



**Anatomy Team**  
**MED 439**

Revised & Approved



**MED439**  
KING SAUD UNIVERSITY

# Anatomy of the Salivary Gland

GNT Block

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Don't forget to check the [Editing File](#)

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Important  
Doctors notes

Extra information, explanation

# Objectives

- Describe the anatomy of the parotid gland:
  1. position
  2. Shape
  3. Structures within it
  4. Innervation
  5. Parotid duct.
  
- Describe the anatomy of the submandibular and sublingual salivary glands:
  1. Location
  2. Shape
  3. Parts
  4. Ducts
  5. Innervation of the glands.

# Salivary Glands

## Salivary glands

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).

Endocrine gland secretes chemical substances directly to the bloodstream, while exocrine gland secretes its product into a duct

### 1- Parotid

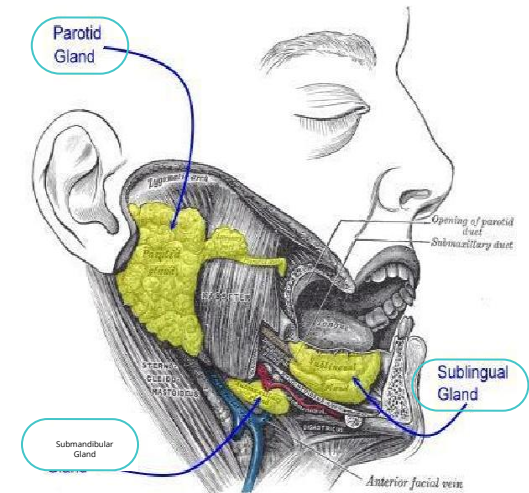
produces a serous, watery secretion.

### 2- Submandibular

produces a mixed serous & mucous secretion.

### 3- Sublingual

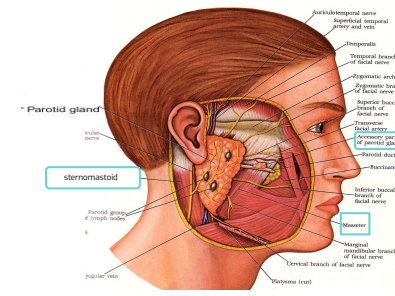
secretes saliva that is predominantly mucous in character.



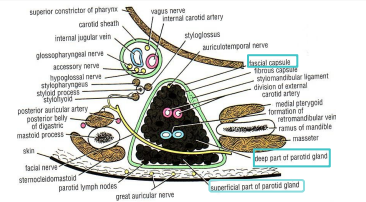
# Parotid Gland Beside ear (otic)

❖ Largest salivary gland Formed entirely of serous acini.

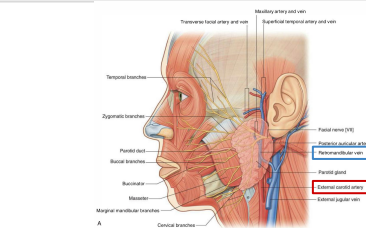
<p><b>Shape</b></p>	<p>Triangular: <b>wedge shaped</b>  <u>Apex</u> behind angle of the mandible.  <u>Base</u> directed upward just below the zygomatic arch, external auditory meatus &amp; TMJ.  <b>when enlarged it affects chewing because it affects the temporomandibular joint</b></p>
<p><b>Position</b></p>	<p>Wedge:          between mandibular ramus &amp; masseter <b>Anteriorly</b>,          Mastoid process &amp; sternomastoid muscle <b>posteriorly</b></p>



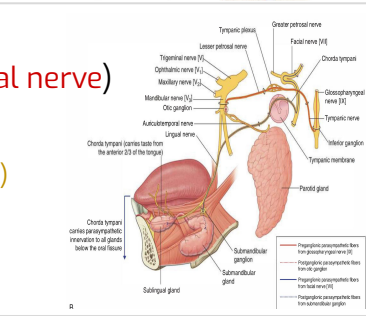
<p><b>Capsule</b></p>	<p>Tight:          derived from deep cervical fascia of the neck.          The gland is divided into superficial <b>covered by skin &amp; fascia</b> &amp; deep parts, by the facial nerve fibers.</p>
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<p><b>Blood supply:</b></p>	<p><b>Arterial supply:</b> external carotid artery &amp; its branches.  <b>Venous drainage:</b> retromandibular vein.  <b>Lymphatic drainage:</b> parotid (preauricular) &amp; thence to upper group of deep cervical lymph nodes.</p>
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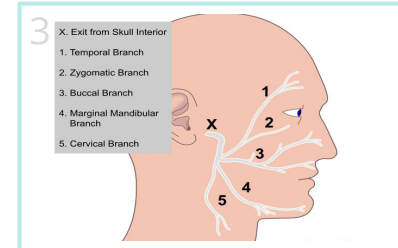
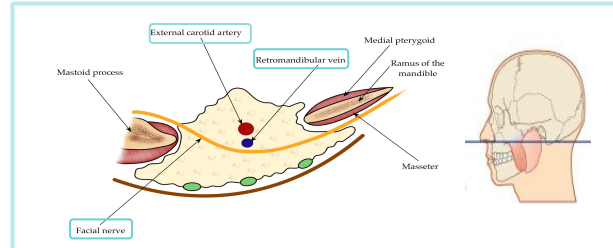
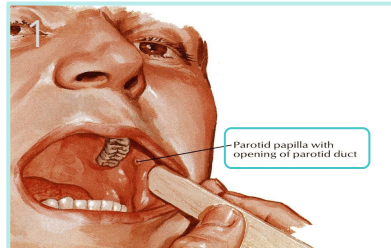
<p><b>Nerve supply</b></p>	<p>★ <b>Parasympathetic (Secretomotor):</b> from inferior salivary nucleus (of <b>glossopharyngeal nerve</b>) to tympanic nerve to tympanic plexus to <b>lesser petrosal</b> to otic ganglion.  <b>this explains why otitis media is accompanied by dry mouth</b>          Dr.Jamila: if a question asks about the preganglionic it's either one of the two red nerves + Tympanic (برضوا يمشي)          - <b>postganglionic</b> fibers from otic ganglion runs in the auriculotemporal nerve.          - <b>Sympathetic:</b> (for vessels) from plexus around external carotid artery.</p>
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<p><b>Accessory part:</b></p>	<p>A small part that is separated from the main gland.</p>
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# Parotid Gland

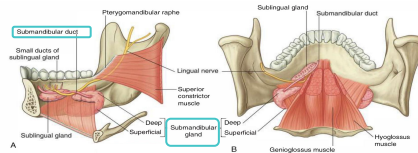
<b>Surfaces</b>	-Superficial -Anteromedial -Posteromedial
<b>Parotid duct 1</b>	It opens into the vestibule of the mouth on a small papilla, opposite the upper second molar (maxillary) tooth. Parotid Duct (of Stensen): 5 cm long ,Runs on the masseter muscle ,Passes thru buccal pad of fat , Pierces the buccinators muscle
<b>Mumps 2</b>	is a viral disease caused by the mumps virus. · Initial signs and symptoms often include fever, muscle pain, headache, poor appetite, and feeling tired. · This is then usually followed by painful swelling of one or both parotid salivary gland in adult About two to three out of every 10 adolescent or adult men who have mumps may experience painful swelling of the testicles. ( complication ? )
<b>What are the Structures within the Parotid gland? ( from superficial to deep/ lateral to medial)</b>	
<b>Facial nerve 3</b>	It is the most superficial Structure,it divides the gland into superficial & deep parts. It gives two Branches before it enters the gland and five branches within the parotid: 1- Temporal 2- Zygomatic 3- Buccal 4- Mandibular 5- Cervical Mnemonic: To. Zanzibar. By. Motor. Car
<b>Retromandibular vein</b>	Intermediate in position Formed by the union of maxillary & superficial temporal veins. Before it leaves the gland it is divided into anterior & posterior branches.
<b>External carotid artery</b>	Most deep, It is divided into maxillary and superficial



# Submandibular gland

# Sublingual gland

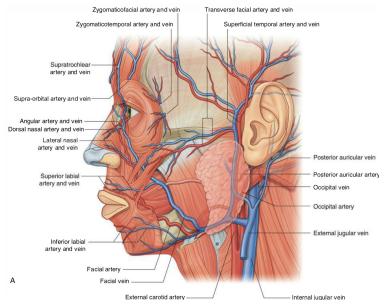
Location	Parts	Location	Shape
deep to the body of the mandible	Formed of 2 parts: <ul style="list-style-type: none"> <li>• Large superficial part</li> <li>• Small deep part</li> </ul> both parts continue around the mylohyoid muscle	It lies below the mucous membrane of the floor of mouth, close to the midline.	smallest of three salivary gland (Almond shape)



## Submandibular & sublingual glands

### Blood supply:

- **Arterial supply:** Facial artery
- **Venous drainage:** Facial vein
- **Lymphatic drainage:** Submandibular lymph nodes.
- **sublingual glands :** lingual vessels & branches from submental (facial vessels)



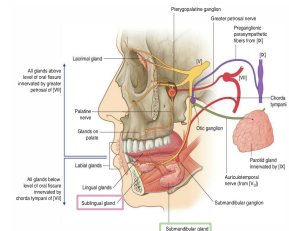
### Nerve supply:

- ★ **Parasympathetic** secretomotor supply is from **superior salivary nucleus** of the **facial (7th)** nerve.

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

Postganglionic parasympathetic fibers reach the **submandibular & sublingual glands** running in **lingual nerve** either directly or along the duct **at first the lingual nerve travels superolateral then inferior and medial to the submandibular duct.**

- **Sympathetic:** from plexus around facial Artery

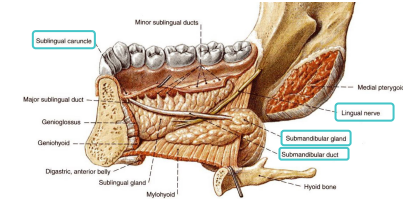


# Submandibular & Sublingual

## Submandibular

### Submandibular duct (of Wharton):

The duct emerges from the deep part of the gland. It passes forward along the side of the tongue, under the mucous membrane of the floor of the mouth. It is crossed laterally by the lingual nerve. It 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.



### 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 and is 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.



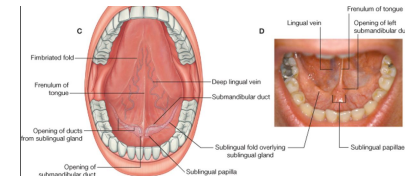
A small calcified stone blocking a salivary duct is visible as a yellowish mass (circled) in the center of the floor of the mouth

## Sublingual

### Sublingual ducts

The sublingual ducts are 8 to 20 in number, Most open into the summit of the sublingual fold, but a few may open into the submandibular duct.

sublingual papilla has orifices of the sublingual ducts



### Ranula

- is a mucous extravasation cyst.
- Involved sublingual gland.
- Found on the floor of the mouth.



# MCQ

**Q1: which gland produce serous, watery secretion only?**

**A: salivary**

**B: parotid**

**C: submandibular**

**D: sublingual**

**Q2: parotid gland located between mandibular ramus & masseter:**

**A: Anteriorly**

**B: Medially**

**C: Posteriorly**

**D: Laterally**

**Q3: parotid duct opens into the vestibule of the mouth on a small papilla, opposite the:**

**A: lower second molar teeth**

**B: last molar teeth**

**C: upper second molar teeth**

**D: first molar teeth**

**Q4: most superficial Structure in the parotid gland:**

**A: ECA**

**B: Trigeminal nerve**

**C: Retromandibular vein**

**D: Facial nerve**

**Q5: Parotid Apex behind angle of**

**A: Mandible**

**B: Masseter**

**C: Mastoid**

**D: Zygomatic**

Answer key:  
1 (B) , 2 (A) , 3 (C) , 4 (D) , 5 (A)



**Q6: Most common site for calculus formation:**

**A: Parotid duct**

**B: Submandibular duct**

**C: Palatine gland**

**D: Sublingual duct**

**Q7: Which of the following is CORRECT about the submandibular gland:**

**A: The submandibular duct arise from the superficial part of the gland**

**B: The gland is located deep to the body of mandible**

**C: The submandibular duct is crossed laterally by the facial nerve**

**D: B&C**

**Q8: How many branches the facial nerve gives before it enters the parotid?**

**A: 1**

**B: 2**

**C: 4**

**D: 5**

**Q9: The submandibular duct emerge from which part of the gland ?**

**A: The superficial part**

**B: The deep part**

**C: The anterior part**

**D: The posterior part**

**Q10: The smallest gland of three salivary gland ?**

**A: lingual**

**B: submandibular**

**C: parotid**

**D: go back to A**

Answer key:  
6 ( B ), 7(B ) , 8(B ) , 9( B ) , 10( A )

# SAQ

**Q1: What are the Structures within the Parotid gland?**

**Q2: What's the nerve supply the parotid gland?**

**Q3: What are the branches of the facial nerve within the parotid?**

**Q4: What is the blood supply of the sublingual ?**

## Answers

**1:** Facial nerve - ECA - Retromandibular vein

**2 :** **Parasympathetic:** from inferior salivary nucleus (of glossopharyngeal nerve) to tympanic nerve to tympanic plexus to lesser petrosal to otic ganglion. **postganglionic** fibers from otic ganglion runs in the auriculotemporal nerve.  
**Sympathetic:** from plexus around external carotid artery.

**3 :** Temporal , Zygomatic , Buccal , Mandibular , Cervical

**4:**

**Arterial supply:** Facial artery

**Venous drainage:** Facial vein

**Lymphatic drainage:** Submandibular lymph nodes

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