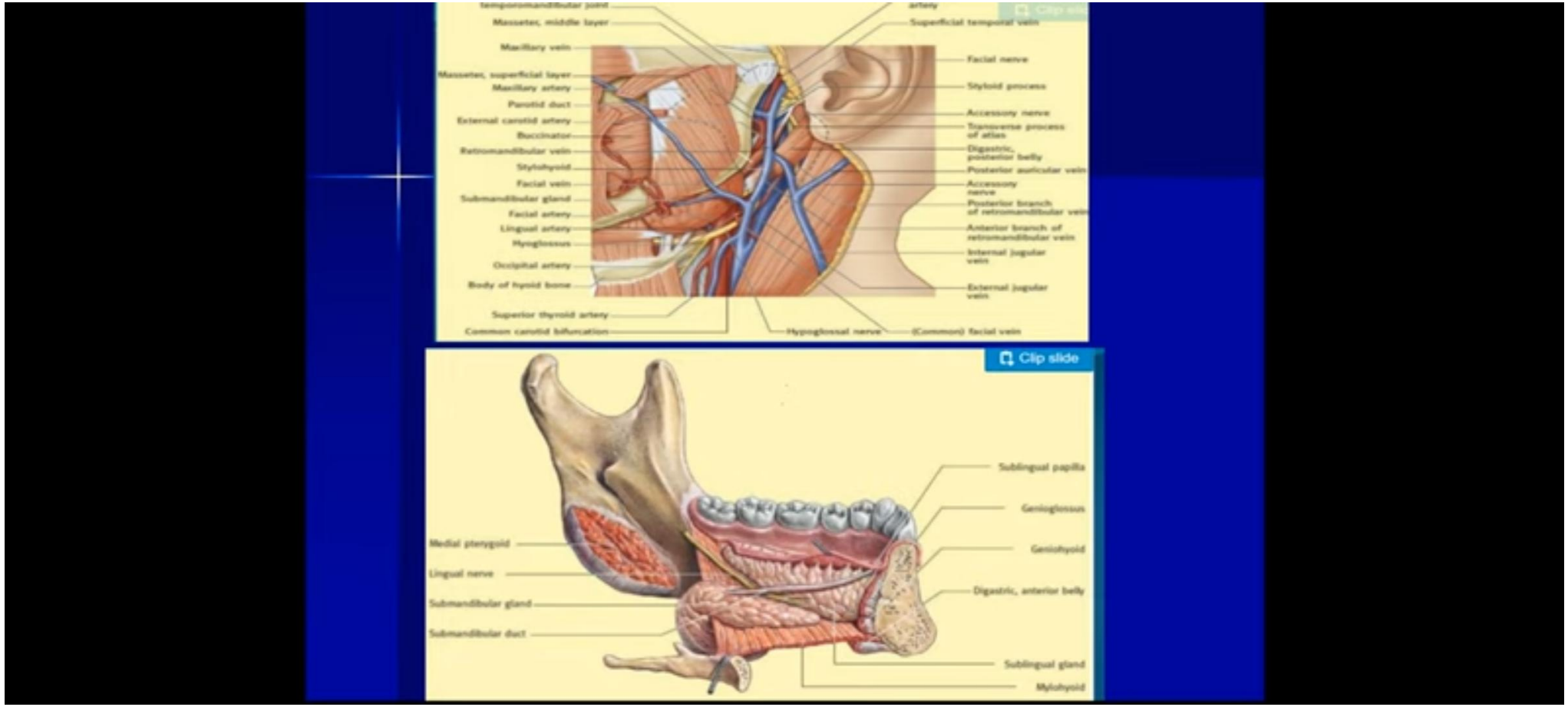
* To diff. between the submandibular salivary gland and submandibular lymph node:-

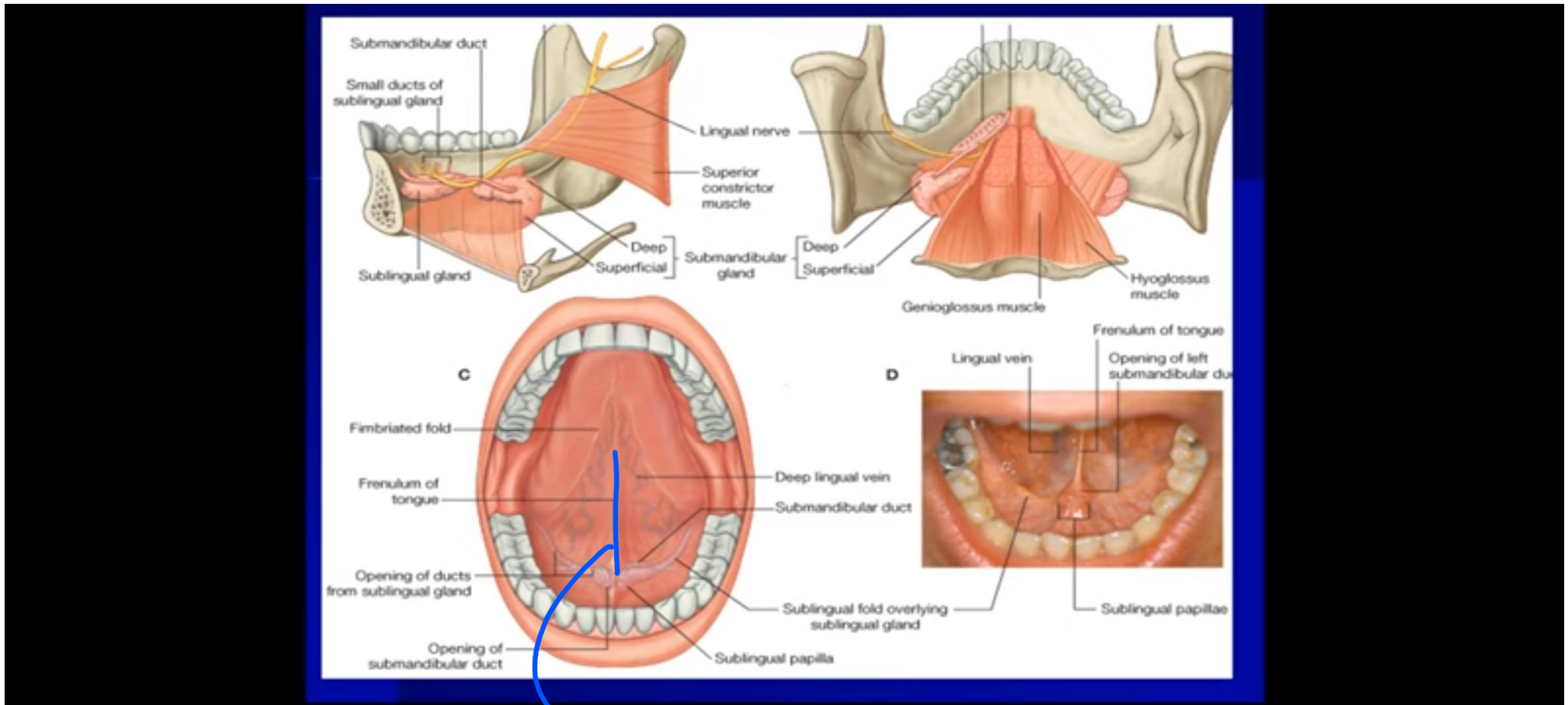
floor of the mouth في neck لما بتتحسس في
[felt by the Bimanual exam]

Only felt from the neck..




deep part of submandibular gland
tongue
submandibular duct
td
fibrous band


Masseter, middle layer
Maxillary vein
Masseter, superficial layer
Maxillary artery
Parotid duct
External carotid artery
Buccinator
Retromandibular vein
Stylohyoid
Facial vein
Submandibular gland
Facial artery
Lingual artery
Hyoglossus
Occipital artery
Body of hyoid bone
Superior thyroid artery
Common carotid bifurcation
Hypoglossal nerve
(Common) facial vein
Superficial temporal vein
Facial nerve
Styloid process
Accessory nerve
Transverse process of atlas
Digastric, posterior belly
Posterior auricular vein
Accessory nerve
Posterior branch of retromandibular vein
Anterior branch of retromandibular vein
Internal jugular vein
External jugular vein
Clip slide
Sublingual papilla
Genioglossus
Geniohyoid
Digastric, anterior belly
Sublingual gland
Mylohyoid
Medial pterygoid
Lingual nerve
Submandibular gland
Submandibular duct



frenulum of the tounge...

* كل ما تصغر الـ salivary gland الـ ⟵ بزيد نسبة الـ Cancer الـ صتحصل فيها ...
- لذلك نسبة الـ parotid cancer ٢ حقه 10-20% ..
- الـ submandibular cancer نسبته 50% ...
- أما الـ minor salivary gland cancer نسبتها 80% ...

Cyst

- Extravasation (Retention) cysts are common and result from trauma to overlying mucosa.
- They usually affect minor salivary glands within lower lip, producing a variable swelling that is painless and translucent.
- Some resolve spontaneously, but most require *Surgical Excision.*
- Recurrence is rare.

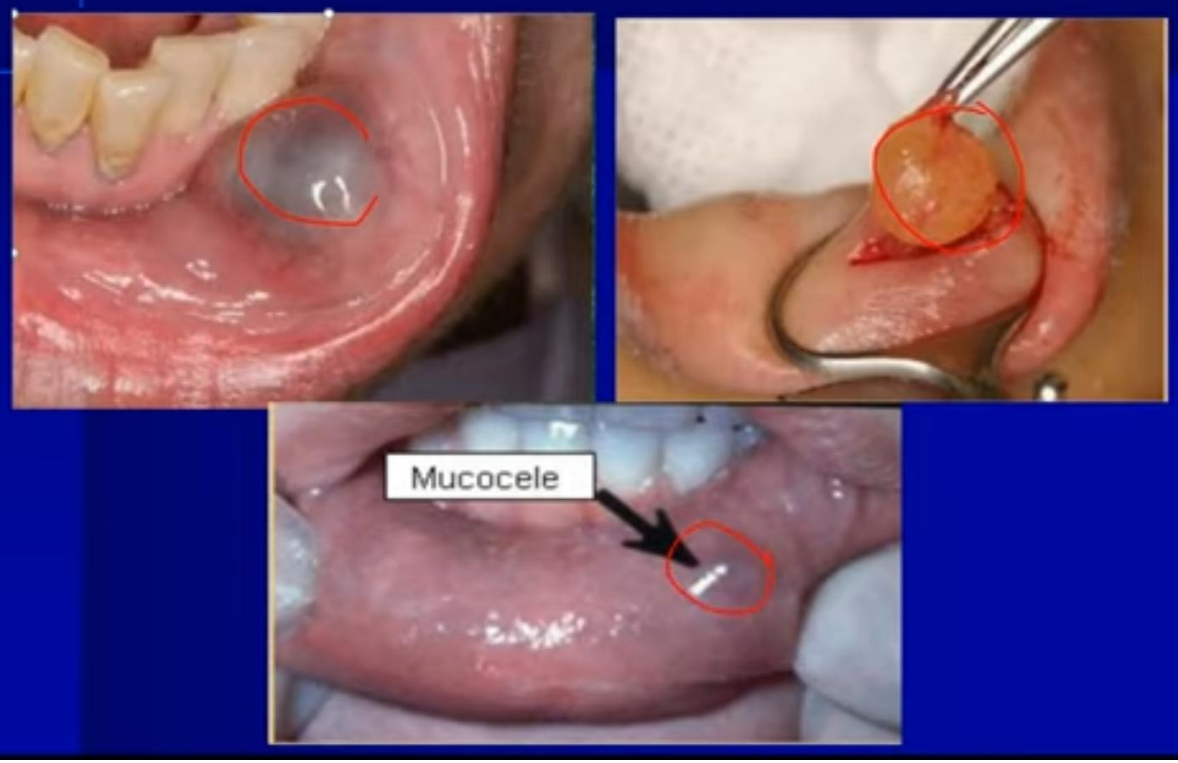


simple ← due to extravasation of Saliva from minor salivary gland..

الـ cyst ٢ بتشيل ٢ ← Salivary gland تقتة

+ close by absorbable suture..

Retention cyst



Ranula

- Cystic swelling in the floor of mouth.
- Usually unilateral to midline. or Bilateral..
- Smooth dome shaped fluctuating painless swelling.
- Mucus extravasation cyst from sublingual salivary gland. [But the cyst from submandibular gland] ⇒ Ranula.
- Usually blue in color of variable sizes.
- Is induced by local trauma (1), and duct rupture (3) followed by mucus spillage to surrounding tissue. and form Ranula shape in the mouth floor
- ***Treatment :*** marsupialization and or excision of sublingual salivary gland

superficial لو كانت

* frog like color ⇒ لضفدع يشبه ما [spot dx for the Ranula]...

Plunging ranula

diaphragm of the mouth then open in the neck...

- Plunging ranula is a rare form of mucous retention cyst. Mucus collects within the cyst, which perforates through the mylohyoid muscle diaphragm to enter the neck.
- Patients present with a dumbbell-shaped swelling that is soft, fluctuant and painless in the neck .
- ***Diagnosis:*** is made on ultrasound or magnetic resonance imaging (MRI).
- ***Excision:*** is usually performed via a cervical approach removing the cyst and both the submandibular or sublingual glands.

Ranula and plunging type

يعني في جزء بارز neck من الجزء اللي تحت اللسان..





Oral Ranula

(a term derived from the Greek word for the swollen area below the mouth of a frog). Oral Ranulas are painless cysts that occur in the floor of the mouth and usually involve the major Salivary Glands. They do not extend beyond the mouth. Oral Ranulas usually present with swelling in the floor of the mouth that is painless. On occasion, they can interfere with speech or chewing.



Inflammatory disorders of the submandibular gland SMG

viral or Bacterial...

- Inflammation of the SMG is termed Sialadenitis. Submandibular *sialadenitis* may be acute, chronic.

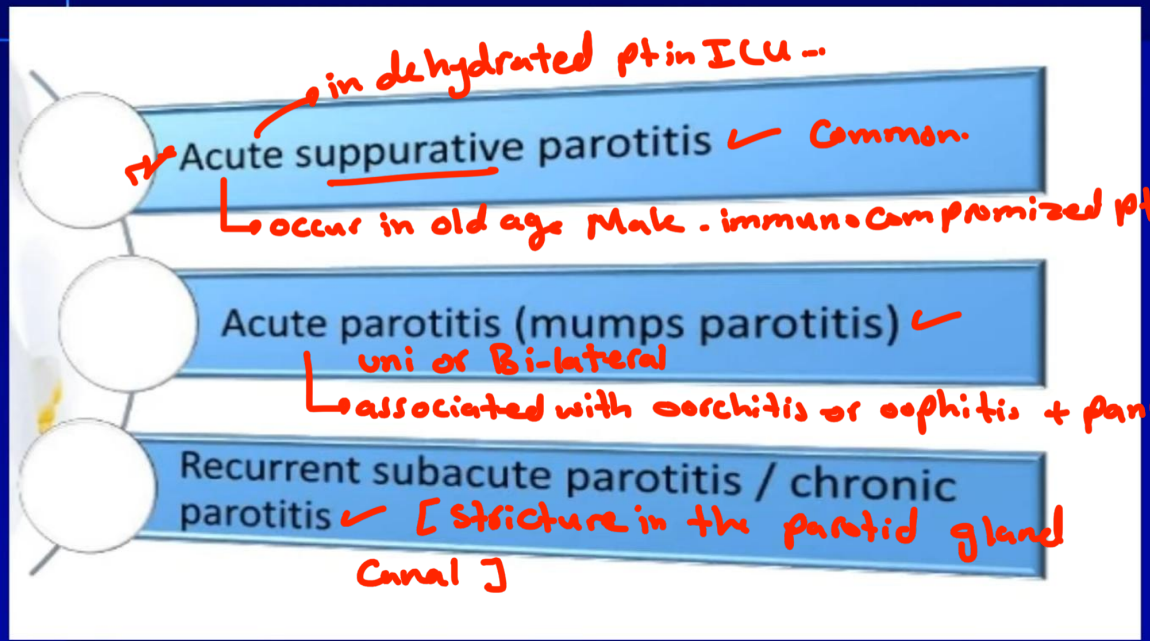
Bacterial due to staph cocoal or streptococcus...

- *Acute submandibular sialadenitis*
- *The paramyxovirus (mumps) is a viral* illness that causes painful tender swollen glands.

more common in parotid gland

- **Bacterial.** Bacterial sialadenitis is more common than viral sialadenitis and occurs secondary to obstruction.

Inflammatory diseases of parotid gland



- Acute suppurative parotitis ← Common.
  - in dehydrated pt in ICU ...
  - occur in old age Male . immunocompromised pt + in ICU + has dehydration...
- Acute parotitis (mumps parotitis) ←
  - uni or Bi-lateral
  - associated with orchitis or oophitis + pancreatitis...
- Recurrent subacute parotitis / chronic parotitis ← [Stricture in the parotid gland Canal]

Parotid abscess

- Spread of infection through Stensen's duct from the mouth cavity.
- Infection to gland through parotid lymph node.







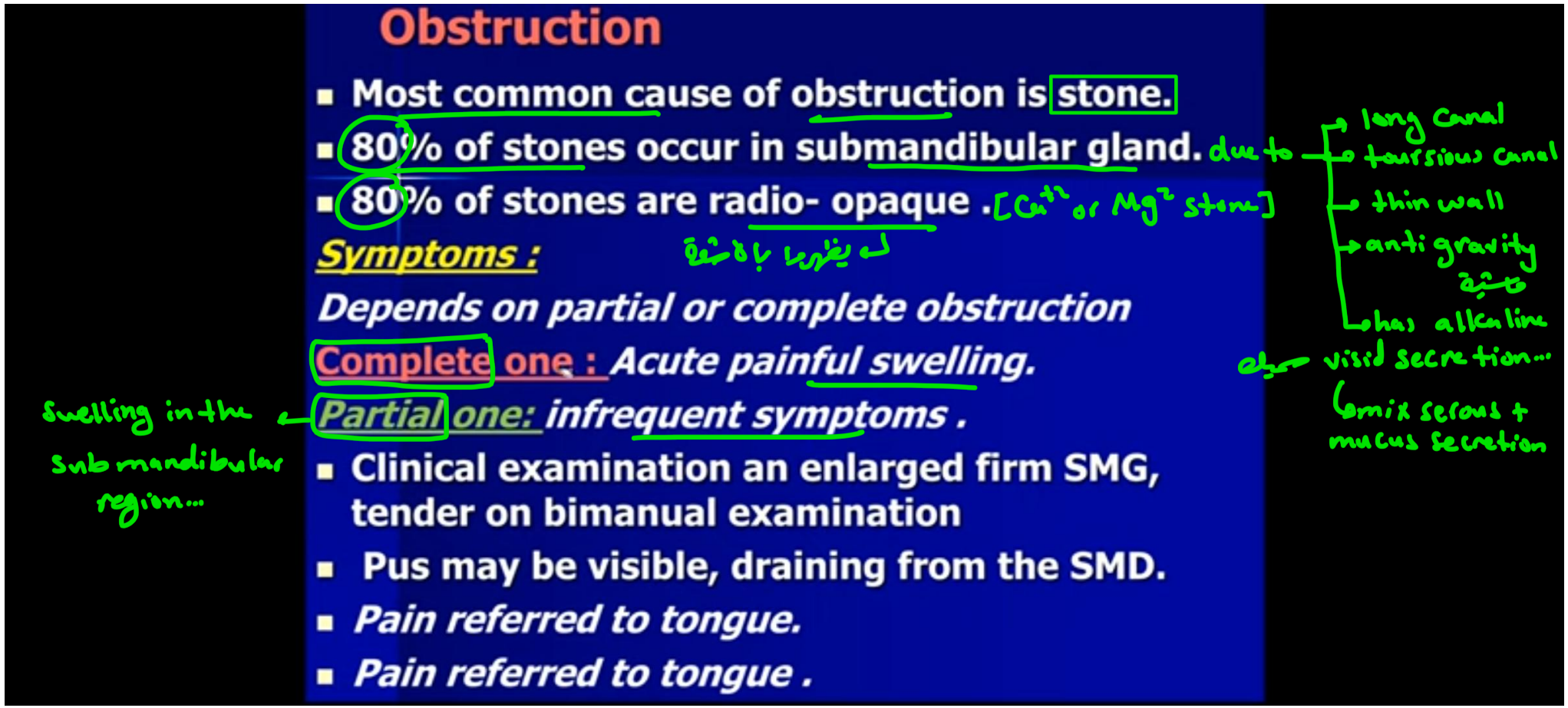






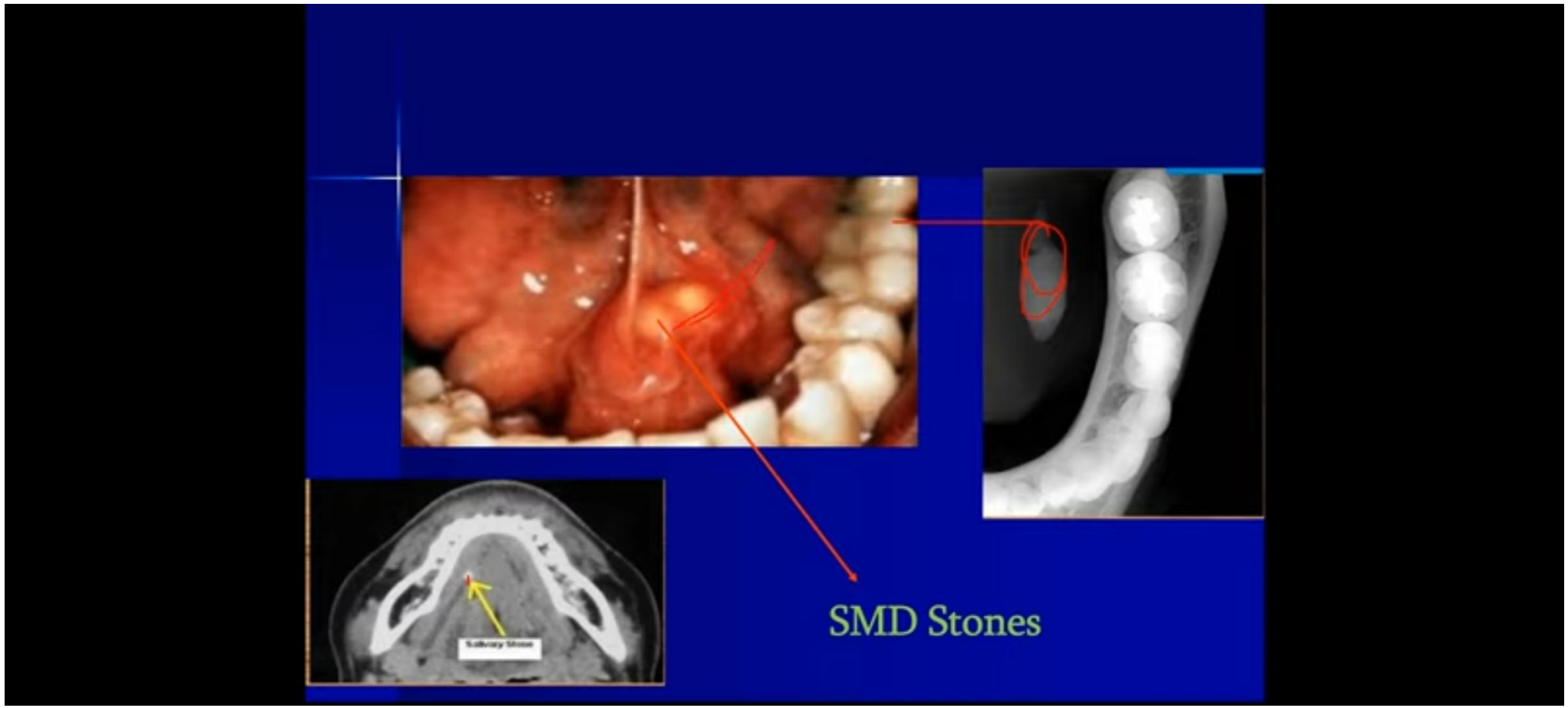
Mumps [very tender - has fever]...
(more serious in adult than children...

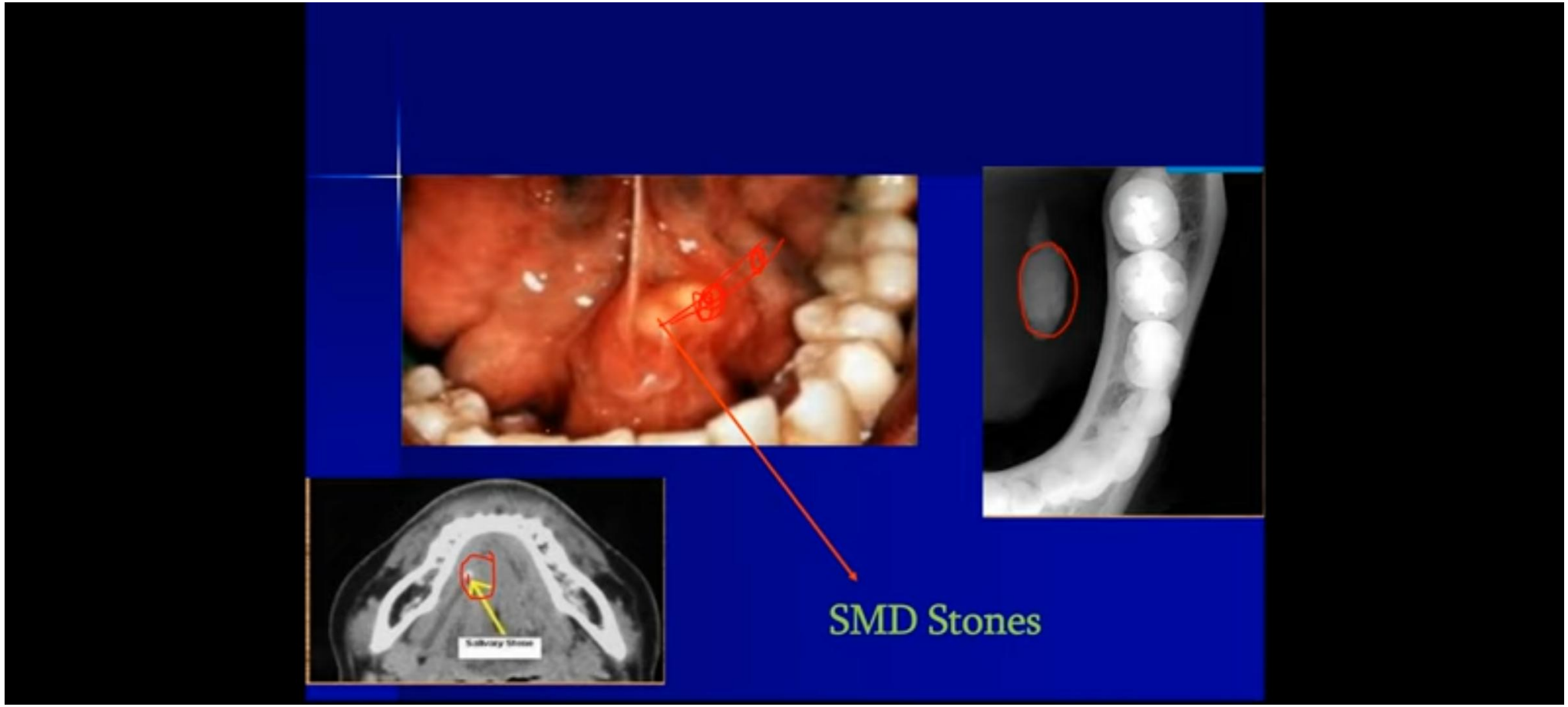
* 70% of resting saliva from submandibular gland..
+ 30% of resting saliva from other salivary gland..
* 50% of slavia during eating from parotid gland..
* The swelling that increase in size during eating and return to the normal size gradually is mostly stone completly obst. the gland..
* if we feel the stone in the mouth floor we open it and resict it...



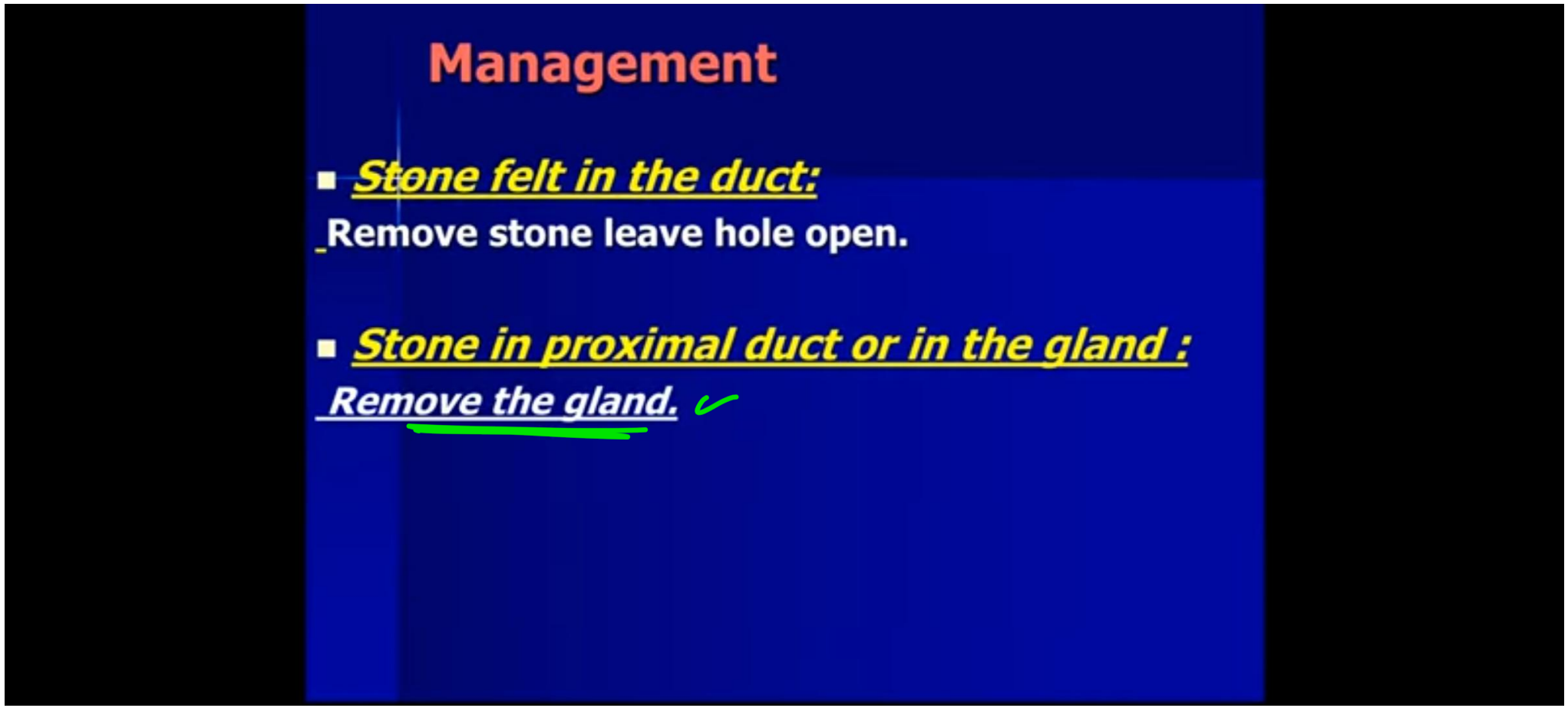
* if the stone in the begining of the sub mandibular duct or inside the gland → [not palpable stone]...

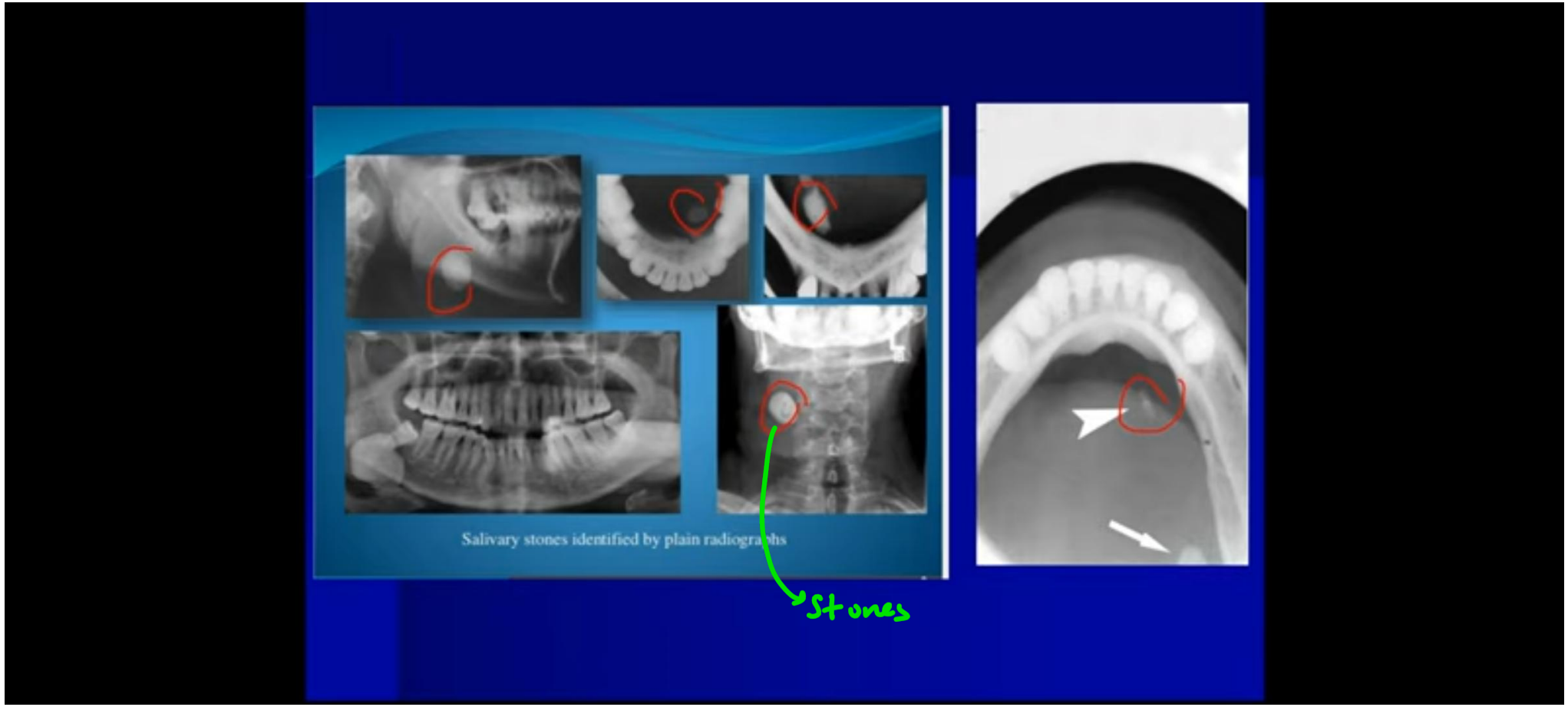
لو بتشيل الـ gland بالكامل برضو منيجي...



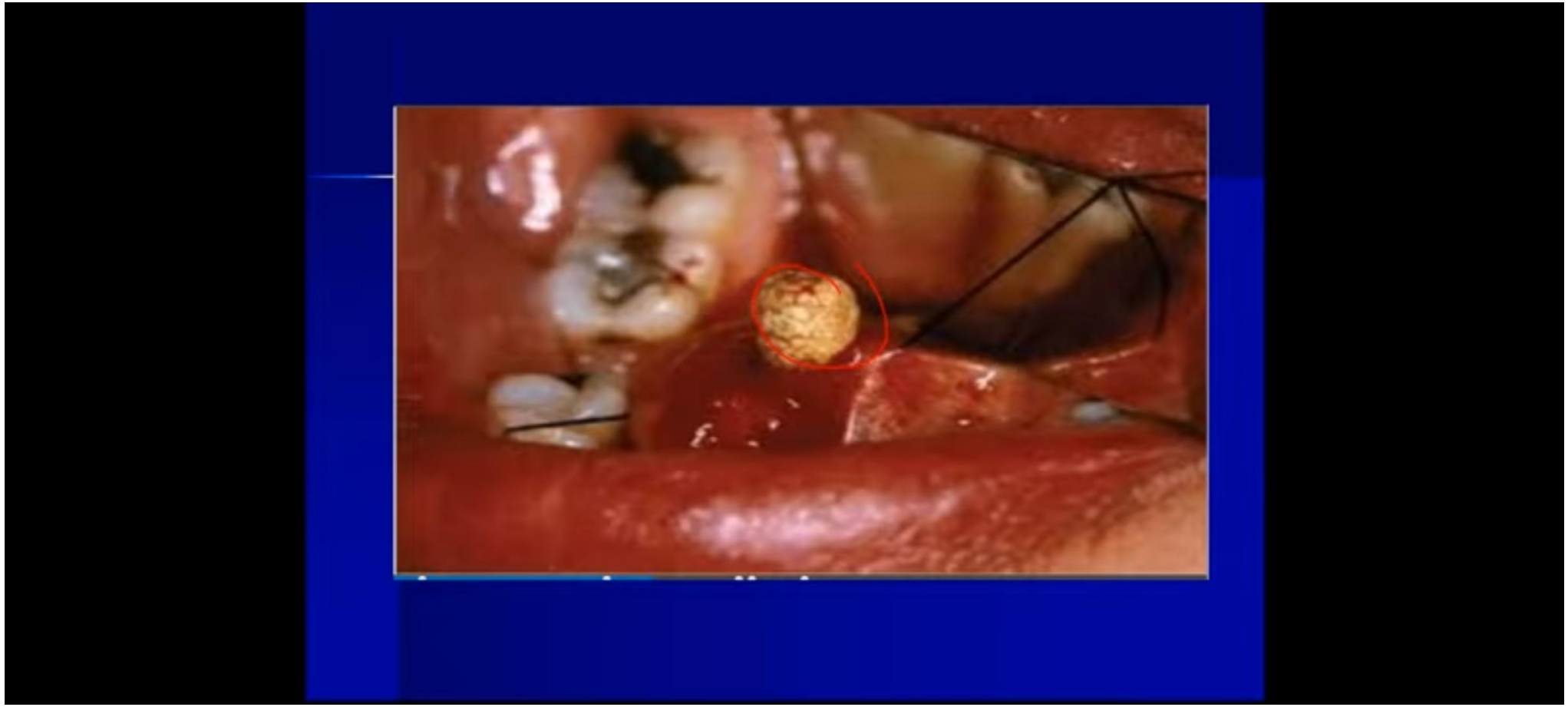

SMD Stones



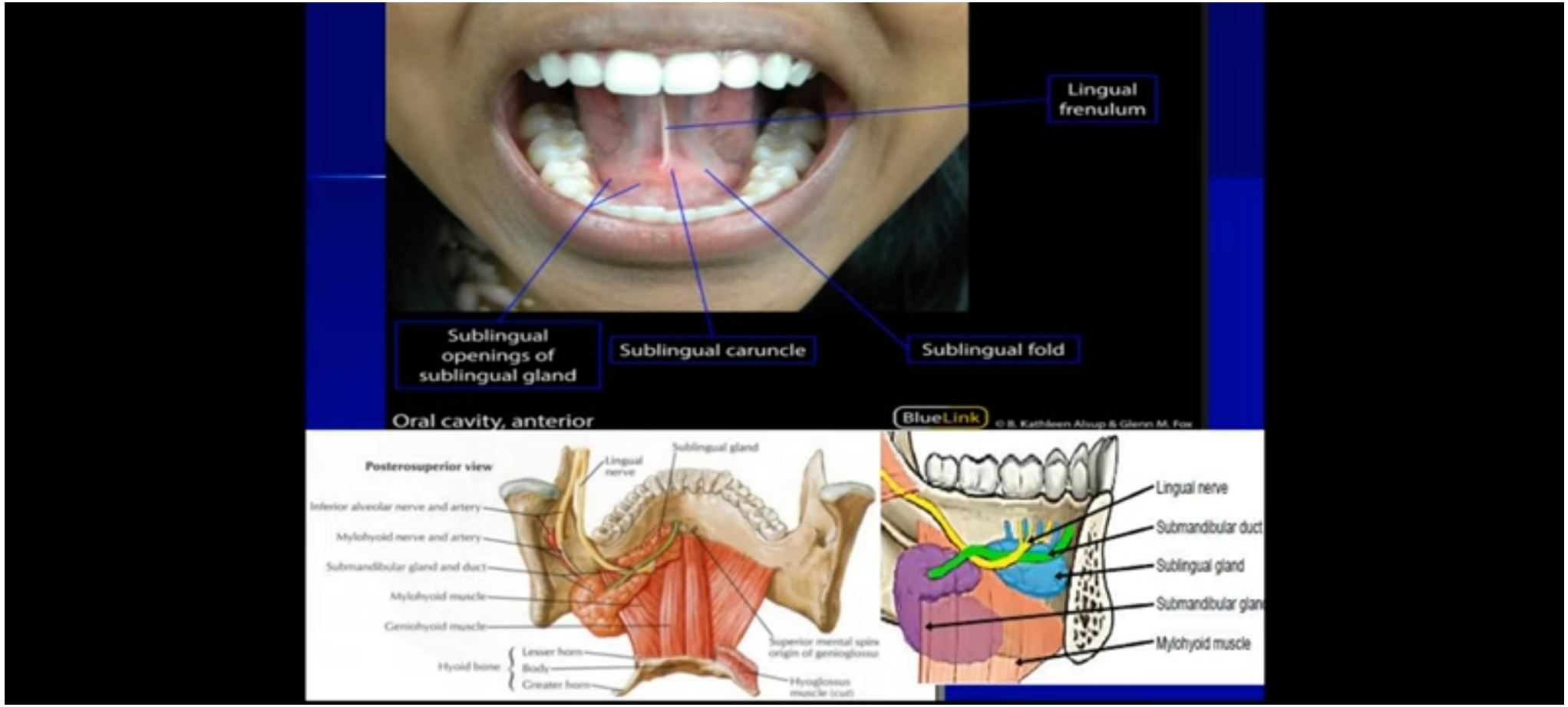

Management
Stone felt in the duct:
Remove stone leave hole open.
Stone in proximal duct or in the gland :
Remove the gland.

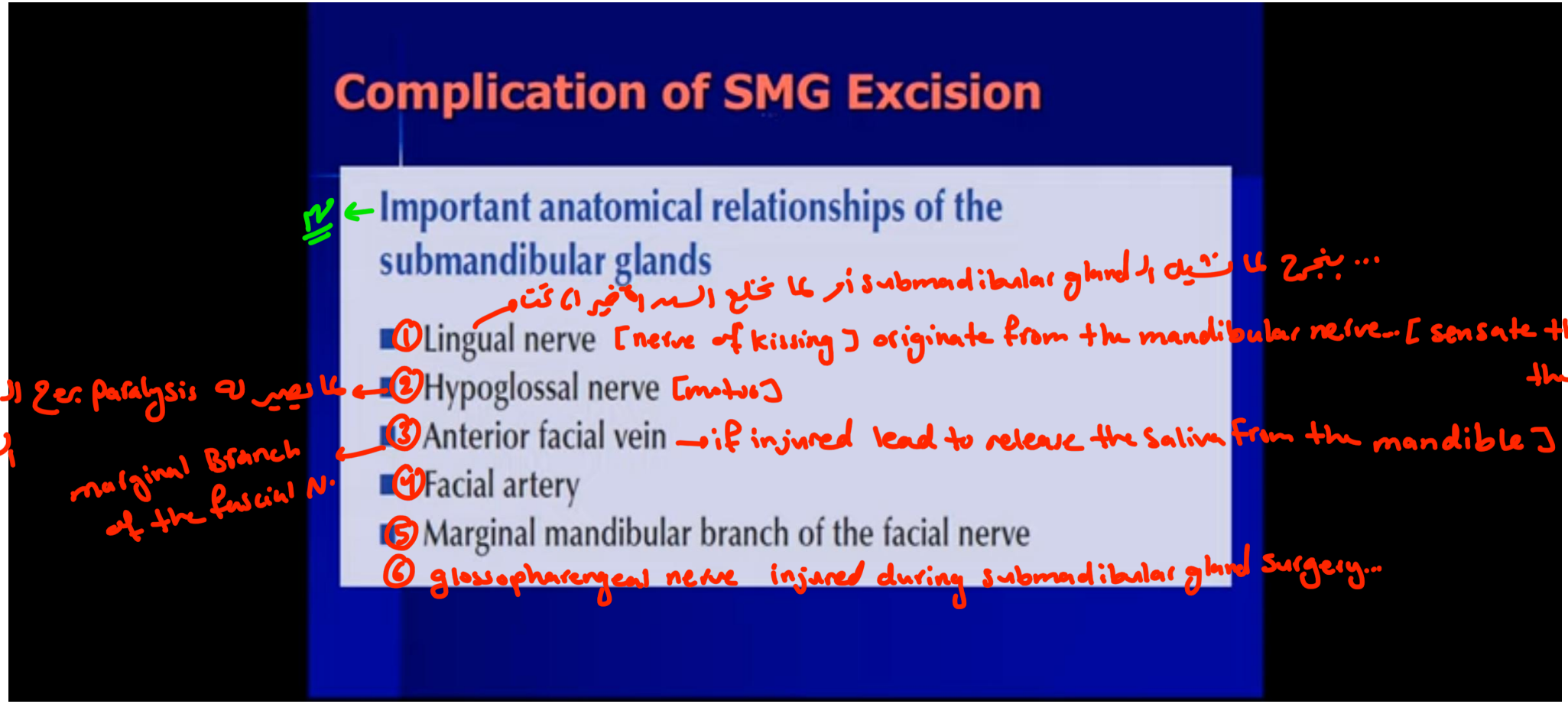

Salivary stones identified by plain radiographs
Stones


Sialadenitis: parotid salivary gland



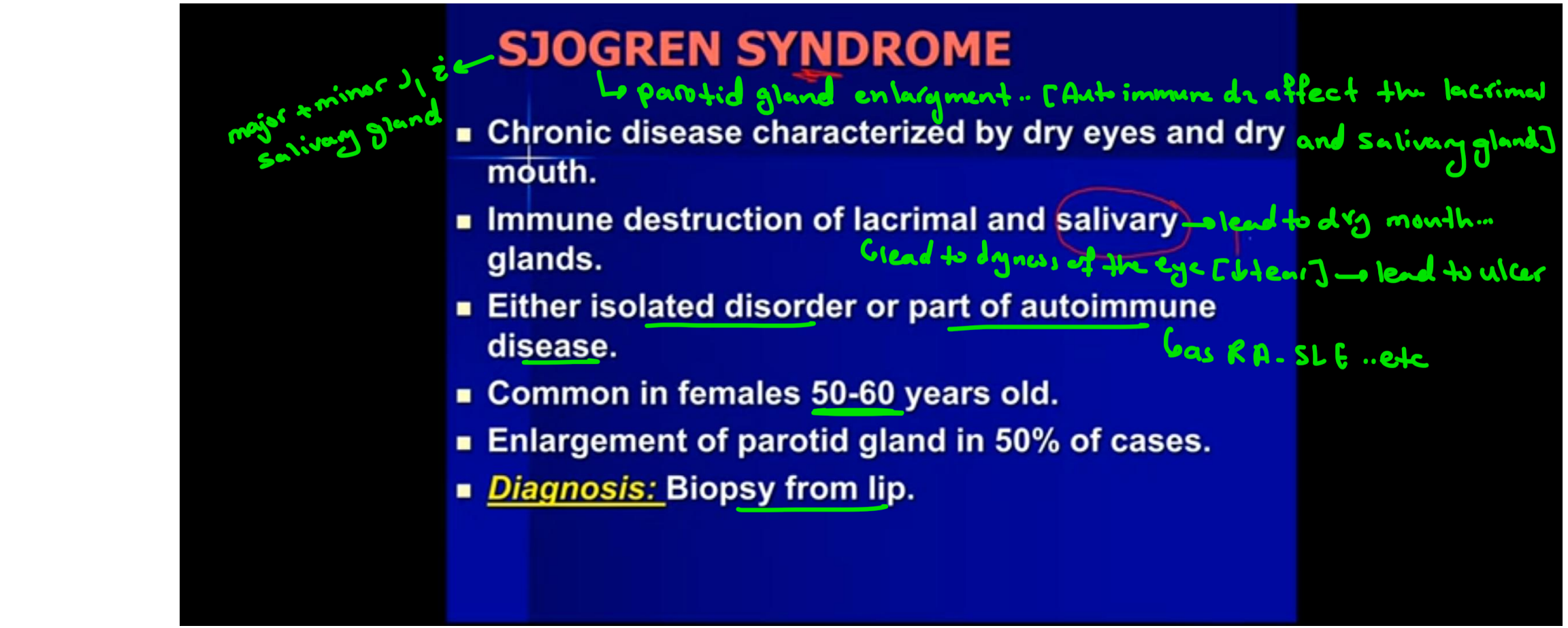

Clip slide
Normal parotid and submandibular sialograms


Lingual frenulum
Sublingual openings of sublingual gland
Sublingual caruncle
Sublingual fold
Oral cavity, anterior
BlueLink
© B. Kathleen Alsup & Glenn M. Fox
Posterosuperior view
Lingual nerve
Sublingual gland
Inferior alveolar nerve and artery
Mylohyoid nerve and artery
Submandibular gland and duct
Mylohyoid muscle
Geniohyoid muscle
Hyoid bone
Lesser horn
Body
Greater horn
Superior mental spine
origin of genioglossus
Hyoglossus
muscle (cut)
Lingual nerve
Submandibular duct
Sublingual gland
Submandibular gland
Mylohyoid muscle


Complication of SMG Excision
Important anatomical relationships of the submandibular glands
1 Lingual nerve [nerve of kissing] originate from the mandibular nerve.. [sensate the ant. 2/3 of the tounge]
2 Hypoglossal nerve [motor]
3 Anterior facial vein → if injured lead to release the saliva from the mandible]
4 Facial artery
5 Marginal mandibular branch of the facial nerve
6 glossopharengeal nerve injured during submandibular gland surgery..

SJOGREN SYNDROME

- Chronic disease characterized by dry eyes and dry mouth.
- Immune destruction of lacrimal and salivary glands.
- Either isolated disorder or part of autoimmune disease.
- Common in females 50-60 years old.
- Enlargement of parotid gland in 50% of cases.
- *Diagnosis:* Biopsy from lip.



Neoplasms of salivary glands

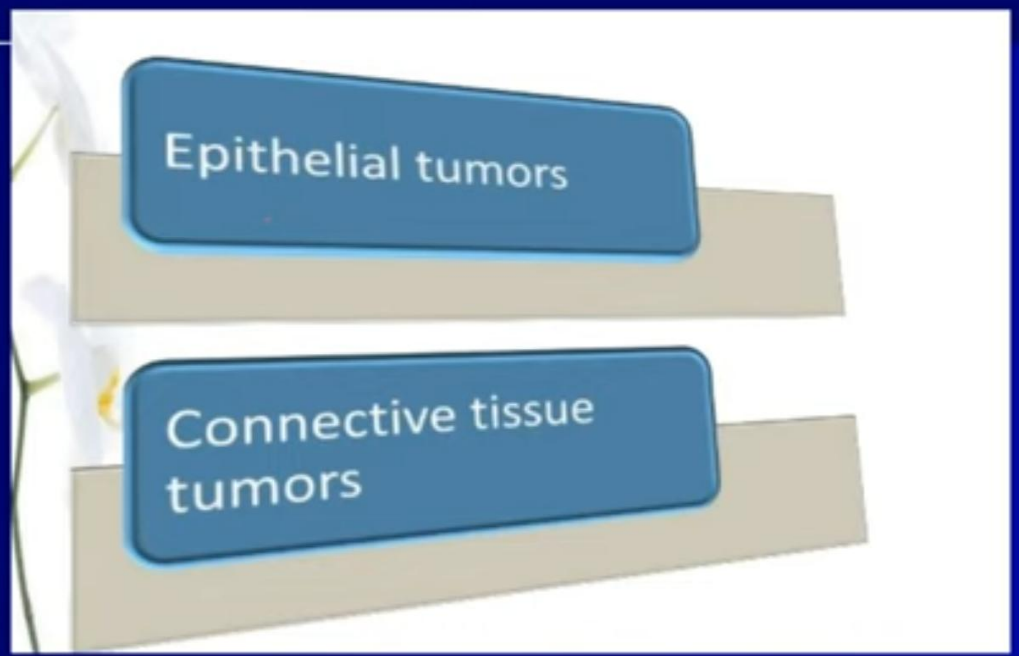
- 75% occur in parotid gland.
- 80% of parotid neoplasms are benign,80% are pleomorphic adenomas.
- 15% of tumors in submandibular salivary gland 50% benign 50% malignant.
- In carcinomas mucoepidermoid ,adeno-cystic and adenocarcinomas.
- 10% in sublingual and minor salivary glands 70% are malignant.

50 % of all salivary gland tumor...

Commonest tumor of salivary gland + parotid gland...

[mc tumor of parotid gland]...

Classifications



Epithelial Tumors

- ***Benign***
  - Pleomorphic adenoma (Mixed tumor).
  - Papillary cyst adenoma (Warthin's Tumor).
  - Basal cell adenoma.



Pleomorphic adenoma

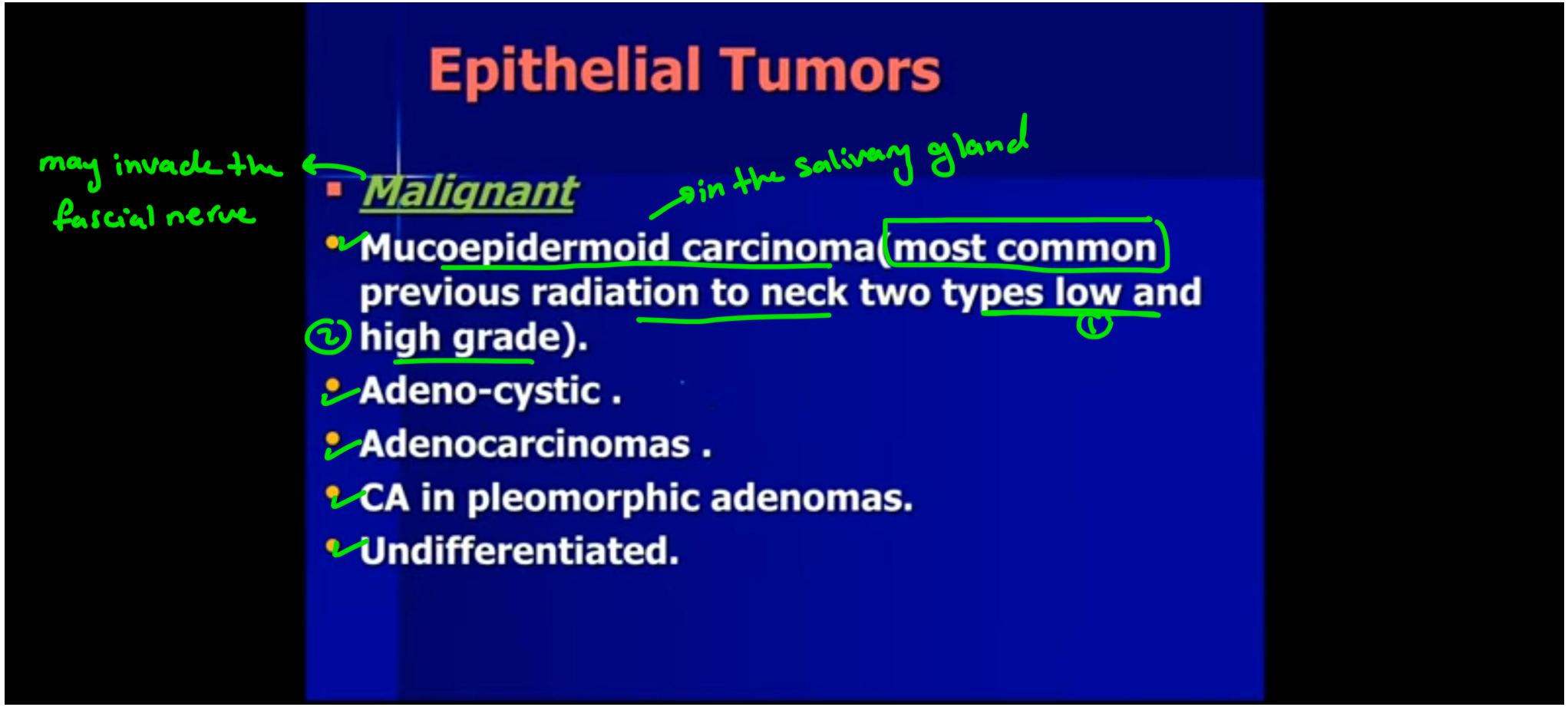
- Most common Benign tumor of salivary gland and mainly in parotid gland 60% of SGTS.
- Most common in parotid tail of superficial lobe 80%.
- Known as Mixed tumor as it is composed of epithelial and mesenchymal component .
- Encapsulated but may send pseudopodia to surrounding gland.
- Present as painless solitary mobile slowly growing tumor over months and years, usually below ear lobules women 40-60of age twice more common.
- *Complication:* Malignant transformation 5%.
- *Diagnosis:* FNA
- *Treatment:* Superficial parotidectomy.


Pleomorphic adenoma
250 × 250

(Warthin') tumor papillary cystadenoma

- 2nd most common benign cystic tumor of parotid gland ,never turn malignant.
- Usually lower pole of gland over angle of mandible .
- Occurs exclusively in parotid gland.
- Occur from salivary tissue remnants trapped in parotid LNs.
- Smoking increase risk 8 times males 50-70 y.
- Bilateral 10% never involve facial nerve.
- ***Diagnosis*** : FNA
- ***Treatment:*** ***Local excision versus*** Superficial parotidectomy.




Epithelial Tumors
may invade the facial nerve
Malignant
in the salivary gland
Mucoepidermoid carcinoma (most common previous radiation to neck two types low and high grade).
Adeno-cystic .
Adenocarcinomas .
CA in pleomorphic adenomas.
Undifferentiated.