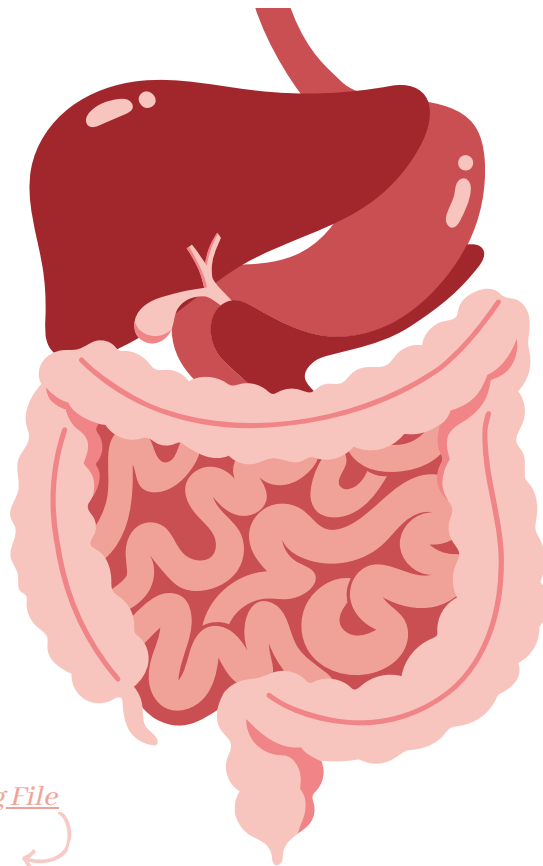




# Anatomy of the Salivary Glands

GNT Block





## Color Index

- ◆ Main Text
- ◆ Female Slides
- ◆ Male Slides
- ◆ Drs' Notes
- ◆ Important
- ◆ Extra info

[The Editing File](#)



# Objectives

-  Describe the anatomy of the **Parotid gland**: position, shape, structures within it, innervation and parotid duct.
-  Describe the anatomy of the **Submandibular and sublingual** salivary glands: location, shape, parts, ducts and innervation of the glands.

This lecture was presented by :

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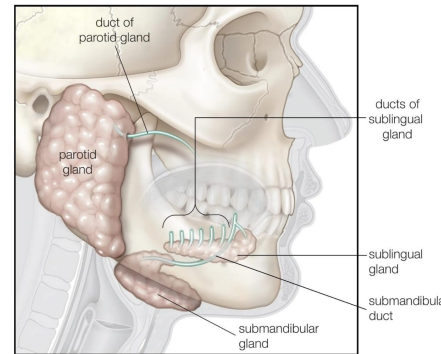
You can find Atlas by [Clicking HERE!](#)

# Introduction

## Salivary Glands

Salivary glands are **paired exocrine glands**, that produce saliva.

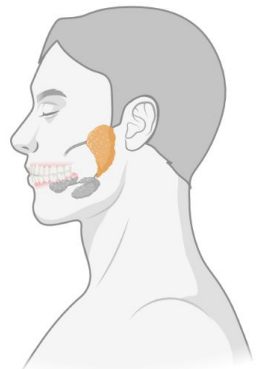
There are 3 large named pairs of salivary glands and multiple minute unnamed glands in the submucosa of the oral cavity (lips, palate & under surface of the tongue).



## Salivary glands

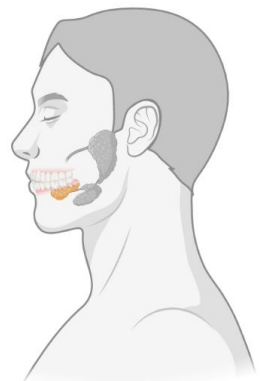
### Parotid

Produces a **serous**, watery secretion.



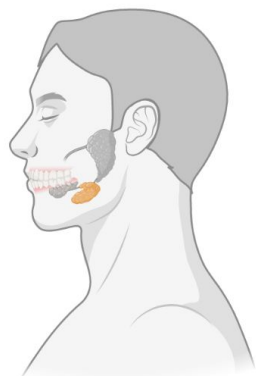
### Sublingual

Secrets saliva that is predominantly **mucous** in character.



### Submandibular

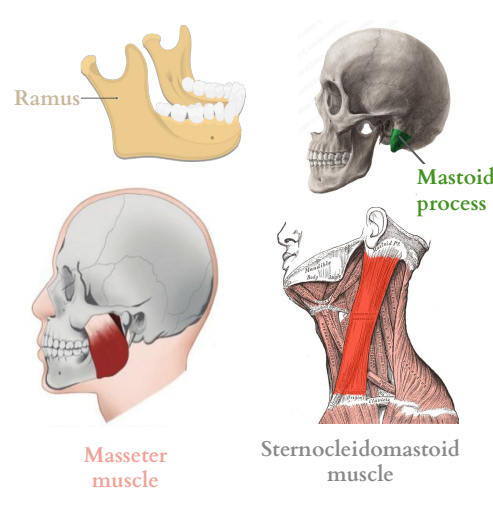
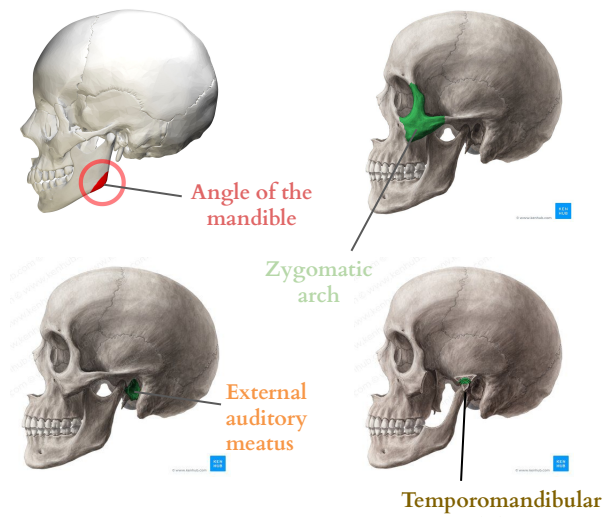
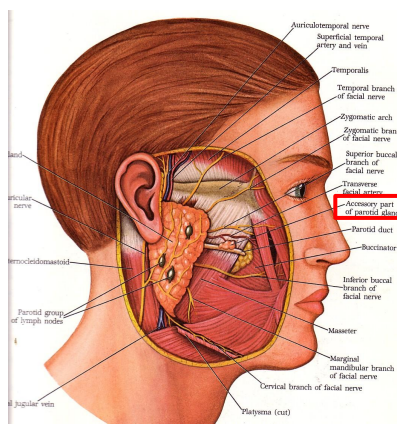
Produces a **mixed serous & mucous** secretion.



# Parotid Gland

## Parotid Gland

Largest salivary gland. Formed entirely of serous acini.

Position Wedged between:		Shape: Triangular		Surfaces
Anteriorly	Posteriorly	Apex	Base	
Mandibular ramus & Masseter muscle	Mastoid process & Sternocleidomastoid muscle (SCM)	behind angle of the mandible	directed upward just below the: Zygomatic arch, External auditory meatus & Temporomandibular joint (TMJ).	1- Superficial 2- Anteromedial 3- Posteromedial
				

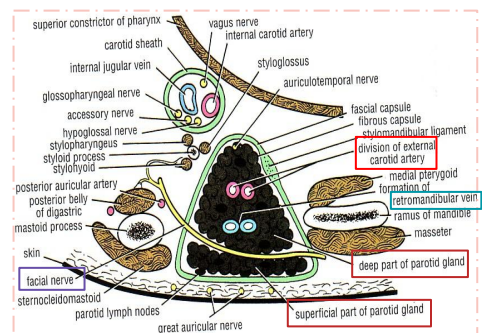
## Accessory part

A small part that is separated from the main gland.

### Capsule

The capsule is tight and derived from deep cervical fascia of the neck.

- ❖ The gland is divided into superficial & deep parts, by the facial nerve fibers

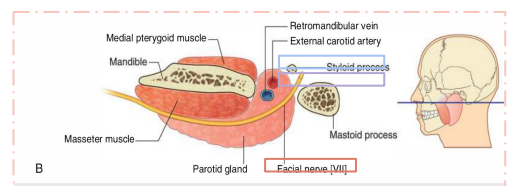
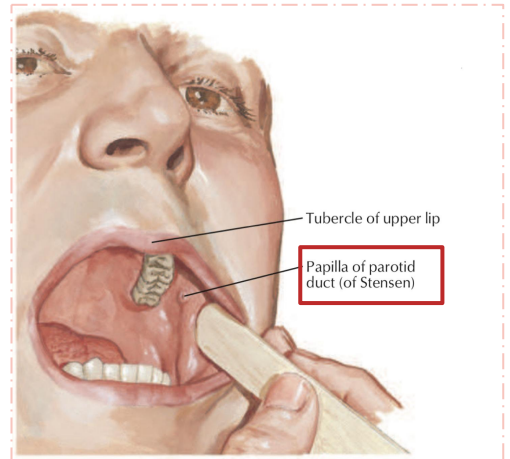


# Parotid Gland

## Parotid duct (of Stensen)

MCQ

- ❖ Opens into the vestibule of the mouth on a small papilla, opposite the **upper second molar (maxillary) tooth**.
- ❖ 5 cm long.
- ❖ Runs on the masseter muscle then passes thru buccal pad of fat, then pierces the buccinators muscle.



## Structures in parotid gland

### From superficial to deep

1

Facial nerve

2

Retromandibular vein

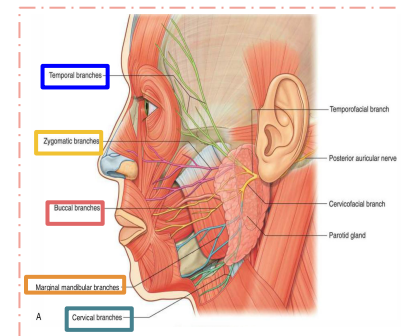
3

External carotid artery

### 1- Facial nerve

- It's the **most superficial** Structure.
- It divides the gland into **superficial & deep** parts.
- It gives 2 Branches before it enters the gland and 5 branches within the parotid:

1-Temporal 2-Zygomatic 3-Buccal 4-Mandibular 5-Cervical



### 2- Retromandibular vein

(post. facial vein): اسم ثاني له

- Intermediate in position
- **Formed** by the union of maxillary & superficial temporal veins. **Within the gland/Before it leaves the gland** it's **divided** into anterior & posterior branches.

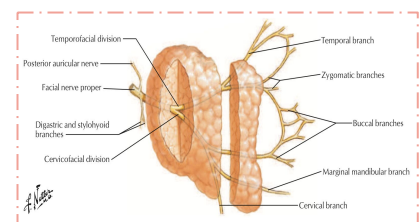


Females' dr's note: Retromandibular vein is special that it divides into 2 branches, Anterior and posterior (Special because usually veins unite and not divide):

- 1-Anterior branch => joins the anterior facial vein => form common facial vein => drains into IJV
- 2-Posterior branch => joins posterior auricular vein => drains into EJV

### 3- External carotid artery

- **Most deep.**
- It's divided into maxillary & superficial temporal arteries.



# Parotid Gland

## Blood supply

### Arterial supply

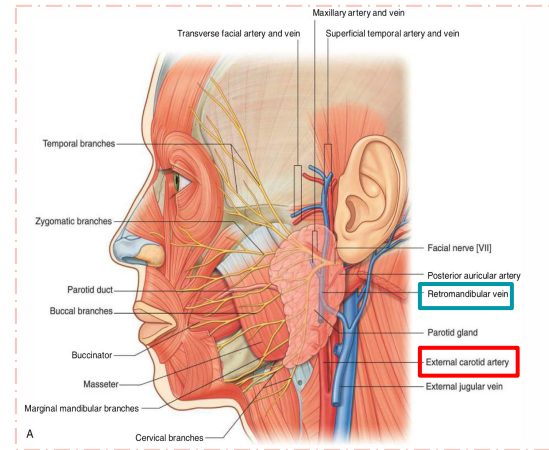
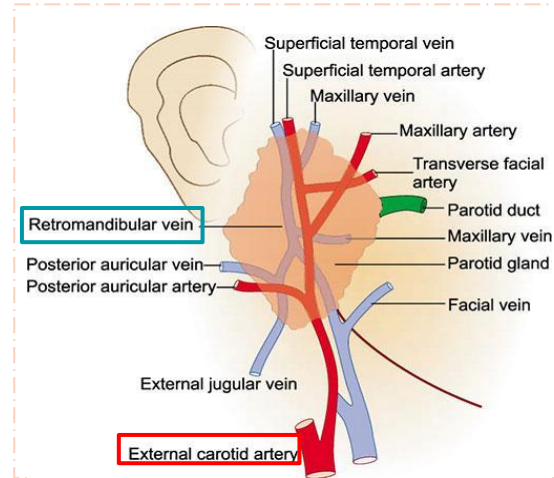
**External carotid artery** & its branches.

### Venous drainage

**Retromandibular vein.**

### Lymphatic drainage

Parotid (preauricular) & thence to upper group of deep cervical lymph nodes.



## Nerve supply

### Parasympathetic (secretomotor):

#### A- Preganglionic

From **Inferior salivary nucleus** it enters **IX CN** **tympanic nerve** through the **glossopharyngeal nerve**, then to **tympanic plexus** then enters the **lesser petrosal nerve** going to **otic ganglion**.

#### B-Postganglionic

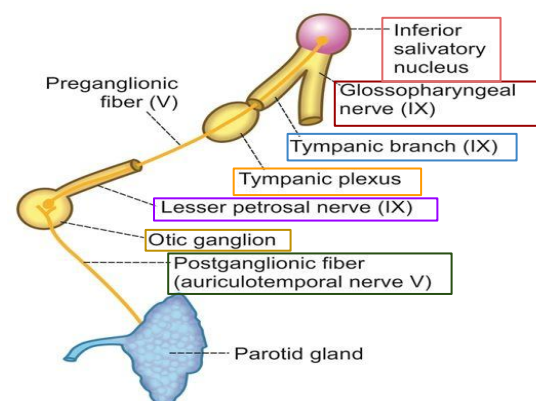
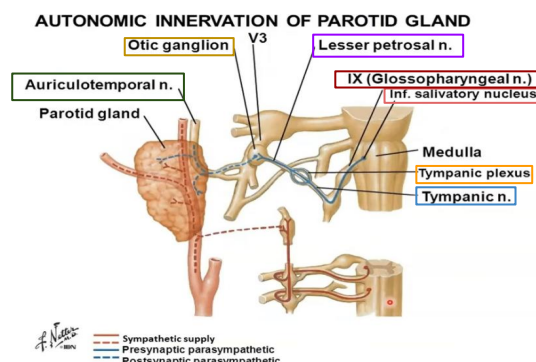
After it reaches the **otic ganglion** it's running in **Auriculotemporal nerve** until it reaches the **parotid gland**.

### Sympathetic

From plexus around **external carotid artery**.

Remember the secretomotor pathway of the parotid gland with the mnemonic "IT has Lesser Options Anywhere", which stands for:

1. Inferior salivary nucleus
2. Tympanic branch of 9th nerve
3. Lesser petrosal nerve
4. Otic ganglion
5. Auriculotemporal nerve



## Mumps

Viral disease caused by the mumps virus.

### Initial signs & symptoms

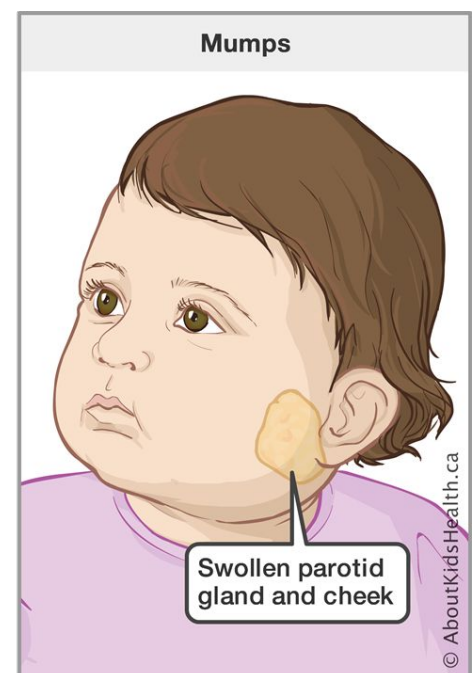
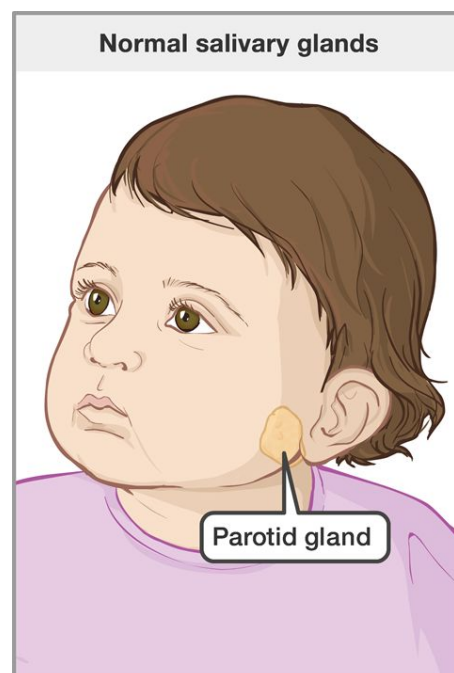
often include fever, muscle pain, headache, poor appetite, and feeling tired.

### In Adults

About 2 to 3 out of every 10 adolescent or adult men who have mumps may experience painful swelling of the testicles

if he's before 11 years and has pain in testicles خلي ولي But if he's older than 11 it can cause **infertility**

Usually followed by painful swelling of one or both parotid salivary glands.



A message from the future



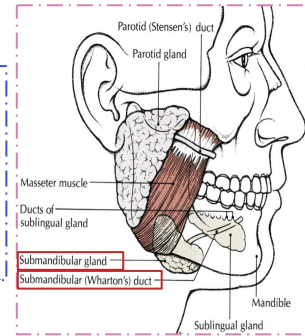
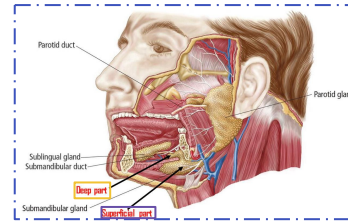
**It's Really IMPORTANT to know that Mumps Targets the parotid gland. Also know the nerve supply of it.**



# Submandibular Gland

## Site

Located deep to the **body of the mandible**.

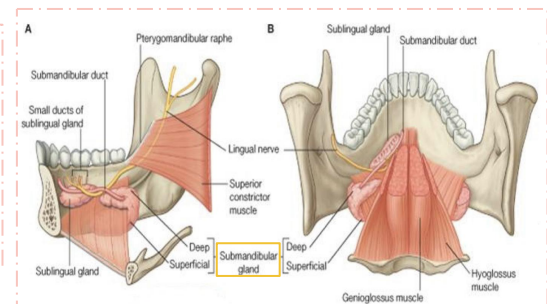
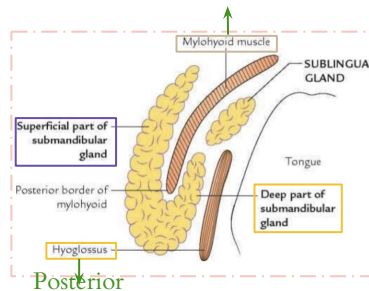


## Parts

- ❖ Formed of 2 parts:
- ❖ Both parts continuous round the **mylohyoid muscle**.

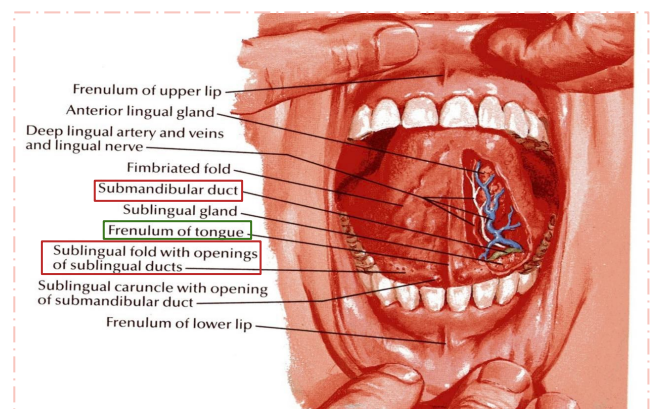
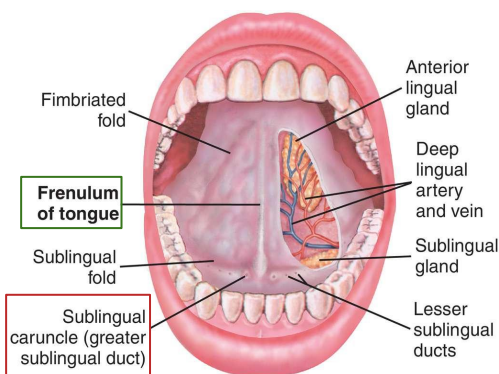
### 1 Large superficial part

### 2 Small deep part



## Submandibular duct (of Wharton)

- 1 The **duct** emerges from the **deep part** of the gland.
- 2 It passes forward **along the side** of the tongue, **under the mucous membrane** of the floor of the mouth.
- 3 It is **crossed laterally** by the **lingual nerve**
- 4 **Opens** on the summit of a small **sublingual papilla**, which lies at the side of the **frenulum** of the tongue.



## Clinically

- ❖ It is **important to remember** that the submandibular duct can be palpated **through the floor of the mouth** alongside the tongue.
- ❖ **Saliva** can usually be seen emerging from the **orifice** of the duct.



# Submandibular Gland

## Blood supply & Lymphatic drainage

1

Arterial supply:  
Facial artery.

2

Venous drainage:  
Facial vein.

3

Lymph drainage:  
Submandibular  
lymph nodes

## Calculus formation

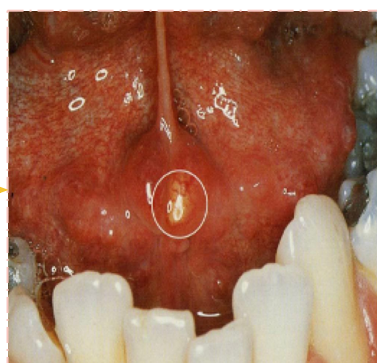
The submandibular duct is a **common site of calculus** formation.

The presence of a **tense swelling below the body of the mandible**, which is: **Greatest before or during** a meal (because this is when saliva secretion is at its greatest) and **Reduced** in size or **absent between** meals, is diagnostic of the condition.

**Examination** of the floor of the mouth will reveal:  
**Absence of ejection** of saliva from the orifice of the duct of the affected gland.

Frequently, the stone can be palpated in the duct, which lies below the mucous membrane of the floor of the mouth

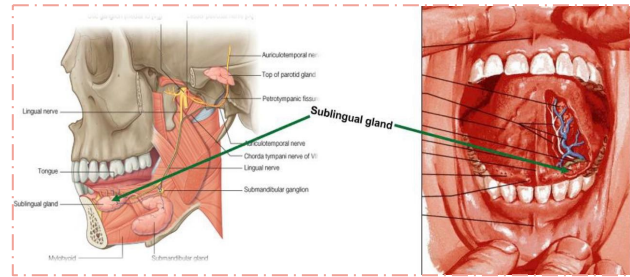
Small calcified stone blocking a salivary duct is visible as a **yellowish mass** in the centre of the floor of the mouth



# Sublingual Gland

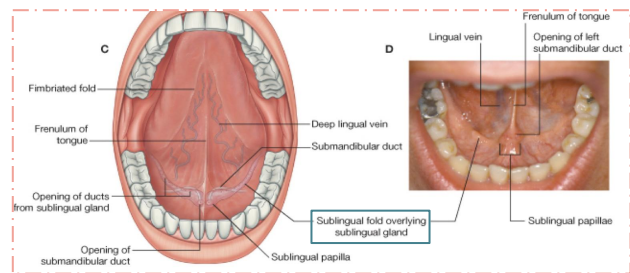
## Site

- ❖ The **smallest** of the three salivary glands.
- ❖ It lies **below the mucous membrane** of the floor of mouth (between mylohyoid & side of the tongue), close to the midline.
- ❖ Almond shape.



## Sublingual ducts

- ❖ 8 to 20 in number.
- ❖ **Most open** into the summit of the **sublingual fold**, but a few may open into the **submandibular duct**.

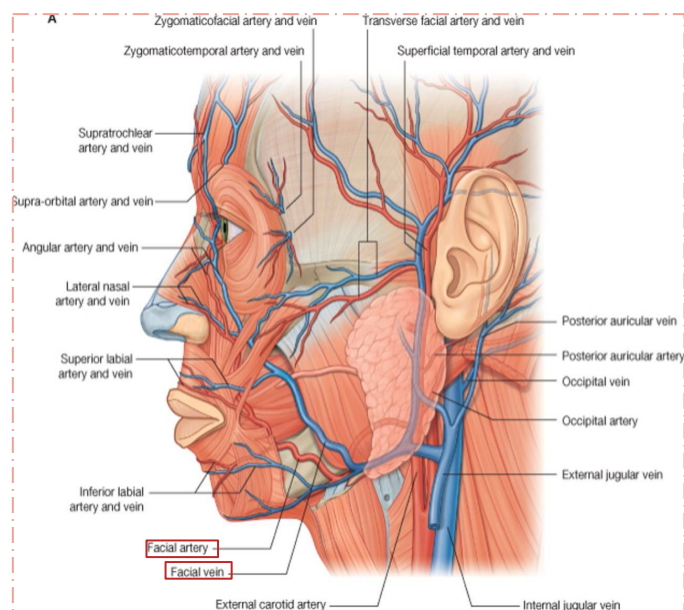


## Blood supply & Lymphatic drainage

**1** Arterial supply:  
Facial artery.

**2** Venous drainage:  
Facial vein.

**3** Lymph drainage:  
Submandibular lymph nodes.



## Ranula

- ❖ A **ranula** is a mucus extravasation cyst.
- ❖ Involved **sublingual gland**.
- ❖ Found on the floor of the mouth.



# Sublingual Gland

## Nerve supply of Sublingual & Submandibular glands

### Sympathetic

From plexus around **facial artery**

### Preganglionic

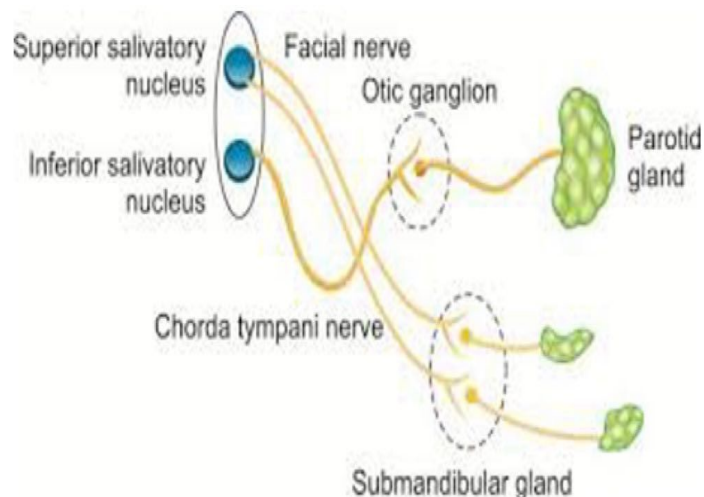
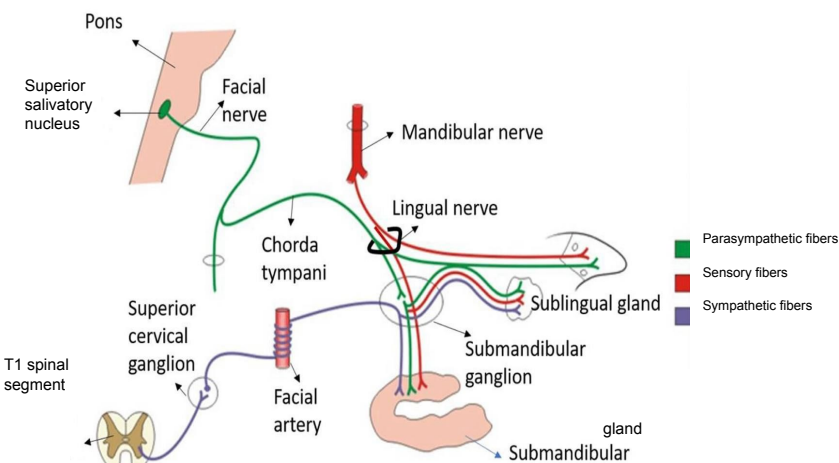
**Superior salivary nucleus** of facial nerve (7th CN)  
(*nervus intermedius*)

The fibers pass to the **submandibular ganglion** via **chorda tympani** and lingual nerve

### Postganglionic

Postganglionic parasympathetic fibers reach the **submandibular & sublingual glands** either:

- Directly
- Along the **duct**
- Running in **lingual nerve**.



# MCQs

Q1. Which of the following is the most superficial structure in the parotid gland?

- |                 |                  |                            |                         |
|-----------------|------------------|----------------------------|-------------------------|
| A. Facial nerve | B. Facial artery | C. External carotid artery | D. Retromandibular vein |
|-----------------|------------------|----------------------------|-------------------------|

Q2. What is the arterial supply of the sublingual gland?

- |                            |                  |                            |                     |
|----------------------------|------------------|----------------------------|---------------------|
| A. Internal carotid artery | B. Facial artery | C. External carotid artery | D. Tonsillar artery |
|----------------------------|------------------|----------------------------|---------------------|

Q3. Which of the following relations corresponds to the opening of the parotid duct?

- |                    |                    |                    |                    |
|--------------------|--------------------|--------------------|--------------------|
| A. Lower 3rd molar | B. Lower 2nd molar | C. Upper 3rd molar | D. Upper 2nd molar |
|--------------------|--------------------|--------------------|--------------------|

Q4. Which of the following is the smallest salivary gland?

- |                        |                     |                  |                          |
|------------------------|---------------------|------------------|--------------------------|
| A. Submandibular gland | B. Sublingual gland | C. Parotid gland | D. All are the same size |
|------------------------|---------------------|------------------|--------------------------|

Q5. Which of the following nerves carries the postganglionic parasympathetic fibers to the parotid gland?

- |                          |                   |                     |                   |
|--------------------------|-------------------|---------------------|-------------------|
| A. Lesser petrosal nerve | B. Chorda tympani | C. Auriculotemporal | D. Tympanic nerve |
|--------------------------|-------------------|---------------------|-------------------|

Q6. A 35-year-old female patient presents with tense swelling and tenderness below the body of the mandible. She reports pain and difficulty while eating. What duct is affected?

- |                  |               |            |                      |
|------------------|---------------|------------|----------------------|
| A. Submandibular | B. Sublingual | C. Parotid | D. None of the above |
|------------------|---------------|------------|----------------------|

A1. **A** A2. **B** A3. **D** A4. **B** A5. **C** A6. **A**

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