TIPS AND TECHNIQUES

Brow Suspension Suture Procedure

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Introduction: This article describes a safe, effective, straightforward brow-suspension lifting technique that minimizes surgical time and can be performed under local anesthesia with predictable outcomes. Mersilene suture and a Keith needle were used to lift the medial and/or lateral brow, producing excellent surgical results.

Materials and Methods: A retrospective study of 9 patients with medial or lateral brow ptosis were included in the study based on the following criteria: men with a brow height below the superior orbital rim either medially, laterally, or both; women with a brow position at or lower than the superior orbital rim medially, laterally, or both. The details of the procedure are presented.

Results: All 9 patients who had the brow-suspension suture procedure reported a satisfactory result: normal brow level was restored for both men and women. Patients experienced no pain during the procedure, which was done under local anesthesia, and all were able to return to daily activities the next day. All patients indicated that if they had to undergo a brow lift again, they would prefer to have this procedure instead of the more conventional brow-lifting procedures. All of the procedures, including those that involved both medial and lateral brows, were performed under 30 minutes.

Conclusions: The brow-suspension suture procedure is a safe, straightforward, minimally invasive alternative to conventional brow-lifting surgeries. It is time and cost efficient and produces effective outcomes.

Most patients who come to plastic surgeons for periocular rejuvenation have some degree of brow ptosis and therefore need a brow-lifting procedure in combination or in isolation with other eyelid or midface procedures. Plastic surgeons have several different brow-lifting techniques available. Some approaches to a brow-lifting procedure are more invasive and require longer surgical and recovery times compared with less invasive methods. Currently, all methods require some level of sedation and thus need an anesthetist. Direct and midforehead brow lifts tend to not be as cosmetically acceptable as other brow-lifting techniques because of the visible residual scar after the surgery. Endoscopic, pretrichial, and coronal brow lifts are extremely invasive and have a higher risk of injury to the temporal branch of the facial nerve than other procedures and a small risk of supraorbital nerve injury if the surgeon does not visualize it. These procedures are also extensively time consuming and labor intensive.

The traditional brow lift performed by an experienced plastic surgeon requires 1 hour or more of surgical time. Recovery time can be as long as 2 months in an uncomplicated case. An endoscopic brow lift has a steep learning curve because of the manual skills required for using the endoscope. The surgeon may also need to learn how to use other tools, such as a drill, which is needed to create the bone tunnel or Endotine notch. Additionally, this is not the surgery of choice for a patient who has an isolated medial or isolated lateral brow ptosis, and the technique described in this article may be a more suitable alternative.

This article describes a minimally invasive procedure that has been performed on 9 patients at a busy Beverly Hills private practice. This procedure minimizes surgical and recovery time while producing very effective results. This approach can be performed under local anesthesia and avoids the extra expense of an endoscope, Endotine, or drill. These patients had a medial and/or lateral brow lift using Mersilene suture and a Keith needle to lift the medial and/or lateral brow. The procedure produced excellent results in under 30 minutes of surgical time.
Materials and Methods

Patient Selection

A retrospective study of 9 patients with medial or lateral brow ptosis were included in the study based on the following criteria: men with a brow height below the superior orbital rim either medially, laterally, or both (n = 3); and women with a brow position at or lower than the superior orbital rim medially, laterally, or both (n = 6). The mean age was 53.5 years (range = 35–72 years). Two patients had upper eyelid blepharoplasties at the time of their brow-lifting procedure. Six of the patients had had a previous upper eyelid blepharoplasty. One patient had never had blepharoplasty. Patients who had previously had Botox to the orbicularis oculi muscle or who had had filler to the periorbital area in the past year were excluded.

Surgical Procedure

While they were in a sitting position, patients were preoperatively marked to indicate the point in the scalp at which the surgeon would use a needle to access subcutaneous tissue for the brow lift and the most natural position for that patient (either at or above the superior orbital rim depending on gender and facial characteristics specific to each patient). The patient was then prepped and draped in the normal sterile fashion. Local anesthetic (2% lidocaine with epinephrine 1:200,000) was injected at the site of the incision and along the intended suture tract. Using a #15 blade to incise the previous markings, an incision was made approximately 1 to 2 cm long in the vertical

Figure 2. Suture being tied to elevate the medial brow to the desired height.
Figure 3. After Mersilene sutured has been tied down, the medial brow suspension is completed. Black vertical lines indicate where the suture has been placed.

direction (Figure 1a). Using a 4-inch Keith needle (Figure 1b) and a 3-0 Mersilene suture, the needle was passed through the subcutaneous tissue down to the brow edge either medially or laterally, exiting at the upper browline (Figure 1c and d). The needle was then redirected into the same exit point at a different angle from that which the needle had already penetrated back upward toward the scalp incision (Figure 1e). This exiting needle was then driven between the subcutaneous tissue.

The brow lift is achieved by tightening the suture after the surgeon has reached an acceptable amount of brow elevation (Figure 2). The suture is then tied (Figure 3), 4-0 Prolene is used to close the incision site, and ointment is applied on the closed incision. The sutures are removed 7–10 days after the procedure is performed. Figures 4 (a, b, and c) and 5 (a and b) show presurgical brow position, and Figures 6 (a, b, and c) and 7 (a and b) show postsurgical results 6 months after surgery.

Figure 4. (a) Before brow-lifting procedure, front view. (b) Before brow-lifting procedure, right view. (c) Before brow-lifting procedure, left view.

Figure 5. (a) Before brow-lifting procedure, front view. (b) Before brow-lifting procedure, right view.
Figure 6. (a) After brow-lifting procedure, front view. (b) After brow-lifting procedure, right view. (c) After brow-lifting procedure, left view.

Complications

Potential complications for this procedure are the same as for any other brow-lifting technique, including visible scar, numbness, brow asymmetry, and, very rarely, facial nerve injury. However, all of these complications are minimized when this technique is used correctly.

Discussion

In today’s environment, patients undergoing aesthetic surgery are increasingly requesting less invasive surgery, less expensive surgery, less recovery time, and less anesthesia. This brow-suspension technique may be an alternative to previous techniques for the right surgical candidate. The brows are measured from the superior orbital rim to the lower brow hair in millimeters at both the medial and lateral edges. An acceptable brow height is any brow above 1 mm from the superior orbital rim on women and at or above the superior orbital rim on men. 6,7

All 9 patients reported being satisfied with the results 1 month after surgery. All 9 patients reported that the procedure gave them a pleasing, natural brow lift. In the first 6 months of the postoperative period, none of the patients reported feeling as if the brow lift was too exaggerated, and it did not leave them with the surprised or unnatural appearance patients often report with other modalities of brow-lifting techniques.

Patients returned to all daily physical activities the next day. Swelling and bruising lasted up to 1 week. Two patients complained that they could identify where the suture was pulling the brow, but this identifiable pulled area relaxed within 1 month of the surgery.

When asked to use a scale of 1 to 10 (1 indicating does/did not bother them and 10 indicating very worrisome) to rate how much the appearance of an identifiable pulled area after the surgery bothered them, most patients reported 1 as their response (the identifiable pulled area after surgery did not bother them). One patient graded it a 2, describing it as an annoyance only he or she could identify; another patient graded it also as a 2 but said it did not bother
him, and he only wanted to know if it would affect the outcome of the surgery. Once the patient was reassured that the place where the suture was pulling the brow would fade and would not affect the outcome, it no longer bothered him. Thus far there have been no complaints of numbness, and previous brow asymmetry remained the same or improved with the surgery. There was minimal scarring and no facial nerve injuries.

Of the 9 patients who had the brow suspension suture procedure, 8 were able to keep the brow height that was achieved for up to 5 years. Three patients later had brow suspension revisions. One revision was performed 3 months after the initial procedure. This male patient did not keep the brow suspension height measured after surgery. This could be because the Mersilene suture broke early in the healing process before the scar tissue formed around the track of the suture to hold the brow position in place. A female patient who wanted a more pulled, unnatural appearance had another revision performed within 5 months after the first brow suspension procedure. The third revision was performed on a male patient 6 years after his initial procedure while he was concurrently having a face-lift performed. His brow position had fallen to slightly below his superior orbital rim, though it was not as low as it was before his initial suspension. The fact that 2 of the 3 patients undergoing revisions were men could be because the excessive weight of the male brow overcame the tensile strength of the 3-0 Mersilene. Thus, when performing this procedure on a male patient, a surgeon may want to consider using a 2-0 Mersilene suture.

All of the procedures were performed in under 30 minutes even if both lateral and medial brows were performed. The cost of the surgical equipment for the physician is the one-time purchase of the Keith needle and the cost of the suture for each procedure. By keeping the physician’s cost low, the savings can be passed on to the patient.

This procedure can also be performed under local anesthesia. Of the patients in this report, 5 received only local anesthesia. All 5 of these patients reported the procedure to be tolerable with local anesthesia and 3 reported that the procedure was painless. In addition, other costs, such as fees for an anesthesiologist and facility fees for a surgery center, are eliminated.

**Conclusion**

The brow-suspension suture procedure is a safe, straightforward, conservative approach to a successful, minimally invasive, time-efficient alternative to the other surgical options for brow lifting that results in minimal complications for the appropriate surgical candidate.

**References**


