

Muscles of Facial Expression

Introduction

- ✓ The facial muscles are the skeletal muscles that are embedded in the superficial fascia of the face in a single fibromuscular layer known as SMAS (Superficial Musculo Aponeurotic System).
- ✓ The facial muscles arise from the bones of the skull and all insert into the skin or other facial muscles.
- ✓ The primary role of the facial muscles is to regulate (constrict or dilate) the facial orifices (i.e., the orbits, nostrils, and mouth), thus producing various expressions which are essential for non verbal communication.
- ✓ All the facial muscles develop from the **second pharyngeal arch (hyoid arch)**, this arch is innervated by the **facial nerve**, therefore all the muscles derived from this arch is supplied by facial nerve
- ✓ Injury to facial nerve leads to (paralyzed face), Bell's palsy is the most common type of facial paralysis.
- ✓ The auricular muscles that control the movement of the auricle are essentially a group of vestigial muscles in humans, but they are very active in animals.
- ✓ Clinically on aging or due to hyperactive muscles; rhytids or wrinkles (lines on skin) are formed in the face in a direction perpendicular to the direction of muscle fibers.

Scalp group of muscles

Frontalis:

It is the anterior belly of occipitofrontalis muscles. This muscle has no bony attachments, arise from the skin of the brow and terminate in the scalp aponeurosis. The muscle runs in a vertical direction, and as such, contraction will result in eyebrow elevation and horizontal forehead rhytids above the brow level.

Orbital group of muscles

i. Orbicularis Oculi:

The orbicularis oculi is the sphincter muscle of the eyelids. The levator palpebrae superioris is a dilator muscle since it elevates the upper eyelid and will be described later with the orbit.

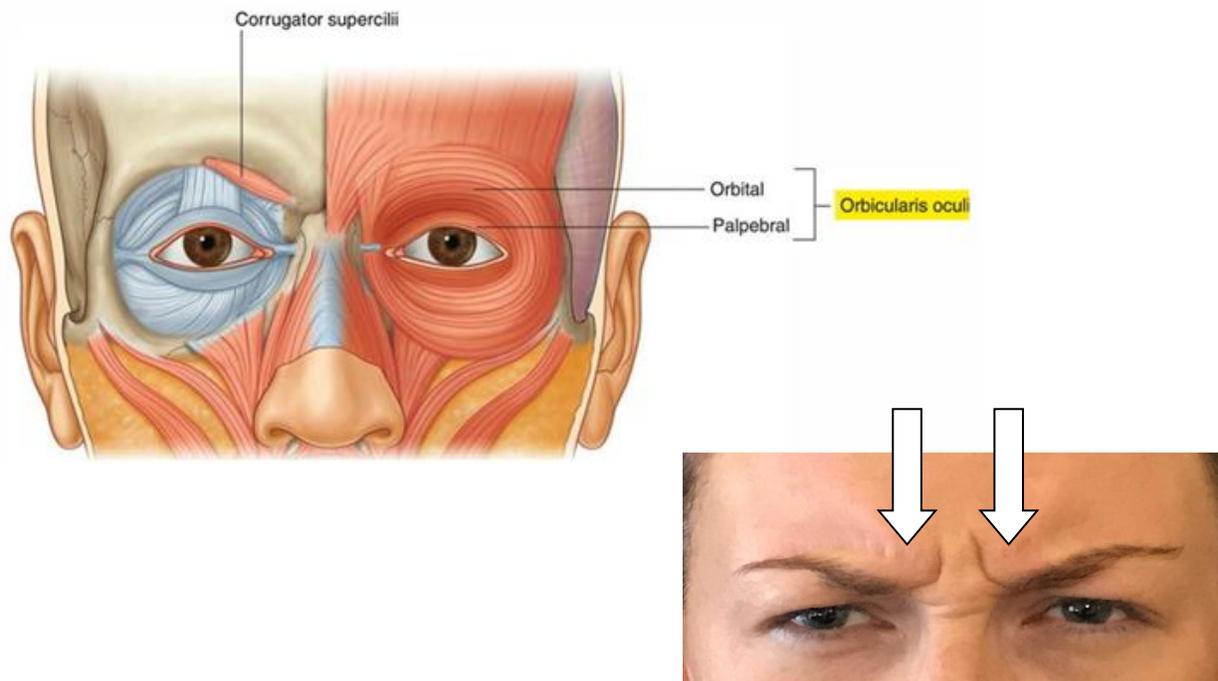
The orbicularis oculi is a broad, flat muscle that encircles the palpebral fissure. The muscle originates from the medial orbital rim and medial palpebral ligament. The muscle consists of two parts: the thicker orbital part; which is the outer circle which runs over the orbit and forms loops return to the origin, and the thinner, palpebral part which encircles the palpebral fissure and forms the upper and lower lids. The palpebral part inserts to the lateral palpebral ligament.

Contraction of palpebral part alone results in gentle closure of the lids while contraction of both palpebral and orbital parts results in forceful closure of the lids. Hyperactivity can cause “crow’s feet” rhytids at the lateral orbital margin.

ii. Corrugator supercilii:

This muscle attaches to superciliary arch and inserts to the skin of eye brow. The muscle lies deep to O.Oculi muscle. Contraction of this muscle draws the

eyebrows medially and inferiorly to produces vertical wrinkles known as “frown lines or Glabellar lines” in the glabellar region (which lies between the eyebrows).



Nasal group of muscles

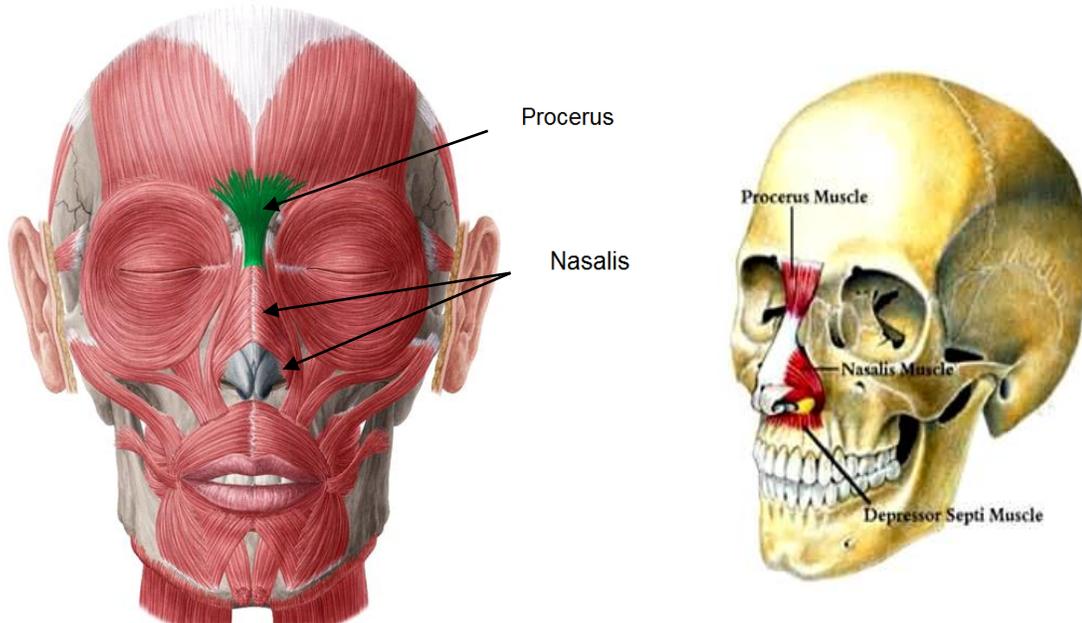
a) Procerus:

The procerus muscle is overlying the nasal bones and inserting on the skin between the eyebrows. It draws down the medial part of brow. Contraction of this muscle produces horizontal rhytids over the nasal dorsum.

b) Nasalis:

Nasalis is a paired muscle that covers the dorsum of the nose. It consists of two parts; compressor naris and dilator naris.

Contraction of compressor naris muscle causes the “bunny lines” on the nasal dorsum, while the dilator naris and levator labii superioris alaeque nasi are the dilator muscles of nasal apertures which cause widening of nostrils openings.



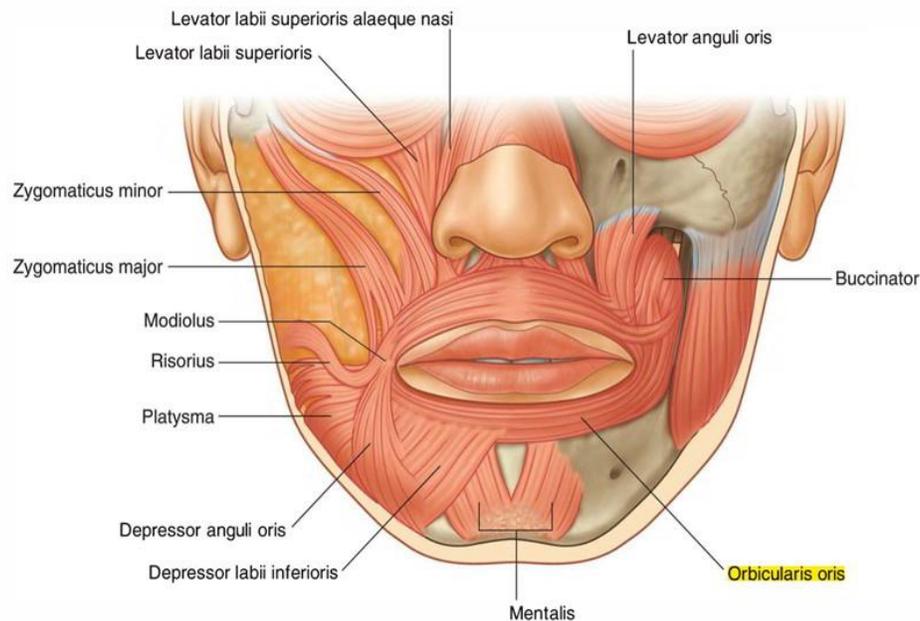
Oral group of muscles

1. Orbicularis Oris:

The orbicularis oris forms the bulk of upper and lower lips. The muscle is a circular sphincter of the mouth and originates from the midline of maxilla and mandible to be inserted in the skin of upper and lower lips

A series of small muscles that blend with O. Oris muscle and radiate out from the lips make up the dilator muscles, their action is to separate the lips. These muscles are named as follows:

- 1_ Levator labii superioris alaeque nasi (this also dilates the nostril)
- 2_ Levator labii superioris 3_ Zygomaticus minor
- 4_ Zygomaticus major 5_ Levator anguli oris (deep to the zygomatic muscles)
- 6_ Risorius 7_ Buccinator
- 8_ Depressor anguli oris 9_ Depressor labii inferioris
- 10_ Mentalis



2. Levator Labii Superioris Alaeque Nasi:

This muscle arises from the upper part of the frontal process of the maxilla and passes inferiorly, lateral to the alar cartilage to be inserted on the upper lip, blending with the orbicularis. Contraction dilates nasal ala, and elevates the upper lip.

3. Levator Labii Superioris:

This muscle arises from the inferior orbital margin above the infraorbital foramen and inserts into the upper lip, lateral to the levator labii superioris alaeque nasi. Contraction elevates the upper lip.

4. Zygomaticus Minor:

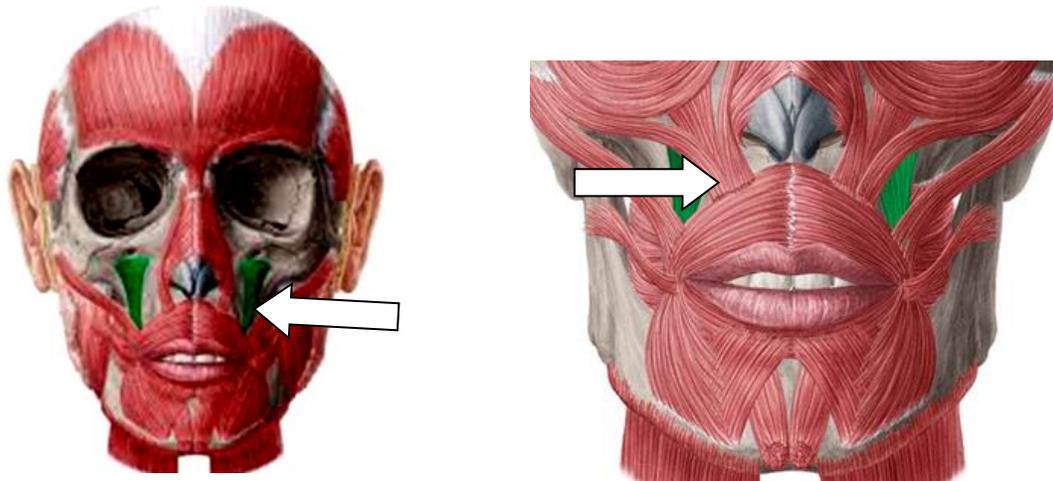
The zygomaticus minor arises from the lateral surface of the zygoma and inserts into the upper lip, just lateral to the levator labii superioris. Contraction will cause elevation of the upper lip.

5. Zygomaticus major:

This muscle runs from the zygomatic bone to the muscular modiolus (the modiolus is best described as a dense, fibromuscular interface of the muscles contributing to oral commissure movement). Contraction pulls the angle of the mouth superolaterally. It is commonly known as laughing muscle due to its action.

6. Levator Anguli Oris:

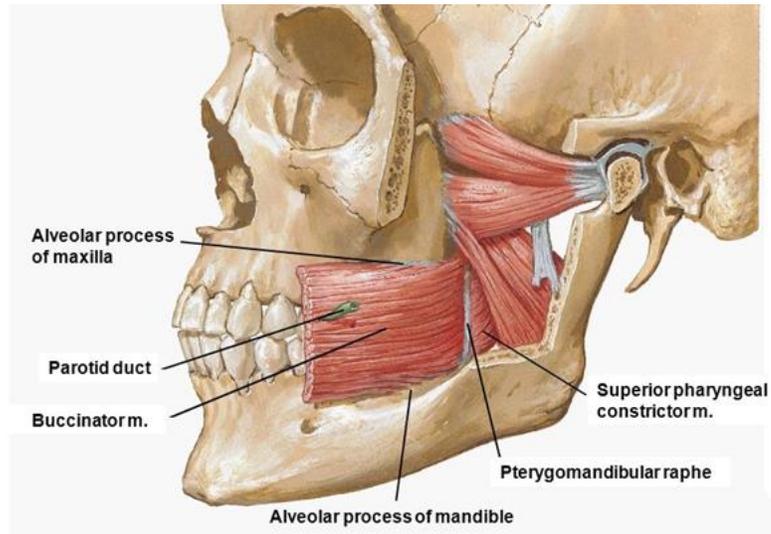
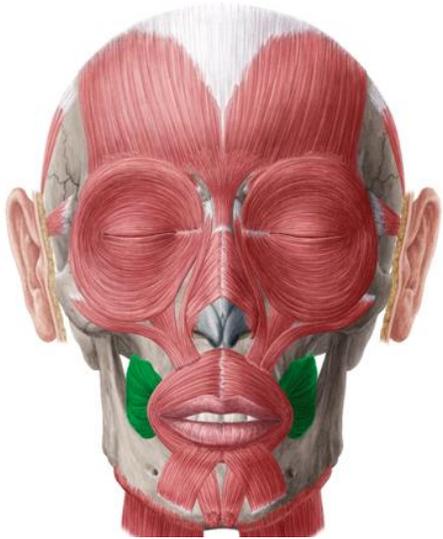
This muscle arises from the canine fossa in maxilla below the infraorbital foramen and inserts into the modiolus at the angle of mouth. The muscle lies deep to Levator Labii Superioris muscle and passes beneath it. From its name; the muscle elevates the angle of mouth.



7. Buccinator:

The buccinator muscle originates from the outer surface of the alveolar margins of the maxilla superiorly and mandible inferiorly opposite the molar teeth and from the pterygomandibular ligament posteriorly. The muscle fibers pass forward, forming the muscle layer of the cheek. The parotid duct pierces the muscle to open in oral buccal mucosa. The buccinator muscle blends with the orbicularis oris muscle.

The buccinator compresses the cheeks and lips against the teeth, thus positioning the food for efficient chewing. The compression action also is important in producing sucking as in neonates feeding. Cheek compression is also important in producing blowing actions, as in blowing the musical instruments.



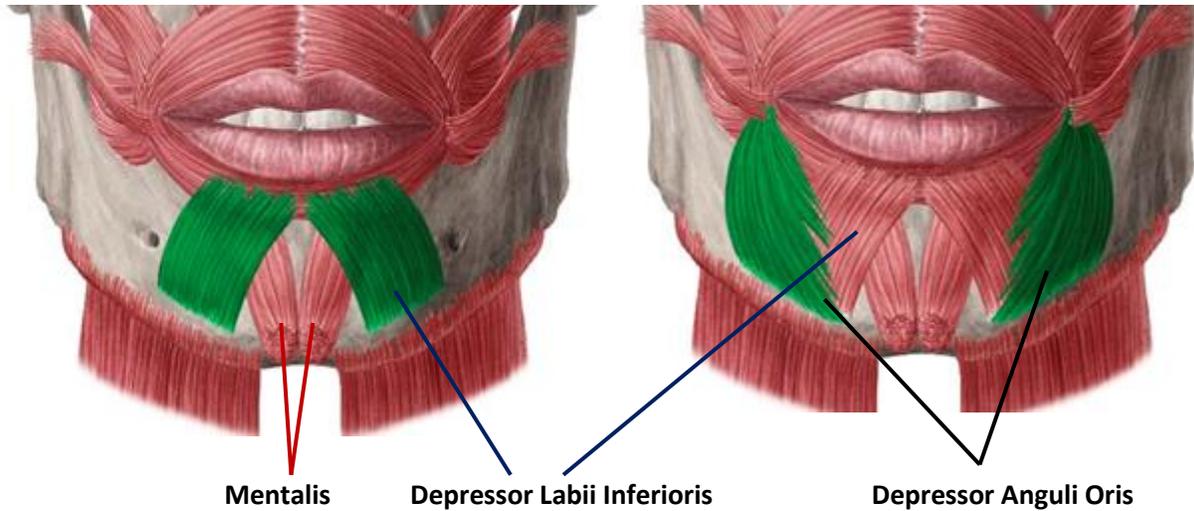
8. Depressor Labii Inferioris:

The depressor labii inferioris arises from the mandible inferior to mental foramen, and inserts on the skin and mucosa of the lower lip. Contraction depresses the lower lip.

9. Depressor Anguli Oris:

This muscle originates from the mandible, lateral to Depressor Labii Inferioris and passes superficial to this muscle, to be inserted to the modiolus and angle of the mouth.

Contraction causes the angle of the lower lip to depress (antagonize the action of Levator Anguli Oris). On aging this muscle produce the “marionette lines” in the face.



Summary 1: The muscles around the mouth:

- **Elevating the upper lip:** levator labii superioris, levator labii superioris alaeque nasi, risorius, levator anguli oris, zygomaticus major and zygomaticus minor muscles.
- **Depressing and protruding the lower lip:** depressor labii inferioris, depressor anguli oris and mentalis muscles.
- **Closing the lips:** orbicularis oris muscle.
- **Compressing the cheek:** buccinator muscle.

Summary 2: all the muscles innervated by the facial nerve- CN VII-

| Muscle | Origin | Insertion | Action |
|---------------------------------|---|---|---|
| Scalp muscle | | | |
| 1. Frontalis | Mentioned in the previous lectures | | |
| Orbital Group | | | |
| 2. Corrugator Supercilii | Superciliary arch (frontal bone) | Skin of eye brow (medial part) | Frowning vertical lines (glabellar lines) |
| 3. Orbicularis Oculi | -Medial palpebral Ligament - bones of medial orbital rim | - lateral palpebral Ligament (palpebral part) -loops return to origin (orbital part) | close the eyelids |

| Nasal Group | | | |
|---|---|--|--|
| 4. Procerus | Nasal bones | Skin of the bridge of the nose | Frowning horizontal lines over nasal bridge |
| 5. Compressor Nasi | Maxilla | Bridge of the nose | Compresses the nostrils |
| 6. Dilator Naris | Maxilla | Ala of the nose | Dilate the nostrils |
| 7. Depressor Septi | Maxilla above the incisors (incisive fossa) | Nasal septum | Depress the nasal septum |
| Oral Group | | | |
| 8. Orbicularis Oris | Midline of Maxilla and Mandible | Skin of the upper and Lower lips | Sphincter of the mouth |
| 9. Levator Labii Superioris Alaeque Nasi (LLSAN) | frontal process of the maxilla | upper lip blending with the orbicularis oris | } dilates the nostrils } elevates the upper lip |
| 10. Levator Labii Superioris (LLS) | inferior orbital margin | upper lip (lateral to the LLSAN) | |
| 11. Zygomaticus Minor | the lateral surface of the zygoma | upper lip, just lateral to LLS | |
| 12. Zygomaticus Major | Zygoma (lateral to Zgomaticus Minor) | Upper lip and modiolus | Pulls the angle of the mouth superolaterally |
| 13. Levator Anguli Oris | canine fossa (maxilla) | Angle of the mouth | Elevates the angle of mouth |
| 14. Risorius | Fascia overlying the parotid gland | Angle of the mouth | Pull the angle of the mouth laterally |
| 15. Buccinator | - Maxilla Superiorly -Mandible inferiorly - Pterygomand. ligament posteriorly | Modiolus and Orbicularis oris | Compress lips and cheek against teeth (chewing, Sucking and Blowing) |
| 16. Depressor Labii inferioris | Mandible (inferior to mental foramen) | Blend with O.Oris of the lower lip | Depress the lower lip |
| 17. Depressor Anguli Oris | Mandible (lateral to Depressor labii) | Angle of the mouth | Depress the angle of the mouth |
| 18. Mentalis | Incisive fossa of the mandible (below incisors) | Skin of chin and lower lip | Protrude the lower lip |

This is the End of the Lecture – Good Luck