The Cross-Cheek Depression: Surgical Cause and Effect in the Development of the “Joker Line” and Its Treatment

Val Lambros, M.D.
James M. Stuzin, M.D.
Newport Beach, Calif.; and Miami, Fla.

Summary: Despite plastic surgeons’ best efforts, deformities can be seen following a face lift. One of the most obvious signs of face-lift surgery is the cross-cheek depression or “joker line,” which begins as an indentation in the region of the oral commissure and extends laterally and superiorly toward the ear. When this depression develops postoperatively, the face can appear harsh, pulled, and abnormal, creating a visual illusion that the corner of the mouth extends laterally onto the cheek. There is a relationship between the preoperative contours of a patient and the postoperative ones. Most patients who develop cross-cheek depressions postoperatively exhibit a version of the problem preoperatively. Inspection and light finger traction on the cheeks identifies and intensifies the abnormal configuration. The clinician needs to be aware of the propensity for this complication preoperatively, as anticipation is the first step toward prevention and treatment. The most specific treatment for the surgical accentuation of cross-cheek depressions is the use of volume to fill the areas of unnatural depression, either intraoperatively or postoperatively (Plast. Reconstr. Surg. 122: 1543, 2008.)

The popularity of face-lift surgery over the last several decades has resulted in increasing numbers of patients who appear “surgical.” There is no secret that these cases occur; the public is very aware of these odd-appearing faces, which are instantly visible from a distance. Patients considering facial surgery are fearful of looking strange or different postoperatively.

A particularly obvious and common deformity is the cross-cheek depression, which is sometimes called a “joker line” by the public because it resembles a traditional representation of the joker in a deck of cards. There are abundant variations of this deformity in depth, breadth, and length and its appearance with animation. In its fullest and most obvious expression, the cross-cheek depression appears as a slight indentation close to the corner of the mouth, widening as the depression courses laterally, hugging the inferior surface of the malar bone and extending laterally and superiorly toward the ear (Fig. 1). After surgery, minor changes in elevation of the cheek surface unmask and elongate the preexisting indentation, producing this hallmark sign that the patient has undergone a face lift.

PREOPERATIVE MORPHOLOGIC APPEARANCE OF PATIENTS PRONE TO DEVELOPING POSTOPERATIVE CROSS-CHEEK DEPRESSIONS

When looking at the preoperative images of patients who have developed cross-cheek depres-

Disclosure: The authors have no conflicts of interest with any product mentioned. Dr. Lambros was once on a Restylane expert users’ panel.

Supplemental digital content is available for this article. Direct URL citations appear in Appendix 1; simply type the URL address into any web browser to access this content. Clickable links to the material are provided in the HTML text and PDF of this article on the Journal’s Web site (www.PRSJournal.com)
sessions, one sees a pattern of similarity. These patients typically share several features; they tend to have prominent malar bones and a slight hollowing in the submalar area that is most noticeable just lateral to the oral commissure (Figs. 1 and 2). Often, their cheeks are thin and flat, and on careful inspection, the incipient cross-cheek depression lateral to the oral commissure may be visible preoperatively.\(^1\)\(^-\)\(^4\) Some patients will exhibit ranks of short, crescent-shaped wrinkles that parallel the nasolabial folds up the cheek (Fig. 3). The condition is more noticeable in the presence of prominent masseters, and as is common in the face, only one side may display the tendency for the condition.

A time-honored maneuver by plastic surgeons is to pull on the patient’s cheeks with fingers. This has a predictive effect and is useful for explaining the effects of surgery to patients. On physical examination of patients with the tendency for cross-cheek depressions, the deformity frequently becomes more noticeable when finger traction is placed on the lateral cheek; one does not need to tug very hard on the cheek to see the depression develop (Fig. 4) (see Animation, Supplemental Digital Content 1; hyperlink to view animation and description available in Appendix 1).

The skin and superficial musculoaponeurotic system (SMAS) shift necessary to accomplish the basic goals of the face lift are enough to accentuate the appearance of the “joker line” in this morphologically prone type of face (Fig. 5). Stated again, with face-lift surgery, this type of face appears worse when subjected to the same lateral forces that make other faces appear better. They appear worse because of unmasking of features that were already there.

**FACIAL FAT COMPARTMENTS AND THEIR RELEVANCE TO CROSS-CHEEK DEPRESSIONS**

As noted by Rohrich and Pessa,\(^5\) the subcutaneous fat of the cheek is partitioned into anatomical compartments. Facial aging is often characterized by how these compartments change volumetrically over time. In faces that thin with aging, the volume loss that occurs within a compartment is typically not uniform, and the contour deformities resulting from deflation tend to be regional, not compartmental.

Patients who are morphologically prone to developing cross-cheek depressions typically are full in the infraorbital and medial malar fat (medial fat compartment) and exhibit prominent skeletal support of their malar eminences. The area of involution most involved in these patients is the fat located directly inferior to the insertion of the zygomaticus major along the oral commissure. This submalar hollow presents as a depression between the volumetrically intact malar and jowl fat pads and tends to directly overlie the anterior aspect of the buccal fat pad and modiolus. An accompanying loss of buccal fat volume within the cheek may accentuate subcutaneous submalar hollowing in these patients. From an anatomical perspective, the region of the cheek where cross-cheek depressions develop represents a soft-tissue...
Fig. 3. A 67-year-old woman before secondary anterior face lift and dermabrasion (above). Two months after her face lift, a cross-cheek depression can be observed (center). (Below) Appearance 10 months after placement of 3 cc of Restylane (Medicis Aesthetics, Inc., Scottsdale, Ariz.) in the right cheek hollow and 1 cc in the left.
“watershed” between the muscular elevators and depressors of the lip (Fig. 6).

**RELEVANCE OF LATERAL TRACTION IN THE DEVELOPMENT OF CROSS-CHEEK DEPRESSIONS**

In our opinion, the degree of release of both skin and SMAS, and the vectors of repositioning of these two layers, influences the depth and prominence of cross-cheek depressions postoperatively. With face lifts, many faces appear better with vertical vectors by repositioning jowl fat and enhancing the mandibular border. Vertical SMAS movement tends to increase submalar hollowing (which is useful in the full, round face), but the same submalar hollowing accentuates and lengthens cross-cheek depressions in the morphologically prone patient (see Animation, Supplemental Digital Content 2; hyperlink to view animation and description available in Appendix 1). Vertical skin tension tends to accentuate flattening in the preauricular area, allowing the submalar cheek shadow to extend toward the preauricular region. Though not discussed here, vertical skin tension can also create unnatural skin creases and elongated pores curving up the face to the ear (i.e., the drapery effect) (Fig. 7).

In our opinion, a more limited lateral release of SMAS and skin should have less effect on medial cheek depressions. Similarly, more laterally oriented vectors of both the SMAS and skin should minimize this problem. In general, we believe that the older the patient and the more wrinkles and pores present, the more posterior the vector of skin closure should be (Fig. 7).
A specific method to prevent or correct cross-cheek depressions is by volumetric filling of the actual or predicted indentation. This may be treated at the time of surgery or later. If the condition is to be treated at the time of surgery, the portion of the cheek requiring augmentation is marked as defined by physical examination. We typically inject the cheek depression with anywhere from 2 to 6 cc of autologous fat per side in the deep subcutaneous plane. This region of the medial cheek is usually not undermined during the face-lifting procedure; if the lateral edge of it is undermined, we inject slightly deeper.

Though abundant and easy to use in the operating room, injected fat can be a problematic material. It is not entirely predictable and can fail to take. Worse, fat growth can occur with or without body weight gain, a condition that is distinctly unattractive and difficult to fix. Used conservatively, injected fat is a reasonable solution, though we strongly recommend that this area not be overfilled, as some submalar hollowing is typically preferable to fullness or convexity. If the area remains undercorrected postoperatively, hyaluronic acid, other fillers, or additional autologous fat can be further injected.

Off-the-shelf fillers can be very useful in the postoperative patient with cross-cheek depressions who does not want further surgery. At the time of this writing, our preference is to use hyaluronic acid–based products. Normally, 1 to 3 cc of hyaluronic acid is required for correction on each side, or for enough correction to fill part of the length of the indentation, which is visually as important. In our experience, 1 cc of hyaluronic acid gives roughly the same volume increase as 3 cc of injected fat.

We have the strong impression that the particulate hyaluronic fillers maintain projection better than the more liquid fillers. The injections are performed radially in the subcutaneous plane and not in the dermis. This is an easy and safe injection performed with vasoconstriction of local anesthetic with epinephrine. The use of local anesthetic does not impede our visualization of the extent and volume of injection.

As hyaluronic fillers have not been used very long in the subcutaneous tissues of the face, their duration is not yet known and remains to be clarified. We find that the longevity of hyaluronic acid fillers is decidedly site specific, and in the cheeks of a female patient, we usually find a duration of 1 to 1½ years, which is what we communicate to patients. We routinely see durations beyond 2 years in the brow and tear troughs. This is a subject for future study.

**CORRECTION OF SUBMALAR DEPRESSION BY VOLUMETRIC ENHANCEMENT**

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We have not found calcium-based fillers\(^2\) to last much longer in this location, and we like the flexibility and malleability of hyaluronic acid. Other fillers (e.g., poly-L-lactic acid) available at this time have been used as well, and the choice of which to use should be the clinician’s. The more important point is to see the problem and treat it appropriately.

**DISCUSSION**

It is commonly understood by the practicing plastic surgeon and the public that in breast augmentation surgery the preoperative appearance of the breast influences the final outcome. There are similar relationships in the face. Patients who exhibit cross-cheek depressions almost always have a version of the deformity preoperatively. When patients who appear like this preoperatively are subject to finger traction on the skin (duplicating some of the effects of a face lift), the cross-cheek depression is reinforced (Fig. 4). It seems reasonable to point out this clinical association and to prepare for it surgically.

Despite considerable rhetoric to the contrary, face lifts have more similarities than differences in their basic approach to the face. They use incisions around the ears, and the skin is undermined a variable amount onto the face. Most current procedures use the subskin layers of the face in some way to shorten the SMAS layer and overlying skin. This is not to say that all techniques are identical, and any procedure can be performed poorly or well, but most face lifts seek to achieve the same goals through the same general means. The primary tool for accomplishing these goals is the use of a lateral pull to “tighten” the skin and reposition subcutaneous fat along the contour of the underlying skeletal and fascial framework (we doubt that

**Fig. 8.** (Above) A 75-year-old woman before a secondary face lift. She had a cross-cheek depression before surgery that was accentuated by finger traction. At the time of surgery, 6 cc of fat was placed in each cheek hollow. (Below) At 3 years after surgery, she has a much more normal-appearing cheek than would be expected with an unmodified face lift.
any real tightening actually occurs; instead, slack skin and subcutaneous tissues are shortened to normal resting tension). In most aging faces, a modest amount of lateral skin shift is a desirable goal, as it is the essence of the face-lift procedure, just as it is with fingers pulling in the mirror.

Anatomical contours that appear normal or desirable in a young face often appear less so in an older one. In a young person, high cheekbones, hollow cheeks, and a cross-cheek shadow are a desirable appearance that many people try to duplicate with makeup. Some sculptural definition of the midcheek can be desirable; it would be a dull world if all cheeks were smooth and round. However, the same configuration in a middle-aged person can appear old and gaunt. In our opinion, any extended nonsmiling indentation at the corner of the mouth appears unnatural in a face-lifted patient.

As in much of cosmetic surgery, careful physical examination and observation are useful for predicting outcomes. One cannot anticipate or treat problems that one cannot or does not see.

What defines facial features in the world of daily life is the light in which one sees them or, more properly, the interplay of light and shadows that visually defines them. What catches the eye is not necessarily the indentation, which is small, but the magnifying effect of the shadows that the indentation causes.

This deformity is very subtle: it is usually only a few millimeters deep but can have a profound effect on the gestalt of the face. Sometimes, it is seen as an elongation of a previously existing shadow, which in two components has less visual effect than when joined to form a single one (see Animation, Supplemental Digital Content 1, 3, and 4; hyperlinks to view animations and descriptions available in Appendix 1.) It is striking to see how much the appearance of the face improves with elimination of this long abnormal shadow when all or part of the indentation is filled (Figs. 3, 8, and 11).

What we have described here is the purest form of the deformity. If the anatomy is different, the result will be different as well, leaving an entire range of appearances from minimal and acceptable to the full-blown cross-cheek depression. In looking at random unoperated groups of people, this pattern is not particularly common; it stands out much more after a face lift.

We noticed the relationships of this deformity by looking at the postoperative appearance and finding a characteristic preoperative appearance. There may be more than one means by which cross-cheek depressions are generated. We have no doubt that excessive traction on certain faces can lead to this deformity, but in our opinion it is incorrect to consider the cross-cheek depression as solely a complication of overenthusiastic pull. We have seen cross-cheek depressions develop after all types of face lifts in personal observations in the office and in presentations and publications of different techniques. The common denominator in most face-lift techniques is that the skin is shortened or shifted away from the nasolabial folds, which leads us to believe that it is the shortening of the skin (Fig. 4) that is the issue in these patients rather than traction on other facial layers. Sequential surgery of facial tissues seems to be an

**Fig. 9.** A 65-year-old woman after face lift surgery. (Above) She has an obvious and abnormal depression in her cheek. She was treated in the office with 2 cc of Restylane on the right side. (Below) She is shown 5 months later.
issue, as the deformity seems to occur more commonly with secondary procedures.

Cosmetic surgery is no stranger to having complex and poorly understood contours treated by simple means, and this situation is no different. The use of fillers in these cases is intuitive and easy, given experience in looking at the face and some basic injection ability.

Other traction deformities of the face lift that result in indentations of the skin may be corrected in a similar way. Hamra15 described the lateral sweep, transverse creases above the mandible in the lower cheek following face-lift surgery. Although he described complicated secondary surgery to correct them, a simpler technical solution is to level the surface depressions (Fig. 11). Another similar indentation that may be corrected is the face lift–induced extension of the sublabial groove seen in some patients. Traction deformities involving misdirection of the skin wrinkles and elongation of pores are not correctible with volume (Fig. 7).

Many of the problems seen with face lifts are a result of having only one tool for improvement (traction) and using it for any contour of every aging face. One can see the cross-cheek depression in many face-lift articles and textbooks and at almost every national face-lift meeting. It is as if plastic surgeons have been blind to the deformity. Once the relationship is seen, it is instantly obvious.

We are surprised that this pattern of tissue behavior has not been specifically addressed in the literature, although face-lift surgeons have discussed methods to correct submalar contour depression in both primary and secondary face lifting.2,4 We would emphasize that although plastic surgeons tend to focus on surgical technique and will accept as normal or unavoidable the secondary changes that can accompany surgery, the objective of face-lift surgery is to improve the appearance of the patient. There is no beauty in surgical distortions, no matter how common. In our opinion, plastic surgery of the aging face cannot progress without a clear realization of its limitations and how to overcome them.

**SUMMARY**

The message of this communication is simple: there are relationships between preoperative and postoperative contours in the face. One of the most obvious complications of face-lift surgery can be anticipated by observation and physical examination, and it can be treated simply in or out of the operating room with any number of volume-generating substances. The association of skin shifting on the face and cross-cheek depressions is one that anyone who regularly examines aging faces can confirm for themselves.
REFERENCES


Fig. 11. This patient exhibits “lateral sweeps” many years after a face lift (above). This is not a cross-cheek depression, and we believe that the mechanism for the two conditions is different. These images are included to show the power of volume fill for certain traction indentations of the skin. Although complicated surgery has been described to correct this problem (which is visible from across a room), the more direct answer is to fill the indentations. (Below) Appearance of the patient 10 months after injection of 2 cc of Restylene on this side. The injections were not in the dermis but in the deep subcutaneous layer. Although parts of the deformity are still visible, breaking up its length diminishes its visual impact.

Val Lambros, M.D.
360 San Miguel, Suite 406
Newport Beach, Calif. 92660
lambrosone@aol.com

APPENDIX 1

Supplemental Digital Content 1, http://links.lww.com/A525. Animation of the patient seen in Figure 4.

Supplemental Digital Content 2, http://links.lww.com/A526. Animation which demonstrates the changes in submalar hollow with direction of finger traction on
the cheek; the more vertical the direction of the lift, the more the submalar hollow is accentuated and the more a cross-cheek depression will be reinforced.

Supplemental Digital Content 3, http://links.lww.com/A527. Animation which shows the anteroposterior view of the patient shown in Figure 5.

Supplemental Digital Content 4, http://links.lww.com/A528. Animation which is a three-quarters view of the patient shown in Figure 5. Note how the modest mid-cheek fullness in the preoperative image flattens out, joining two inconspicuous areas of depression into an obvious single one.

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Plastic and Reconstructive Surgery
Rod J. Rohrich, M.D., Editor-in-Chief
St. Paul’s Hospital
5909 Harry Hines Boulevard
Room HD01.544
Dallas, Texas 75235-8820
Tel: 214-645-7790
Fax: 214-645-7791
E-mail: PRS@plasticsurgery.org