Background: Facial rejuvenation surgery has yielded results through cutaneous suspension or deep, subperiosteal suspension. However, these complex procedures do not address the fatty structures that always require elevation and fixation.

Objective: In search of a simple and efficient solution, we have investigated the use of polypropylene monofilament threads (known as Beramendi threads), which feature double-convergent cog-like anchors for elevation and fixation of the soft tissue.

Method: We placed these threads in the indicated directions and locations, through a bezel-tipped trocar, without visible scars. Fifty-two patients who underwent this technique were followed for 18 months. We present here the observed ideal indications, limitations, and complications of this procedure.

Results: The observed results were good or satisfactory in most cases. Ecchymosis, edema, discomfort, and pain were observed, as well as some incidents of localized depression (dimpling), which either resolved spontaneously or through subsequent minor correction.

Conclusions: Results observed using this method, despite our small number of cases, suggest that it is a useful and simple procedure that deserves further investigation as to whether it might, in some cases, substitute for or complement certain conventional methods of facial rejuvenation. (Aesthetic Surg J 2005;25:340-347.)

Scarless Mid- and Lower Face Lift

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Facial rejuvenation addresses the consequences of the aging process, such as bone reabsorption, and the descent of the muscle and tendon insertions, which in turn cause descent of the soft tissue and loss of youthful facial contours. Among the many techniques to address these signs of aging, two general concepts of facial rejuvenation are evolving in parallel at this time. One uses subcutaneous suspension, treatment of the internal structures using the superficial muscle aponeurotic system (SMAS) as the structure of fixation, and vectors of posterior vertical elevation. Another concept is based on subperiosteal undermining and repositioning en bloc of all the structures, with a purely vertical vector. These techniques have been incorporated into our minimally invasive endoscopic-assisted mid and lower face lift procedures. They allow for the use of minimal incisions, and for the elevation and repositioning of the mid and lower face via sutures anchored to the superficial temporal fascia or the osseous tunnel.

In endoscopic (subperiosteal undermining) techniques, suture fixation is based in the deep tissue (periosteum), leaving the fatty structures free to slide between the superficial and deep fascia, presenting a “landslide” effect that, in most cases, involves a large amount of fatty tissue and can be prevented only by fixation with additional sutures. The suspension-thread technique described in this article acts precisely to prevent such ptosis of the subcutaneous tissue. Suspension threads directly addressing the buccal (Bichat), malar, and suborbicularis oculi fat (SOOF) pads have been perfected by Sulamanidze. They are applied through trocars, eliminating the need for incisions.

Patients and Methods

Patients

We performed the described mid and lower facial rejuvenation procedure with polypropylene monofilament threads (Beramendi threads) in 48 women and 4 men, ranging in age between 14 and 81 years, in the period between October 2002 and April 2004.

Indications

Patients with one or more of the following characteristics were selected for the procedure:

- Descent of mid and lower face fatty tissues
- Palpable fatty tissue of good volume
- Unwillingness to undergo conventional face lift surgery
- Contraindications for more invasive facial surgery
Scarless Mid- and Lower Face Lift

(hypertension, previous cardiac surgery, diabetes, heart problems)

- A facial configuration characterized by voluminous facial fatty tissue in a round face, so that the conventional face lift would likely not yield sufficient results
- No excess skin flaccidity
- Secondary lift with insufficient result in the center oval of the face

Contraindications

Contraindications to use of Beramendi threads as the sole procedure included:

- Insufficient facial fat volume
- Presence of marked wrinkles
- Excess skin
- Positive HIV test; medication that causes fat atrophy
- Skin with cystic acne

Method

Two types of double convergence polypropylene threads were used: a greater master thread (Figure 1), 20 cm in length, and a smaller complementary thread (Figure 2), 12 cm in length. The threads and barbs are molded together in a cake tin or mold to ensure continuity between them. Both threads featured a characteristic central point without cogs. This is considered the fragile point of the thread. The barbs were positioned opposite one another on each side. The sustaining/supporting part of the thread was double-single-double-cogged (47 cogs) to provide flexibility. The other end of the thread also
featured a double-cog configuration (62 cogs), double-double, to provide traction. Each cog was 0.70 mm in height, with a total fixation area per cog of 0.14 mm², a sustaining area of 6.58 mm², and a traction area of 8.68 mm². These figures were derived by calculation of the number of sustaining and traction cogs multiplied by the area of support and traction of each cog (height × thickness of the cog) divided by the total area (area per cog × number of cogs).

The threads were applied through bezel-tipped trocars (Figure 3) with lengths of 18 cm and 11 cm and diameters of 3 mm and 2.5 mm, respectively.

**Application Technique**

Patients were marked prior to surgery at the palpated point of desired traction (Figure 4) while in a seated position. The procedure was performed under local anesthesia and intravenous sedation, with facial nerve blocks and infiltration of the previously marked tunnels where the threads would be placed.

The 18-mm–long trocar was introduced in the direction demarcated in the midportion of the fatty tissue, from the mentojugal (marionette) sulcus to the temporal region inside the hairline, where the plane becomes deep, for placement of the master threads under the deep temporal fascia. In the midface, the trocar goes through the soft tissue, but in the temporal region it penetrates the deep temporal fascia, runs into the deep part of the fascia for 3 cm, and then becomes superficial again, thus creating 2 points of fixation for the end of the thread. The long thread was introduced via the trocar in the direction of the cranium. The double-double end remained in the inferior part (soft tissue), providing optimal fixation in the soft tissue, while the double-single-double end was locked in deep temporal fascia. The trocar was then removed, freeing the thread inside the fat pad at one side and locking the cranial part at the deep temporal fascia. The ends of the threads were pulled and the excess thread cut under tension, so that the extremity of the thread was buried, both to prevent dimpling and to ensure that it did not become attached to the dermis. There was some loss of correction in the early postoperative period until the cicatricial band (a band of fibrous tissue around the thread, forming a foreign body scar) was formed. For this reason, we immobilized the face in the first postoperative week (5 to 7 days) with MicroPore dressing to avoid strong movements and consequent mobilization of the thread position during the process of scar formation.

**Postoperative Instructions**

Patients were instructed to leave the MicroPore dressing in place for several days, to avoid facial movement and expression, to avoid exaggerated opening of the mouth (no dental treatments, facial massage, or hard chewing for 1 month postoperatively), and to avoid the lateral decubitus position. They were advised to use sun block and avoid sun exposure, and to be prepared for some discomfort, paresthesia, dysesthesia, edema, and ecchymosis.

**Results**

The described procedure was proposed for mid and lower facial rejuvenation and was shown to be a good alternative, as well as a complement, to well-established facial rejuvenation procedures, satisfactorily correcting fatty tissue descent. It is a simple, quick procedure that can be performed on an ambulatory basis under local anesthesia, with or without sedation, and provides rapid recovery with early return to normal activity, satisfying the demands of physician and patient alike. The possibility of performing this procedure in patients with cardiopathy, diabetes, or other conditions that may preclude conventional surgery can provide alternatives for facial rejuvenation (Figures 5 and 6). It is an excellent option for patients aged 40 or younger who are unwilling to undergo more invasive surgery (Figure 7). The achievement of a demonstrable result after a brief period of edema (5 to 7 days) provides a high degree of patient satisfaction. However, to ensure optimal patient satisfaction, it is essential that during preoperative counseling, patients are prepared for the occurrence of edema, a sensation of immobilization of soft tissue, and the restriction of hard chewing and significant oral movements for 1 month postoperatively.

<table>
<thead>
<tr>
<th>Complications</th>
<th>Total number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimpling</td>
<td>7</td>
<td>13.5</td>
</tr>
<tr>
<td>Hyperalgia</td>
<td>2</td>
<td>3.8</td>
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<tr>
<td>Nerve injury (sensitive or motor)</td>
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<td>0</td>
</tr>
<tr>
<td>Herpes (after 21 days)</td>
<td>1</td>
<td>1.9</td>
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<tr>
<td>Extrusion of threading</td>
<td>5</td>
<td>9.6</td>
</tr>
<tr>
<td>Infection</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Inflammation of acne cyst</td>
<td>1</td>
<td>1.9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>16</strong></td>
<td><strong>30.7</strong></td>
</tr>
</tbody>
</table>
Figure 5. A, C, E, Preoperative views of a 49-year-old woman in whom face lift surgery was contraindicated because of a pulmonary problem. B, D, F, Postoperative views 17 months after placement of Beramendi threads in the mid and lower face.
Figure 6. A, C, E, Preoperative views of a 59-year-old patient with cardiac contraindications for face lift. B, D, F, Postoperative views 4 months after placement of Beramendi threads in the mid and lower face, full-face CO₂ laser resurfacing, and upper blepharoplasty.
Figure 7. **A, C, E**, Preoperative views of a 54-year-old woman who did not want traditional face lift surgery. **B, D, F**, Postoperative views 7 months after placement of Beramendi threads in the mid and lower face.
Complications

The main complications observed are summarized in the Table. Temporary dysesthesia can occur, including hyperalgia (3.8%) and ecchymosis. Hyperalgia was controlled by treatment with analgesics, and ecchymosis resolved spontaneously. Postoperative pain resolved over time. Early in our experience with the procedure, there were instances in which we believe sensitive nerve fibers may have been trapped by the barbs; when higher tension was used, this could have been the cause. The end of the thread was visible in 5 patients (9.6%) and corrected by sectioning of the thread under traction. If the threads were not exposed, it was simple to reposition the thread more deeply by performing a needle puncture, locating the end of the thread, and cutting a part of it under traction. There was no need to take out the entire thread. If the patient needs a later face lift procedure, we can take advantage of the cicatrical band to anchor the plication. Dimpling of the skin was more common, observed in 7 patients (13.5%). Most of these cases resolved with massage and dermotonia (physiotherapy with vacuum machines to create suction over the skin) that corrects retractions. In the most difficult cases, subcision was performed, with or without filling. The rarer complications, such as herpes (1.9%) and inflammation of acne cysts (1.9%), did not present significant difficulty and resolved with treatment. We did not observe any cases in which the threads became either visible or palpable in the course of follow-up. We believe this is the result of limiting treatment to patients who presented with descent of the mid or lower face and had sufficient fatty tissue volume, in whom the technique is especially beneficial.

In cases of undercorrection or regional delimitation of the original procedure, it was possible to complement the original work with the insertion of new threads. In the same way, it was possible in some cases of overcorrection to break up the complementary threads intraoperatively or postoperatively by using pressure. In the cases involving surgical correction of facial paralysis, we faced a greater challenge and more difficulty in maintaining the surgical result over time, and found it necessary to fortify the original treatment with additional complementary threads.

Conclusion

The use of double-convergence polypropylene threads (Beramendi threads) can be considered an alternative for younger patients with the first indications of facial aging, as evidenced by the descent of the mid and lower facial fatty tissue, and can be used as a complement to long-established midface rejuvenation procedures. Additionally, this procedure may be an option for patients who, for health reasons, may not tolerate conventional surgery. The simplicity of the method, the lower morbidity, and the short period of recovery extend the scope of current indications. However, there is a need for relatively lengthy postoperative immobilization of the treated areas. Increased experience and volume of cases, as well as combined and comparative studies with other techniques, will help determine the appropriate role for threading techniques in mid and lower face lift and other facial rejuvenation procedures. Further study will also help to prevent common complications and shorten the learning curve. The evolution of the materials for suspension, support and anchoring will likewise improve long-term results.

References


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