Eyebrow lifting by suture
From: “Serdev Sutures. Scarless face and body liftings”

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INTRODUCTION

Multiple invasive techniques have been described for brow lifting by fixation of the scalp and upper face; however, these methods do not allow the direct positioning of the brow like in the suture method, described by the author. Within the past decade, the demand for minimal invasive surgery, fast recovery and immediate beautification result have revised large surgeries and radically changed surgery in face forehead beautification and rejuvenation. Even minimal incision approach to brow lifting and endoscopic methods has become undesired options for beautification in younger patients, Asian and Afro-American skin. Improved understanding of eyebrow anatomy, pathophysiology of the aging face, and advances in small- and non-incision surgery, has contributed to a new approach in correction of the eyebrow position in beautification of the face. A closed suture method with needle skin perforations between the eyebrow hairs only, was introduced by the author since 1994. The idea, both in open techniques and in closed suture technique, is to catch movable but stable tissue (in this case - subdermal skin or orbito-superciliar fascia) and to attach it to hard nonmovable tissue (bone periosteum). The closed suture technique uses special polycaproamide threads n° 0 that are semi-elastic, long term absorbable, antimicrobial, and braided; as well as special curved, elastic needles. The aim is to lift the brow without visible scars, to save the mimic and the movement of the brow, and to preserve the naturale look. The results are immediate with a very high longevity and patient acceptance.

Our aim with this method is to obtain beautification in patients of any age, as well as rejuvenation in elderly, using minimally invasive and long-lasting cosmetic surgery procedure. It is done ambulatory, under local anesthesia with i.v. sedation, with immediate result and close to 0% complications, pre-

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venting facial expression and gesture without any scarring.

**PROCEDURE**

The brow lift suture is done by needle punctures only, between the eyebrow hairs to prevent scaring. It presents a stable fixation of the subdermal skin layer to the perios- teum of the upper temporal line and its rim above the orbit. An important instrument that facilitates performing this technique is the specially designed Serdev curved, semielastic, semiblunt mini needle of 50 or 60 mm length with a hole at the tip that can be turned down and up in order to enter through the skin, to catch periosteum or fascia and exit through another skin perforation point. Most important is that we have at our disposal the 0 polycaproamide Polycon threads with marked elasticity that are long-term biodegradable (in 1.5 - 2 years), antimicrobial and braided. The semielastic, braided, n° 0 threads permit movements of face and muscles, fixation under elastic tension, and do not trauma or cut the sutured tissue. The long term resorption quality gives time for a stable fibrosis formation and do not leave foreign bodies in the tissue after the fibrotic fixation is finished.

**TECHNIQUES**

I. **OPTION - Fixation of the eyebrow to the upper temporal line 1.5 cm above the superior orbital rim.**

A. **First suture pass: SUBPERIOSTEAL FIXATION to the upper temporal line 1.5 cm above the superior orbital rim**

Mark the intersection point between lateral canthus line and eyebrow. Mark point A and point B approximately 1 cm both sides of it between the hairs of the eyebrow. Entry Point A is the point of lateral fixation of the eyebrow. Exit Point B is the point of medial fixation of the eyebrow.

Place your thumb on the forehead at about 1 cm above the above mentioned cross point and you should feel the rim of the superior temporal line. Pull up/lift the forehead.
skin maximally and hold it until anesthetic infiltration and subperiosteal fixation is done. This maneuver positions the eyebrow tail at an optimum level which is located at 1 to 1.5 cm above the superior orbital rim (fashion position). Applying identical finger positioning and lifting bilaterally, the eyebrow tail should be positioned identically in both sides. NB. Do not pull the eyebrow itself. A pull on the eyebrow alone will result in an unnatural brow tail position, because the eyebrow is fixed looser and can move much more than wanted.

While holding the brow in the desired position, local anesthetic is introduced at the two perforation points A e B intradermally, at the line A'1B'1 - subperiosteally, and between the two points A and B -intradermally and subdermally (Fig.3). Use only a small amount of anesthetic – drops in a line. Larger amount will result in visible post-op swelling.

Use the tip of scalp knife blade 11 to perorate the skin in the points A and B horizontally (respect Langer lines) and then use the thin tip of a mosquito/ hemostat instrument to open/widen perforations in the subdermal fascia at that points. NB. If the fascia is not perforated, its attachment and lift will result in dimple formation at the place of the perforation points.

While holding the eyebrow at the desired position, a Serdev needle 50 or 60 mm is introduced in a perpendicular fashion through point A (do not touch or engage the dermal tissue). Once the needle touches the bone, then slide it subperiosteally (A'B'1) through the rim of the upper temporal line in direction to point B. When the needle tip reaches the position below point B, direct the tip upward towards the opening B, then fold the skin against the needle tip at a 90° angle and with gentle twisting movements move the needle upward until it exits from point B. Try to avoid engaging the dermis as you are exiting to prevent the creation of a skin dimpling. If you feel that the needle is facing any resistance, that means that the needle has caught the dermis, move twisting the needle back and repeat the maneuver. NB. Do not push or pull – twist the needle forwards or twist backwards.

Important! At line A'1B'1 check if the needle is locked under the periosteum, if it moves freely that means that the needle is not inserted at sub-periosteum level. This is a common mistake that beginners often commit. In such case the needle should be repositioned deeper under the periosteum.

After threading the suture through the tip hole of the needle at point B, the needle is
pulled back towards point A until it exits out bringing with it the suture through point A. This represents the first pass of the suture extending from A-B subperiosteally.

B. Second suture pass: Eyebrow fixation

The second needle pass used to fix the eyebrow can be achieved by two options:

1. **Fixation of the eyebrow dermis.**
   In this case the second needle pass is done through the lower dermis layer (intradermally) between the points A and B. At point A advance the needle through the firm lower dermis, holding the skin opposite with the other hand. If your needle is in the right level you should find a strong resistance as you are advancing the needle towards exit point B. To facilitate the passing of the needle through dermis use a gentle twisting movement as you are advancing the needle forward until you reach point B (exit point). Pushing the needle hard without the twisting movement can result in tissue perforation and migration of the needle to an undesired direction.

2. **Fixation of the orbito-superciliar fascia*.**
   (*This fascia was found by the author to fix the superciliar skin to the upper orbital rim). The needle passes from point A to point B through subdermis below the orbito-superciliar fascia, i.e. just below the line of the eyebrow to catch the orbito-superciliar fascia.

   After exiting perpendicularly through point B, the medial free end of suture is re-threaded through the needle hole, and pulled backward laterally to exit through point A. This will complete the suture loop formation. Once the suture exits point A, a surgical knot is performed under medium elastic tension. After that, a slight pressure is applied at the line AB for a minute to minute and a half to flatten the eyebrow over the suture and to stop any bleeding (respect bleeding time). If dimpling of skin is noted at either point A or B you can resolve that as follows: while applying pressure to stabilize the skin at the perforation site you can use a “mosquito” branch to release the skin from the suture at the exit points thus resolving the skin dimpling at these point A or B. The author does not use stitches to close the entry point A or exit point B.

   After skin is flattened, and skin dimpling is removed, no wound bandages are necessary. For overnight we use skin color tapes Micropore 3M, placed on the upper eyelid skin just below the eyebrow to reduce swelling (the hypertensive glue of the tape should absorb superficial swelling). Even sutured that way, the eyebrow is movable due to the possible movement of the suture up and down on the side of the eyebrow.

II. OPTION. Eyebrow lifting with fixation to the upper temporal line at the hairline
Mark two points A, and B at the eyebrow both sides the cross point between lateral canthus line and eyebrow as described above. Mark two perforation points A1 and B1 both sides at temporal line, just behind hair line.

Introduce local anesthetic in the perforation points A, B, A1, and B1 intradermally, in A1-B1 line – subperiosteal, in A-B line – intradermally, and in connecting lines A-A1 and B-B1 - subdermally. Use only a small amount of anesthetic – drops in a line. Larger amount will result in visible postop swelling.

Use scalper blade 11 to perforate the skin in the points A, B, A1 and B1.

**A. First suture pass: Fixation of the eyebrow**

Fixation of the eyebrow can be achieved by two options:

1. **Fixation of the eyebrow dermis.**
   In this case the needle pass is done intradermally between the points A and B. At point A advance the needle through the firm lower dermis, helping with the other hand and holding skin in opposite direction. If your needle is in the right place you should find a strong resistance as you are advancing the needle towards exit point B. To facilitate the passing of the needle through dermis, use a gentle twisting movement as you are advancing the needle forward until you reach point B (exit point). NB. Pushing the needle hard without the twisting movement can result in tissue perforation and migration of the needle to an undesired direction.

2. **Fixation of the orbito-superciliar fascia*.**
   (*This fascia was found by the author to fix the superciliar skin to the upper orbital rim). The needle passes from point A to point B through subdermis below the orbito-superciliar fascia, i.e. just below the line of the eyebrow.

   After exiting perpendicularly through point B and threading the needle, the thread is pulled out through the needle pass and point A.

**B. Connecting A-A1 and B-B1 passes.**

Pass Serdev 60 or 100 mm needle from point A1 to point A subdermally in the fat
layer between dermis and anterior frontal fascia. NB. If your needle faces resistance that means that the needle has migrated into the frontal fascia and has to be twisted backwards and re-inserted into the proper plane. If needle enters the fascia, the lift of the brow can not be achieved. At point A thread the suture through the needle hole and pull out the thread from point A into point A¹. Repeat the same step between point B¹ into point B.

**C. Last pass: Subperiosteal fixation to the upper temporal line**

(just behind the hair line)

Serdev 50 mm needle is introduced in a perpendicular fashion through point A¹ (do not touch or engage the dermal tissue), once the needle touches the bone, then slide it sub-periosteally through the upper temporal line. When the needle tip reaches the position below point B¹, direct the tip upward towards the opening B¹, then fold the skin against the needle at a 90⁰ angle against the tip, and with a gentle twisting movements move the needle upward until it exits from point B. Try to avoid engaging the dermis as you are exiting to prevent the creation of a skin dimpling. If you feel that the needle is facing resistance, which means that the needle has caught the dermis, twist it backwards to free the tip and repeat the maneuver.

NB. At line A¹-B¹ check if the needle is locked under the periosteum, if it moves freely that means that the needle is not inserted at sub-periosteum level. This is a common mistake that beginners often commit. In such case the needle should be repositioned deeper under the periosteum.

After threading the suture through the needle tip hole, the needle is pulled out from point B¹ backwards through point A¹ and the thread is positioned through the needle pass A¹-B¹ subperiosteally (= subperiosteal fixation to lift the brow).

A surgical knot is performed under medium elastic tension. After that, a slight pressure is applied at perforation points for a minute to minute and a half to flatten the skin over the suture and to stop any bleeding (respect bleeding time). If dimpling of skin is noted at either point A or B you can resolve that as follows: while applying pressure to stabilize the skin at the perforation site you can use a “mosquito” branch to release the skin from the suture thus resolving the skin dimpling at point A or B. The author does not use stitches to close the perforation points A, B, A¹, B¹.

After skin AB is flattened, and skin dimpling is removed, no bandages are necessary. For overnight we use skin color tapes Micropore 3M, placed on the lines AA¹, BB¹ and on upper eyelid skin below the eyebrow to reduce swelling (the hypertensive glue of the tape should absorb superficial swelling). Even fixed that way, the eyebrow is movable up and down due to the frontal muscle work.

Additionally, through a 3-mm medial brow incision, the glabella musculature can be excised or better sutured for ligation to im-
prove glabellar wrinkles (see glabellar relaxation by Serdev sutures).

RESULTS

Brow elevations using sutures carried out in 1500 patients show excellent results in 85% of patients followed during the first 3 years after surgery. Only one 59 years old patient experienced aesthetic lack of satisfaction, due to different understanding of aesthetic proportions and angles at her age. Complications were minimal – only 2 cases of initial infection in the lateral skin punctures threatened by wound cleaning and disinfection for 2-3 days.

There were no instances of scarring, skin problems, or hair loss. The post op period is characterized by small percentage of swelling, no bleeding, no nerve injury, no scars, near to zero complications, possible social activities next day, immediate return to social life, mimic preservation.

In the patients with more than three years follow up we have observed stable results and no ptosis. Aging process cannot be stopped, but it was found that it’s process continues from the new level of the eyebrow fixation.

COMPLICATIONS

In no patient nerve damage was noted. Two complications, initial infection in the lateral perforation point, 2 and 3 weeks after surgery, were treated by wound cleaning and disinfection, and healed in 2 to 3 days. We have no case of suture removal.

DISCUSSION

This chapter aims to describe a new innovation in scarless brow lifting without any incision, without undermining, but suturing on place the brow subdermal fibrous tissue higher to stable periosteum using special needles and skin punctures only between the hairs of the brow. The method was started 1994, with protocol description and was presented around the world as a part of our fashion art face beautification in young patients and for correction of ptotic eye brow and rejuvenation as well. It has the following advantages compared to incision and excision methods: short intervention time about 5 minutes each side, no visible scars, minimal trauma, and immediate result, short and
easy postop period and immediate return to social life. The suture is long term absorbable – in 2-3 years, so that it stays until the fibrosis is finally completed in 6 to 12 month after surgery and desapears later. Result is longlasting and pleasing.
The brow lift by suture without scars is an effective and safe technique for beautification of the eye region and rejuvenation of the upper face, producing a natural result with minimal complications and high level of longivity. It is a beautification method, ambulatory, under local anesthesia with i.v. sedation, with immediate result and less than 0,00038% complications. It is done without visible scars, saves the mimic and the expression, the movement of the brow, and preserves the natural look. All our facial cosmetic surgery procedures are done on an outpatient basis. A combination of local anesthesia and intravenous sedation provides excellent patient tolerance and comfort both intraoperatively and postoperatively. Postoperative recovery is uneventful. Complications are very, very rarely encountered. The eye-eyebrow region is the center for facial expression. The position of the eyebrows expresses emotion, and even a minor change in brow position can be important for the understanding and contact between individuals. Lifting the eyebrows can change the expression into a more pleasant, young and natural one. Our experience and follow up made us believe that this technique provided us with a more permanent and stable result. This brow lift method can be one of the most beneficial surgical procedures in cosmetic surgery. This very simple procedure requires about ten to twenty minutes both sides and allowes lifting in any degree and elevation of any brow point. It supports the upper lid with lateral face improvement. It may be utilized for eyebrow ptosis alone, or for fashion beauty, whether unilateral or bilateral; in conjunction with other suture techniques for equalizing asymmetrical eyebrows, and for further support of markedly ptotic upper lids. It has been used by the author in instances of partial and complete facial paralysis in conjunction with other procedures in the face to accomplish better symmetry. The stable duration of results with this procedure depends on the tissue quality and healing, the non-traumatic surgical technique, care given the area during healing by the patient, amount of frowning and vigorous facial muscle use by the patient, and aging. It is an useful adjunct, especially when used with temporal SMAS lift by suture, other author’s suture methods on the face, beautification rhinoplasty etc. to adjust proportions, volumes and angles for beautification and rejuvenation of the individual’s face.
Our experience indicates that this specific method of scarless brow lift by suture adds a great deal to appearance and satisfaction. The operating time is short with immediate aesthetic result, and there is a very high patient acceptance. The procedure has taken its place as an integral part of facial beautification and rejuvenation in our practice.

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