

The role of autologous lipografting in myomodulation and lower eyelid restructuring - a case report

Abstract

Introduction: Over the year, the position of the eyelids changes, causing a tired and aged appearance. Using blepharoplasty and fat grafting techniques, we can improve the appearance of our face, as well as rejuvenate and improve the quality of our skin.

Objective: To describe a case report of a 66-year-old male patient who presented with hollowing of the middle third of the face, scleral exposure with a negative malar vector.

Methodology: The patient underwent upper blepharoplasty with canthopexy and malar and periorbital fat grafting.

Conclusion: Autologous lip grafting in combination with other facial rejuvenation techniques represents a valuable tool in modern plastic surgery, offering significant benefits in both the appearance and functionality of the periorbital region.

Keywords: lipografting, blepharoplasty, modern plastic surgery, eyelid restructuring

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Introduction

The periorbital tissues, together with the eyelid, undergo progressive changes with age and are a cause for concern in facial rejuvenation. Thorough evaluation of the upper and middle thirds is of significant importance regarding eyelid position and support.¹

Tactics for facial rejuvenation have changed dramatically in the last ten years, evolving from the isolated treatment of superficial rhytids to an approach focused on revolumization and repositioning of fat pads, mainly due to a better understanding of the bone and soft tissue changes that occur in the facial aging process.²

Currently, it is understood that in the process of aging the middle third, there is no "fall" by the gravity of the structures, but rather a change in skin quality, as well as a volumetric redistribution (hypotrophy and hypertrophy) of the facial fat compartments and continuous remodeling of the craniofacial bones.³

The most common complications are lower eyelid malposition, scleral show, palpebral fissures, and lower eyelid depressions.⁴ Treatment involves redistributing and/or repositioning facial volumes and eyelid fat pads, which are addressed according to each patient's specific needs. The repositioning of the periorbital fat pads can be carried out using various techniques to suspend the middle third of the face, alloplastic implants or even associated with autogenous lipograft.^{3,5}

Autogenous tissue has the advantage of lower risk of infection, no reaction because it is the patient's tissue, and a lower cost compared to alloplastic implants.⁴

Several studies have demonstrated the importance and viability of stem cells in liposuction, as well as the improvement in skin quality with their use, generating concern in the medical community in the search for more research and in-depth study on this subject.^{6,7}

Objective

To demonstrate through a case report the importance of autologous lipograft in the revolumization and restructuring of the lower periorbital

region and the middle third of the face. In addition, to show how autologous lipograft contributes to improving skin quality, as well as reducing the risk of complications after lower blepharoplasty, such as scleral show, eyelid laxity, and ectropion.

Methodology

This study is a case report of a 66-year-old male patient who presented with hollowing of the middle third of the face, decreased tone of the orbicularis muscle, scleral exposure, and eyelid retraction of more than 6 mm, with a negative malar vector. The patient was followed by the Plastic Surgery service at Hospital Geral de Fortaleza (HGF), a tertiary hospital in the state of Ceará, in March 2024.

The initial assessment included a detailed clinical examination to evaluate the patient's current condition, focusing on eyelid ptosis, muscle tone, and the degree of eyelid retraction. A preoperative photographic record was conducted in accordance with plastic surgery photographic documentation guidelines.⁵ The primary technique chosen was autologous lipografting to restore volume and restructure the lower periorbital region and the middle third of the face. The patient was also indicated for bilateral upper blepharoplasty, transconjunctival lower blepharoplasty, bilateral canthopexy, and malar lipografting. Despite excess skin, the patient opted against skin resection.

The surgical procedure was performed under local anesthesia with sedation. Supra-trochlear and supraorbital nerve blocks, along with direct infiltration into the upper eyelid for hydrodissection, were used. Additionally, an infraorbital nerve block was applied for lower blepharoplasty and malar liposuction. Autologous fat collection involved liposuction of 60 ml from the abdomen under local anesthesia. The fat was decanted without any additional solution, followed by filtration through a nanofat filter, as described by Chang & Rovaris³ and Rohrich et al.⁷ The purified fat was injected in precise amounts: 1 ml in the middle region of the orbit at the mid-pupillary line, 1 ml between the pupillary line and the lateral orbit, 1.5 ml between the orbit and the zygomatic arch, and 1.5 ml in the deep malar region (Figure 1). The fat was applied from deep to superficial layers using 3 ml syringes and microcannula techniques to ensure uniform and natural distribution.⁴



Figure 1 Simulation of malar and periorbital fat grafting.

In addition to fat grafting, the surgical plan included bilateral upper blepharoplasty, transconjunctival lower blepharoplasty, and bilateral canthopexy to provide additional support. Postoperatively, the patient was closely monitored to identify any immediate complications. Detailed postoperative instructions were provided, including care for the treated area and the application of cold compresses to minimize edema. Follow-up visits were scheduled for the 3rd, 7th, and 15th postoperative days, followed by additional evaluations at one and three months, ensuring continuous monitoring of outcomes. A photographic record was maintained at each follow-up appointment for comparative analysis (Figures 2 & Figure 3).



Figure 2 & Figure 3 Follow-up visit 3rd day and 3rd month, respectively.

The evaluation criteria included skin quality assessment through clinical and photographic analysis of improvements following liposuction. Patient satisfaction was measured using standardized satisfaction questionnaires with Likert scales to assess perceptions of aesthetic and functional outcomes. Additionally, any complications, such as infection, asymmetry, or fat graft resorption, were recorded according to established criteria for evaluating surgical complications.

Results

Canthoplasty is indicated when the lower eyelid retraction is greater than 6mm, as described by Theodoro et al.,¹ and Codner & McCord.⁵

Seven clinical parameters were used for the functional assessment of the eyelid region: vector analysis, snap-back together with distraction, sclera exposure, canthal inclination, lateral distance from the canthal rim

to the orbital rim, central facial position, and vertical eyelid restriction. The latter is predictive of lateral canthal laxity and its presence suggests the need for canthoplasty.¹

The lower eyelid was evaluated together with the middle third of the face, showing sagging, excess skin, and a reduction in soft tissue, making the Tear trough (region medial to the pupillary line) and the eyelid-malar sulcus (region lateral to the pupillary line) evident over time.

The patient showed great satisfaction after the final result, with good acceptance of the functional and aesthetic result, being classified on the Likert Scale as “Totally satisfied” (Figure 4).



Figure 4 Comparison between preoperative and postoperative (90 days).

Discussion

Lipografting techniques have evolved significantly, with a better understanding of the action of mesenchymal cells, which are abundant in fatty tissue. Lipografting offers several advantages, such as the absence of foreign body granuloma or biofilm formation, the possibility of injecting into all layers, an abundance of material, better tissue integration, and more natural and satisfactory results.^{6,7}

Rohrich et al.⁷ emphasized the importance of lipografting in the malar region associated with the transconjunctival approach,¹ advocating lipografting in the deep malar region, followed by removal of the lower fat via the transconjunctival approach, release of the orbicular retentive ligament with lateral canthoplasty and removal of excess skin when necessary and possible,⁶ so that there is an evolution in the overall appearance of the face, which was evident in the case presented, with significant improvement in filling deep fat pads, rejuvenation, improvement in skin quality and functionality of the upper eyelid.

Lipografting has several advantages, such as a lower risk of infection compared to alloplastic implants, lower cost, absence of significant adverse reactions, and improved skin quality.⁸ There was no infection, contour anomalies or other complications in our study.

The transition of the eyelid-cheek junction remains an elusive goal in modern blepharoplasty. The addition of nanofat and fractionated fat for improvements in this region is an effective strategy for achieving this goal. (Rohrich et al., 2021)

It is not possible to precisely quantify the amount of fat that should be injected into the lacrimal and malar region, and it must be assessed on a case-by-case basis. As a general principle, 0.5 to 1.5 ml is injected into the lacrimal region and 2 to 3 ml into the malar region.⁸ having been observed an absorption of approximately 30% of the injected volume after 3 months in this case.

Conclusion

As properly demonstrated in this case report, liposuction combined with lower blepharoplasty and repositioning of the eyelid margin has a good result for increasing support in the periorbital region and the middle third of the face. This procedure improves ligament laxity and the position of the lower eyelid, resulting in a harmonious and natural facial rejuvenation.

When performed properly, autologous lip grafting in combination with other facial rejuvenation techniques represents a valuable tool in modern plastic surgery, offering significant benefits in both the appearance and functionality of the periorbital region.

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Conflict of interests

The authors declare there is no conflict of interest.

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