The Face

Pictorial Atlas of Clinical Anatomy

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Prologue: The Face

Throughout an individual’s lifetime, there is a fateful connection between the face and the person. With the face, we recognize each other; we communicate with our facial expression. When we meet for the first time, it is the face that makes the first, unrepeatably visual impression.

We dress ourselves according to our mood, and according to the role we intend to play. In order to signal a certain identity, we are set, however, with the appearance of our face.

Purely morphologically, each face shows very individual characteristics and proportions.

Faces differ in countless nuances in relation to skin characteristics, the form and color of the eyes, the eye spacing, the outline of the eyebrows, the prominence of the cheeks, the contour of the nose, and the cut of the mouth and the chin, just to mention a few examples. From these features, not only Johann Caspar Lavater, the eighteenth century promoter of physiognomy, but also long before this Aristotle and peasant public opinion developed misguided theories of types.

Many people are not aware why they perceive a certain face as nice, friendly, personable and attractive — but not another one. However, the importance of our face is evident even at birth. There are studies that show that caresses of an infant by the mother are much more numerous and more intense when the mother finds her baby attractive.

So, very early, there is an intensive interaction between the expectations and fulfillments to the response by people — or a deep disappointment.

Moods are reflected in our facial expression; thus the face becomes a mirror of our soul.

Things like the luster of the eyes can hardly be influenced by the individual but are undoubtedly perceived by those around. The tension and activity of the muscles of facial expression contribute to the overall impression. It is not surprising that a complete lifetime can be engraved into the face by the permanent activity of the muscles of facial expression and, with this, the position, orientation and depth of the wrinkles and creases. Consequently, the face shows not only a spontaneous impression of the person but also a lived identity.

The interdependency between the face and the identity of a person has to be acknowledged not only by the individual but also by the therapist. In particular, severe malformations or traumatic facial damage, which cannot be hidden by clothing, causes the affected person to be mercilessly exposed during interactions with the world around. These individuals need the most advanced specialist efforts of medical science and technology. However, individuals who feel that their person, their identity, is not or is no longer congruent with their face also require special medical attention. The face can be subtly modified therapeutically, with a high degree of responsibility to balance the self-perception and the desires against the feasible changes. The detailed knowledge of the anatomy of the face is one of the many foundations for such interventions. This is the use that is intended for this atlas.
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The face

Fig 1-28 Right half of the face shows the subcutaneous fat layer removed and the cheek fat exposed. Left half of the face shows the orbicularis oculi muscle removed and the retroorbicularis oculi fat (ROOF), suborbicularis oculi fat (SOOF) and buccal fat pads exposed.
1.2.2  Muscles of the face in anterior view

The relationship between the fat compartments and the facial muscles was the main topic in the previous section. In the following figures, the facial muscles themselves will be addressed directly, starting again with the most superficial muscle layers of the face.

Fig 1-29  The left side of the face shows the superficial facial muscles. The occipitofrontalis muscle (seen here: frontal belly) is connected to the sturdy galea aponeurotica. Fiber tracts of the depressor supercilii muscles originate from the glabella region and become concomitant with the muscle fibers in the eyebrow region. Some muscle fibers merge with the orbicularis oculi muscle. In the region of the glabella, the procerus muscle stretches out and corresponds with the fibers of the underlying occipitofrontal muscles. The outer cartilaginous nasal skeleton is covered by the nasalis muscle, the anterior dilator nasis muscle and the compressor narium minor muscle. In the border between the orbicularis oculi muscle and the nose, the levator labii superioris alaque nasi muscle takes a narrow but long course. In the lower lip region, the orbicularis oris muscle is covered completely by the depressor anguli oris and depressor labii inferioris muscles. The upper lip is partly overlapped by the levator labii superioris alaque nasi, levator labii superioris and zygomaticus minor muscles. In the corner of the mouth, the zygomaticus major muscle inserts together with the risorius muscle, with fibers that preferentially run horizontally. Still further posteriorly, some extensions of the platysma muscle run across the margin of the jaw. The tip of the chin is dominated by the mentalis muscle. Large parts of the lower cheek muscles and the temporal region are still covered with solid fascia. The chiasm of the facial muscles at the corners of the mouth is called the modiolus. It is formed by the orbicularis oris, buccinator, levator anguli oris, depressor anguli oris, zygomaticus major, risorius and platysma muscles.

Fig 1-30  As soon as the platysma, the risorius muscle and the fascia in the deep cheek region are removed in the right part of the face, the parotid gland, the parotid duct, the masseter muscle and the buccal fat pad (of Bichat) become exposed.

Fig 1-31  After removal of the peripheral portion of the orbicularis oculi muscle in the left half of the face, the insertion of the levator anguli oris muscle in the maxilla becomes visible. Furthermore, in the left half of the face, the zygomaticus minor and major muscles and the depressor anguli oris muscles are removed. As a result, the course of the parotid duct, which crosses over the masseter muscle, can be traced. Also, some parts of the mandible become visible.

Fig 1-32  In the left half of the face, the depressor supercilii muscle has been removed to expose some parts of the corrugator supercilii muscle. Although most parts of this muscle run underneath the frontal belly of the occipitofrontalis muscle, its fibers must eventually penetrate this muscle. The complete removal of the orbicularis oculi muscle exposes the orbital septum. At its caudal margin, the infraorbital foramen becomes visible as soon as the levator labii superioris muscle has been elevated. This also allows the levator anguli oris muscle to be completely visible. Removal of the depressor labii inferiorus muscle exposes the lower lip portion of the orbicularis oris muscle. The fascia wrapping the parotid gland has also been removed.

Fig 1-33  When the temporal fascia is removed (left half of the face), the temporalis muscle becomes exposed. In addition, the temporal process of the buccal fat pad becomes visible. The chin region parts of the orbicularis oris muscle run underneath the depressor labii inferioris muscles and above the mentalis muscle.

Fig 1-34  The corrugator supercilii muscle runs underneath the frontal belly of the occipitofrontalis muscle. However, its fibers eventually penetrate the frontal belly in order to insert into the subcutaneous connective tissue. Portions of the procerus muscle, which runs on top of the frontal belly, have been kept visible in the left half of the face. Also in the left half of the face, the fascia of the masseter muscle has been removed. The parotid duct perforates the buccal fat pad and the buccinator muscle close to the anterior margin of the masseter muscle. The nasalis muscle, dorsal part, has been removed in the left half of the face to expose the upper lateral cartilage of the nose.

Fig 1-35  In the right half of the face, parts of the procerus muscle, which runs above the corrugator supercilii muscle, are preserved. All muscles that radiate into the perioral region, such as the levator anguli oris muscle (which still is visible in the right half of the face), have connections with the fibers of the orbicularis oris muscle.

Fig 1-36  The orbicularis oris and the buccinator muscles form a functional unit that embraces the oral cavity. As well as running around the oral cavity in a circular pattern, fibers of the orbicularis oris muscle also radiate into the buccinator muscle.

Fig 1-37  The oral vestibulum is formed by the buccinator muscle in the maxilla and mandible.

Fig 1-38  The right half of the face is shown with the buccinator muscle and gingiva maintained.
Fig 1-58  The continuity of the buccal fat pad into the temporal region becomes visible when the zygomatic arch and the masseter muscle are partly removed.

Fig 1-59  In the cheek region, all muscles are more or less tightly, but continuously, connected together and with the skin by means of interwoven connective tissue, the SMAS. From here, strands run toward the skin (false retaining ligaments) and form the septa of the compartments. There are also strands of connective tissue that insert into bone; these are called true retaining fibers.

The connective tissue may contain some fat, the amount varying from individual to individual.

This aponeurotic system is manipulated during facial cosmetic surgery, particularly rhytidectomy (facelift).

Fig 1-60  The SMAS is continuous with the facial muscles and allows facial expression. These connections between muscles and the connective tissue of the skin, or between muscles, are called false retaining ligaments.

Fig 1-61  There are also strands of connective tissue that insert into bone; they are called true retaining ligaments.

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**Fig 1-58** Zygomatic arch and masseter muscle partly removed to reveal the extension of the buccal fat pad with its temporal process.
**Fig 1-59** Detail of the superficial musculo-aponeurotic system (SMAS) in the cheek region.

**Fig 1-60** False retaining ligaments of the superficial musculo-aponeurotic system.

**Fig 1-61** True retaining ligaments of the superficial musculo-aponeurotic system.
• **Fig 3-54** Frontal section through the nasal cavity at the level of the incisor teeth.

• **Fig 3-55** Frontal section through the nasal cavity at the level of the first molar teeth.

• **Fig 3-56** Frontal section through the nasal cavity at the level of the second molar teeth.

• **Fig 3-57** Horizontal section through the nasal cavity at the level of the medial nasal concha.

• **Fig 3-58** Horizontal section through the nasal cavity at the level of the superior nasal concha.

• **Fig 3-59** Horizontal section through the nasal cavity at lower-eye level.

• **Fig 3-60** Horizontal section through the nasal cavity at mid-eye level.

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**Fig 3-54** Frontal section through the nasal cavity at the level of the incisor teeth.
The nasal cavity

Fig 3-55  Frontal section through the nasal cavity at the level of the first molar teeth.
Fig 3-56  Frontal section through the nasal cavity at the level of the second molar teeth.
**Fig 4-21** The mucosa at the ventral surface of the tongue is as thin as the one on the floor of the mouth. The thickness of the epithelium is only 0.2 mm. The blood vessels can be clearly seen through this thin epithelium; in some older individuals varicose veins may protrude.

**Fig 4-22** The tongue is a body with varying motility that completely fills the space palatal of the dental arches when the mouth is closed. The tip of the tongue can reach almost every point of the oral mucosa. The dorsal mucosa of the tongue is completely different from the epithelium at the ventral side. The epithelium of the dorsum of the tongue is keratinized. Underneath is a tough lamina propria, rich in vessels and nerves. The superficial layer of the lamina propria carries a large number of papillae, which are covered by epithelium. According to their form and size, they are distinguished into thready (filiform papilla), mushroom-shaped (fungiform papillae), leaf-shaped (foliated papillae) and wall-like (circumvallate papillae) papillae. The papillae greatly enlarge the surface of the tongue. An enormous number of taste buds are embedded into the epithelium of the papillae, each taste bud bearing receptors for specific taste sensations. Consequently, each taste is perceptible at any place of the tongue but there are maxima of specific flavor perception at certain regions of the tongue.

**Fig 4-23** Much of the epithelium of the cheek is not keratinized. However, along a horizontal line, parallel to the occlusal plane, there can be a white line (linea alba) in some individuals, which represents a line of keratinization of the epithelium. The cheek epithelium is the thickest epithelium of the oral mucosa (0.5–0.6 mm).
4.5 Anatomy of the lips, teeth, periodontium and alveolar bone in sections

Fig 4-24 The alveolar processes and the teeth are bordered by the tongue on the inside and the lips (and cheeks laterally) on the outside. The physiologically correct alignment of the upper to the lower incisors is an overlap of the incisal ridge of the upper incisor over that of the lower incisor (overbite). A biomechanically ideal support would be given if the lower incisal ridge rests at the transition between the palatal concavity and the convexity of the tubercle. This would result in an overlap of the upper incisal ridge anterior to the labial surface of the lower incisor (overjet).

The angulation of the dental axis is influenced by the forces exercised by the tongue and the lips. Swallowing and speaking, however, is of minor importance and the permanent pressure exercised by the tongue and by the lips is more significant.

Fig 4-24 Sagittal section through the anterior region of the mouth, slightly lateral of the midline.
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