Temporal fascia: -

**Definition:** Fascia covering the temporalis muscle.

**Attachment:**

**Above,** to the superior temporal line

**Below,** it splits into

- The superficial layer is attached to the upper border of the zygomatic arch
- The deep layer passes deep to the zygomatic arch and continues with the fascia on the inner surface of the masseter.

**Importance:**

Deep surface gives origin to the superficial fibers of the temporalis muscle

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MUSCLES OF MASTICATION

1. Temporalis

**Origin:**

1. Superficial fibers from temporal fascia
2. Deep fibers from temporal fossa

**Insertion:**

1. Coronoid process of the mandible: In its tip, anterior border and medial surface.
2. Anterior border of the ramus of the mandible.

**Nerve supply:** two deep temporal nerves from the anterior division of the mandibular nerve.

**Action:** (elevate and retract the mandible)

1. The anterior vertical fibers of the muscle **elevate** the mandible.
2. The posterior horizontal fibers **retract** the mandible.

2. Masseter

**Origin:** 2 heads:

1. The superficial head: from the lower border of the *zygomatic arch*.
2. The deep head: from the deep surface of the *zygomatic arch*.

**Insertion:**

1. The superficial head: the lower border of the ramus of the mandible.
2. The deep head: lateral surface of the coronoid process.

- Both heads become continues in front, and open posteriorly where the nerves and vessels pass to the muscle.

**Nerve supply:** Masseteric branch from the anterior division of the mandibular nerve.

**Action:** Elevates and protract the mandible.
3. **Lateral pterygoid**

**Origin:** This arises by two heads;

1. **Upper head:** from the infratemporal surface of the greater wing of the sphenoid & infratemporal crest...

2. **Lower head:** from the lateral surface of the lateral pterygoid plate of the sphenoid bone.

**Insertion:**

1. The fibers of the upper head inserted into the capsule and the intra-articular disk of the temporomandibular joint.

2. The fibers of the lower head inserted into the pterygoid fossa or fovea on the neck of the mandible.

**Nerve supply:** Branch from the anterior division of mandibular nerve.

**Action:** Protract, depress and push the mandible to the opposite side.

4. **Medial pterygoid**

**Origin:** arises by two heads:

1. **Deep head:** from the medial surface of the lateral pterygoid plate.

2. **Superficial head:** arises from the maxillary tuberosity.

**Insertion:** Into the inner surface of the angle of the mandible (pterygoid tuberosity)

**Nerve supply:** From the trunk of the mandibular nerve.

**Action:** Elevate, protract and push the mandible to the opposite side.

**Action of muscles of mastication:**

- All the muscles protrude the mandible except Temporalis retract it
- All the muscles elevate the mandible except lateral pterygoid depress it
- Medial and lateral pterygoid move the mandible from side to side as in chewing action
Muscles attached to the mandible:

Muscles of mastication
1. Medial pterygoid
2. Lateral pterygoid
3. Masseter
4. Temporalis

Muscles of the floor and wall of the mouth:
1. Mylohyoid muscle
2. Geniohyoid
3. Genioglossus
4. Anterior belly of digastric
5. Superior constrictor muscle of the pharynx

Muscles of facial expression:
1. Platysma
2. Buccinator
3. Mentalis
4. Depressor anguli oris
5. Depressor labii inferioris

Ligaments attached to the mandible:
2 S
a. Sphenomandibular ligament
b. Stylomandibular ligament

2 T
a. Pterygopalatine ligament
b. Temporomandibular

Arteries related to the mandible:
1. First part of the maxillary artery: medial to the neck
2. Termination of the external carotid: behind the neck
3. Inferior alveolar artery: in the mandibular canal
4. Mental artery: come out from the mental foramen
5. Facial artery: related to the lower border of the mandible
6. Mylohyoid artery: in the mylohyoid groove
7. Masseteric artery: in the mandibular notch
Nerves related to the mandible:

1. Mylohyoid nerve: in mylohyoid groove
2. Lingual nerve: related to the last molar teeth
3. Inferior alveolar nerve: in mandibular canal
4. Mental nerve: come out mental foramen
5. Auriculotemporal nerve:
6. Nerve to masseter: in mandibular notch

Age changes in the mandible:

At birth: the mental foramen near the lower border, and no teeth eruption

In adults: the mental foramen midway between upper and lower borders and there is teeth eruption

In the old age: the mental foramen near the upper border and the teeth fall out (absorption of the alveolar margin)
Blood supply of the infratemporal region

1) Maxillary artery
2) Maxillary vein
3) Pterygoid venous plexus

The maxillary artery

Origin:
* One of the 2 terminal branches of the external carotid artery
* It arises within the substance of the parotid gland (behind the neck of the mandible)

Course and relations:
The course of the artery divided into 3 parts..

The 1st part:
- The artery arises within the parotid gland and runs forward to enter the infratemporal fossa to come in relation to the lower border of the lateral pterygoid muscle
- It runs medial to the neck of the mandible (between the neck of the mandible and sphenomandibular ligament)
- It crosses the lingual nerve and inferior alveolar nerve below the lower border of the lateral pterygoid.

The 2nd part:
- It runs either deep or superficial to the lateral pterygoid muscle
- It form a loop between the 2 heads of the muscle if it is deep to it

The 3rd part:
- It runs between the 2 head of the lateral pterygoid muscle
- Runs through the pterygomaxillary fissure and enters into the pterygopalatine fossa
Branches of the maxillary artery:

Branches of the first part:

1. **Deep auricular:**
   - Enters the external ear between the bony and the cartilaginous parts
   - Supply the tympanic membrane

2. **Anterior tympanic:**
   - Enters the middle ear through squamotympanic fissure
   - Supply the inner side of tympanic membrane and middle ear

3. **Middle meningeal artery:**
   - Enters the cranial cavity through foramen spinosum
   - Supply the dura mater

4. **Accessory meningeal artery:**
   - May arise from the middle meningeal artery
   - Enters the skull through foramen oval
   - Supply the dura mater
5. **Inferior alveolar artery:**
   - It is the arterial supply of the lower jaw (teeth and gum)
   - It enters the mandibular foramen to run in the Mandibular canal
   - It gives the following branches:
     1. **Myelohyoid artery:** to the myelohyoid muscle and anterior belly of digastrics
     2. **In the Mandibular canal:** it supplies the molar and premolar teeth
     3. **Incisive artery:** to the incisive and canine teeth
     4. **Mental artery:** comes out from the mental foramen to the supply the chin and lower lip

**Branches of the second part:**

1) **Pterygoid branches:** to the pterygoid muscles

2) **Deep temporal arteries:** to the deep surface of temporalis muscle

3) **Masseteric branch:** to the masseter muscle. It passes through the Mandibular notch to the deep surface of the muscle

4) **Buccal artery:** runs with the buccal nerves
Branches of the 3rd part:

1) **Posterior superior alveolar artery:**
   - Arise before the artery enters the pterygomaxillary fissure
   - Descends on the back of maxilla to supply the following:
     - Molar and premolar teeth of the upper jaw and related gum

2) **Infraorbital artery:**
   - Enters the orbit by passing through inferior orbital fissure
   - Reach the face after passing in the infraorbital groove, canal and foramen
   - Branches: it gives...
     - Orbital: for some ocular muscles and Lacrimal sac
     - Middle superior alveolar and anterior superior alveolar: for the incisors and canine teeth
     - Terminal branches in the face: NLP (nasal - labial – palpebral)

3) **Greater palatine artery:**
   - Passes through the greater palatine canal and foramen to the hard palate
   - It gives branches:
     - Supply the hard palate, Gum, mucosa of the roof of the mandible
     - Lesser palatine branch to the soft palate
     - Nasal branch for the nose passes through incisive foramen.

4) **Pharyngeal artery:** supplies the roof of the pharynx

5) **Artery of the pterygoid canal:** supplies the upper part of the pharynx

6) **Sphenopalatine artery:** to the nasal cavity
Pterygoid Venous Plexus

- It is formed of numbers of veins on the lateral pterygoid muscle

Communication of the plexus: it communicates with

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<td>1- Cavernous sinus</td>
<td>By emissary veins passing through the foramen ovale</td>
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<tr>
<td>(venous sinus present inside the cranial cavity on each side of the body of sphenoid bone)</td>
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<tr>
<td>2- Ophthalmic veins</td>
<td>By emissary veins passing through pterygopalatine fossa and inferior orbital fissure</td>
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<tr>
<td>(veins present in the orbit)</td>
<td></td>
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<tr>
<td>3- The anterior facial vein</td>
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<td>4- Pharyngeal venous plexus</td>
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Tributaries:

* Veins corresponding to the branches of the 2nd and 3rd parts of the maxillary artery...
* Drain into the Maxillary vein...

Clinical importance:

* It may be punctured during anaesthesia to the superior alveolar nerves. This may lead to bleeding in the infratemporal fossa. The bleeding may reach the orbit through inferior orbital fissure to produce black eye sign.

Maxillary vein

* Corresponding to the 1st part of the maxillary artery
* Drain the pterygoid venous plexus
* Unites with the superficial temporal vein to form the retromandibular vein in the substance of the parotid gland
* The retromandibular vein soon divides into anterior an posterior divisions.
Temporal region and muscle of mastication

Dr. Hany Sonpol

MAXILLARY ARTERY

In infratemporal fossa, either within or lateral to the superficial head of lateral pterygoid muscle. This muscle is shown below.

Middle meningeal (foramen spinosum)
Anterior tympanic (petrotympanic fissure)
Deep auricular (squamos tympanic fissure)
Superficial temporal

Accessory meningeal (foramen ovale)
Deep temporal a

Muscular branches
Buccal a
Lingual a

Infra-orbital (same fissure)
Posterior superior alveolar (same foramina)
Sphenopalatine (same foramen)
Greater/lesser palatine (same foramina)
Pharyngeal (palatovaginal canal)

+ an artery to the pterygoid canal

BEFORE LATERAL PTERYGOID
5 BRANCHES INTO BONE

LATERAL OR WITHIN LATERAL PTERYGOID. 4/5 BRANCHES TO SOFT TISSUE

BEYOND LATERAL PTERYGOID
5/6 BRANCHES WITH NERVES
Infratemporal fossa

* Infratemporal fossa lies below the anterior part of temporal fossa and behind the maxilla.

Boundaries of the infratemporal fossa:

1) Roof: Formed by
   * The infratemporal surface of greater wing of the sphenoid
   * Small part of the squamous part of temporal bone.
   * It shows 2 foramina: ovale and spinosum

2) Medial wall: formed by the lateral pterygoid plate.
3) Anterior wall: formed by the back of maxilla.
4) Lateral wall: formed by the zygomatic arch and ramus of mandible.