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Intraoral Facial Lifting: A Tactical Modification

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Abstract

There was improvement in several techniques for elevating the middle third of the face in search of lower surgical scars and morbidity. Conservative approaches have emerged using endoscopy, transconjunctival access, malar implants, direct lifting, multivectorial and multiplane. We highlight in this article, a technical modification of the authors, using the exclusive intraoral access for use in the surgical elevation of the middle third of the face. Webster-Labbé's technical modification (LFI) to elevate the middle third of the face using an intraoral incision was efficient in the facelift in the present case, following the expected behavior concerning the previous anatomical study.

Keywords: Reconstructive surgical procedures; Facial paralysis; Surgery; Plastic; Facial asymmetry; Malar lift; Midface; Facial lifting

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Introduction

There was improvement in several techniques for elevating the middle third of the face in search of lower surgical scars and morbidity. Conservative approaches have emerged using endoscopy, transconjunctival access, malar implants, direct lifting, multivectorial and multiplane [1].

In facial paralysis, there is a ptosis in the middle third of the face due to sagging denervated muscles, contributing to its asymmetry and lagophthalmos. The elevation of the facial medium third is a safe and effective technique for the static treatment of the malpositioning of the lower eyelid, or after chronic facial paralysis or after retraction of the lower eyelid [2].

We highlight in this article, a technical modification of the authors, using the exclusive intraoral access for use in the surgical elevation of the middle third of the face.

Research Methodology

The study of anatomical dissection in fresh frozen cadaver and its initial clinical trial stage followed the 1950 Geneva Convention n° IV and was validated using informed consent according to the Ethics Committee of the Santa Casa da Misericordia, Porto Alegre.

The surgical procedure, under general anesthesia, begins with the cutaneous marking of the traction points **(Figure 1).**

In soft parts, the three anchor points are oriented as follows:

1. The intersection between a horizontal line from the nasal base to the tragus and a vertical line through the oral commissure, defining the first orbital medial anchorage point.
2. The second point is located at the intersection of the horizontal line from the nasal base to the tragus with the vertical line through the outer eyelid epicanthus.
3. If necessary (upper lip ptosis), a third attachment point may be made midway along the vertical line of the lateral end between the base of the nasal wing and the upper lip.

The intraoral access begins with an incision located 2 mm above the gingivolabial sulcus, 2-3 cm long, centered in the upper canine region. Dissection progresses in the sub-periosteal plane over the maxillary body, zygoma, piriform opening, and inferior orbital margin, advancing about 1 cm on the inferior orbital floor, lateral to the infraorbital foramen **(Figures 2 and 3).**

In the bone portion, after the subperiosteal dissection described

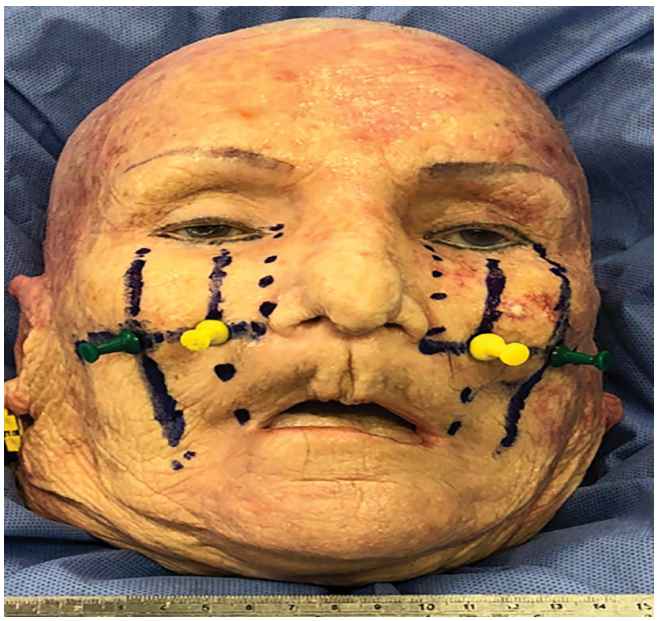

Figure 1 Operatory sequence (cadaver) LFI: Soft tissue anchor markings.

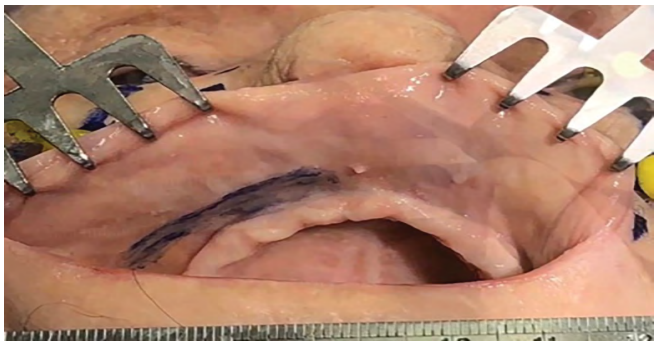

Figure 2 Operatory sequence (cadaver) LFI: Intraoral access view.

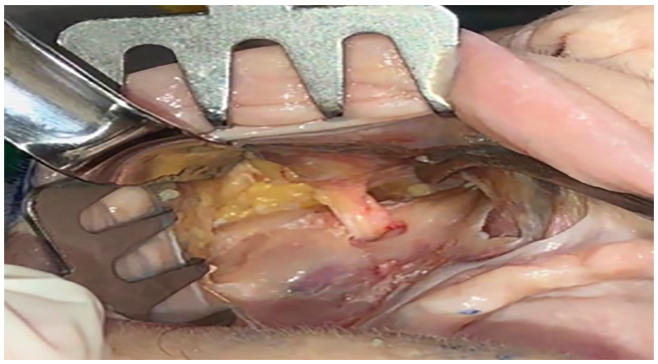

Figure 3 Operatory sequence (cadaver) LFI: Infraorbitary nerve dissection.

above, we can make up to three bone holes. Two bone holes, lateral to the infraorbital foramen, entry point 0.5 cm caudal to the inferior orbital margin in the maxillary body, with 45° inclination to the frontal plane exiting on the orbital floor. Approximate spacing between holes 1.5-2.0 cm. If necessary, we can make a third hole point at the lateral portion of the piriform opening, 0.5 cm from the bone edge. We suggest a low rotation 1.5 mm to 2.0 mm drill bit for bone drilling **(Figure 4).**

Afterward, the sutures are in two steps, as follows: after ocular protection by inter-eyelid suture, a slight external pressure intrusion of the eyeball using a periorbital surgery retractor is performed **(Figure 5).** The maneuver allows the first time of suture where it is performed with the direct transcutaneous passage of Mononylon® 3-0 suture, in a craniocaudal direction, with entry through the orbital floor bone hole and exit at the orbital margin anterior to the maxillary body, always under direct monitoring of the infraorbital nerve, through the transoral incision **(Figure 6).** The same operation is applied to the other bone hole.

Sequentially, at the second time of suture passage, the portion of the Mononylon® thread external to the skin is pulled to the subperiosteal plane initially dissected in the intraoral approach. With the sutures already attached to the bone holes and positioned in the dissected area with intraoral access, with a Casagrande needle, the suture is anchored to the soft tissue portion to be elevated, transfixing SMAS and muscles to be elevated as required, previously provided **(Figures 7 and 8).** After final revision and hemostasis, the gingival incision is sutured and

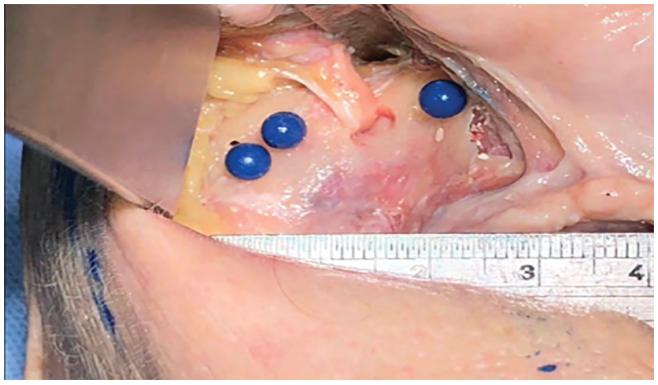

Figure 4 Operatory sequence (cadaver) LFI: Suggested anchoring point's location, close to the inferior orbital rim and pririformis aperture.

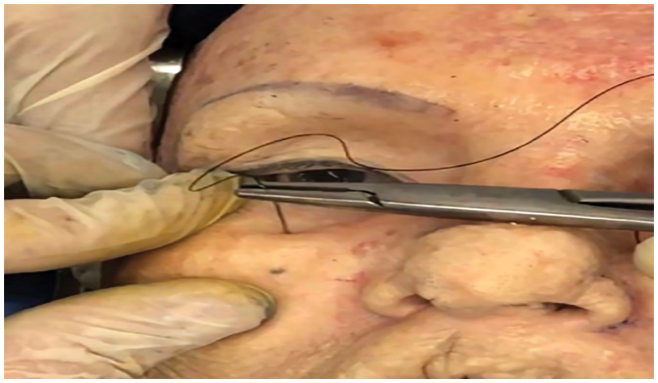

Figure 5 Operatory sequence (cadaver) LFI: Transcutaneous access to the intraosseous tunnels.

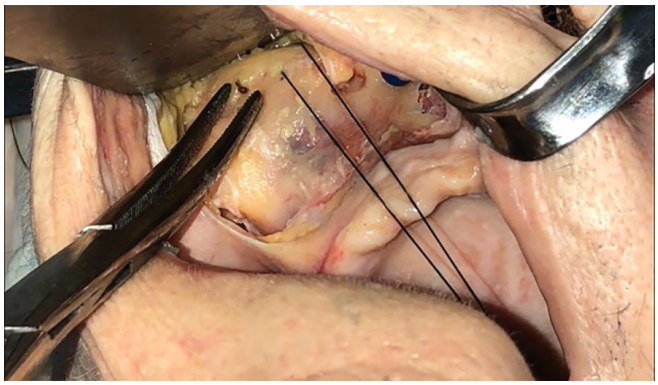

Figure 6 Operatory sequence (cadaver) LFI: Intraosseous tunnels: Already with the stick passed through.

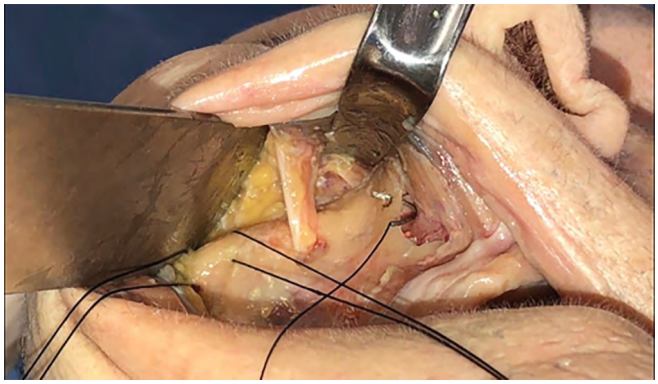

Figure 7 Operatory sequence (cadaver) LFI: Additional stitch at piriformis aperture, all stitches in the intraosseous tunnels.

Figure 8 Operatory sequence (cadaver) LFI: Final aspect , intra-oral view. All stitches anchored in the soft tissue.

the elevation of the middle third of the face is rechecked **(Figures 9 and 10).**

Case Example

A female patient, 27-years-old, with facial paralysis due to sequelae of pontocerebellar angle tumor resection. In 2017, she underwent the inclusion of 1.2 g of eyelid gold weight for correction of eye exposure and, in April 2018, underwent dynamic facial suspension using fascia lata elongated orthodromic temporal muscle. Due to the loss of malar support caused by the soft tissue descent because of her facial paralysis, the patient still had mild lagophthalmos and wanted to improve her symmetry of the middle third of the face. In August 2018, she was included in the middle facial lifting protocol in the left hemiface, with the technical modification introduced by Webster-Labbé, according to the technique described above in **Figures 11 and 12** [3].

The procedure took an operative time of 45 minutes and proceeded as planned. We opted for two sutures anchored in the inferior orbital margins **(Figure 13).**

In perioperative care, we used preventive measures of venous thrombosis, with intermittent lower limb compression device and early ambulation. There was antibiotic treatment, using Amoxacillin and Sodium Clavulanate, according to the local hospitalar protocol for intraoral surgeries with wide dissection.

Figure 9 Operatory sequence (cadaver) LFI: Left- soft tisne markings, pre-suspension, Right: soft tissue suspension with LFI technique on the right side of the cadaver. Antero-posterior view.

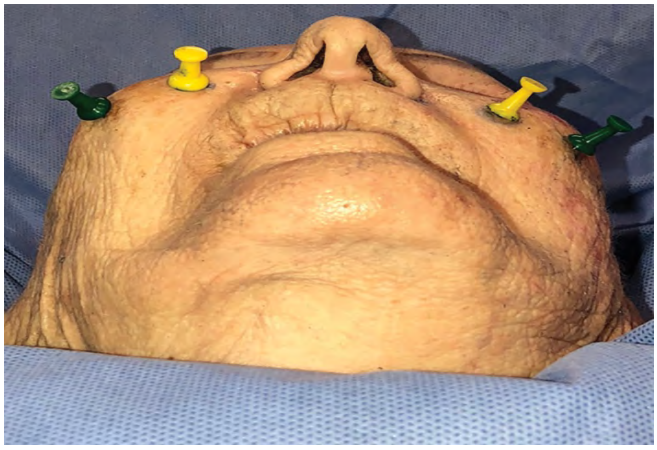

Figure 10 Operatory sequence (cadaver) LFI: Soft tissue suspension with LFI technique on the right side of the cadaver, Inferior view.

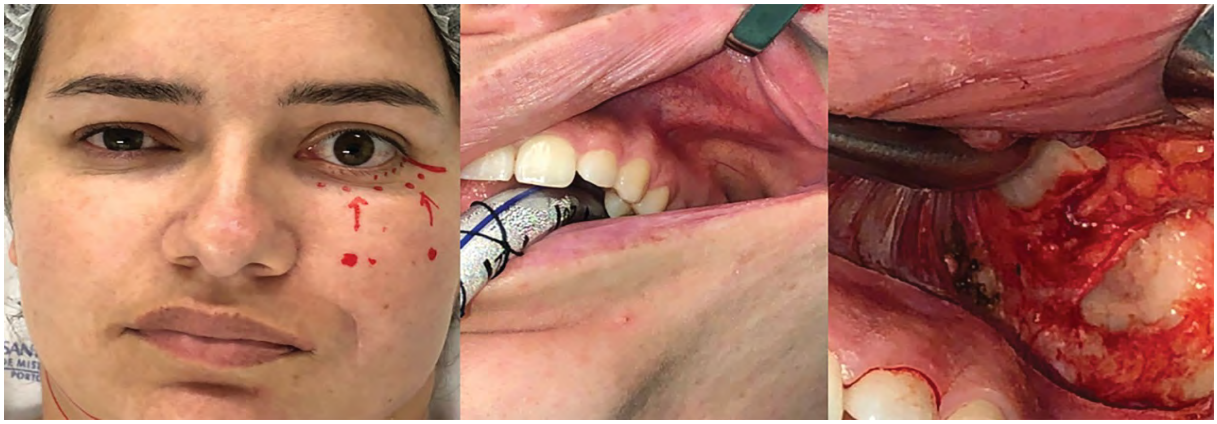

Figure 11 Operatory sequence (cadaver) LFI: Left- pre-operatory markings, Center - intraoral view, Right - Infraorbitary nerve dissection.

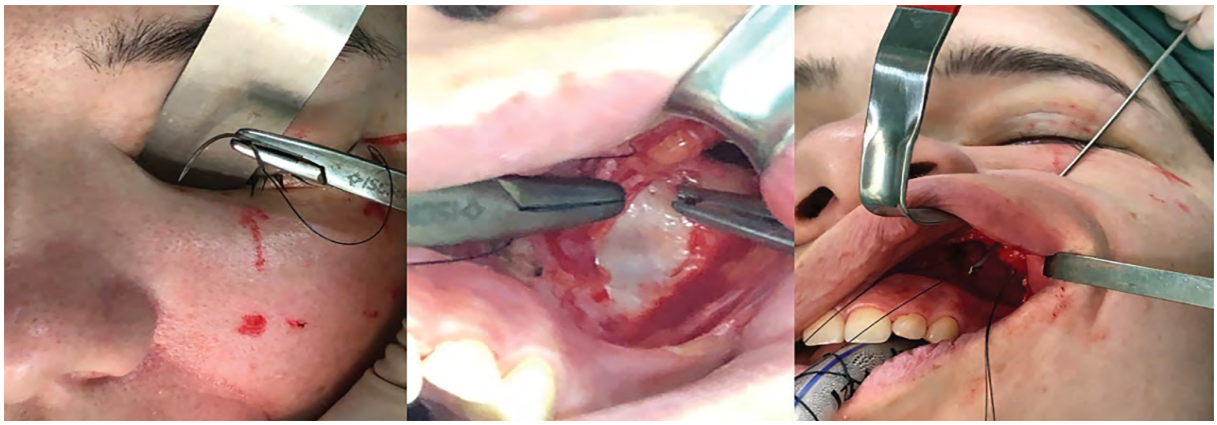

Figure 12 Operatory sequence (cadaver) LFI: Left - Transcutaneous needle passage for soft tissue anchoring in the intraosseous tunnels, Center - needle being pulled through the intraosseous tunnel, Right- anchoring soft tissues in the intraosseous tunnels.

Figure 13 Left: Immediate pre-operatory; Right: Immediate post-operatory - LFI.

It was followed the routine of external facial application of cold compresses as well as oral hygiene with aqueous chlorhexidine solution, and food was restricted to clear liquids without any residue and non-dairy during the first 48 h. Postoperative edema was mild and without major implications such as chemosis or tendency to lagophthalmos reaction.

The pain was considered tolerable, level 3/10 of the standard pain scale adopted in the institution, yielding with the eventual use of non-steroidal anti-inflammatory drugs. In other aspects, the patient evolved without postoperative complications. The return to the usual activities took about one week.

The patient's degree of satisfaction with the procedure was 8/10 concerning the expected benefit. In the evaluation of the surgical team, we achieved consistent improvement of the eyelid closure (paralytic lagophthalmos) repositioning the middle facial third, improving the appearance of the apparent sclera and the emptying of the middle part of the face, thus improving global facial symmetry **(Figures 14 and 15).**

Figure 14 Right: Pre-operatory; Left: One year post-operatory, noticeable fullness in the middle third with reduction of scleral show without additional procedures in palpebral area.

Figure 15 Detail: Malar fullness restoration after the procedure.

Discussion

The surgery went as expected compared with the experimental surgery performed on a fresh frozen cadaver, following the rules established in a previous study from the authors [3]. Sales-Sanz et al. described how facial paralysis affects the orbital support. They explain that facial palsy is associated with an abnormal lower eyelid position, which results in ectropion, bulbar and corneal conjunctiva exposure, lagophthalmos, and inadequate tear drainage. The paralytic concomitant ptosis of the malar soft tissue is responsible for stretching and progressive weakness of ligamentous structures of the middle third and the consequent loss of support on the lower eyelid. Thus, it is possible to understand why the middle third is a suitable lifting treatment in facial paralysis [2].

In 1994, Ramirez et al. pioneered in the description and popularization of endoscopic third lifting medium with sub-periosteal dissection on the malar prominence and inferior orbital rim, the temporal and intraoral approach, promoting effective increase of the junction between the lower eyelid and the middle third [4]. Sales-Sanz et al. described the elevation of the middle third by transoral incision, but associated with transconjunctival and temporal access for subperiosteal dissection of the middle third and fixation to the deep temporal fascia [2]. They argue that the oral incision is useful for achieving complete subperiosteal dissection and performing distal periosteotomy, which would allow complete elevation of the soft tissue of the middle third. Mofid et al. published the technique of transoral middle third elevation in association with temporal endoscopic approach [5]. The procedure would avoid complications associated with violating the anatomical structures of the lower orbital junction and present a marked better visualization of the structures with an incision that allows much wider access. The proposed technique would perform all subperiosteal dissection of the middle third through transoral access and fix soft tissues to the maxillary bone through small holes created by perforating them in the desired position, allowing a firmer and lasting fixation.

According to Engle et al. of all complications associated with subperiosteal lifting, the middle third motor nerve injury is the most feared [6]. Sales-Sanz et al. state that the subperiosteal plane prevents facial nerve damage [2]. Schwarcz et al. who compared the well-known facial middle third facelift techniques and their complications, observed that the endoscopic technique (which has the general characteristics of the technique described in this article) is extremely effective [7]. We have shown in the present publication that, through exclusive transoral subperiosteal dissection, it is possible to visualize the infraorbital vascular-nerve bundle, thus preventing its injury with precision, and protecting the facial nerve, if precise dissection is maintained in the subperiosteal plane.

Another much-feared complication in facial surgery is a haematoma. Subperiosteal dissection haematoma rates are less than 1%, according to Engle et al. [6]. However, they emphasize that we should pay attention since bruising may be more difficult to identify compared to typical rhytidectomies due to the thickness of the flap. Preventive measures of perioperative infection related to antisepsis and antibiotic use were successful. We used antibiotic treatment for seven days postoperatively associated with oral antisepsis with chlorhexidine-based oral solutions, according to Sales-Sanz et al. and Perry et al. [8]. The patient reported that she was able to abstain from care with external bandages characteristic of a traditional postoperative facial suspension, which was a subjective factor of significant postoperative well-being. Points in favor of the technical

modification introduced by Webster-Labbé in the lifting of the middle facial third are the absence of external scars, speed of execution and the possibility of the patient to resume their usual activities in a relatively short time. The above features are beneficial both in the sphere of reconstructive and aesthetic procedures.

We understand that the osseous anatomy changes with age and the position of the bone perforations may need some adjustments, even subtraction of one of the fixation point. Correa et al., who described a similar technique that used only one perforated hole for middle third elevation performed in 12 patients, which showed the persistence of the result one year after the procedure [9]. As with other facial lift and blepharoplasty techniques, the perception of risk of lower oblique muscle injury or eyeball perforation should always be in mind. Otherwise, although we have not completely resolved our patient's lagophthalm clinically, we greatly reduced the scleral exposure on the paralyzed side. In an intervention with character tending more to an aesthetic procedure than reparative, as in the case described, a theoretical factor with a negative influence on this modification presented is that we can induce a relative excess skin in the lower eyelid, which may require complementary treatment. We do not necessarily need to be aggressive in resolving this excess skin by violating the structures preserved by the facelift, such as the orbital septum and musculature. The CO_2 laser and conservative pinch blepharoplasty may be more than sufficient alternatives for this situation. We can, therefore, infer that we can potentially have good longevity of results, without the costs of endoscopic surgery and the complications of invasive temporal and eyelid access surgery, making Webster-Labbé's technical modification a viable option in the universe of surgical techniques suspension of the middle facial third, including for exclusive aesthetic purposes. We have the prospect of technical improvement by implementing and facilitating the passage of the stitches using bone mini-anchors only by intraoral approach, thus not requiring skin transfixion by a needle **(Figure 16).**

Figure 16 Mini-anchor Project - Webster-Labbé Technique.

Conclusion

Webster-Labbe's technical modification to elevate the middle third of the face using an intraoral incision was efficient in the facelift in the present case, following the expected behavior concerning the previous anatomical study.

Acknowledgement

The authors of the technical modification are grateful to the Department of Anatomy, Plastic Surgery of the UFCSPA-Irmandade Santa Casa of Porto Alegre and Surgery of the Hospital Privet Saint-Martin-Caen-France, for their support in providing the structure for anatomical dissection and diagramming, and the prior anatomical article in the person of their service chiefs, residents and staff, co-authors involved in the publications.

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