Suture Suspension Technique for Midface and Neck Rejuvenation

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Abstract: Seventeen patients averaging 51 years of age underwent 23 surgical procedures, including suture suspension for both midface and neck rejuvenations. A 3/0 polypropylene thread with bioabsorbable cones with multiple point fixations in addition to 2 × 0.5-cm polypropylene surgical mesh are used in this technique. The mean postoperative, follow-up time was 9 months. Of the 17 patients, 12 underwent this procedure for midface rejuvenations, 3 for facial palsy, 5 for neck aesthetic procedures, 2 for brow ptosis, and 1 for brow asymmetry. The average number of sutures used for each face was 4 and 2 were used for each neck. The authors present an anatomic study for the safe placement of sutures, the surgical technique, and a microscopic photo documentation of the fibrosis around the suture knot and cone. All patients developed temporary edema. Two patients had a moderate aesthetic improvement of the face, and 1 patient underwent resuspension of the sutures 4 months postsurgery. Overall early patient satisfaction at 9 months was 90%. This technique has the potential to be a useful and effective clinical tool for minimally invasive face and neck rejuvenations.

Key Words: midface, neck, suture suspension

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Younger patients are beginning to seek cosmetic surgery and are attracted to less invasive approaches to facial rejuvenations,[1,2] and a number of face-lift alternatives and adjunct procedures have been recently popularized. For patients with primarily soft tissue ptosis and little skin redundancy, the use of percutaneous suspension sutures is an option.[3,4] Suture suspension of the face is not a new procedure.[5,6] It has regained popularity because it is a minimally invasive technique with diminished adverse events: no skin excision occurs, and no superficial muscular aponeurotic system (SMAS) flap is created, as it does not remove redundant skin. Thus, such a technique may be best suited for younger patients.

Different techniques that counteract the descent of the face may be performed with prosthetic materials, sutures, polytetrafluoroethylene, slings, mesh, or autologous tissues, including tendon and fascia.[7–16] In addition, conventional sutures are used for both correction of facial paralysis[17] and lifting of the malar fat pads to enhance the volume of the midface.[2,18] A new modified polypropylene suture (Silhouette Lift, Kolster Methods Inc., Corona, CA) was approved in 2006 by the Food and Drug Administration for use in face surgical procedures. This suture consists of 3/0 polypropylene with bioabsorbable cones and multiple point fixation; it is attached distally to a 20.3 cm/20-gauge straight needle and proximally to a 26 mm/one-half circular needle. The percutaneous threads grasp and elevate soft tissues.[19] This study presents a surgical technique, fresh anatomic dissections, and the clinical implications for midface and neck rejuvenations.

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PATIENTS AND METHODS

An institutional review board and approved Health Insurance Portability and Privacy Act compliant study was reviewed in patients who had undergone midface and neck suture suspension between 2007 and 2008 at the Medical College of Georgia and at the University of Alabama at Birmingham; 17 patients with a mean age of 51 years (range, 38–69) were identified. Anatomic dissections were performed on fresh cadavers. The facial layers were exposed in relation to the suture position, demonstrating both efficacy and safety for the branches of the facial nerve (Fig. 1).

Polypropylene surgical mesh and 3/0 polypropylene sutures with bioabsorbable cones and multiple point fixation, approved by the Food and Drug Administration for use in facial surgeries, were used (Fig. 2).

Technique

The procedure was performed under local anesthesia. The preoperative marking was done with the patient in a sitting position. Four suspension points at a distance of 1.5 cm from one another were located 1 cm from the nasolabial crease (Fig. 3A).

A 2-cm skin incision was made in the hair-bearing area parallel to the zygomatic arch and a small pocket was dissected at the level of the deep temporal fascia (DTF); a 2 × 0.5 cm nonabsorbable synthetic knitted surgical mesh was sutured. The

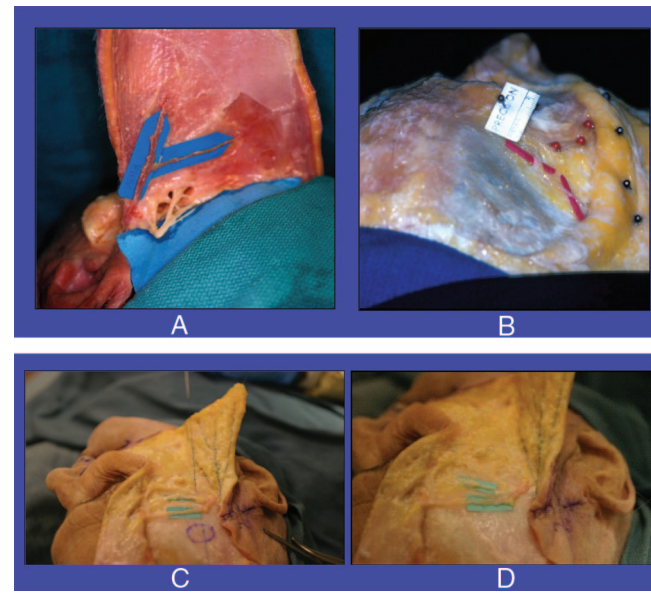

FIGURE 1. Frontal branch of the facial nerve, A, B, in relation with the temporal vessels and the orbital rim; C, beneath the suture; D, above the suture.

surgical knot was located on top of the surgical mesh to prevent asymmetries caused by displacement of the suture (Fig. 3B).

The deployment of sutures was deep to the DTF and placed at the subcutaneous level at the hairline, with digital assistance; the needle was threaded in a uniform fashion (Fig. 3C). The vectors of the 2 medial sutures were slightly horizontal and the lateral sutures were vertical. The wound was closed in layers, and a paper tape was applied to the lifted area and maintained in this position for 3 to 4 days (Fig. 3C). The neck suspension technique was performed either with or without suction-assisted lipectomy. A small, 1-cm retroauricular skin incision was made. Subsequently, sutures were threaded in a uniform fashion at the subcutaneous level and exited at the midline of the neck (Fig. 4).

The procedures were carried out in an outpatient setting and the average duration was 45 minutes. A histologic illustration showing fibrosis around the polypropylene knot and cone was demonstrated in a biopsy 6 months postapplication of the suture (Fig. 5).

RESULTS

Twenty-three surgical procedures in 17 patients with a mean follow-up time of 9 months were studied. Of the 23 procedures, 12 involved the procedure for midface rejuvenation, 3 for facial palsy asymmetry, 5 for neck aesthetic procedures, 2 for brow ptosis, and 1 for brow asymmetry. The midface suture lift provided anterior projection of the cheek, elevated the corner of the mouth, and improved the jowls (Fig. 6). The brow ptosis corrections improved the lateral third of the eyebrow with elevation either above or in the orbital rim (Fig. 7). The neck procedure showed the satisfactory delineation of the neck-mandible angle (Fig. 8).

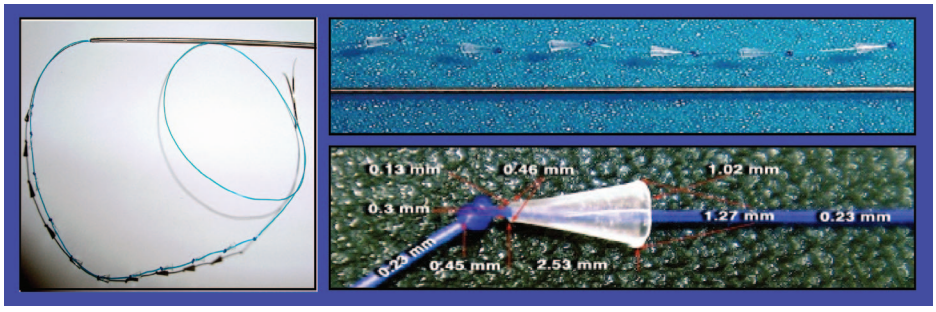

FIGURE 2. Polypropylene with bioabsorbable cones with multiple point fixation (Silhouette Lift, Kolster Methods Inc).

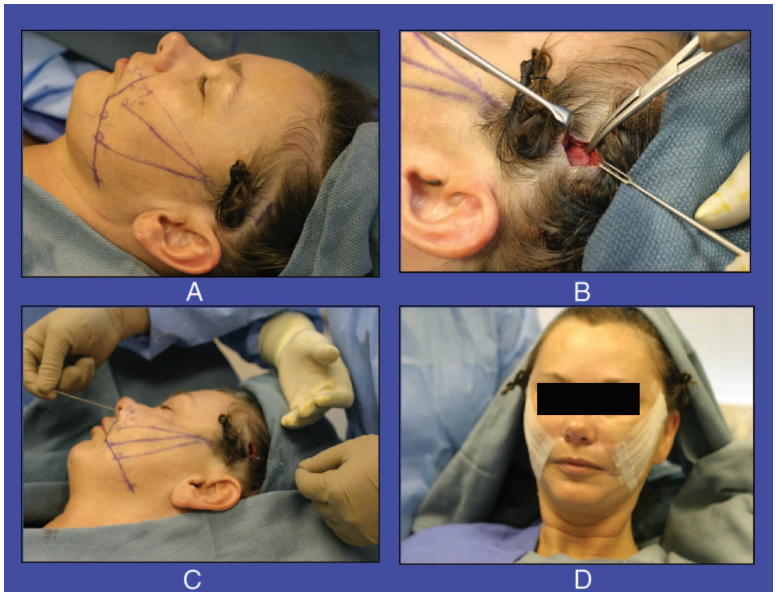

FIGURE 3. A, Preoperative marking; B, 2 × 0.5-cm surgical mesh suture at DTF; C, deployment of suture; and D, surgical dressing.

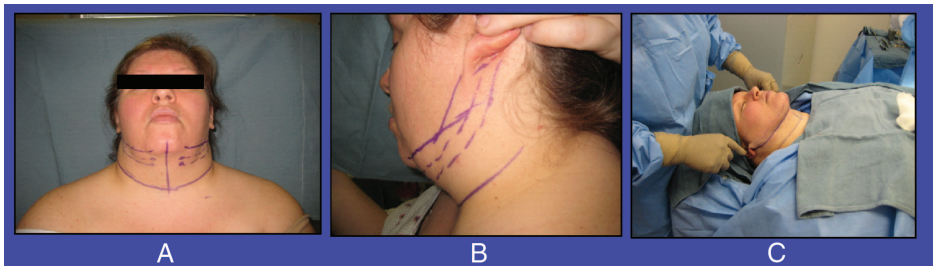

FIGURE 4. A, Solid line shows the extension of the suction-assisted lipectomy. Interrupted line showing the suture position; B, retroauricular incision; and C, delineation of the neck with suture suspension.

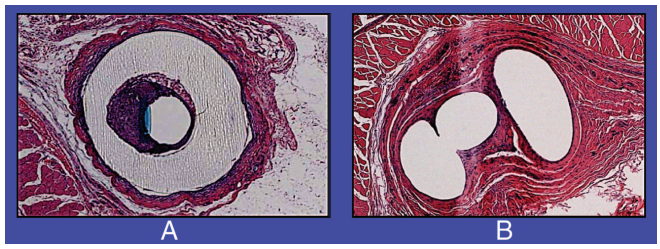

FIGURE 5. Biopsy of a patient after 6 months of suture placement. A, Fibrosis around and in the cone; B, fibrosis around the knot (Courtesy of Dr. Franco Perego and Dr. Roberto Pizzamiglio).

Complications were minimal temporary edema in all patients; 2 patients developed bruising and 2 had an only moderate aesthetic improvement. Of these 2 moderately improved patients, 1 patient underwent resuspension of the sutures after 4 months of suture placement. Typically, patients can return to work in 3 to 4 days after surgery.

CONCLUSIONS

The Silhouette lift, a modified polypropylene suture with absorbable cones, provides advantages to surgeons and patients with minimal morbidity for face and neck rejuvenation. The surgical technique is simple; patients need only local anesthesia and the mean operation duration is 45 minutes. Additionally, the sutures can be used in combination with other aesthetic and reconstructive-

FIGURE 6. Top, a 43-year-old female patient preoperative view. Lower, 9 months postoperative midface suture suspension.

FIGURE 7. A 38-year-old female patient. Top, preoperative view. Lower, brow suture lifting and blepharoptosis correction.

FIGURE 8. Top, preoperative view of a 38-year-old woman with severe neck lipodystrophy. Lower, 7 months postsuction-assisted liposuction and neck suture suspension.

facial procedures. Furthermore, the overall patient satisfaction at 9 months is 90% very satisfied and 10% moderately satisfied. The longevity and the long-term effects of the sutures themselves remain to be determined.

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