Subcutaneous Superficial Musculoaponeurotic System Grafting of the Aging Melolabial Furrow

Thomas A. Lamperti, MD; Jeffrey S. Carithers, MD

Objective: To describe a technique of subcutaneous superficial musculoaponeurotic system grafting during rhytidectomy to treat the aging melolabial furrow.

Design: Two hundred seventeen patients received bilateral superficial musculoaponeurotic system grafts from December 1, 1996, through June 30, 2003 (a 78-month period). The patients' charts were reviewed for demographic data, follow-up dates, and complications. Selected preoperative and postoperative photographs were viewed.

Results: In the 217 patients, 434 grafts were performed, with a mean follow-up of 23.2 months. Follow-up postoperative photographs showed effective long-term effacement of the melolabial furrow. There was a 0.9% complication rate involving 4 cases of unilateral graft infection that resolved with oral antibiotic therapy.

Conclusions: Subcutaneous superficial musculoaponeurotic system grafting of the melolabial furrow is a safe, effective technique of treating the prominent melolabial furrow. It adds very little time to the rhytidectomy procedure, is well tolerated by patients, and shows durable results.

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CORRECTING THE PROMINENT melolabial furrow has long posed a challenge to the facial plastic surgeon. Beginning in 1992, one of us (J.S.C.) developed an approach to this area that involves harvesting a strip of preauricular superficial musculoaponeurotic system (SMAS) tissue in conjunction with a rhytidectomy followed by grafting into the melolabial furrow via a tunneling technique. The goal of this article is to present the surgical technique and to retrospectively analyze our results from December 1, 1996, through June 30, 2003.

METHODS

MELOLABIAL FOLD ANATOMY

The nomenclature regarding the melolabial region is confusing. Many authors refer to the area as the nasolabial region, whereas others believe the term melolabial more accurately describes the area between the cheek and lip. We prefer the latter terminology. This region is composed of 3 components. First, the melolabial crease is defined as the well-demarcated and depressed facial line found between the upper lip and the cheek. It serves as a point of insertion of the SMAS and the upper lip elevators. Next, the melolabial furrow is the indentation in which the crease is present. Last, the melolabial fold is the bulge of tissue lateral to the crease that is composed of cheek skin and subcutaneous fat.

The malar fat pad plays an important role in the development of the prominent melolabial furrow. This fat pad is a triangular-shaped area of thickened subcutaneous tissue with the base at the melolabial fold and the apex directed toward the malar eminence. It is firmly attached to the overlying infraorbital and cheek skin and lies immediately superficial to the SMAS. The fat pad is attached to the SMAS via supporting fibrous septa. The malar fat pad descends with age as these septa weaken. Yousif and colleagues performed a photogrammetric analysis of the aging melolabial fold. Initially, the superior margin over the inferior orbital rim descends vertically. As aging progresses, the malar fat pad continues to descend and bulge against the fixed melolabial crease. This results in an increase in the anterior projection of the fold, creating an illusion of melolabial furrow deepening.

SURGICAL TECHNIQUE

Two parallel skin markings are made approximately 0.5 cm medial and lateral to the melolabial crease to denote the area in which the
subcutaneous tunnel is to be created. In addition, standard preoperative face-lift skin markings are made. The nasal vestibule is included in the preparation field.

A SMAS plication face-lift is then begun. After a skin flap is raised, a strip of subcutaneous fat and SMAS tissue is harvested from the immediate preauricular area (Figure 1). Graft dissection extends from the superior tragus down to 2 cm below the lobule. The graft includes all the tissue superficial to the parotid fascia. The graft is maintained in isotonic sodium chloride solution–soaked gauze until it is used later in the procedure. After a SMAS imbrication is performed to close the resultant defect, a subcutaneous tunnel is bluntly dissected, centered under the melolabial crease to break any muscular attachments to the dermis and allow for graft placement. A 0.5-cm incision is then made in the lateral wall of the nasal vestibular skin internally. After the graft is trimmed to the appropriate dimensions, a pituitary rongeur is placed through the tunnel from under the face-lift skin flap and brought out through the nasal incision. The graft is then grasped and pulled through the nose into the subcutaneous tunnel (Figure 2).

Two transcutaneous 6-0 fast-absorbing gut sutures are then placed to anchor the graft (Figure 3). This modification was made early in the development of the technique after one patient experienced graft migration. The nasal incision is sutured with 3-0 gut suture. The face-lift incisions are closed in a standard fashion, followed by a standard compressive dressing.

Postoperatively, the patient is told not to blow the nose for 2 weeks to avoid forcing mucus into the healing intranasal incision.

RESULTS

Between December 1996 and June 2003, 434 grafts were performed in 217 patients. The patients had a mean age of 56.9 years (range, 35-77 years). Of the procedures, 416 (95.9%) were in women and 18 (4.1%) in men. The mean follow-up was 23.2 months (range, 1-113 months). Four complications (0.9%) were noted among the 434 graft procedures. All 4 complications were unilateral graft infections that resolved with outpatient oral antibiotic treatment, with no further sequela. No incidences of hematoma were noted.

Preoperative and postoperative photographs demonstrate the results that can be achieved with the SMAS graft technique (Figures 4, 5, and 6). Variable effacement of the melolabial furrow can be seen. All of the patients in the photographs underwent only rhytidectomy and melolabial fold SMAS grafting; none received midface lifting.

The one case of unilateral SMAS graft migration early in the development of the procedure allows us to determine graft longevity. Comparing the preoperative photograph (Figure 7A) with one taken 12 months postoperatively (Figure 7B) demonstrates continued graft presence. The patient was contacted by telephone 9 years after her surgery, and she reported that the graft remained visible. She was unable to return for a follow-up examination.

COMMENT

Addressing the aging melolabial furrow has long perplexed surgeons. Numerous methods to correct prominent folds have been developed. These include several rhytidectomy techniques along with adjunctive procedures. Although traditional skin-only rhytidectomy may have an effect on the melolabial area in many patients, the result is modest at best and ephemeral. Progressively more aggressive rhytidectomy techniques have been developed with the hope of improving on this outcome,
Millard et al\textsuperscript{10} described the method of wide subcutaneous undermining and direct lipectomy of the melolabial fold bulge. However, Ramirez\textsuperscript{11} noted that such lipectomy techniques produce contour irregularities that are quite noticeable.

Owsley and Fiala\textsuperscript{12} described their success in improving the melolabial fold by using a malar fat pad lift technique.

Direct excision of the melolabial fold has been recommended by many surgeons, including Castanares,\textsuperscript{13} Rafaty and Cochran,\textsuperscript{14} Carlin and Gurdin,\textsuperscript{15} Rees,\textsuperscript{16} and Guyuron.\textsuperscript{17} It is the simplest procedure for dealing with the prominent melolabial fold, but the resulting midface scar detracts from its more widespread use. Many argue that this technique does have a place in selected patients, especially older men with sun-damaged skin.

Several techniques directed at injecting or implanting material into the melolabial furrow have been described. These include silicone, which never gained wide popularity;\textsuperscript{18} collagen, which can produce a modest but always temporary effect;\textsuperscript{19} and expanded polytef,\textsuperscript{20} though some authors have concerns over using superficially placed implants.\textsuperscript{17}

Numerous soft-tissue grafting techniques have been described. Fat injection may be beneficial for the pa-
tient who has minimal fold prominence and who opposes a more definitive procedure. Loeb\textsuperscript{21} noted the importance of adequate subcutaneous undermining before fat grafting to prevent the fixed melolabial crease from redirecting the fat during injection. Guyuron\textsuperscript{17} reported that the results of fat injection are often unpredictable, with a strong possibility of undercorrection or, less commonly, overcorrection. In his experience, the improved appearance that is expected to last only up to 12 weeks will often last for years.

In 1989, Horibe et al\textsuperscript{22} described a technique involving the use of dermic, fatty dermic, or aponeurotic galea grafts that are placed via an intraoral route. The authors suggested harvesting the graft from a preexisting scar, the suprapubic area, or the scalp.

In 1994, Guyuron and Michelow\textsuperscript{23} described harvesting a cervical fat graft from over the platysma at the time of rhytidectomy. The technique involves undermining the facial skin flap 1 cm medial to the melolabial furrow. They noted that an alternative in patients with inadequate amounts of cervical adipose tissue is a deepithelialized strip of skin from the posterior portion of the facial flap or a piece of SMAS. They found it rarely necessary to obtain a graft from the groin or suprapubic region. They argued that grafting the crease serves 2 functions: First, it prevents the undermined musculoaponeurotic attachments from reattaching to the crease dermis, leading to crease recurrence. Second, the graft partially fills in the melolabial furrow, creating a smoother transition from lip to cheek.

The subcutaneous SMAS graft technique described provides an additional means of addressing the melolabial fold. The graft material is readily accessible at the time of the rhytidectomy and adds minimal time to the procedure. An additional benefit of the procedure is the absence of external scars. We have not experienced any problems with the intranasal incision method of graft placement, maintaining a low complication rate of 0.9% that is comparable with other published infection rates for melolabial grafts of 2% to 3%. The graft also appears to remain viable long after placement.

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Correspondence: Jeffrey S. Carithers, MD, Carithers & Koch Facial Plastic Surgery, 535 40th St, Des Moines, IA 50312-3503 (carithers@qwest.net).

REFERENCES