Using Barbed Sutures in Open/Subperiosteal Midface Lifting

The author has found that the use of barbed sutures simplifies midface suspension not only by stacking elevated soft tissue, but also by providing the ability to adjust sutures postoperatively. Complications, such as breaking of sutures, malposition, and failure to maintain support have been rare in his practice. (Aesthetic Surg J 2006;26:725–732.)

A n understanding of the morphologic changes that occur with midface aging has encouraged many innovators to develop surgical techniques that reverse the signs of aging in the middle third of the face. Multiple approaches have been devised to accomplish the aesthetic goal of repositioning ptotic soft tissue in a superior direction. Access incisions used in these approaches include transtemporal, transpalpebral, transbuccal, through existing face lift incisions, and various combinations of the preceding.

The vertical vector of correction is preferable in repositioning ptotic soft tissue. I have primarily used the combined transtemporal and transbuccal approach that I published in Aesthetic Surgery Journal. The technique, as originally described, required placement of 1 or more suspension sutures from the intraoral access incision. Obtaining symmetrical placement and recruitment of soft tissue was sometimes difficult.

I began to examine the emerging technology of barbed sutures as a tool to more easily accomplish soft tissue vector-based correction in midface rejuvenative surgery. The concepts of easy access through the temporal incision and multiple points of fixation were appealing. Although this technology can be used in both open and closed midface lifting, I prefer an open subperiosteal approach for the following reasons: (1) it achieves reliable soft tissue molding and fixation, (2) it provides opportunity for early postoperative adjustment of the threads, (3) it minimizes the need for subsequent procedures, and (4) it yields a high level of patient satisfaction.

**Patient Selection Criteria**

Patients who demonstrate midface ptosis with elongation of the lid/cheek junction are typically good candidates for an open subperiosteal midface lift using barbed sutures. This technique is also of value in supporting lower lids that require correction of malposition by canthopexy or canthoplasty. There are, however, young patients who demonstrate very early soft tissue descent with minimal prominence of the proximal nasolabial fold. These patients can be managed with a closed subcutaneous placement of barbed sutures with limited soft tissue undermining to aid in collagen deposition and maintenance of the result (Figure 1).

**Procedure**

Mark the planned vector(s) of correction with the patient in a semi-upright position. The markings should include the planned movement of mobile to fixed tissue. Perform the open subperiosteal midface lift (using barbed sutures) with the patient under general anesthesia. Inject the temporal and buccal incisions as well as the areas to be dissected with lidocaine and epinephrine, and prepare and drape the patient.

Make a 3-cm incision behind the temporal hairline and carry it down to the deep temporal fascia. Using a periosteal elevator, continue the dissection to the lateral orbital rim. Divide the orbital ligament for lateral brow elevation, and address the remainder of the eyebrow and brow depressors if indicated. Perform a blind dissection around the orbital rim over the deep layer of the temporal fossa, which will bring you to the superior aspect of the zygoma. Using an endoscopic periosteal elevator, release the peristium over the zygoma, carefully avoiding the infraorbital nerve (Figure 2). Dissect only the anterior segment of the arch at the subperiosteal level. Do not dissect the mid and lateral segments of the arch; however, elevate the temporal soft tissue to just above the arch to allow adequate flap mobilization. Frequently, an intraoral incision over the canine fossa is added for wider...
release of the periosteum and greater flap mobility (Figure 3).

Typically, I use 2 barbed sutures on each side, passing them through the temporal access incision, over the deep temporal fascia, under the periosteum of the zygoma, and through the soft tissue of the cheek, exiting the skin past the malar fat pad just lateral to the nasolabial fold (Figure 4). Pass the proximal needles through the deep temporal fascia, tie the sutures to each other, and lock them in place with an absorbable suture (3-0 Vicryl, Ethicon, Inc., Somerville, NJ) (Figure 5). Remove a small window of temporalis fascia to allow flap fixation to muscle, and advance the temporoparietal fascia and suture it to the deep temporal fascia to support an elevated lateral brow. Close the temporal incision with skin clips and close the intraoral incision with a 4-0 catgut suture.

The final and most important part of the procedure is elevating and molding the midface. While applying traction on the distal end of the barbed suture, advance the cheek in a superior direction, allowing the barbs to engage the soft

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**Figure 1.** A, C, E, Preoperative view of a 39-year-old woman. B, D, F, Postoperative views 6 months following closed barbed suture midface suspension.
Operative Strategies

Figure 2. Soft tissue dissection.

1. Superficial to deep temporal fascia
2. Subfascial at the lateral orbital rim
3. Subperiosteal over the inferolateral orbital rim and malar eminence
4. Exits periosteum and passes through SMAS, SOOF, and malar fat pad
5. Exits skin lateral to nasolabial fold

Deep layer of temporal fascia
Subperiosteal dissection
Superficial to masseter

Figure 3. Transbuccal dissection.
Figure 4. Deployment of threads.

Figure 5. A, Proximal suture anchoring to soft tissue with 2-thread placement. B, Proximal suture anchoring to soft tissue with 1-thread placement.
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Operative Strategies

Figure 6. Soft tissue molding.

Figure 7. Volumetric stacking of soft tissue.

Deep temporal fascia
Periosteum of zygoma
SMAS
SOOF
Malar fat pad

Barbed suture
Direction of tissue advancement
Figure 8. A, C, E, Preoperative views of a 61-year-old woman. B, D, E, Postoperative views 4 months following upper and lower blepharoplasties, subperiosteal midface lift with barbed suture suspension, and face and neck lift.
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Operative Strategies

Because the barbs engage several layers of soft tissue, a volumetric stacking occurs as the tissue is molded onto the barbs (Figures 6 and 7). Check for symmetry before cutting off the distal ends of the sutures. If you are doubtful about the adequacy and/or symmetry of the elevation, cover the exposed suture ends with an antibacterial ointment and a nonadherent dressing such as a Telfa pad (Tyco Healthcare Group LP, Mansfield, MA). This allows for further adjustment of the soft tissue position postoperatively in the office at 2 or 3 days. Support the elevated soft tissue with Steri-Strips (3M Healthcare, St. Paul, MN) for 5 days. Some soft tissue settling occurs over 3 months; therefore, I suggest that you overcorrect by 10% to 20%.

I have found that the use of barbed sutures has simplified midface suspension (Figures 8 and 9). The stacking of elevated soft tissue with the added benefit of postoperative suture adjustability are not options in methods that employ traditional single point suture fixation.

Sequelae and Complications

Common sequelae to the placement of barbed sutures are edema, some posterior skin puckering, and irregularities along the path of the suture. All of these sequelae disappear within a few days to a few weeks. Complications are rare and include the breaking of sutures, malposition, and failure to maintain support. Threads can be removed and replaced, if necessary, typically through the original access incision if they were placed in the subcutaneous plane. I have not had to replace threads that were inserted via the open subperiosteal route, but have removed threads in a patient who had discomfort at the proximal fixation point in the temporalis fascia, and in a patient who had faintly visible barbs close to the skin. I have added 1 thread to a patient who had asymmetric midface ptosis and required additional elevation and support to achieve symmetry.
Operative Strategies

The author is a consultant for Surgical Specialties Corporation and receives a consulting fee, as well as a fee for teaching course presentations.

References


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