The persecution of Christians began in Alexandria during the reign of the Emperor Philip. The first victim of the pagan mob was an old man named Metrius, who was tortured and then stoned to death. The second person who refused to worship their false idols was a Christian woman named Quinta. Her words infuriated the mob and she was scourged and stoned. While most of the Christians were fleeing the city, abandoning all their worldly possessions, an old deaconess, Apollonia, was seized. The crowds beat her, knocking out all of her teeth. Then they lit a large fire and threatened to throw her in it if she did not curse her God. She begged them to wait a moment, acting as if she was considering their requests. Instead, she jumped willingly into the flames and so suffered martyrdom.

Skeleton of the face, thickened and weakened skull areas. Formation of jaws and dental arches. Anatomical base of clefts of face and palate.
rovina okluze  occlusal plane
protetická rovina  Camper plane
vodorovná rovina  horizontal plane
areae intermingling together better regiones
30 yr man

3D visual methods
Skull with cavities tendinous insertions; ligaments projection of the nerves and vessels; their arrangement
Topographic relation between structures
Fig. 7. Twins (natural age 61) with significant difference in sun exposure. Twin B (B) had approximately 10 hours per week greater sun exposure than twin A (A). Twin A had a body mass index 2.7 points higher than that of twin B. The perceived age difference was 11.25 years. Reprinted with permission from Plast Reconstr Surg. 2009;123(4):1321-1331.
Face: What can be focused on?
Characteristics of aging

- Wrinkles
- Drooping brows
- Hollowing eyes
- Sagging cheeks
- Nasolabial folds
- Downturning mouth angle
Rysy obličeje - vztah mezi tvrdými a měkkými tkáněmi
Face features - relation between soft and hard tissues

Prototypic female face of high attractiveness
("sexy face")

Prototypic female face of low attractiveness
("unsexy face")
A new classification of the nasolabial fold for use during facial reanimation surgery.

Skin relief is roughly determined by muscles and bones and formation of the subcutaneous tissue.
Mimic muscles in head mm. faciales

Inervation from n. facialis (nervus cranialis septimus; VII.)
muscles:

- Head vault
- Proper facial muscles
  - Muscles around eye
  - Muscles around nose
  - Muscles around oral cavity
- Muscles around external ear

VII – FACIALIS Derivatives of the 2. pharyngeal arch
Mimické svaly     cévy obličeje
Mimic muscles     face vessels

trigonum mortis
H. Chang: Arterial anatomy of subdermal plexus of the face. Keio J Med 50: (1)31-34
Vazivové a tukové oblasti
Fibrous and fat Compartments
Fig. 1. Six locations of cross-sections for histological study:

- **Type 1**
  - Epidermis
  - Dermis
  - SMAS
  - Fat lobules
  - Fibrous septae
  - Periostea
  - Mimic muscles

- **Type 2**
  - Epidermis
  - Dermis
  - SMAS
  - Fat cells
  - Collagen fibers
  - Muscle fibers

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*Fig. 8.* Cross-section of the nasolabial fold. Masson-Goldner's trichrome, ×2.8.

*Fig. 9.* Cross-section of the nasolabial fold. Picrosirius red in polarized light, ×2.8.

*Fig. 10.* Cross-section of the lower lip. Masson-Goldner's trichrome, ×2.8.
Fasciocutaneous ligg. - stippled areas

Osteocutaneous ligg. - in black

Fig. 6 The zygomatic ligaments along the lower edge of the orbicularis oculi muscle. They are inserted close to the zygomaticus major and zygomaticus minor muscles.
ligamentum mandibulare
Expression of the main genetically active genes in face

- **WNT**: Wingless type
- **PAX6**: Paired box 6
- **DLX**: Distal-less homeobox
- **BARX**: Barx homeobox
- **GSC**: Goosecoid homeobox
- **BMP**: Bone morphogenetic protein
- **FGF8**: Fibroblast growth factor 8
- **PAX9**: Paired box 9
• Adipocire changes follow generally facial parts rich by fat
Mrtvý ležící
Dead horizontal position

Živý stojící
Erectile position
Transitional zone on lip

Sulcus buccolabialis

Sulcus buccolabialis

Labium superius

Labium inferior

Sulcus nasolabialis

Přechodní zóna rtů

Transitional zone on lip

Philtrum

Tuberculum labii superioris

Rima oris

Sulcus mentolabialis
Určení vrstev? Determination of layers? Prvě pokusy? First attempts

Bryan Mendelson, and Chin-Ho Wong, Anatomy of facial ageing. Commentary 4.3e47-e51

**Fig. 9-5**  
A. The estimated course of the frontal branch of the facial nerve from a line that begins at the inferior aspect of the ear lobe and bisects another line connecting the superior border of the tragus to the lateral canthus. The facial plane is prepared. 
B. Endoscopic view of the zygomaticofacial (temporal) vein, a more accurate landmark to determine the location of the frontal branch.

**Fig. 9-4**  
Fascial planes over the temporalis muscle, the temporal line, and the superior orbital rim.
Fat in face is missing due to age gradually.
• The subcutaneous fat of the face is divided into numerous, anatomically separable clusters.
• Sulcus nasolabialis is a fine groove with well-defined anatomical borders.
• Face fat (not Bichat's pillow) is divided into three sections: internal, middle and side.
• In the area of the forehead, three fat sections can be identified: the middle, side and intersecting sections between the middle and the lateral.
• Ophthalmic fat can be divided into three parts separated by septa.
• Grease in the chin is the lowest stored fat area of the face.
• Some structures between the skin and the periosteum are described as so-called "retaining ligaments" and form a septum link between adjacent fatty regions.
1. The eyebrow falls and there is sub brow fat loss
2. Hollowness of the superior orbit
3. Prolapsed medial orbital fat pad
4. Looseness of lower eyelid
5. Prolapsed orbital fat pads inferiorly
6. Loss of mid face volume
7. Descent of mid face
8. Formation of tear trough secondary to loss of mid face volume and descent of mid face
9. Formation of nasolabial fold
10. Jowl line formation
11. Lips lose substantial volume and get thinner
Platysma

size: 8x12 cm
origin: Fascia upper part of the mm. pectoralis major and deltoideus
insertion: skin and subcutaneous layer of the lower face part.

! No direct connection with skull periosteum !

Vascular supply:
main source: a. submentalis
small source: a. suprasternalis

Nerve supply:
Motor: cervical branches of n. VII
Sensory: n. cervicalis transversus
Fig. 4.3.3 The origin of the jowl with age ing and the changing relations of platysma and masseter. A, In youth, platysma, which forms the roof of the lower premasseteric space, is in close and tight relation to the anterior border of masseter via the vertical line of ligaments. B, The jowl develops as a result of the developing laxity and distension of the septa-like lower masseteric ligaments. This allows enlargement of the lower premasseteric space, specifically of its anterior and lower boundaries and the adjacent roof. This ligamentous weakness allows the inferior extent of the buccal fat pad to prolapse, which contributes fullness to the labiomandibular fold above the jowl.
Suborbicularis oculi fat (SOOF) in the lower eyelid lies between the zygomatic bone and orbicularis oculi muscle. It can be located as a triangular bulk above insertion of the zygomaticus minor muscle; posteriorly covers beginning of the zygomatic major muscle and it is limited by ligaments called zygomatic ones.
A skin incision 1 cm away from the orbital rim.

Dissection down to the orbicularis oculi muscle.

m. orbicularis oculi is separated from the orbital septum.
Muscles around nose

- **M. nasalis**
  - from ventral maxilla surface to nose root; pars transversa (constrictor) et pars alaris (dilatator)

- **M. levator labii superioris alaquae nasi**
  - Pars nasalis et pars labialis

- **M. depressor septi nasi**
  - from ventral maxilla surface (fossa incisiva maxillae) to nose root and glabella

- **M. procerus**
  - from nose root (aponeurosis septi nasi) to glabella
lymph drainage of the external nose, cheeks and upper lip.
M. levator labii superioris
- Below orbital margine
- To the skin following nasolabial groove

M. zygomaticus minor
- Os zygomaticum
- To the distal area of the nasolabial groove

M. zygomaticus major
- From the proc. zygomaticus ossis temporalis
- To skin of the oral angle or to the orbicularis oris muscle
malar fat expansion

Face tvář

external malar pad

Vnější tvářové tukové těleso
Zygomaticus major – variations

cca 12 mm

Duplicit form (zygomaticus duplex)
Rarely connected with s m. marginalis oculi
**Traction muscles:** pars labialis m. levator labii superioris alaequeae nasi, levator labii superioris, zygomaticus minor, depressor labii inferioris, pars labialis platysmatis
Perpendicularly connect lip (depression, protraction, eversion)

**Muscles around corner:** m. levator anguli oris, depressor anguli oris, levator labii superioris, zygomaticus major, pars modiolaris platysmatis, buccinator, risorius, orbicularis oris, m. incisivus superior et m. incisivus inferior
Movement with mouth corner (elevation, depression, constriction and dilation rima oris)
orbicularis oris, buccinator, levator anguli oris, depressor anguli oris, zygomaticus major, risorius, platysma, levator labii superioris
FIG. 6.8. **Orbicularis oris and nasal musculature.** The nasalis and the depressor septi muscles interdigitate with the orbicularis oris muscle. A strong depressor septi muscle depresses the nasal tip with smiling and can be interrupted during rhinoplasty surgery to decrease active tip rotation.
intraoral dissection of the mimetic muscles using a fresh cadaver
A: maxilla
B: mandible
BM; buccinator, ILI; incisivus labii inferioris, ILS; incisivus labii superioris, LAO; levator anguli oris, MF; mental foramen, OO; orbicularis oris, S; buccomandibular space, sMT; superior portion of the mentalis
Buccal frenulum of the left maxilla

A: Before the removal of the mucosa
B: After the removal of the mucosa

Black arrows: lateral border of the incisivus labii superioris (ILS),
white arrows: anterior border of the buccinator
Figure 7: The measurement of the distance and circumference of the bony attachment. D: the distance from mid-line to innermost part of the bony attachment, H: length of horizontal part, L: length of lateral part, M: length of medial part (mm).
Buccal frenulum of the left mandible

A: Before the removal of the mucosa

B: After the removal of the mucosa (the MT and connective tissue underneath the lower labial frenulum have been separated)

Black arrows: lateral border of the upper part of the MT and ILI, white arrows: anterior border of the buccinator, arrowhead: mental foramen, ILI: incisivus labii inferioris muscle, MT: mentalis, OO: orbicularis oris
Schematic drawing of the buccomandibular space

A: boundary of the buccomandibular space
B: intraoral observation of the buccomandibular space

BM; buccinator, DAO; depressor anguli oris, DLI; depressor labii inferioris, ILI; incisivus labii inferioris, MM; masseter muscle, MT; (inferior and superior portion of the) mentalis OO; orbicularis oris, PM; platysma, S; buccomandibular space
Second buccal frenulum of the mandible

A: Before the removal of the mucosa

B: After the removal of the mucosa

C: Lateral view (right) of the buccal frenulum of the mandible

D: Lateral view (left) of the buccal frenulum of the mandible; note that the white arrow indicates the second buccal frenulum

Black arrows: lateral border of the upper part of the mentalis, white arrows: lateral border of the ILI, arrowhead: mental foramen
Face

Hluboké tukové těleso

internal fat pad - Bichatův polštář

Marie François Xavier Bichat
1771-1802
Fig. 115a The buccal fat pad and its processes (after Kahn, Sick, and Koritké 1988 after Bichat 1901)
1 Inferior portion of fat pad (jugal part)
2 Superior portion (latero-orbital part, laterosinusoidal part)
3 Masseteric process
4 Superficial temporal process
5 Deep temporal process
6 Pterygomandibular process
7 Interpterygoid process and pterygomandibular process
8 Sphenopalatine process
9 Inferior orbital process

Fig. 115b Buccal fat pad in a 67-year-old man
1 Oral mucosa and medial pterygoid muscle
2 Posterior and medial fibers of buccinator muscle
3 Mandibular insertion of buccinator muscle
4 Buccal fat pad and millimeter scale
5 Inferior alveolar nerve and artery (canal segment)
6 Masseter muscle and external carotid artery
7 Parotid gland
8 Fascia of buccal fat pad
Motor innervation
- nervus facialis
VII. CN nerve

 sutura tympanomastoidea
“drop off point - nejvíce vystupující bod“
n. VII. : tzv. „facial danger zones“ - Nerves and vessels are closer to face surface – they can be wounded
Fig. 3.1 Danger zone 1. This danger zone (red) extends from the inferior border of the zygomatic arch to a line above the bony lateral canthus. The zone curves anteriorly as shown from the lower line to the upper one. Within this zone, the temporal branch of the facial nerve is vulnerable to injury where it passes superficially in the superficial temporal fascia.
Fig. 3.2 Danger zone 2. The anterior continuous green line represents the most anterior position of the lateral border of zygomaticus major. The posterior continuous green line marks the most posterior part of the anterior border of the parotid gland. The borders of this triangular danger zone are formed in relation to these lines, with the base of the triangle running from the masseteric tuberosity at the angle of the mandible toward the oral commissure. The zygomatic and buccal branches of the facial nerve occupy this zone as they run on the buccal fat just underneath platysma.
Fig. 3.3 Danger zone 3. The marginal mandibular nerve occupies this danger zone, represented by a circle centered on the inferior border of the mandible, 2 cm posterior to the oral commissure. The nerve courses superficially in this zone.
IV.

Fig. 3.4 Danger zone 4. A circle of 1.5 cm diameter is centered on a point 2.5 cm from the midline along the supraorbital ridge, or on the supraorbital foramen or notch if palpable. The danger zone extends from the superolateral part of the circle along the superior temporal crest lines and for 1.5 cm medial to it, where the deep branch of supraorbital nerve passes on the periosteum. This danger zone includes the supraorbital nerve, deep branch of supraorbital nerve, and supratrochlear nerve.
Fig. 3.5 Danger zone 5. This danger zone is circular, centered on the infraorbital foramen. The foramen is usually 2.5 cm from the midline, close to the midpupillary line. The infraorbital nerve can be damaged here during deep dissections over the maxilla.
VI.

3 cm

Fig 3.6 Danger zone in. A circular area of 3 cm diameter centered on the mental foramen defines this danger zone. Note that the foramen is approximately in the midpylary line.
Fig. 3.7 Danger zone 7. This lies 6.5 cm below the external auditory meatus, in the middle of sternocleidomastoid, parallel to the external jugular vein. The greater auricular nerve is prone to injury as it passes through this danger zone behind the border of platysma.
How to identify openings in the facial part of the skull where nerves and arteries come to periphery.
Central and peripheral palsy of the CN VII.
Full line – nerve fibers are not affected
Interrupted line – nerve fibers are affected
Peripheral palsy affects full one half of face

Eylid is pushed down

Mouth corner is pushed down
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