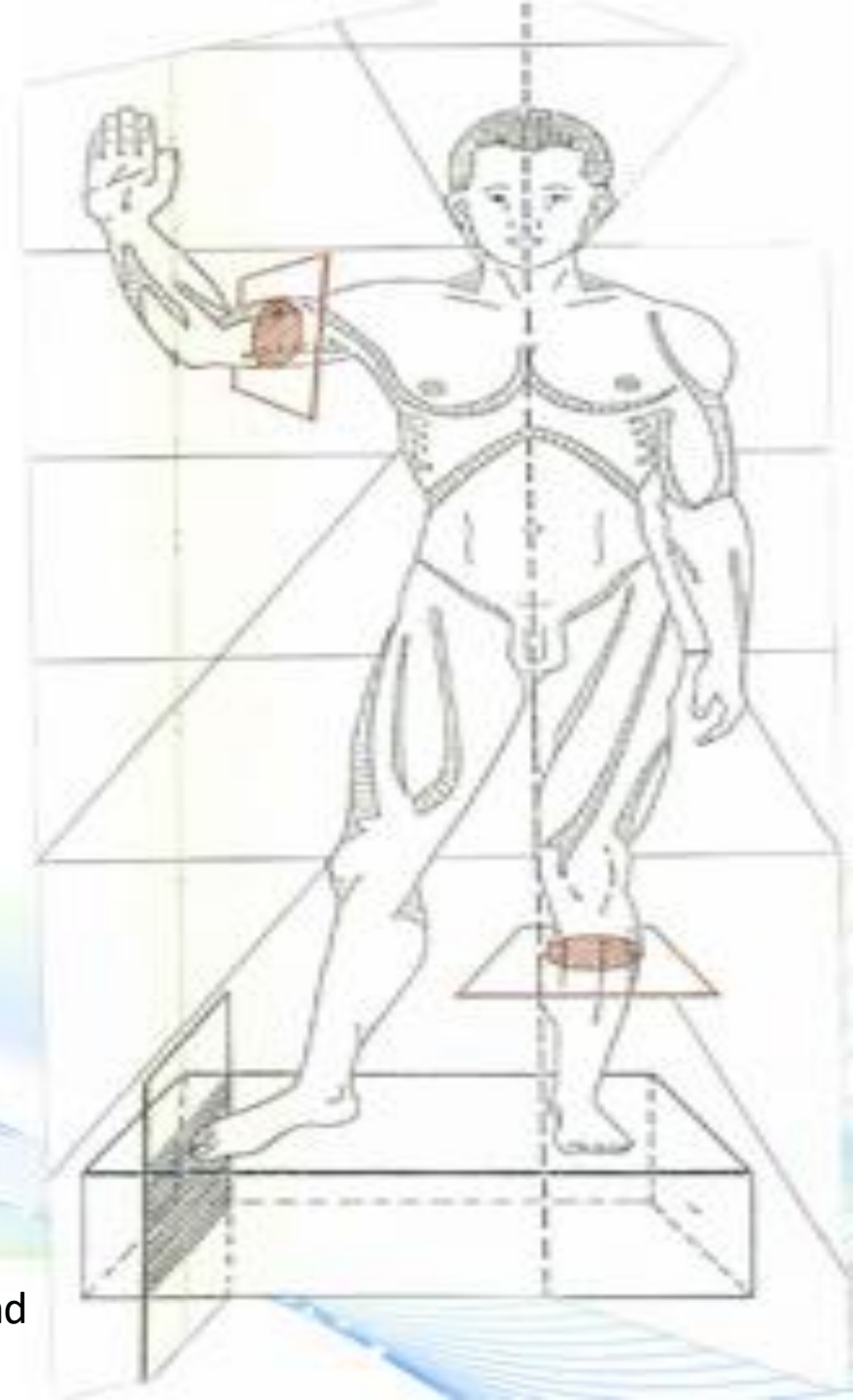


SALIVARY GLANDS

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CONTENTS

I. INTRODUCTION

II. DESCRIPTIVE ANATOMY

III. STRUCTURE

IV. ANATOMICAL RELATIONS

V. BLOOD SUPPLY; LYMPH DRAINAGE AND NERVE SUPPLY

VI. SURGICAL APPROACH

VII. CONCLUSION



I. INTRODUCTION

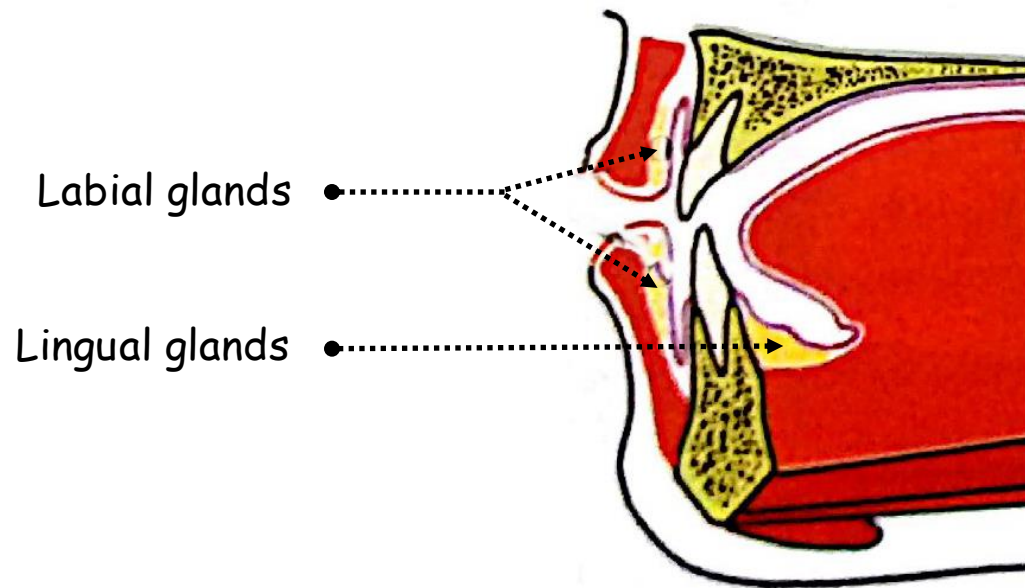
- Exocrine glands annexed to the oral cavity
- Produce saliva very useful for:
 - Mastication
 - Digestion
 - Protection
- 2 categories:
 - Salivary glands
 - Main salivary glands



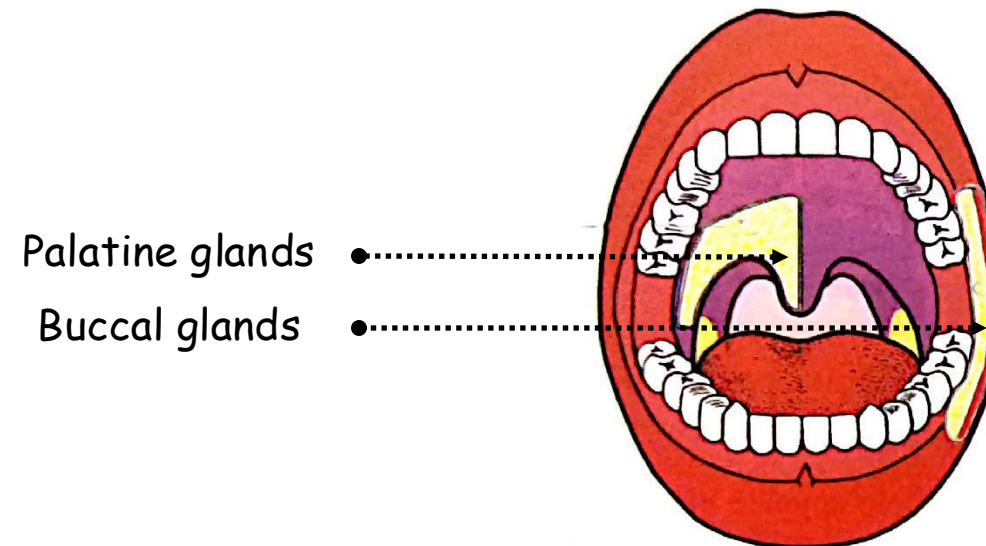
OVERVIEW OF THE MAIN SALIVARY GLANDS

A. SALIVARY GLANDS

- Small glands scattered in the oral mucosa and submucosa
- Directly open in the oral cavity through a small duct
- Continuous excretion of saliva
- Labial glands: internal surface of labia
- Molar glands: towards molar teeth
- Buccal glands: internal surface of cheeks
- Palatine glands: submucosa of soft palate
- Lingual glands: submucosa of inferior surface of the tongue
- Serous, mucous and seromucous



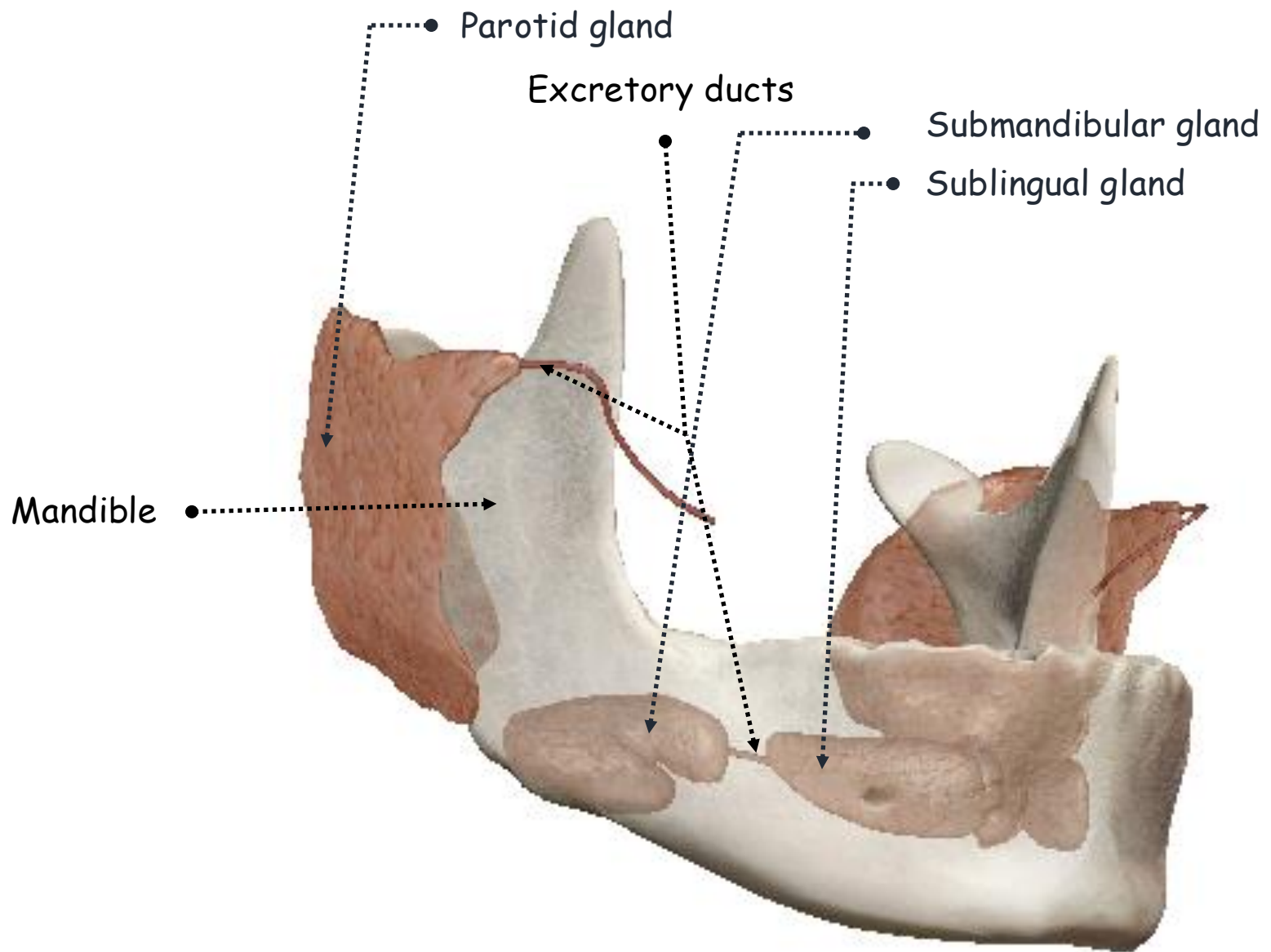
SAGITTAL SECTION OF THE ORAL CAVITY



ANTERIOR VIEW OF THE ORAL CAVITY

B. MAIN SALIVARY GLANDS

- **Away** from the oral cavity
- Own **excretory duct**
- Own **capsule**
- **Discontinuous** excretion of saliva
- **Three paired glands:**
 - Parotid glands
 - Submandibular glands
 - Sublingual glands
- **Around the mandible**



OVERVIEW OF THE MAIN SALIVARY GLANDS

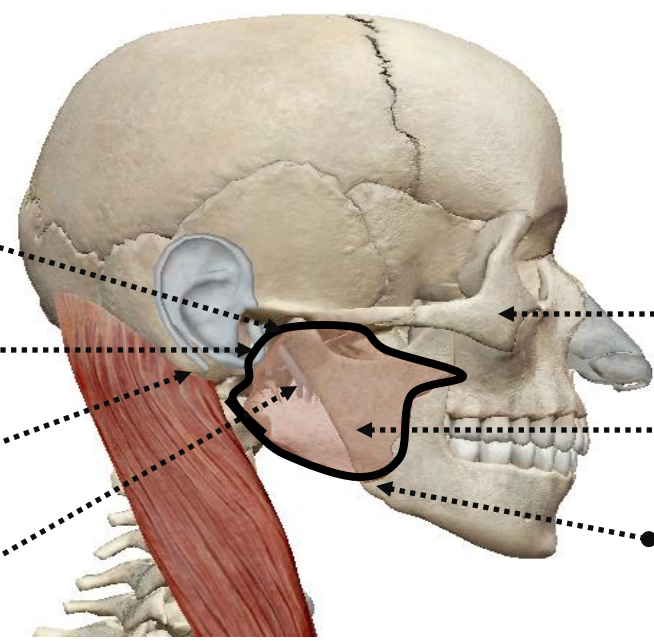
II. DESCRIPTIVE ANATOMY

A. PAROTID GLAND

1. Situation:

- Superficial
- Fills in the gap between:
 - Forwards: **ramus of the mandible** and the muscles attached to it
 - Medially: **styloid process**
 - Backwards: **mastoid process**
 - Upwards: **external acoustic meatus** and **temporomandibular joint**
 - Downwards: **angle of the mandible** and **posterior belly of digastric**

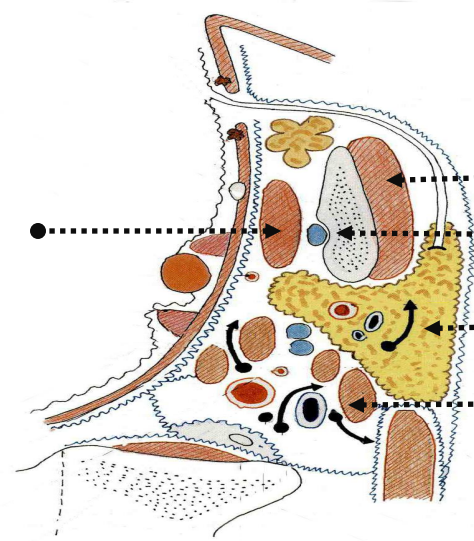
- Temporomandibular joint
- External acoustic meatus
- Mastoid process
- Styloid process



- Zygomatic bone
- Parotid gland
- Angle of mandible

LATERAL VIEW OF THE HEAD

- Medial pterygoid muscle

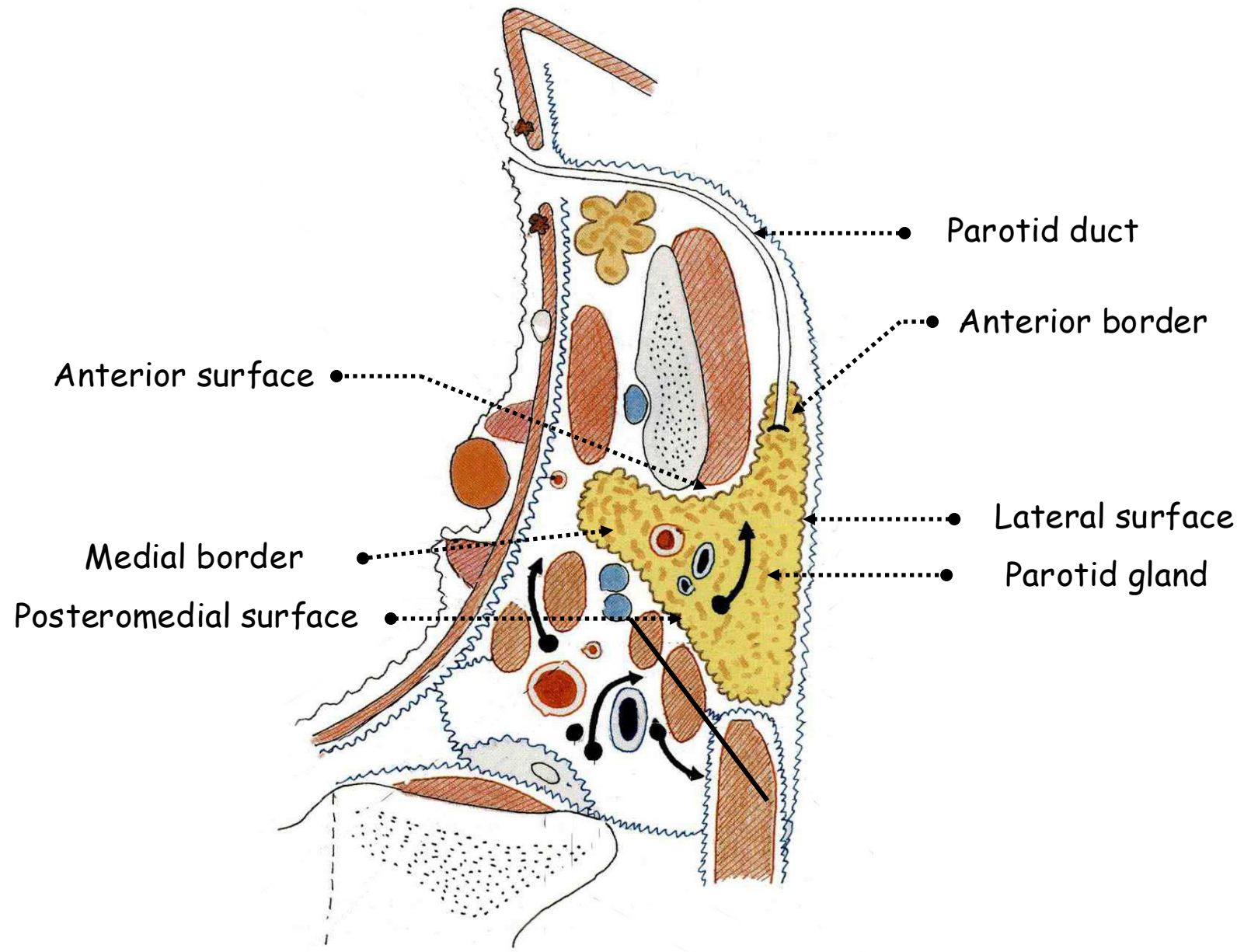


- Masseter muscle
- Ramus of mandible
- Parotid gland
- Digastric muscle

HORIZONTAL SECTION OF THE FACE AT THE LEVEL OF THE AXIS SHOWING THE PAROTID GLAND

2. Shape:

- Irregular pyramid-shaped
- Lateral surface:
 - Flat
 - Accessory parotid gland
- Anterior surface:
 - U-shaped clasping the ramus of the mandible
 - Outer edge meets the lateral surface
 - Anterior border convex where emerges the parotid duct
 - Inner edge meets the posteromedial surface
 - Medial deep border convex
- Posteromedial surface: deep



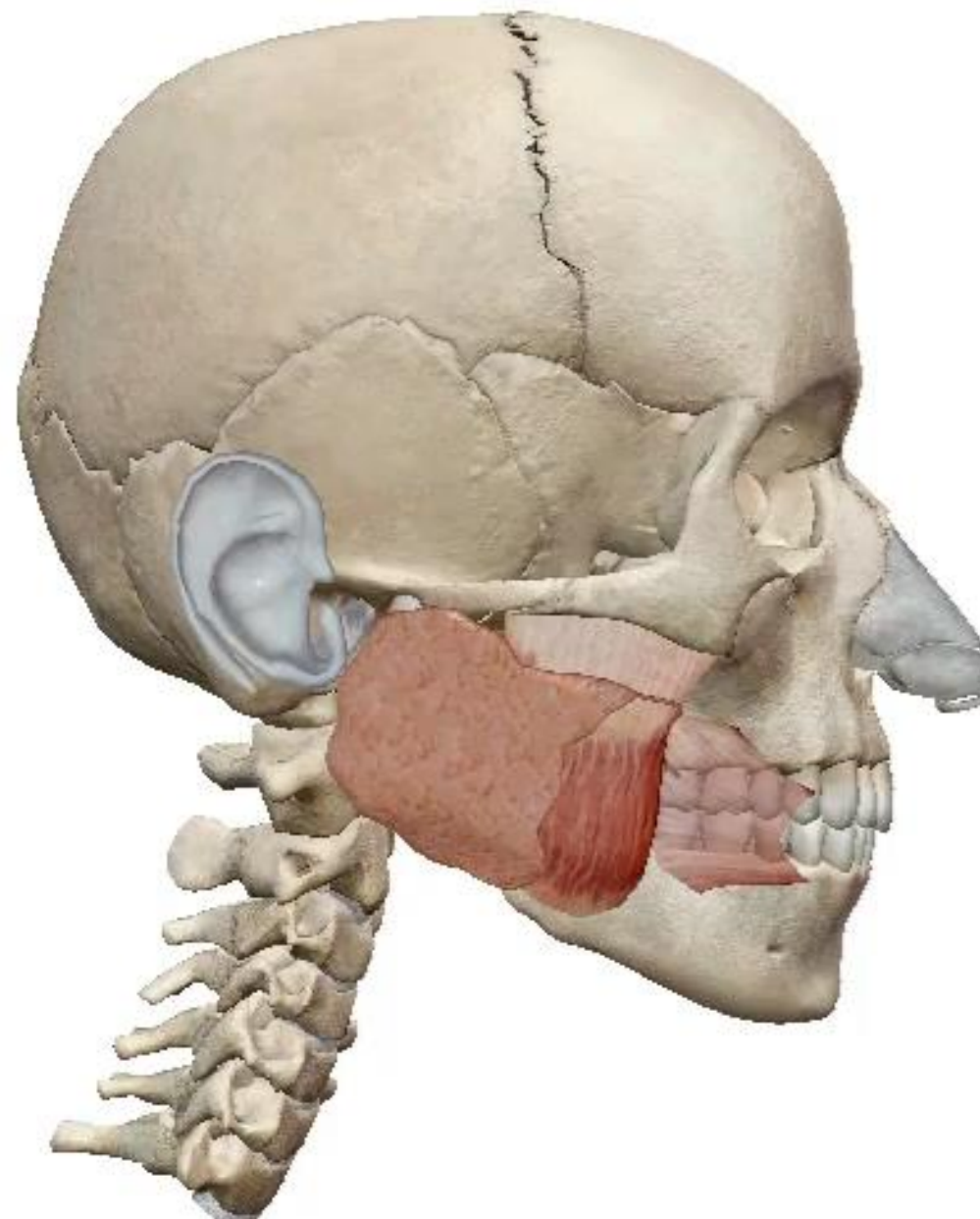
HORIZONTAL SECTION OF THE FACE AT THE LEVEL OF THE AXIS
SHOWING THE PAROTID GLAND

- **Superior surface:**
 - Small and concave
 - Base
- **Apex:**
 - Inferior
 - Rounded
 - Overhangs the submandibular gland
- **Yellowish** in colour
- **Largest**
- **Weighs 25 grams**



3. Parotid duct of Stensen:

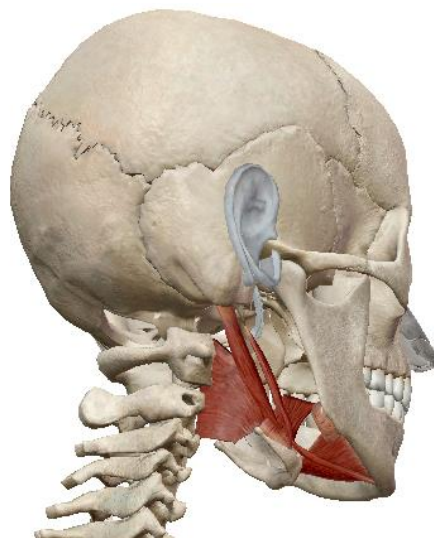
- 5 cm long
- Passes forwards across the masseter and turns around its anterior border
- Pierces the buccinator further back
- Runs forwards beneath the mucous membrane
- Opens on the mucous membrane of the cheek opposite the second upper molar tooth
- Valvular flap of mucous membrane
- Lies in the line between the intertragic notch of the auricle and the midpoint of the philtrum
- Palpable over the clenched masseter muscle



B. SUBMANDIBULAR GLAND

1. Situation:

- **Small deep part:**
 - Situated between **mylohyoid** and **hyoglossus** muscles
 - Under the mucous membrane of the floor of the mouth
- **Large superficial part:**
 - Situated in the **submandibular fossa** of the mandible
 - Downwards: the investing layer of **deep cervical fascia**
 - Laterally: **internal surface of the angle of mandible**
 - Medially: **mylohyoid** muscle
- **Continuous** with one another round the free posterior margin of **mylohyoid**

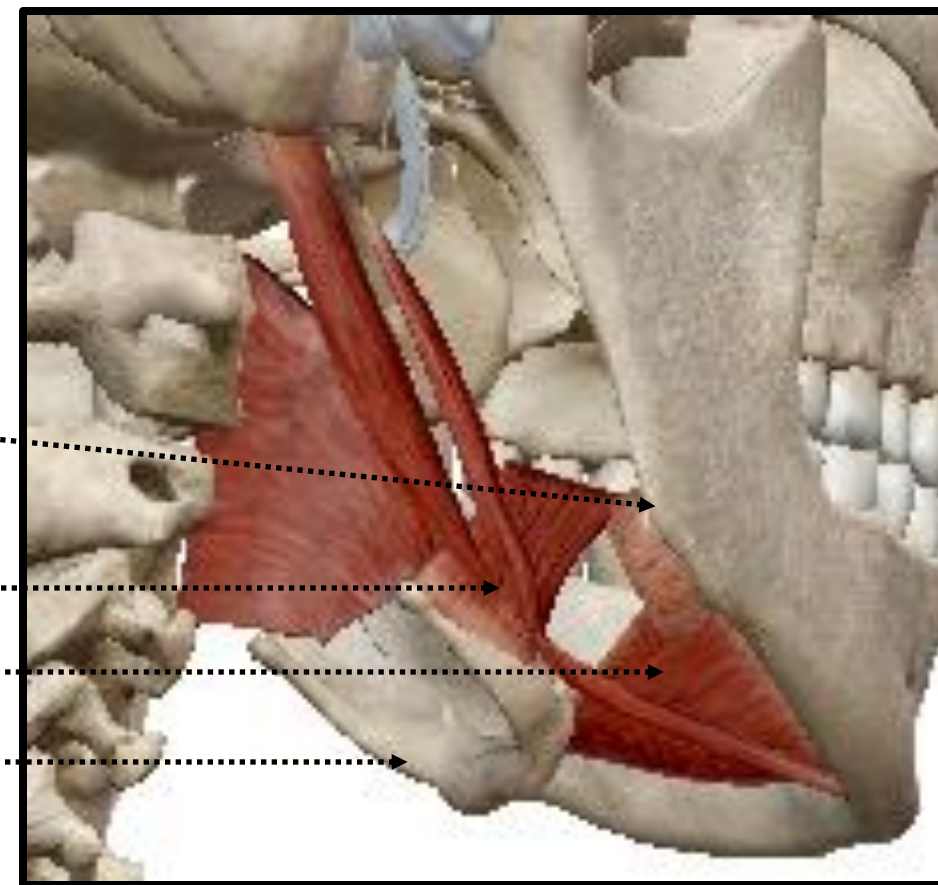


Submandibular gland in the submandibular fossa

Hyoglossus muscle

Mylohyoid muscle

Hyoid bone



INFEROLATERAL VIEW OF THE FACE SHOWING THE SUBMANDIBULAR FOSSA

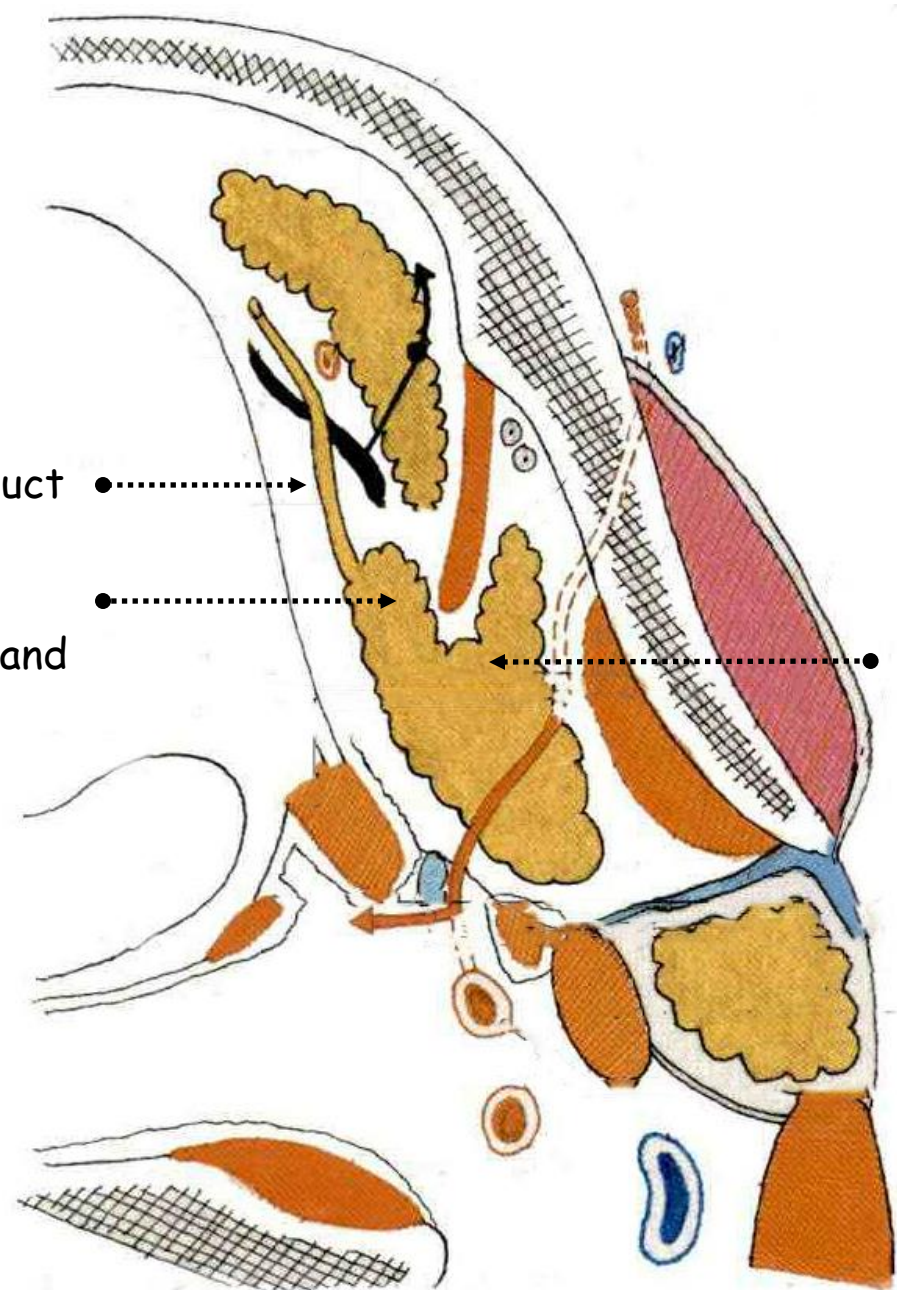
2. Shape:

- Irregular in shape
- Weighs 7 grams
- Yellowish in colour
- **Small deep part:**
 - Where emerges the submandibular duct
- Large superficial part

Submandibular duct

Deep part of submandibular gland

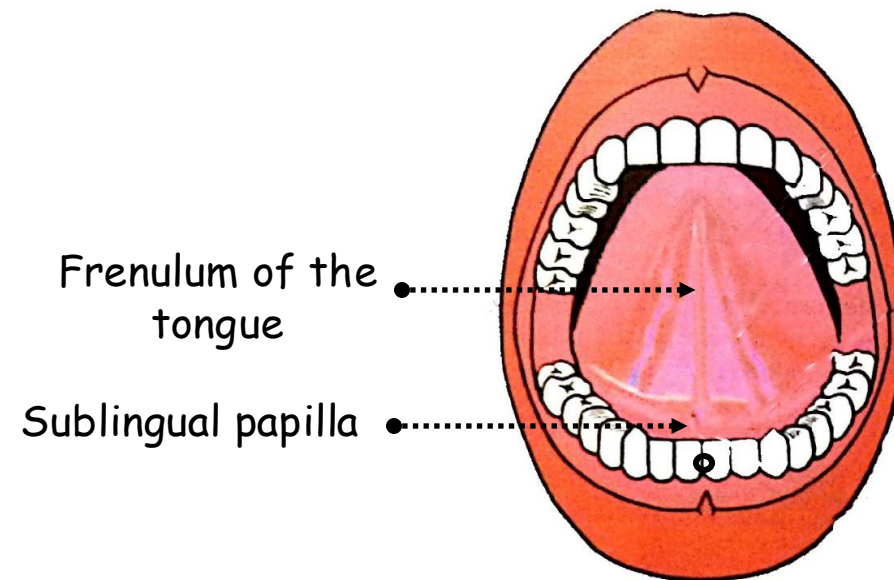
Superficial part of submandibular gland



HORIZONTAL SECTION OF THE FACE AT THE LEVEL OF THE ANGLE OF MANDIBLE SHOWING THE SUBMANDIBULAR GLAND

3. Submandibular duct of Wharton:

- 5 cm long
- Emerges from the deep part of the gland near the posterior border of mylohyoid
- Runs forwards first between mylohyoid and hyoglossus
- Then between the sublingual gland and geniohyoid muscle
- Then overcrosses the lingual nerve from inside to outside
- Opens into the floor of the mouth beside the frenulum of the tongue

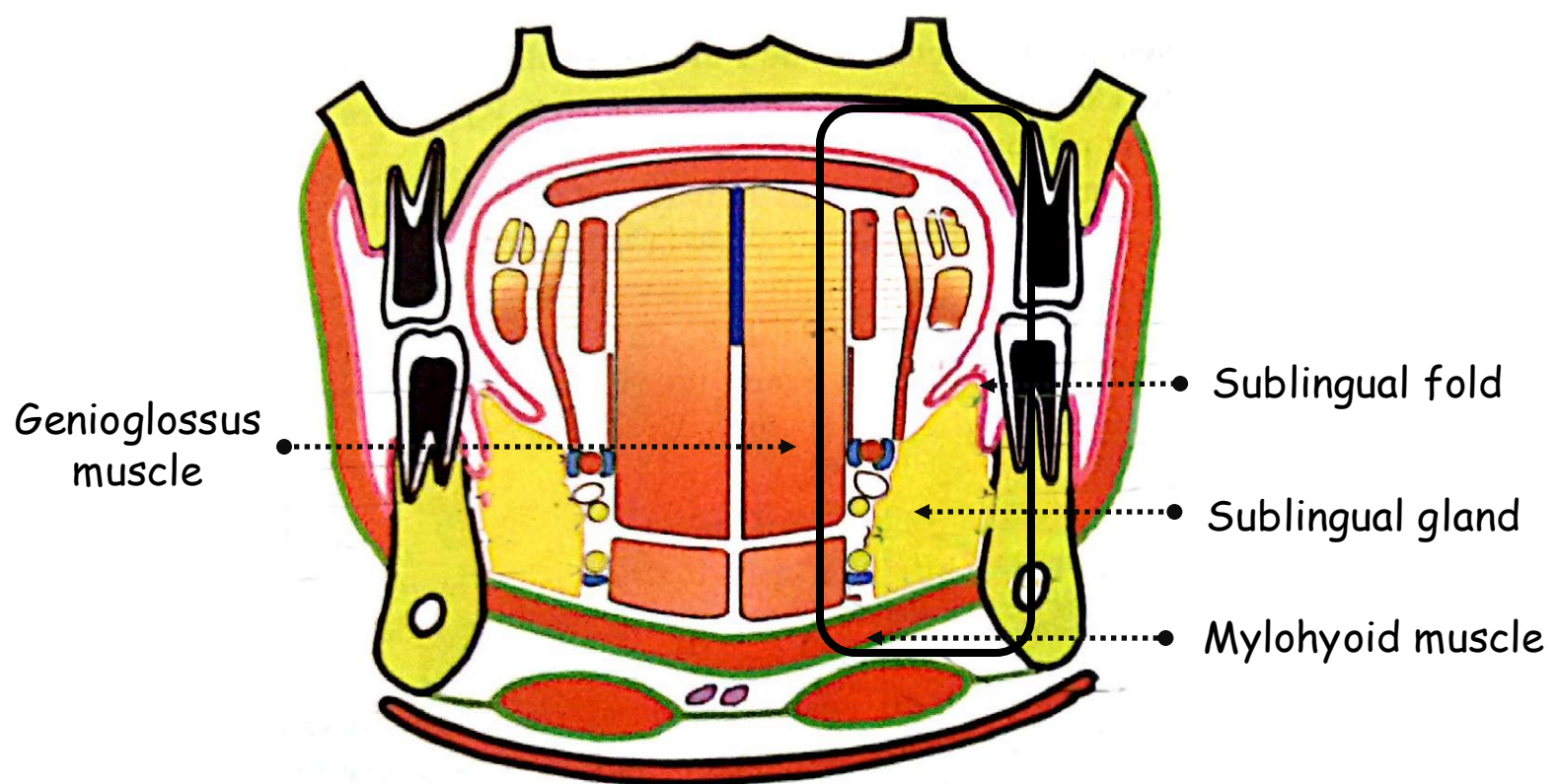


ANTERIOR VIEW OF THE ORAL CAVITY

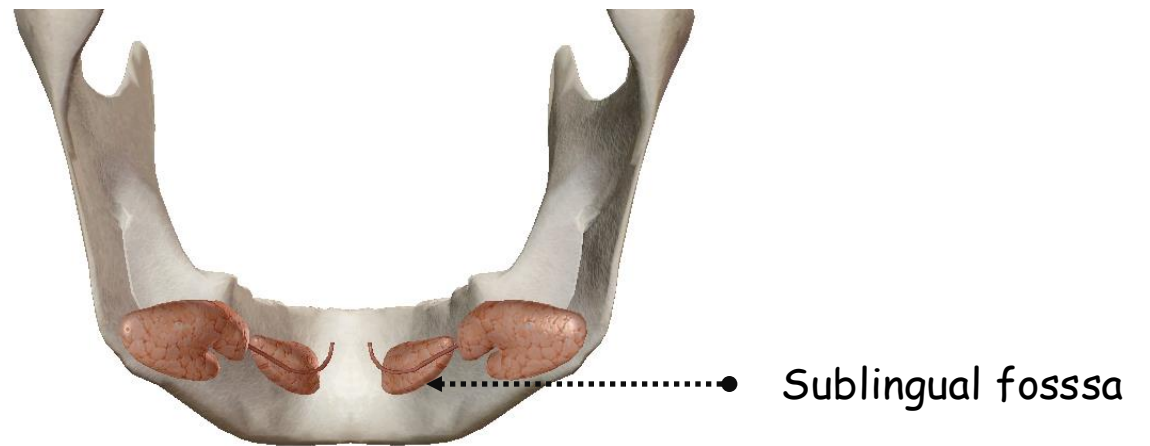
C. SUBLINGUAL GLAND

1. Situation:

- Situated on the floor of the mouth beside the frenulum of the tongue
- Between:
 - Backwards: anterior border of hyoglossus muscle
 - Forwards and downwards: mylohyoid muscle
 - Upwards: floor of the mouth raising the sublingual fold
 - Laterally: sublingual fossa of the mandible
 - Medially: genioglossus muscle



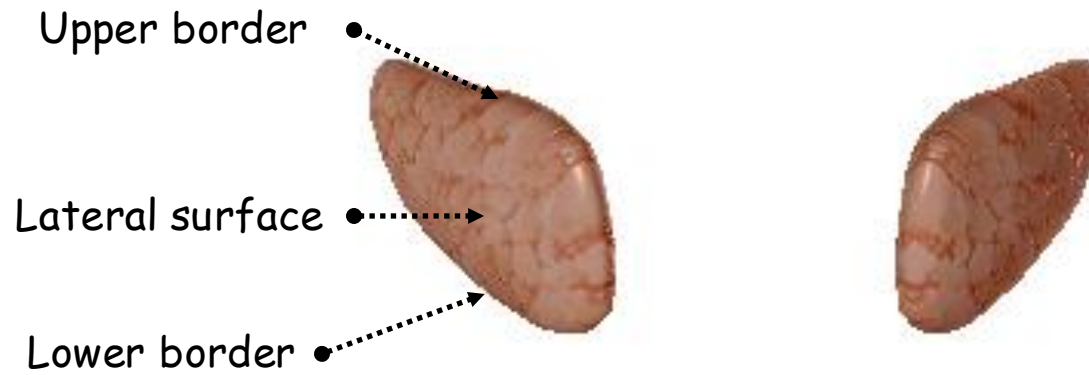
CORONAL SECTION OF THE ORAL CAVITY



POSTERIOR VIEW OF THE MANDIBLE

2. Shape:

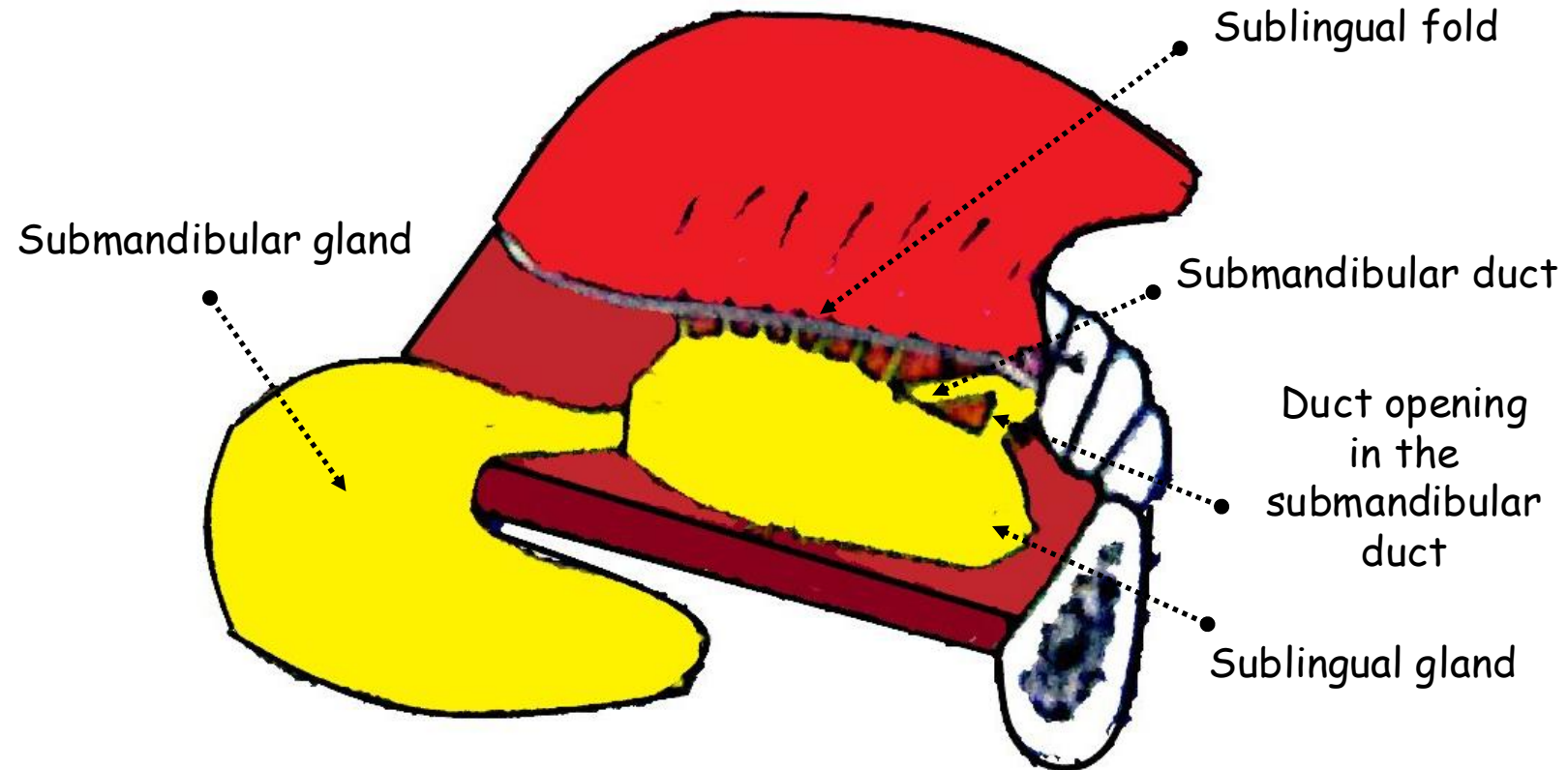
- **Almond-shaped**
- **Yellowish** in colour
- **Weighs 3 grams**
- **Lateral** and **medial** surfaces
- **Upper** and **lower** borders



OVERVIEW OF THE SUBLINGUAL GLANDS

3. Sublingual duct:

- 15 ducts
- Half open directly in the submandibular duct
- The remainder separately on the sublingual fold



OVERVIEW OF THE SUBLINGUAL DUCTS

III. STRUCTURE

A. GENERAL FEATURES

- Arranged in **lobules** separated by **septa**
- **Tubuloalveolar**
- **Seromucous**
- **Tubules** drain into **interlobular ducts** that flow into the **excretory duct** of the gland
- Lined by a **double-layer epithelium**:
 - **Columnar cells**
 - **Myoepithelial cells**

B. PARTICULARITIES

- **Parotid**: predominantly **serous acini**, many **ducts** and **fat cells**
- **Submandibular**: **few ducts**
- **Sublingual**: **exclusively mucous** and **few ducts**

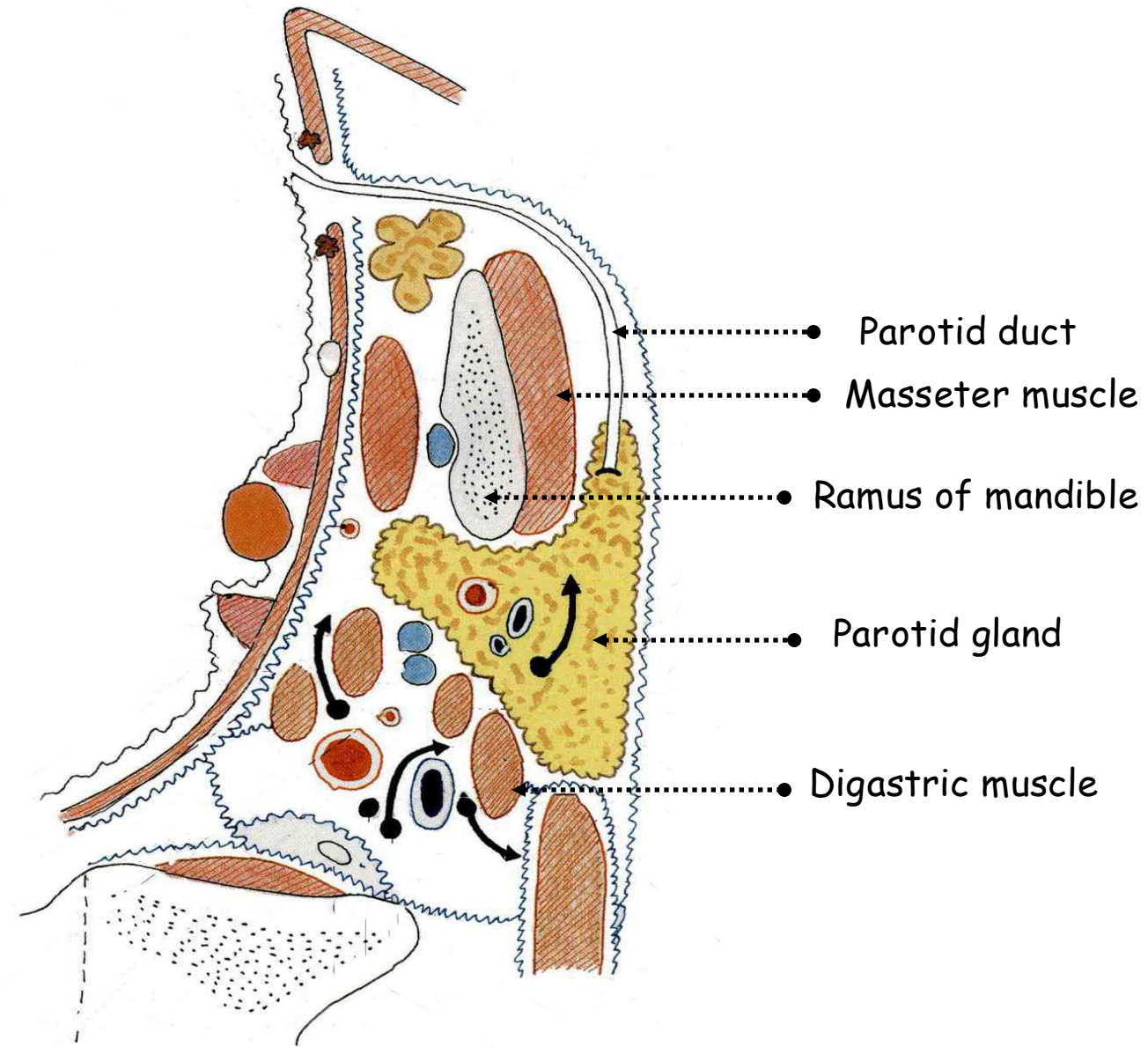


IV. ANATOMICAL RELATIONS

A. PAROTID GLAND

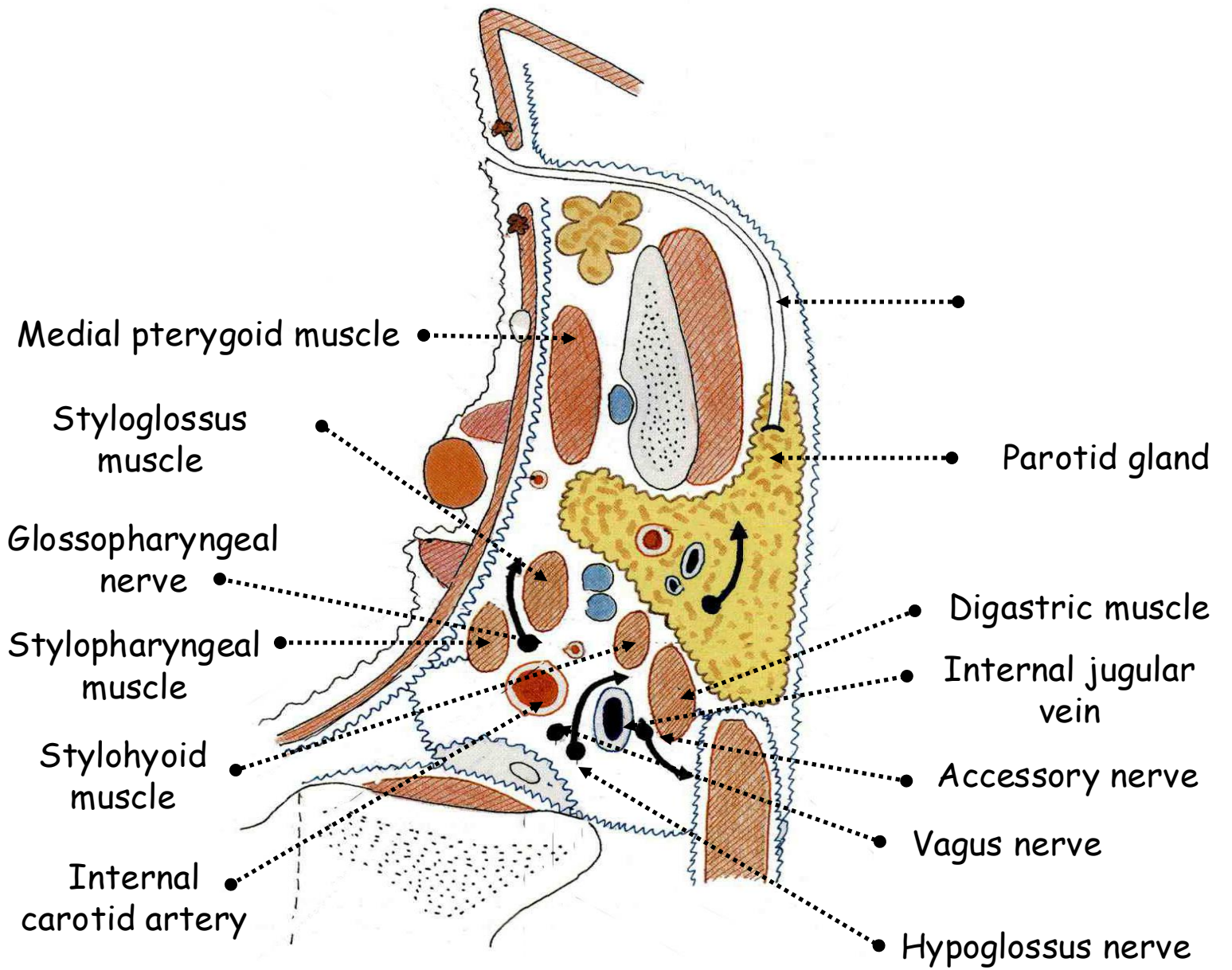
1. External relations:

- **Parotid sheath:** derived from the investing layer of deep cervical fascia and continuous with the masseteric fascia
- **Lateral surface:**
 - Deep and superficial lymph nodes within the parotid sheath
 - Skin
- **Apex:**
 - Posterior belly of digastric muscle
 - Angle of mandible
- **Anterior surface:**
 - Posterior border of ramus of mandible
 - Masseter muscle
 - External surface of the temporomandibular joint



HORIZONTAL SECTION OF THE FACE AT THE LEVEL OF THE AXIS
SHOWING THE PAROTID GLAND

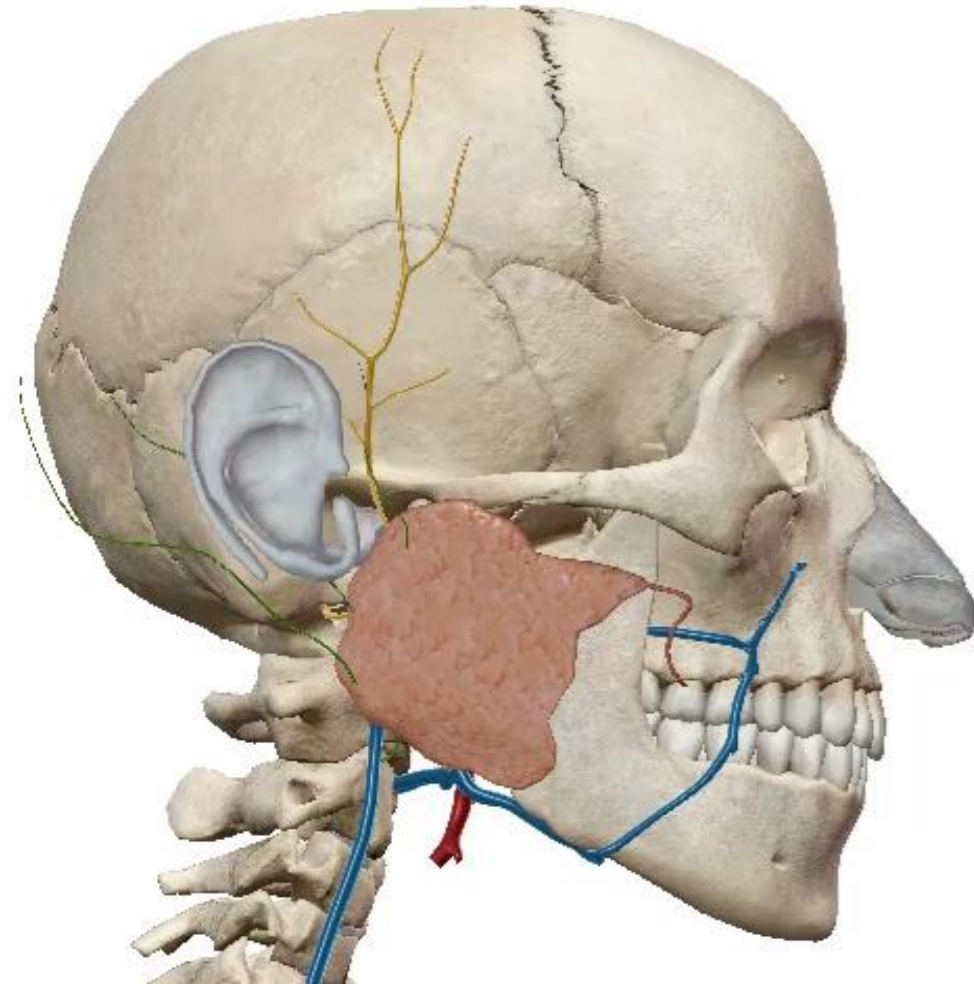
- **Posteromedial surface:**
 - Mastoid and styloid processes
 - Stylohyoid, styloglossus, stylopharyngeal and digastric muscles
 - Internal carotid artery, internal jugular vein and glossopharyngeal and hypoglossus nerves
 - Medial border between medial pterygoid muscle forwards and stylomandibular ligament backwards
- **Superior surface:**
 - External acoustic meatus
 - Temporomandibular joint



**HORIZONTAL SECTION OF THE FACE AT THE LEVEL OF THE AXIS
SHOWING THE PAROTID GLAND**

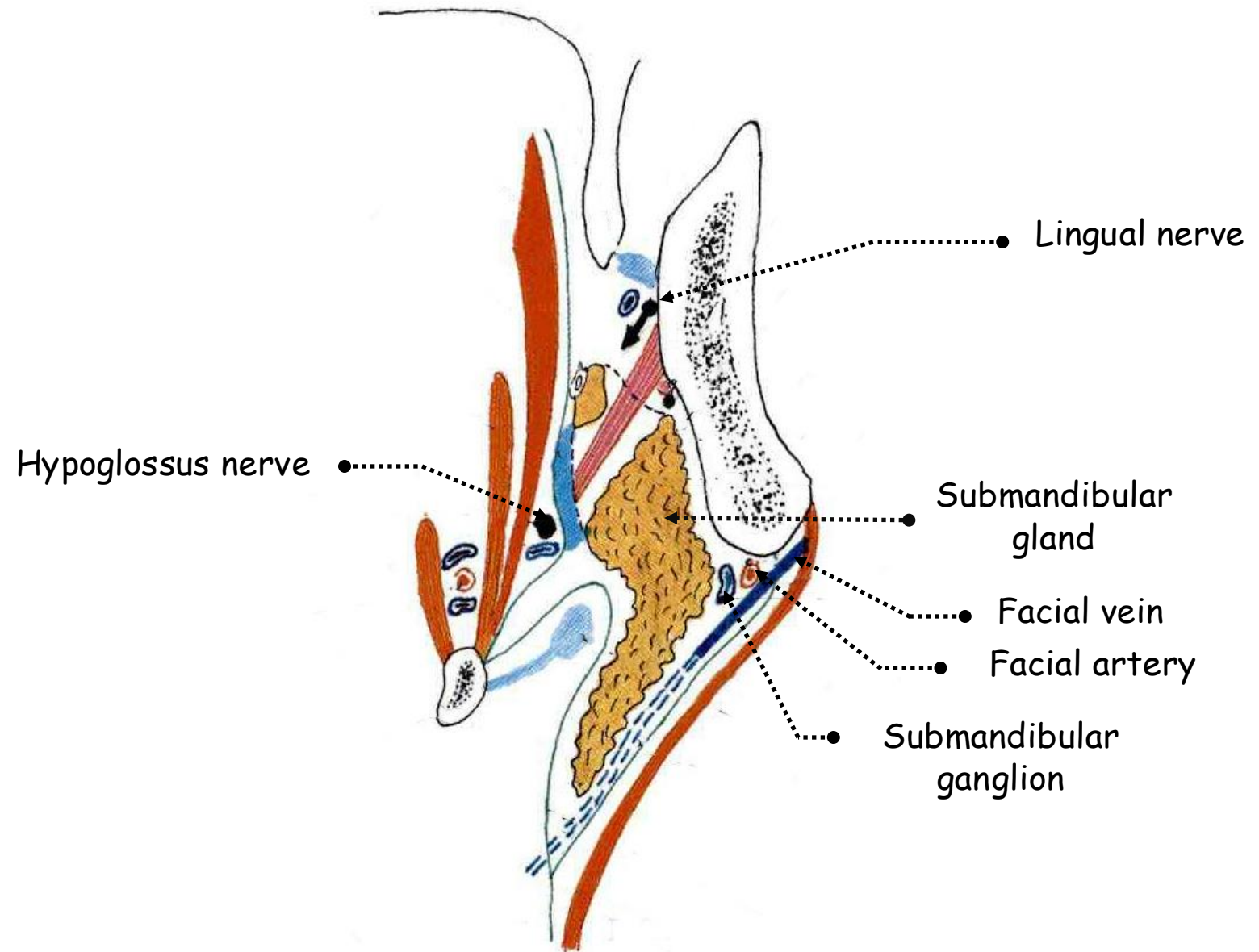
2. Internal relations:

- Crossed by vessels and nerves
- **Facial nerve:**
 - Forms a **plexus** after dividing **inside the gland**
 - Splits the gland into **two lobes**
- **Veins:**
 - Deep lobe
 - Superficial temporal vein
 - Maxillary vein
 - External jugular vein
 - Retromandibular vein
- **Arteries:**
 - External carotid artery
 - Superficial temporal artery
 - Maxillary artery
 - Posterior auricular artery
- Lymph nodes



B. SUBMANDIBULAR GLAND

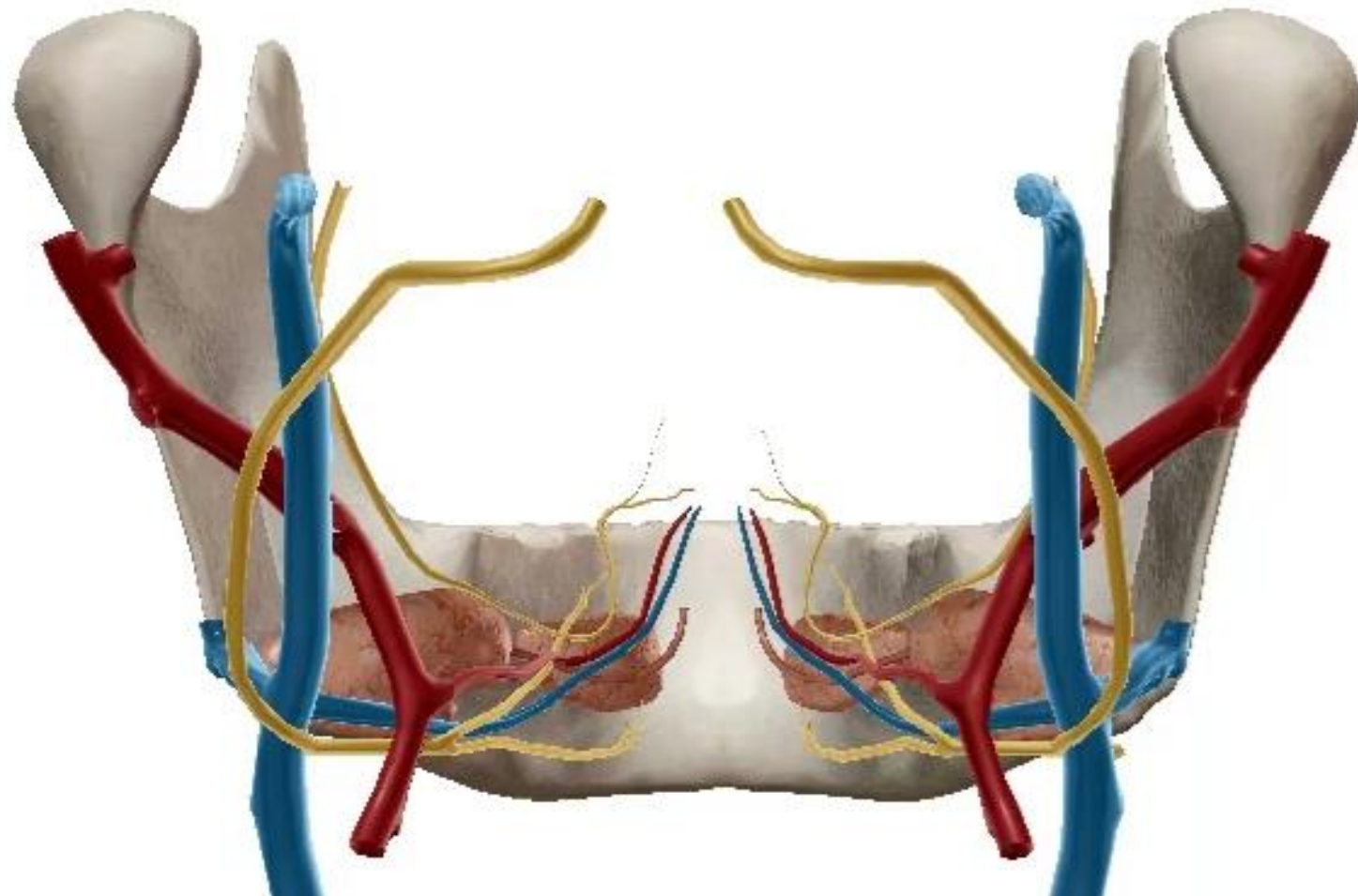
- **Lateral surface:**
 - Attachment of the medial pterygoid muscle
 - Facial artery
- **Medial surface:**
 - Forwards: anterior belly of digastric muscle
 - Upwards: lingual nerve and submandibular ganglion
 - Backwards: styloglossus muscle, stylohyoid ligament, pharyngeal wall, lingual vein, lingual artery, hypoglossus nerve
- **Inferior surface:**
 - Facial vein, submandibular nodes and cervical branch of facial nerve



SAGITTAL SECTION OF THE MOUTH SHOWING THE SUBMANDIBULAR GLAND

C. SUBLINGUAL GLAND

- **Medial surface:**
 - Lingual nerve
 - Hypoglossus nerve
 - Lingual artery and its branches
 - Deep lingual vein
 - Genioglossus and inferior longitudinal muscles
- **Lateral surface:**
 - Mylohyoid muscle



V. BLOOD SUPPLY; LYMPH DRAINAGE AND NERVE SUPPLY

A. PAROTID GLAND

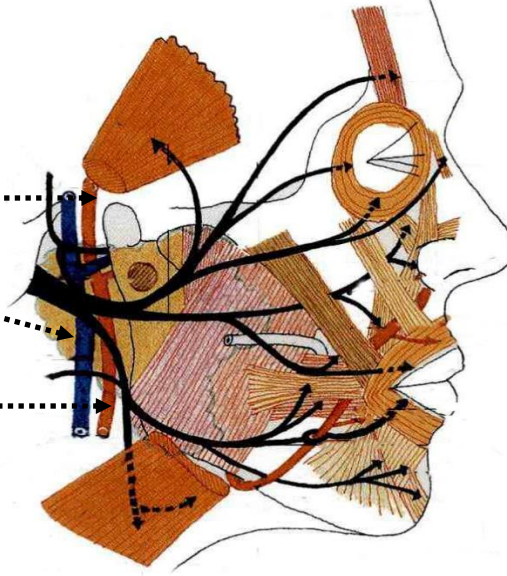
1. Arteries:

- Branches from the external carotid artery

2. Veins:

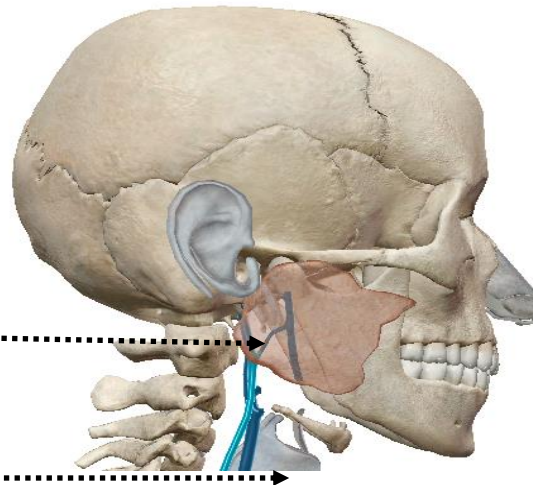
- Retromandibular vein

Superficial temporal artery
External jugular vein
External carotid artery



LATERAL VIEW OF THE FACE

Retromandibular vein
External jugular vein



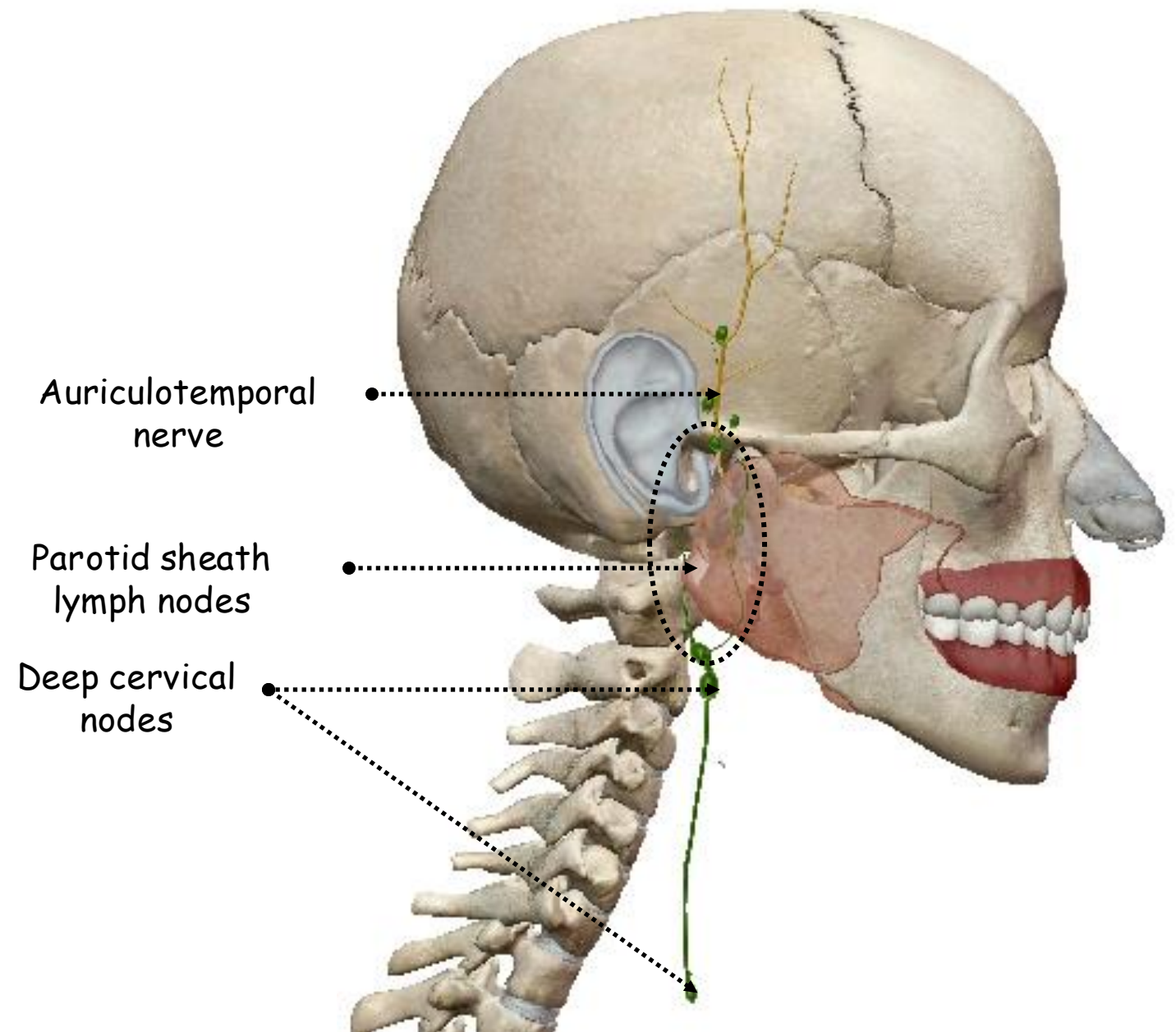
LATERAL VIEW OF THE FACE

3. Lymph drainage:

- Nodes within the parotid sheath
- Thence with the external carotid artery to nodes of the upper group of deep cervical nodes

4. Nerves:

- Secretomotor fibres arise from cell bodies in the otic ganglion
- Auriculotemporal nerve
- Preganglionic fibres arise from cell bodies in the inferior salivary nucleus in the medulla
- Tympanic branch of the glossopharyngeal nerve, tympanic plexus and the lesser petrosal nerve
- Sympathetic vasoconstrictor fibres
- Plexus on the external carotid and middle meningeal arteries



LATERAL VIEW OF THE FACE

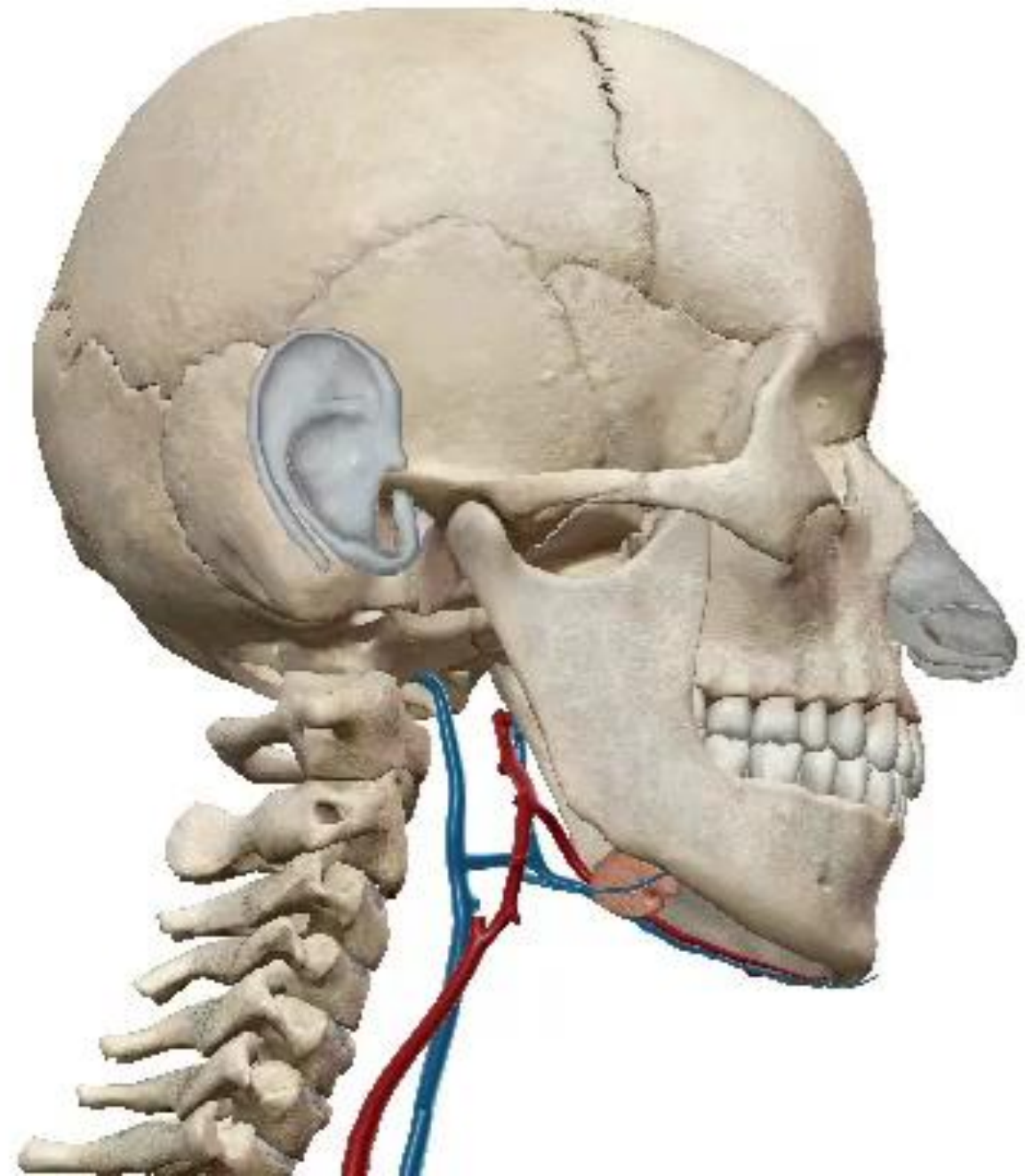
B. SUBMANDIBULAR GLAND

1. Arteries:

- Facial artery

2. Veins:

- Facial vein

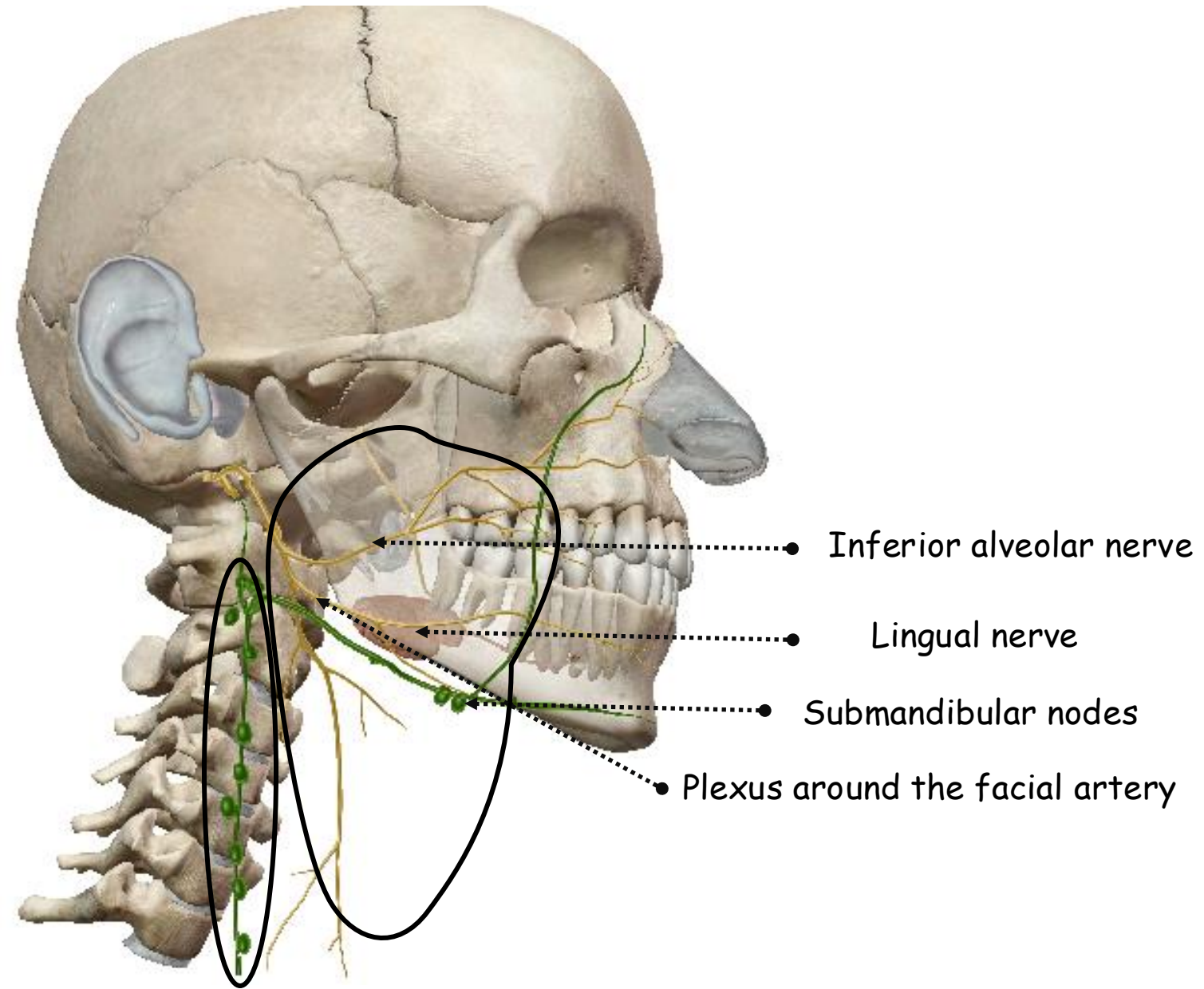


3. Lymph drainage:

- Submandibular nodes

4. Nerves:

- Secretomotor fibres to the gland have their cell bodies in the submandibular ganglion
- The preganglionic fibres pass from cell bodies in the superior salivary nucleus in the pons by way of the nervus intermedius, chorda tympani and the lingual nerve
- Sympathetic vasoconstrictor fibres come from the plexus around the facial artery



INFEROLATERAL VIEW OF THE FACE

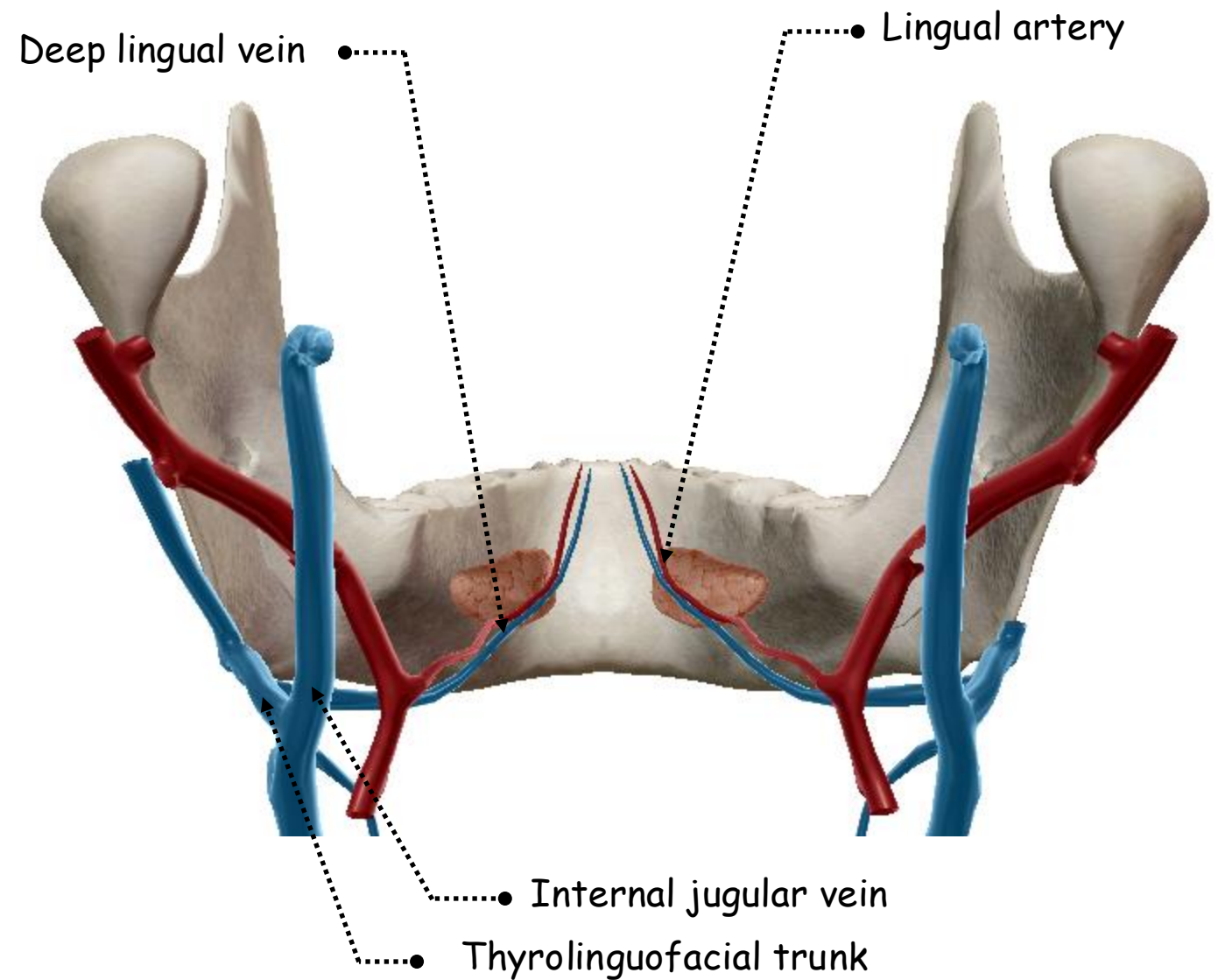
C. SUBLINGUAL GLAND

1. Arteries:

- Lingual artery
- Branches of the submental artery

2. Veins:

- Deep lingual vein



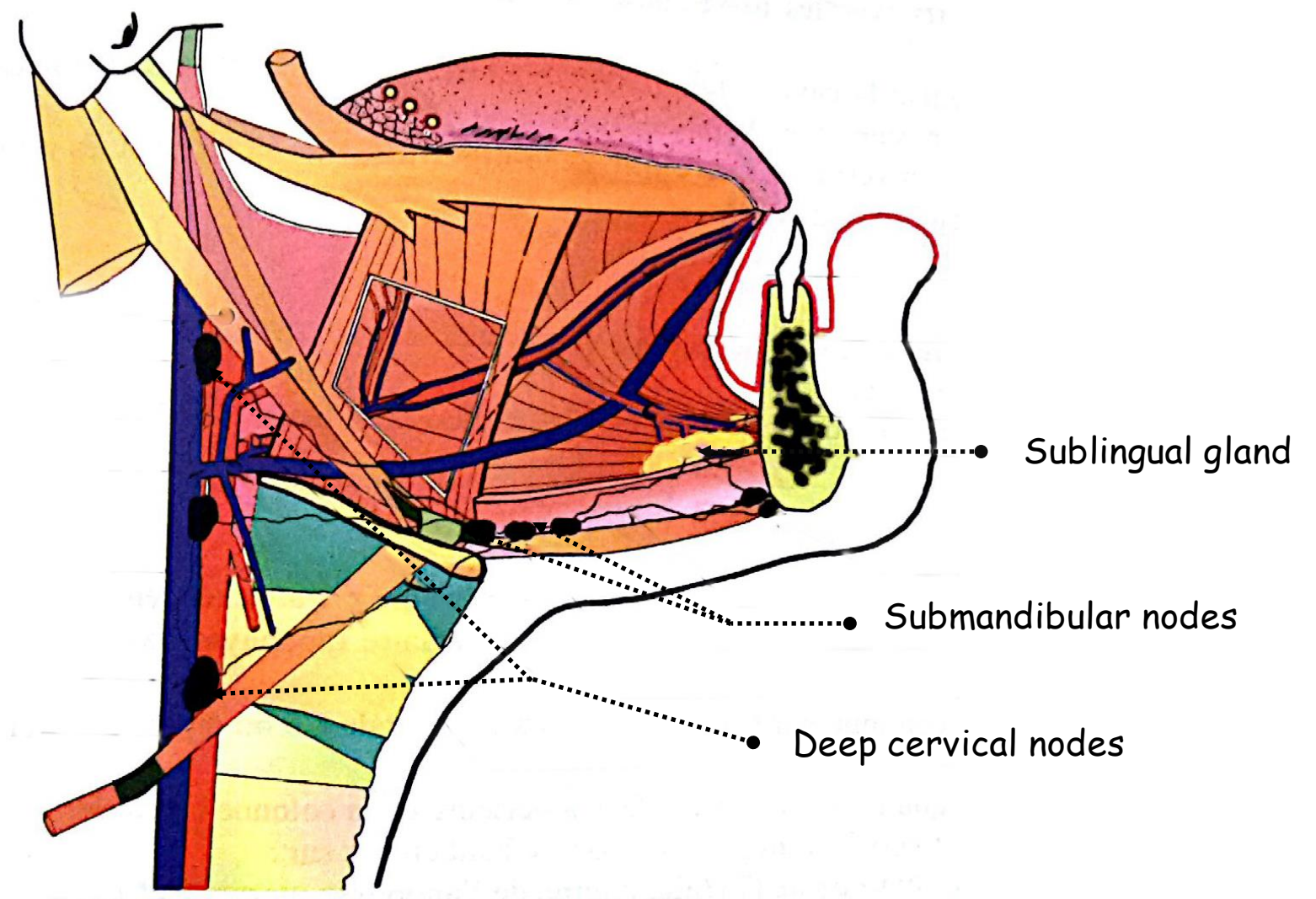
POSTERIOR VIEW OF THE MANDIBLE

3. Lymph drainage:

- Submandibular nodes

4. Nerves:

- Submandibular ganglion



LATERAL VIEW OF THE FACE AND THE NECK

VI. SURGICAL APPROACH

A. PAROTID GLAND

- **Parotidectomy:**
 - Danger: facial nerve

B. SUBMANDIBULAR GLAND

- **Removal:**
 - Danger: marginal mandibular branch of the facial nerve, lingual and hypoglossus nerves
- **Removal of stone from the duct:**
 - Within the mouth over the stone



VII. CONCLUSION

- Main and scattered glands
- Secrete saliva
- Several vascular and nervous relations
- Rich blood supply
- Lymph drainage is ensured by deep cervical nodes





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