

# Upper-Lip Augmentation by Graft of Preseptal Orbicularis Oculi Muscle Through Blepharoplasty

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## Abstract

**Background** Upper-lip augmentation is used to enhance a thin upper lip or correct lip deficiencies or senile hypotrophy. We describe an easy, effective, and reproducible technique.

**Methods** We use two preseptal orbicularis oculi muscle grafts that provide a reliable option for soft-tissue upper-lip augmentation, with improved vertical lip height and lateral lip projection and reappearance of the Cupid's bow. Muscle grafts are harvested from a blepharoplasty done at the same time.

**Results** The advantages of this procedure include the creation of an anatomically natural upper lip through preserving the continuity and function of the labial structure, good augmentation, no donor-site morbidity, no visible scars on the vermilion, and successful rejuvenation with the associated blepharoplasty.

**Conclusion** Both patients and surgeons were satisfied with the results because the muscle grafts produce a youthful appearance by adding natural, soft roundness and fullness to the upper lip without an artificial look or the use of synthetic material, providing long-term augmentation.

**Keywords** Lip augmentation · Muscle graft · Orbicularis oculi · Blepharoplasty

Upper-lip augmentation is used to enhance a thin upper lip or correct lip deficiencies or senile hypotrophy, for cosmetic and reconstructive indications [1]. The definitive method has yet to be defined. We describe our easy, effective, and reproducible technique for upper-lip augmentation which uses two preseptal orbicularis oculi muscle grafts inserted in the supramuscular layer of the vermilion. We used this technique on five patients (10 grafts) over the past year with satisfactory results. There have been no cases of infection, serious hematoma, graft exposure or significant resorption. Our early results with using orbicularis oculi muscle grafts for lip augmentation are encouraging, with the creation of an anatomically natural upper lip and successful rejuvenation with the associated blepharoplasty. Muscle grafts are potentially useful for long-lasting lip augmentation; however, further studies are under way to better define long-term results.

## Operative Technique and Main Outcomes

Patients undergo simultaneous upper-lip enhancement and blepharoplasty procedures in which a portion of preseptal orbicularis oculi muscle is grafted into the upper lip, with minimal additional operating time than the usual blepharoplasty. The operation is performed as outpatient surgery using local anesthesia and intravenous sedation. After the preoperative marking, a full-thickness incision is made, including skin and subcutaneous tissues, up to the orbicularis oculi muscle so a strip of preseptal orbicularis oculi muscle from both eyelids can be removed. An uninterrupted suture is used to close the eyelid incisions. The two harvested muscle strips (Fig. 1) are grafted into the upper lip by inserting them through two tunnels created on the vermilion from the commissure to the philtrum

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**Fig. 1** Strips of preseptal orbicularis oculi muscle from both upper eyelids. The two muscle strips were harvested as good grafts for upper-lip augmentation

(Fig. 2). So, we suture the lip at the central and lateral incision sites.

Patients were followed for 12 months. An objective grading scale based on photographs was used to assess outcomes. In each case, the patient's upper lip was substantially augmented and had a natural feel and appearance (Figs. 3, 4, 5, 6, 7 and 8). We also mailed a questionnaire to all patients who underwent the orbicularis oculi muscle graft lip augmentation. The patients reported that their lips were larger than before the operation and that the results were excellent or good. There were no unsatisfactory results. Only minimal swelling was noted immediately after surgery.

## Discussion

For over a century surgeons have been in search of the perfect filler for lip augmentation [2]. Although there is a

long list of products [3], the definitive approach has yet to be defined [4]. The techniques used for upper-lip augmentation include injectable materials (fillers), implants, grafts, and local flaps. There are numerous fillers, some are biodegradable, others slowly biodegradable, others are permanent implants. The disadvantage of the traditional biodegradable fillers is their short duration (6 months). Over the past decade, semipermanent fillers have been used; they last longer but they might induce granulomas, especially on the lips. Also, permanent fillers are traditionally linked to a higher incidence of granulomas and extrusions, although with the new available formulations, these adverse events have decreased [5]. Cohen et al. [6, 7] describe multicenter clinical trials using polymethylmethacrylate microspheres and bovine collagen. They conclude that it is a long-lasting filler material that yields long-lasting significant augmentation. Landau [3] documents clinical successful experience with a porcine collagen-derived dermal filler.

Seymour et al. [8] introduced an acellular soft tissue matrix derived from porcine small intestinal submucosa. The implants are nonresorbable sutures of polytetrafluoroethylene, inactive biologically, i.e., Gore-Tex tubes [9]. Niamtu [10] describes 18 months' experience with this implant, with good results when used for lip augmentation.

Grafts are usually autologous tissues. Dermis-fat grafting was the most efficient and versatile and a reliable method for lip enlargement. In addition, long-term survival of transplanted autologous tissues was confirmed by histologic studies of biopsy specimens [9]. Chasan and Rahban [2] assert that despite the numerous methods employed to enhance the fullness of lips, autogenous free dermal fat grafting remains a preferred method but it has failed to gain widespread clinical acceptance. One reason has been concern about donor-site morbidity. In their article, they describe a method of lip augmentation that utilizes a dermal fat graft from the presacral region. This site is optimal because it has thick skin with minimal hair follicles and leaves a minimal scar. Local flaps (either W or V/Y plasty) give only a slight outward protrusion of the lips and do not increase volume and therefore have

**Fig. 2** **a** Tunnel in the upper lip. **b** Muscle graft insertion



**Fig. 3** Preoperative and postoperative views**Fig. 4** Preoperative and postoperative views (immediate follow-up and at 1-day follow-up)**Fig. 5** Preoperative and 15 days postoperative views

negligible cosmetic impact. In plastic surgery, flap rotation is the standard practice when the objective is stable tissue reconstruction. Botti et al. [11] feel that this technique achieves a lasting increase in lip volume. They propose the rotation of a mucous-muscle flap obtained from the inner cheek wall or from the other lip, the fulcrum of which is the labial commissure. Furthermore, Mutaf [12] uses two vertically parallel V-shaped incisions (V-Y in V-Y procedure) for augmentation and protrusion of the upper lip, and Guerrissi [13] uses a dermal flap from the vermilion border.

We believe the following cited literature is interesting. In 2002, Leaf and Firouz [14] reported lip augmentation using superficial musculoaponeurotic system grafts with very good outcomes. In 2003, Fezza et al. [15] performed lip augmentation using eyelid tissue from an upper blepharoplasty that was deepithelialized with the CO<sub>2</sub> laser before implantation in the lips. Eyelid tissue

from an upper blepharoplasty provides a quick, economical, and natural method to enhance lip volume. In 2008, Trussler et al. [1] reported excellent results at 1-year follow-up using palmaris longus tendon (a technique first proposed by Davidson [16] in 1995) as autologous filler.

Our approach, which has the potential to provide long-term augmentation, uses two preseptal orbicularis oculi muscle grafts that are a reliable option for soft-tissue upper-lip augmentation, with improved vertical lip height and lateral lip projection, maintenance of lip mobility, and reappearance of Cupid's bow (Figs. 3, 4, 5, 6, 7, 8). The advantages of this procedure include the creation of an anatomically natural upper lip by preserving the continuity and function of the labial structure, sufficient augmentation, no donor-site morbidity, no visible scars on the vermilion, and successful rejuvenation with the associated blepharoplasty.



**Fig. 6** Preoperative and 1-, 6-, and 12-month postoperative views



**Fig. 7** Preoperative views and postoperative views that show the natural appearance of the lip

This surgery guarantees a one-step procedure with a precise final effect because the augmentation is predetermined by planning two symmetric muscle strips. This assures symmetry and linearity of the treated lip, and it eliminates the need for readjustments as when using the fillers. Moreover, the use of totally autologous tissue instead of a nonautologous substance is always better as one does not have to worry about antigenicity or associated allergic reactions or siliconoma-like reactions seen using resorbable fillers. However, we cannot dispute the fact that although an injectable filler comes with disadvantages, it is



**Fig. 8** Successful rejuvenation after blepharoplasty and lip augmentation

versatile and can reshape and refine the lip structure along with augmenting it without subjecting the patient to a surgical procedure. We propose an easy alternative for patients desiring an upper-lip augmentation in conjunction with a blepharoplasty by using the autologous tissue.

Even fat has been proposed as an autologous filler, but it has not been able to compete with the nonautologous synthetic injectables in defining the white line. However, differences exist between fat and muscle grafts. With fat the swelling is much more marked; therefore, further remodeling may be necessary; edema is much slower to resorb. With muscle strips there is increased volume, minor edema, and no readjustments are needed.

With respect to resorption, in our experience we have noted a progressive reduction of the treated upper lip, amenable to partial resorption and fibrosis, but at 1-year

follow-up the augmentation has showed persistence. Nevertheless, we do not exclude that muscle graft atrophy over time may change both symmetry with volume maintenance.

In conclusion, both patients and surgeons were satisfied with the results because the muscle grafts produce a youthful appearance by adding natural, soft roundness and fullness to the lip without the artificial look and feel of synthetic material, but only by using tissue like muscle on muscle. The main advantages of our technique are that combining the two procedures works to the patient's benefit with respect to downtime. The surgical sites of the upper lip do not need medications, the sutures are resorbable, and the healing in these sites is very fast. There no problem with asymmetry; nor have we viewed significant asymmetry due to long-term unequal resorption/atrophy/fibrosis. The drawbacks of our technique are that it has to be used for those patients who are primary candidates for blepharoplasty where a good amount of muscle resection is planned and who also want only moderate lip augmentation with autologous tissue.

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