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Bryan C Mendelson
Centre for Facial Plastic Surgery

Surgical Anatomy of the Midcheek: Facial Layers, Spaces, and the Midcheek Segments

Bryan C. Mendelson, MBBS, FRCSE, FRACS, FACS[a,*],
Steven R. Jacobson, MD[b]

KEYWORDS

• Midcheek • Lid-cheek junction • Malar mound
• Nasojugal groove • Malar fat pad • Midcheek furrow
• Orbicularis retaining ligament

He that loves a rosy cheek,
Or a coral lip admires,
Or from star-like eyes doth seek
Fuel to maintain his fires:
As old Time makes these decay,
So his flames must waste away.
Thomas Carew 1595–1640

The poet elegantly expressed the importance of the midcheek in attractiveness. The youthful midcheek is inherently attractive as it conveys an overall look of freshness to the face, whereas the changes that occur in the midcheek over time epitomize the "tired look" of the aging face, which loses its appeal.

In addition to its role in aesthetics, the anterior face functions as the primary structure for both nonverbal and verbal communication. The central location of the midcheek connects the eyes and the lips, the two most important structures for communication and expression. Because faces have a limited range of movement, expression relies on minute differences in position and relative proportion of facial features. In fact, aged faces often falsely express a negative emotion (anger, fatigue, disappointment) in repose because the changed proportions now resemble those temporarily assumed in normal expression. To mask these changes, some people refresh their look by assuming a static smile, as this effectively provides a temporary midcheek lift.

For these reasons, correction of the midcheek is of central importance in facial rejuvenation surgery. Despite this importance, attempts to correct the midcheek are relatively recent in the evolution of facial rejuvenation and remain a major challenge. Progress in understanding the midcheek has been hampered by the absence of consistent terminology and a lack of understanding of how aging changes the anatomical components. The detailed description of the midcheek that follows may be unfamiliar to many surgeons because this is an original description to account for the aging changes and provides the basis for a more logical correction of the midcheek.

DEFINITIONS

The term "midface" refers to the central third of the face, as distinct from the upper and lower thirds of the face. The midface is arbitrarily defined by an upper horizontal line located above the zygomatic arch and extending from just below the superior helix insertion to the lateral canthus, and a lower line that extends from the inferior border of the tragal cartilage to just below the oral commissure (**Fig. 1**).

The midcheek is the part of the midface on the anterior aspect of the face, between the lower eyelid above and the nasolabial groove and lip below. The midcheek has a triangular shape, narrowing

[a] Toorak Cosmetic Surgery Centre, 109 Mathoura Road, Toorak, Victoria 3142, Australia
[b] Division of Plastic Surgery, Mayo Clinic, 200 1st Street SW, Rochester, MN 55905, USA
* Corresponding author. 109 Mathoura Road, Toorak, Victoria 3142, Australia.
E-mail address: bcm@bmendelson.com.au (B.C. Mendelson).

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Fig. 1. The face has an anterior and a lateral aspect. The midface (*yellow*) is the horizontally orientated middle third of the face, which is bounded by an upper horizontal line (*upper dotted line*) that extends from the superior helix insertion along the top of the zygomatic arch to the lateral canthus. The lower boundary (*lower dotted line*) is a line that extends from the inferior border of the tragal cartilage to the oral commissure. The midcheek is the specific part of the midface on the anterior aspect of the face (ie, medial to a vertical line from the lateral orbital rim to the oral commissure).

below because of the angulation of the nasolabial fold. Medially, the midcheek blends imperceptibly with the side of the nose. The outer border of the midcheek is continuous with the lateral cheek around the prominence over the zygoma and below.[1]

The youthful midcheek typically appears as a uniform rounded fullness (**Fig. 2**). However, structurally, the midcheek is not the single entity that its youthful appearance suggests. It becomes increasingly obvious with aging that the midcheek is formed by the convergence of three unique components. For purposes of description, we have named these the lid-cheek segment, the malar segment, and the nasolabial segment (**Fig. 3**). When the segments appear with aging, they are separated by the three cutaneous grooves on the midcheek: the palpebromalar groove superolaterally, the nasojugal groove medially, and the midcheek furrow or groove inferolaterally (see **Fig. 3**). The three grooves can be likened to the three interconnected limbs of the italic letter *Y* (for the right side of the face).[2] The midcheek furrow correlates with the obliquely oriented stem of the *Y,* running roughly parallel to the nasolabial fold, and is the continuation of the nasojugal groove. The palpebromalar groove correlates with the left side arm of the *Y* attached to the stem near the upper part of the midcheek (see **Fig. 3**).

Fig. 2. In youth, the midcheek has a uniform rounded fullness. The youthful lid-cheek junction is a three-dimensional surface contour with concave shape. The skin of the youthful lid-cheek segment is indistinguishable from the skin of the youthful upper cheek.

The youthful lid-cheek segment has a high convex contour that extends up to the lower lid at the infratarsal crease and overlies the lower lid septum orbitale, the orbital rim, and part of the upper cheek.[3] The malar segment is defined by its

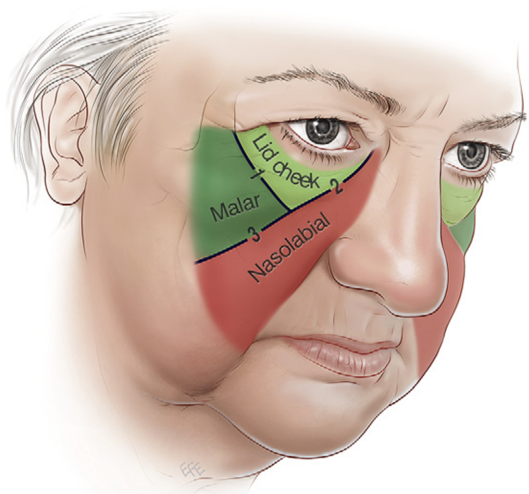

Fig. 3. The triangular midcheek is that part of the anterior face between the lower eyelid above and the nasolabial fold below. It is formed from the convergence of three components: The lid-cheek segment (*light green*), the malar segment (*dark green*), and the nasolabial segment (*red*). Separating the segments are (**1**) the palpebromalar groove superolaterally, (**2**) the nasojugal groove medially, and (**3**) the midcheek furrow inferiorly.

relationship with the underlying skeleton, as it overlies the body of the zygoma. The nasolabial segment below covers the vestibule of the oral cavity overlying the maxilla.

SKELETON OF THE MIDCHEEK

An understanding of the basic evolution of the facial skeleton helps to explain why the human midcheek is so seemingly complex. The midcheek is the site of fusion of two adjacent but separate anatomical structures, the orbit and the upper jaw. The orbits above form an increasingly broader part of the facial skeleton, on moving up the scale of evolution, as the orientation of the globes assumes a more forward position for stereoscopic vision. The posterior part of the jaw, the part attached to the orbit, has an anteroposterior orientation that is almost at right angles to the plane of the orbits. The loss of forward projection of the jaws in higher evolution results in the posterior dentition becoming positioned beneath and then behind the level of the orbits, as the midcheek skeleton and related anatomy becomes more compact.

The shape and degree of projection of the underlying skeleton are the major determinants of the individual appearance of the midcheek as well the major determinants of the subsequent changes that occur with aging. The anterior surface of the midcheek skeleton provides the base for the attachment of the muscles of the lower lid and the upper lip as well as the related ligaments that support the midcheek soft tissue (**Fig. 4**).

Fig. 4. The midcheek skeleton is formed by the body and maxillary process of the zygoma, the anterior aspect of the maxilla and, to a minor degree, the lacrimal bone. Note the height of the superior reflection of the mucosa lining of the oral cavity (*purple*).

The midcheek skeleton is formed by the zygoma, the anterior surface of the maxilla, and, to a minor degree, the lacrimal bone (see **Fig. 4**). These bones are comprehensively described in standard anatomical texts, but certain aspects are emphasized because of their clinical significance.[4,5]

The body of the zygoma has two distinct parts. The upper part relates to the orbit and its soft tissue attachments, and is continued medially along the orbital rim by a major process, the maxillary (or orbital process). The lower part of the body of the zygoma is in the form of a triangular platform that projects forward over the upper and outer recess of the oral cavity and provides attachment for the powerful masseter along its lower edge. The zygomatic muscles and the zygomatic ligaments attach to the anterior surface of this promontory.

The inferior orbital rim has two parts, each with a distinctly different appearance. The medial component, formed by the lacrimal bone and the maxilla, is straight and inclined downward. The edge of the medial orbital rim tends to be sharper and angled into the orbit, reflecting the attachment of the arcus marginalis of the septum orbitale as well as the attachment of the preseptal part of the orbicularis oculi. The larger, inferolateral part of the rim, formed by the body of the zygoma and the maxillary process, has a curved orbital rim surface with a more rounded edge that tends to be everted. The two parts meet at an obtuse angle at the center of the inferior orbital rim.

The inferior orbital rim does not have a uniform projection. The most forward projecting part is centrally at the medial end of the maxillary process of the zygoma just lateral to where the transition sits above the infraorbital foramen. The maxillary process, which forms a prominent part of the orbital rim, projects, in complete contrast to the zygomaticomaxillary suture line and maxilla immediately below, which is retruded. The straight line of the orbital rim edge of the maxilla continues obliquely along the lower border of the maxillary process of the zygoma and extends onto the body of the zygoma as the unnamed groove that defines the boundary between the orbital and oral cavity parts. The foraminae for the zygomaticofacial nerve branches are in this groove.

Below the oblique demarcating groove, the larger part of the body of the zygoma is for the attachments of the muscles and related ligaments for the cheek that overlies the oral cavity. This lower part of the zygoma is more projecting than the orbital component of the zygoma. By contrast, over the maxilla, the cheek component is less projecting than the orbital component (in adults, but not in children).

The midcheek skeleton undergoes aging changes that have important clinical consequences.[6–8] There is a significant loss of projection of the body of the maxilla below the orbital rim, while the prominence of the zygomatic body appears not to regress. These changes of projection are an important contribution to the laxity and descent of the medial cheek soft tissue.

CONCEPT OF SOFT TISSUE LAYERS AND SPACES

Traditionally the midcheek has been avoided in rejuvenation surgery, possibly because the anatomy is more complex than that of other areas of the face. To explain this complex anatomy, it is helpful to first review the basic principles of facial construction.

The soft tissues of the face are arranged in concentric layers, which can be more easily appreciated by a study of the least complex part of the face—the scalp. The entire face is similar to the scalp in being composed of five basic layers: (1) the skin, (2) the subcutaneous layer, (3) the musculoaponeurotic layer, (4) loose areolar tissue (ie, spaces and retaining ligaments), and (5) the fixed periosteum and deep fascia (**Fig. 5**).[9]

The musculoaponeurotic layer (layer 3) is attached by retinacular cutis fibers within the subcutaneous layer (layer 2) to the skin (layer 1). In the scalp, this layer is formed by the galea and flat muscles, the occipitofrontalis. The outer three layers are fused and form a functional unit, which is seen when a scalp flap is elevated (through the loose areolar tissue in the fourth layer). A scalp flap is essentially a composite flap (ie, a naturally integrated structure) that is mobile because the loose areolar tissue (layer 4) permits gliding movement of the composite scalp over the fixed deep fascia (periosteum and deep temporal fascia, layer 5). The fibrous tissue component, mainly in layer 3, is the superficial fascia.

When the same generic five-layer model is applied to the midcheek, the musculoaponeurotic layer (layer 3) is the layer described as the superficial musculoaponeurotic system (SMAS). The SMAS contains the intrinsic muscles of the cheek, which have a limited attachment to the underlying facial skeleton and a more extensive attachment to the soft tissues that they move.[10]

An understanding of the fourth layer provides the key to understanding the midcheek. The fourth layer is more than a simple areolar tissue layer as seen in the scalp, although the principle of it being a glide plane remains. The fourth layer has two opposing functions. Within this layer are the facial ligaments that fix the overlying composite soft tissue to the facial skeleton. The ligaments within the midcheek are the orbicularis retaining, zygomatic, and the upper masseteric ligaments.

Between the ligaments are larger areas where there is no deep attachment of the overlying soft tissue. This is important to allow movement of the composite flap (layers 1 through 3) in response to contraction of the facial muscles (layer 3). For this movement to occur, the attachment of the superficial fascia to the underlying skeleton is uniquely adapted to form a series of soft tissue glide planes within layer 4 (**Fig. 6**).[11] The fascia on the underside of layer 3 (ie, orbicularis fascia) forms the roof of the spaces while the deep fascia or periosteum (layer 5) forms the floor. The spaces are glide planes that become more apparent with aging laxity. Because of the presence of the spaces, the attachment of the mobile soft tissue to the skeleton is limited to fixation only at the boundaries or walls of the soft tissue spaces by the system of retaining ligaments.[12–14] The facial nerves and vessels traverse though the walls, but do not enter the spaces.

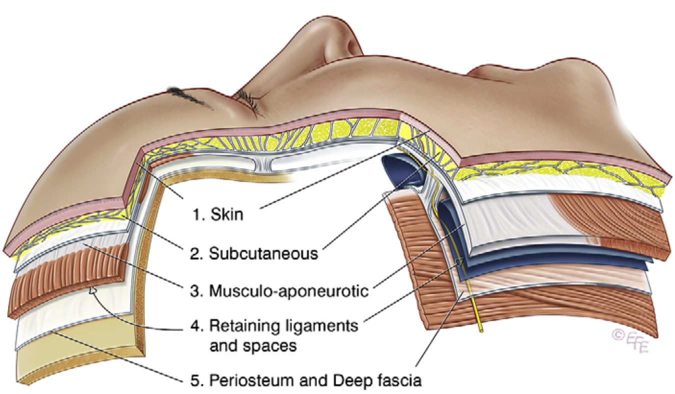

Fig. 5. The basic five layers of the face, which are simple on the scalp and complex on the midcheek. Note that the facial nerve branches course beneath the deep fascia (*level 5*) in the lateral face and then cross layer 4 outside the facial spaces where they are under the "protection" of the retaining ligaments into layer 3, where they travel until innervating their targeted muscle.

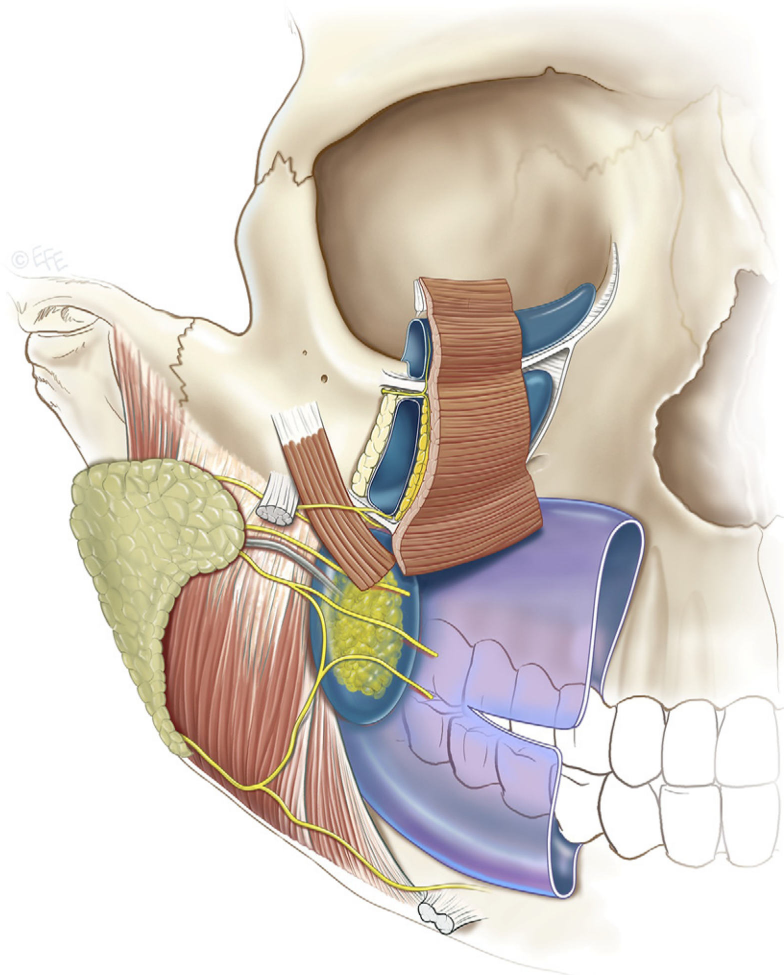

Fig. 6. Spatial anatomy of the midcheek showing the preseptal, prezygomatic, masticator, and oral cavity spaces. The orbicularis retaining ligament (*above*) separates the preseptal space of the lower lid from the prezygomatic space. The zygomaticocutaneous ligaments (*below*) separate the prezygomatic space from the masticator space.

The spaces in the face are of two types: (1) the soft tissue spaces described above and (2) the spaces within bony cavities. The facial spaces dominate the structure of the midcheek such that the midcheek soft tissues overlie more "space" than solid skeleton (see **Fig. 6**). The upper part of the midcheek overlies the lower orbital cavity, while the major part of the midcheek overlies the oral cavity, due to the high reflection of the upper gingival-buccal recess (see **Fig. 4**). The relatively small area of bony skeleton of the midcheek between the two bone "spaces" is largely covered by the prezygomatic space (over the body of the zygoma).[1]

As a result, there is a minimal area of "available" bone for the attachment of the retaining ligaments in the midcheek. This contrasts with the scalp, which has an extensive area for bone attachment. Because of the small area of skeleton available for attachment, the ligaments are compacted and strong in the midcheek to fix the relatively large amount of overlying tissue (again in contrast to the diffuse and weaker ligaments in the less mobile scalp).

The fixation effect of the ligaments is not restricted to the fourth level under the SMAS. The ligaments branch out through the SMAS to form the perpendicular part of the retinacular cutis, which fixes to the dermis. This dermal fixation becomes apparent clinically with the onset of aging changes. With attrition of the finer ligamentous fibers, the areas of looser retinacular cutis attachment overlying the spaces become distended and appear as bulges on the surface. Meanwhile, the lines of concentrated ligamentous attachment to the dermis resist this distension and appear as cutaneous grooves. The surface of the aging midcheek becomes uneven, with bulges alternating between lines of grooves.

While spaces and their distention account for much of the aging changes, they also provide opportunities for the surgeon. Because the spaces are effectively predissected, dissection within a space can proceed quickly without bleeding and with safety as the facial nerves remain "outside" the spaces in the walls.

AGING CHANGES OF THE MIDCHEEK

The effects of midcheek aging are the summation of the interplay of factors that occur in all five anatomical layers of the soft tissue and in the bone. Attenuation of the retaining ligaments at all levels reduces the quality of fixation of the soft tissue layers. The volume loss apparent in the midcheek is largely due to displacement of soft tissue and, to some extent, atrophy of soft tissue, as well as atrophy of the facial skeleton. The more mobile, less attached areas between the ligaments undergo the most prominent changes with aging, presenting as bulges or folds over soft tissue spaces (malar mounds), over bony spaces (nasolabial fold), or over both soft tissue and bony spaces (lower lid bulge). The skeletal volume loss is largely from resorption of the maxilla.

The changes of the internal anatomy are revealed with the midcheek segmenting into the three distinct components seen on surface anatomy: the lid-cheek segment, the malar segment, and the nasolabial segment (see **Fig. 3**). Each segment exists because of its relationship to its own space in sub-SMAS layer 4 (see **Fig. 6**).

The midcheek is bisected by the oblique line formed by the continuation of the nasojugal groove into the midcheek furrow, which continues further into the lower cheek. Functionally, the part above the groove has to do with the orbit and its related structures formed by the lid-cheek and malar segments. The part below is the nasolabial segment, which has solely to do with the oral cavity.

The Malar Segment

The malar segment, a triangular region, is a junction area between the lid-cheek segment (above and medial) and the nasolabial segment (below and medial), as well as the lower temple and the lateral face. The triangular shape reflects the shape of the underlying lower part of the body and maxillary process of the zygoma. The prezygomatic space is the soft tissue glide plane overlying the skeleton beneath the superficial fascia of this segment (see **Fig. 6**). The upper and lower borders of the space are defined by ligaments and converge medially. The superior ligamentous border of the prezygomatic space is formed by the orbicularis retaining ligament (orbitomalar ligament) along the inferior orbital rim that separates the preseptal space of the lower lid (lid-cheek segment) from the prezygomatic space (malar segment).[15] The orbicularis retaining ligament originates from the anterior lacrimal crest of the orbital rim, above the origin of the levator labii superioris, and continues along the rim, where laterally it merges into the lateral orbital thickening. The quality of the orbicularis retaining ligament changes from a filmy distensible, double-layered membrane over the central part of the rim to become firm and ligamentous laterally.

The inferior boundary of the prezygomatic space is much stronger because it is supported by the zygomatic ligaments. The zygomatic ligaments originate from the periosteum of the zygoma in a transverse line that extends from the medial border of zygomaticus minor to the lateral border of zygomaticus major, where they meet with the vertically arranged upper masseteric cutaneous ligaments parallel to the anterior border of the masseter. The zygomatic ligaments pass outward between and behind the zygomaticus muscles into the overlying soft tissues and dermis, where their restraining effect provides the basis for the midcheek furrow.

The malar segment cleverly accommodates both orbital and oral cavity structures in this most compacted area of the midcheek. This is achieved by the horizontal stratification associated with the prezygomatic space (layer 4). The prezygomatic space functions to separate the orbital-based structures, which are in the roof and undergo independent movement from the oral cavity–related structures that are under the floor of the space.[1] This may explain why there are two distinct layers of fat in relation to the prezygomatic space. In the roof of the prezygomatic space, the finely lobulated sub–orbicularis oculi fat (SOOF) adheres to the orbicularis fascia on the underside of the orbicularis.[16] Meanwhile, beneath the floor of the space, the thicker layer of immobile preperiosteal fat covers, and is insinuated between, the origins of the zygomatic muscles on the zygomatic tuberosity. Zygomaticus major has a broad attachment to the posterior half of the body of the zygoma, whereas zygomaticus minor has a narrower attachment more medially.[17] The only anatomic structure crossing the prezygomatic space is the zygomaticofacial nerve (see **Fig. 6**) immediately inferior to the thicker part of the orbicularis retaining ligament.

The roof over the prezygomatic space, which contains the orbicularis oculi pars orbitalis, has an intrinsic mobility allowing displacement of the soft tissues upward and medially, concentric with the orbit when the orbicularis contracts. The mobility of the malar segment increases in proportion with progressive aging laxity within the mobile roof and the ligamentous borders. This laxity results in increased displacement of the soft tissue on smiling (excessive zygomatic smile lines) and bulging of the roof over the prominence of the zygoma at rest. When the orbicularis is not contracted and tightening the roof, the bulging roof sags against the resistance of the zygomatic ligaments (which form the midcheek groove), which increases the prominence of the malar mound as well as the apparent depth of the midcheek groove. When the distended roof gives the appearance of a bulge at rest, it is described as a malar mound, which is a different structure from the malar fat pad (see description in nasolabial segment). The distension of the roof gives the impression of redundancy of the orbicularis and the underlying SOOF. This was the rationale for excision of "excess" orbicularis in some of the procedures described for the treatment of malar mounds.[18,19] The alternative approach is to tighten the laxity of the roof. The benefits of improved tone in the roof of the space are demonstrated if the malar mound reduces or effaces when the patient contracts his or her orbicularis.

Lid-Cheek Segment

There is not a uniformly accepted definition of what constitutes the lid-cheek junction. Traditionally, the lid-cheek junction has been considered from the viewpoint of the skin surface characteristics to be the visual demarcation between the lower lid skin and the upper cheek skin. However, this does not usefully account for the changes that occur with aging. The lid-cheek junction not only has a skin component, but it also has a surface contour that passively reflects changes deep to the skin. It is for this reason that the lid-cheek junction is considered in the context of being a component of the midcheek.

To add to the confusion of having two definitions for the lid-cheek junction, the contour lid-cheek junction is not in the same location as the cutaneous lid-cheek junction. The difference between the two increases with aging. The cutaneous lid-cheek junction remains at essentially the same place even though the appearance alters.[20] Meanwhile, the contour junction progressively changes location and shape as it moves down into the cheek. Contrary to what may be expected, the lid-cheek junction contour does not have a specific fixed relationship to the bony orbital rim and in youth is situated well above the rim.

The anatomical relationship between the lower lid and the upper cheek is complex. In terms of appearance, the lower lid is positioned on the face above the upper cheek. However, structurally, the relationship is not so straightforward as they overlap each other without a clearly defined and fixed boundary between the two. This is because the two lamellae of the lid develop from different origins. The anterior lamella (skin and orbicularis) is derived from the facial soft tissue and is an upward extension of the cheek (layers 1, 2, and 3) that continues over the inferior orbital rim. The thickness of the anterior lamella in not uniform, but tapers, being thicker below and thinner as it ascends into the lid. By contrast, the posterior lamella of the lid is of a purely orbital origin, and it includes the septum orbitale that covers the orbital fat.

Immediately above the rim, the anterior lamella is separated from the posterior lamella by the interposition of the preseptal space. The significance of the space is that it prevents the two lamellae from bonding and allows independent movement of each layer, particularly displacement with increased laxity.

The lid proper is the part where both lamellae are fused above the preseptal space (ie, the pretarsal part above the youthful lid-cheek junction). Meanwhile, the lid-cheek segment is the convexity below the youthful lid-cheek junction, which extends high in the lid, well above the inferior orbital rim. The position and shape of the lid-cheek junction changes dramatically with aging as it descends into the lid-cheek segment.

Both lamellae of the lid undergo changes with aging that contribute to the appearance of "baggy lids."[21] Bulging of the posterior lamella, with weakness and distension of the septum orbitale, leads it to bulge inferiorly over the inferior orbital rim and eventually onto the anterior surface of the maxillary process, the most forward projecting part of the inferior orbital rim. A small amount of prolapsed orbital fat (from the central lid compartment above) on top of the projection of the rim here gives an exaggerated look of a larger volume than is really present. At the same time, distension of the overlying anterior lamella allows a slight descent of the thicker part of the anterior lamella off the same bony prominence. The bony concavity immediately inferior to the prominence results in a retrusion of the dropped part of the upper midcheek. A thinner part of the anterior lamella is now over the bony prominence. The magnification of the small changes, caused by the prominence of the orbital rim leaves the displaced lid fat projected as well as lower and at the same time "revealed" because the anterior lamella covering it is now thinner. The magnifier effect has a corollary in rejuvenation surgery, whereby small surgical changes of both lamellae over the inferior orbital rim result in a disproportionately beneficial result.

As the lower part of the lid and the upper part of the cheek descend with aging, they give the appearance of doing so at different rates. Proportionally, there is more descent of the cheek, which results in the lower part of the lid becoming revealed.

The lid-cheek junction contour descends from the youthful position above the orbital rim to below the rim with aging. The youthful concavity (see **Fig. 2**) is lost secondary to the described changes. This bulging convex contour alters the shape of the lower lid, giving the appearance of a "new" lid-cheek junction below the bulge. It is still referred to as the lid-cheek junction even though the "new" lid-cheek junction contour transition has moved off the anatomical lower lid and into the territory of what had previously been the upper cheek. This lengthening of the lid contributes to the round-eye look of aging.

The youthful lid-cheek junction and the youthful upper cheek have now become incorporated into the "visual" aged lower lid. That is, there is a segment of the lid that is transitional in that it was originally upper cheek and with aging has become lid. Due to this dynamic relationship, the transitional segment of skin reverts to becoming cheek again following a proper contouring lower lid blepharoplasty. In other words, a correct blepharoplasty not only affects the lid, but also includes the midcheek. The part of the cheek that again becomes lid, the transitional segment, is the lid-cheek segment, whereas the pretarsal area of the lid above the youthful lid-cheek junction always remains as true lid and is not part of the midcheek.

How can the lid-cheek contour change so significantly and yet the cutaneous lid-cheek junction be so minimally changed? The reason has to do with the movement that occurs mainly at a level deeper than the skin. Immediately inferior to the preseptal space of the lid is the orbicularis retaining ligament that attaches the anterior lamella to the orbital rim. The part of the orbicularis retaining ligament attached to the central part of the orbital rim (ie, the maxillary process of the zygoma immediately lateral to the firm attachment of the orbicularis to the maxilla) is membranous and distensible. This part of the ligament remains attached to the bone behind and to the underside of the orbicularis muscle in front. In between it becomes distended and acts like a sling or hammock to suspend the orbital fat that has prolapsed over the bony orbital rim. The interposition of this orbital fat between the anterior projection of orbital rim and the upper midcheek—which formerly had a close relationship—gives the appearance of the descent of the lower margin of the lid. The apex of the V-shaped laxity of the palpebromalar and nasojugal grooves occurs at the inferior edge of the bulging central compartment lid fat.[22,23]

The Nasolabial Segment

The nasolabial segment has a long trapezoidal shape as it continues from the side of the nose between the malar segment and the lip to where it blends into the lower cheek beyond the oral commissure. The nasolabial segment has two distinct parts, structurally and functionally.

The upper part of the nasolabial segment is partially attached to the underlying maxilla where it overlies the origins of the muscles to the upper lip (levator labii superioris and levator labii superioris alaequae nasi). This part is defined laterally by the nasojugal groove that separates it from the lower lid and the lid-cheek segment and, further below by the midcheek groove from the medial extent of the malar segments (see **Fig. 3**). This attached upper part of the nasolabial segment continues to the level of the alar crease. Laxity affects the shape but not the position of the upper part of the nasolabial segment and is associated with laxity occurring in the soft tissues lateral to it. This laxity can therefore be improved by correction of the lateral laxity (eg, by lifting the SOOF).[24–26]

The lower, major part of the nasolabial segment overlies the vestibule of the oral cavity and is, accordingly, mobile. Only the most lateral part of this mobile segment has a direct fixation, and this is where the strong zygomatic ligaments suspend it from the body of the zygoma. This fixation is reinforced by additional support from the upper masseteric ligaments.

The masticator space beneath the outer part of the nasolabial segment further interferes with fixation. The lower boundary of the masticator space and its content, the buccal fat pad, extends to just below the parotid duct in youth.[27] With aging, the inferior boundary descends to become inferior to the level of the oral commissure and bulges into the lower face, where it contributes to the fullness of the labiomandibular fold.

The subcutaneous layer in the nasolabial segment is both thicker and more mobile than the subcutaneous layer above the midcheek furrow within the orbital midcheek segments. Because of its thickness and defined boundaries,[28] the subcutaneous fat of the nasolabial segment appears as a distinct entity. This subcutaneous fat is referred to as the malar fat pad, which is an unfortunate term because the malar fat pad does not strictly overlie the zygoma (malar segment) as its name suggests. It actually overlies the maxilla (nasolabial segment).[29–31] This misnomer contributes to misunderstanding among plastic surgeons.

Aging of the suspensory attachment of the nasolabial segments provided by the zygomatic ligaments affects the quality of support with two consequences. Initially there is a flattening of the rounded fullness at the center of the midcheek. This is at the same place where the midcheek furrow starts to appear. Ultimately, this tends to progress to the gaunt look of midcheek hollowing as the outer part of the nasolabial segment slides off the skeletal support provided by the lower edge of the body of the zygoma, which abruptly magnifies the loss of projection. The second consequence is the change of shape from displacement of soft tissue volume into the medial side of the segment. Initially this gives the midcheek a longer and flatter look associated with the appearance of nasolabial fullness. Increasing volume of the nasolabial fold exaggerates the depth of the nasolabial crease medially. Proper correction of the nasolabial segment requires a major resupport over the body of the zygoma.

INNERVATION

Knowing the course of the facial nerve and its branches is crucial for safe surgery, which is based on the facial layers. The facial nerve branches emerge from the border of the parotid where they are beneath the investing deep fascia (level 5) in the lateral face and its final branches become more superficial to approach layer 3 at the lateral extent of the anterior face and travel just under level 3 until innervating the target muscle (see **Fig. 5**). In the middle third of the face, up to 50% of the branches have cross-innervation between the zygomatic and buccal nerve divisions distal to the parotid.[32]

When a subcutaneous (level 2) or subperiosteal (deep to layer 5) midcheek dissection is performed correctly, the surgical plane is remote from the nerves and the risk of nerve transaction is avoided. However, when a SMAS flap is elevated through level 4, a detailed knowledge is required as the branches are at surgical risk where they traverse the sub-SMAS areola space (layer 4). Fortunately, the nerves pass outward through this level in predictable locations, where they are under the "protection" of the zygomatic and upper masseteric retaining ligaments. Accordingly, the branches are in the soft tissue immediately outside the prezygomatic space, in the interval between it and the premasseter space, which is the space of the lower lateral face.[33]

The zygomatic branches to the orbicularis oculi course from deep to superficial immediately outside the prezygomatic space. They enter the SOOF near the periphery of the orbicularis and traverse within the SOOF in the roof of the space (see **Fig. 6**).[34]

SUMMARY

- In youth, the midcheek has a uniform rounded fullness.
- The midcheek is formed by the convergence of three components: the lid-cheek segment, the malar segment, and the nasolabial segment.
- The midcheek skeleton provides the attachment for the muscles and ligaments of both the lower lid and the upper lip.
- Structurally, the midcheek contains proportionally more spaces and fewer ligaments than other parts of the face.
- Each midcheek segment overlies a specific facial space.
- The lid-cheek junction has two forms. The traditional cutaneous distinction is less useful for the surgeon than the changes of contour that reflect deeper structural dynamics.
- The lid-cheek contour transition does not have a fixed relationship to the inferior orbital rim.
- Facial nerve branches course in predictable locations and, as they traverse layer 4, are "protected" by the zygomatic and masseteric ligaments.

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