



Enlarged blepharoplasty: treating the upper two-thirds of the face

Blefaroplastia ampliada: tratando os dois terços superiores da face

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Article received: November 17, 2020.
Article accepted: May 18, 2021.

Conflicts of interest: none.

DOI: 10.5935/2177-1235.2021RBCP0093

■ ABSTRACT

Introduction: Patients may show signs of facial aging still in the early stages of life when complex surgical procedures are not sought, especially if they result in larger scars. These signals should be detected and treated appropriately for effective rejuvenation. **Methods:** In the last 23 years, 338 patients have undergone upper blepharoplasty associated with transpalpebral elevation of the eyebrows and myectomies of corrugators. They also received a mid-facial facelift through a lower blepharoplasty incision, with a detachment of the retaining orbital ligaments and repositioning an extensive flap of the orbicularis muscle in the superolateral direction. Canthopexy was routinely performed.

Results: Simultaneous rejuvenation of the upper two-thirds of the face is performed through simple blepharoplasty incisions, and this systematization is not found in the current literature. Patients were satisfied with the results, and routine canthopexy effectively prevented lower eyelid positioning defects. The most common complications were temporary paraesthesia (frontal and scalp regions) and chemosis in the lateral and lower aspects of the conjunctiva. In a retrospective review of 139 procedures performed between 2010 and 2019, the temporary scleral show was observed in 15 cases (10.8%) and a mild ectropion in 1 case (0.72%), treated conservatively. Two cases of chemosis (1.44%) and one hematoma (0.72%) required surgical treatment. **Conclusion:** Enlarged blepharoplasty is safe, allows direct vision of manipulated periorbital structures, does not require long or expensive instrumental training. The authors achieve aesthetic results that impress by the rejuvenation of the upper 2/3 of the face and the lasting effect.

Keywords: Blepharoplasty; Ritidoplasty; Plastic surgery; Myocutaneous flap; Oculomotor muscles.

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■ RESUMO

Introdução: Os pacientes podem apresentar sinais de envelhecimento facial ainda em fases iniciais da vida, quando procedimentos cirúrgicos complexos não são procurados, especialmente se resultarem em cicatrizes maiores. Estes sinais devem ser detectados e tratados adequadamente para um rejuvenescimento eficaz. **Métodos:** Nos últimos 23 anos, 338 pacientes foram submetidos à blefaroplastia superior associada à elevação transpalpebral das sobrancelhas e miectomias dos corrugadores. Eles também receberam um lifting médio-facial através de uma incisão de blefaroplastia inferior, com descolamento dos ligamentos retentores orbitais e reposicionamento de um extenso retalho do músculo orbicular em direção superolateral. Cantopexia foi realizada rotineiramente. **Resultados:** O rejuvenescimento simultâneo dos dois terços superiores da face é realizado através de incisões simples de blefaroplastia e essa sistematização não é encontrada na literatura atual. Os pacientes ficaram satisfeitos com os resultados e a cantopexia de rotina efetivamente preveniu defeitos de posicionamento da pálpebra inferior. As complicações mais comuns foram parestesia temporária (regiões frontal e escalpo) e quemose nos aspectos lateral e inferior da conjuntiva. Em uma revisão retrospectiva de 139 procedimentos realizados entre 2010 e 2019, *scleral show* temporário foi observado em 15 casos (10,8%) e um leve ectrópio em 1 caso (0,72%), tratados de forma conservadora. Dois casos de quemose (1,44%) e um hematoma (0,72%) necessitaram de tratamento cirúrgico. **Conclusão:** A blefaroplastia ampliada é segura, permite a visão direta das estruturas periorbitais manipuladas, não requer treinamento longo ou instrumental caro. Os autores alcançam resultados estéticos que impressionam pelo rejuvenescimento dos 2/3 superiores da face e pelo efeito duradouro.

Descritores: Blefaroplastia; Ritidoplastia; Cirurgia plástica; Retalho miocutâneo; Músculos oculomotores.

INTRODUCTION

Gravitational forces and facial mimicry cause anatomical changes that result in aging¹. For example, the action of the corrugator muscles favors the ptosis of the eyebrow, which causes a pseudo cutaneous excess of the upper eyelid¹. Classic blepharoplasty, without eyebrow elevation, can make your ptosis more evident, as the frontal muscle will not be stimulated for suspension^{1,2}.

On the aged face, the skin of the lower eyelid stretches, exposing the lower orbital margin and herniations of orbital fat³. The elongated and excavated lower eyelid combines with the deepening of the nasojugal and nasolabial line^{3,4} and with the decrease in skin vitality^{1,3}, resulting in senile physiognomy. These changes should be addressed to achieve better aesthetic results.

There are many techniques described for eyebrow elevation: direct skin excisions in supraorbital, temporal, or frontal areas, coronal lifting, frontal endoscopic elevation and transpalpebraal approaches^{4,6}. The middle third of

the face approach is usually done by time incisions, before and after the ear, to tract the skin and the Superficial Musculoaponeurotic System (SMAS), which can result in visible scars, hairline displacement, or alopecia.

The treatment of the structures mentioned here is described only with the incisions of the upper and lower blepharoplasties.

OBJECTIVE

Describe a surgical procedure of the periorbital region, which allows the management of the upper two-thirds of the face in a single surgical procedure, using only blepharoplasty incisions.

Present a 10-year review of complications related to the technique.

METHODS

From 1996 to 2019, 338 patients with signs of aging in the upper two-thirds of the face (11.8% men and 88.2%

women) underwent upper blepharoplasties associated with the transpalpebral suspension of the eyebrows and myectomy of the glabella muscles. Also, lower blepharoplasties associated with a mediofacial survey with a detachment of orbital ligaments, repositioning and fixation of the orbicularis muscle of the eyes in the superolateral direction^{7,8}. In addition, canthopexy was routinely performed, and canthoplasty was performed when necessary.

All patients underwent standard preoperative evaluation. The surgeries were invariably bilateral and photographic records were performed before surgery and 6 and 12 months later.

This study was submitted to the research ethics committee (COEP) from Hospital Felício Rocho/MG, via Plataforma Brazil, on 07/31/2021, with CAAE designated 50441821.4.0000.5125.

Markings

With the patient lying down, the frontal dissection area is marked as an arch over the eyebrow, 2.5cm long. A medial triangle delimits the area corresponding to the supraorbital and supratrochlear nerves (Figure 1).



Figure 1. Surgical markings. Area delimited for dissection, with 2.5cm extension in cranial direction over the eyebrow. A medial triangle is marked bilaterally, delimiting the area from which the supraorbital and supratrochlear nerves emerge and should be preserved. The upper eyelids' lower margin of skin resection follows the upper eyelid fold, and its upper margin is estimated by clamping after manually positioning the eyebrows at the desired height.

The upper eyelids' lower margin of skin resection is marked following the upper eyelid groove, from the medial corner to approximately 0.5cm of the lateral palpebral fissure, where a periorbital wrinkle is followed by about 2.0cm laterally. The upper margin of skin resection is estimated by pinching after manually positioning the eyebrows at the desired height (Figure 1). The five points in Figure 2 show the fixation locations of the eyebrows.

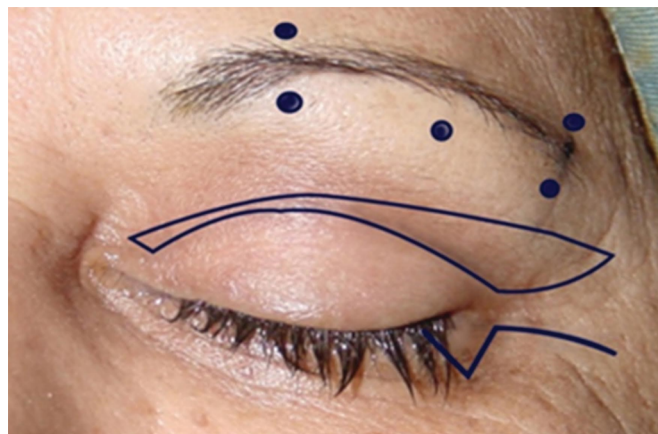


Figure 2. Schematic design showing the projection of five fixation sutures to the eyebrow. The incision of the lower eyelid is subciliary. An equilateral triangle is marked in the side corner, with sides of 0.5cm and a vertex pointing down. The lateral incisions for the upper and lower eyelids should be 0.5 to 1.0 cm apart and are slightly divergent from their medial aspect.

The incision of the lower eyelid is subciliary, and after the lateral corner leans slightly down, following a periorbital rhythm. An equilateral triangle is marked in the side corner, with sides of 0.5cm and a vertex pointing down. Half of its base will be medial to the lateral eyelid fissure and the other half lateral to it^{9,10}. The lateral incisions for upper and lower blepharoplasties should be 0.5 to 1.0 cm apart and slightly divergent¹⁰ (Figure 2).

Surgical technique

The procedure can be performed under sedation combined with local anesthesia or general anesthesia. Local anesthesia involves supraorbital, supratrochlear, and infraorbital nerve blocks using 1% ropivacaine. An 80ml solution consisting of 55ml of saline, 20ml of ropivacaine 1%, 1ml of a deposit steroid and 4ml of diluted epinephrine (totaling a concentration of 1:200,000) is prepared. This will be used to infiltrate the eyelids, the upper detachment area and around the lower orbital margin, in a range of 2.0cm.

A tarsorrhaphy is performed with nylon 6.0 before resection of skin and orbicularis muscle in the upper eyelid. The fat bags are treated, saving them for use as grafts. The blunt dissection towards the upper orbital margin is performed through the blepharoplasty incision, forming three tunnels: the first at the midpoint of the incision and the other two near the lateral and medial ends. The orbital

margin is exposed by fusing the dissection tunnels with scissors, allowing the marked area to be dissected in the supragaleal plane¹⁰ (Figure 3). The aponeurotic galea is a strong tissue, preserved in this case to receive the fixation sutures and protect the deep branch of the supraorbital nerve, which is found between the deepest layer of the galea and the periosteum, to which it adheres anatomically in the first 2.0 cm superior to the edge orbit^{1,10} (Figure 4).

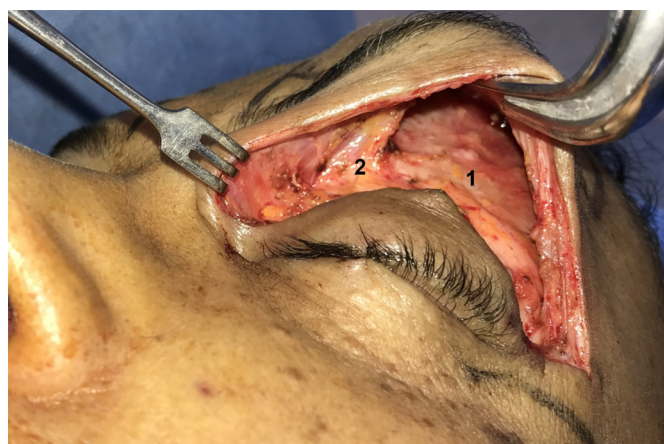


Figure 3. Supraorbital dissection. Dissection rotates toward the upper orbital margin through the blepharoplasty incision. The orbital margin is exposed, allowing the marked area to be dissected in the supragaleal plane (1), preserving the supraorbital nerve (2). Adhesions to the galeal adipose cushion and frontal muscle are released at approximately 2.5cm.

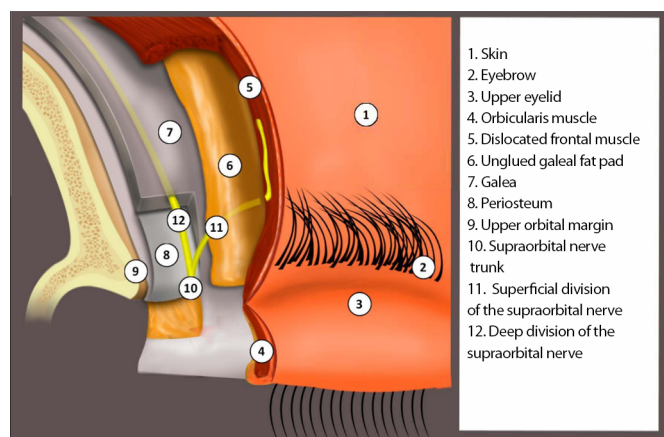


Figure 4. Surgical anatomy: anatomy of the frontal dissection area, observing the highlighted galeal plane.

Dissection is laterally limited by the projection of the orbital ligament and its upper extension, the support zone. Adhesions to the galeal adipose cushion and frontal muscle are released in approximately 2.5cm^{1,10} (Figure 4). Medially, supraorbital, and supratrochlear nerves are identified, and corrugating muscles are individualized between them (Figure 5) for minor resection and cauterization^{10,11}. Fat grafts are positioned in muscle resection areas, avoiding depressions^{2,10,12,13}.

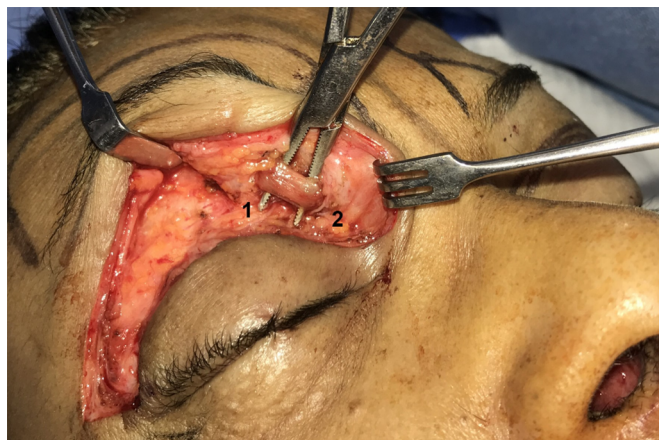


Figure 5. Treatment of corrugators. Corrugator muscle of the individualized eyebrow between the supraorbital (1) and supratrochlear (2) nerves, maintained with Kelly tweezers for small resection and cauterization.

The eyebrows are fixed with nylon sutures 5.0 (Figure 2), connecting the cool soft tissues (the needle is passed from its inner surface to near the dermis and returned to the inner surface) to the galea. The sutures should be firm, without excessive tension. The first suture is positioned laterally to the supraorbital nerve and the subsequent one, just below it. The following two sutures are similar but in the projection of the tail of the eyebrow. The fifth and last suture is central¹⁰ (Figure 2). The ideal fixation of the eyebrows in women varies from 0.5 to 1.0 cm above the orbital margin; in men, it is along this orbital margin. The sutures form fixation loops that naturally descend with the patient standing; therefore, a higher galeal suture area is marked (1.5 cm from the orbital margin in women) for proper final positioning of the eyebrows (Figure 6).



Figure 6. Refixation of the eyebrows. Stable anchoring from eyebrow to galeal plane. Notice the different descent of the eyebrows with the same force applied by both fingers.

The incision of the lower eyelid begins laterally, reaching the marked triangle. The blunt dissection under the orbicularis muscle is performed with a wide

craniocaudal opening of Kelly tweezers, supported on the orbital rim. The pre-tarsal part of the muscle should be preserved along the incision, which proceeds on the subciliary skin, from this triangle up to approximately 2.0 mm from the tear point (Figure 2). Lateral orbicular insertions lower than the bone margin (orbital retention ligaments - ORL) are taken off, while fibers connected to the medial half of the orbital margin should be preserved (Figure 7). The objective is to expose suborbicular fat (SOOF) inferiorly and laterally and orbital thickening (LOT)^{14,15}. The lower and lateral dissections mentioned extend for approximately 1.5 cm in the thickness of the medial facial fat compartments¹⁵, dividing two thin layers of fat: one to be preserved on the periosteum (SOOF) and the other adhered to the orbicularis muscle (medial fat of the cheek and lateral orbital fat)^{15,16}. Dissection is kept superficial to LOT for about 1.0cm laterally). During dissection, branches of the zygomatic-facial nerve are individualized¹⁴ (Figure 7).

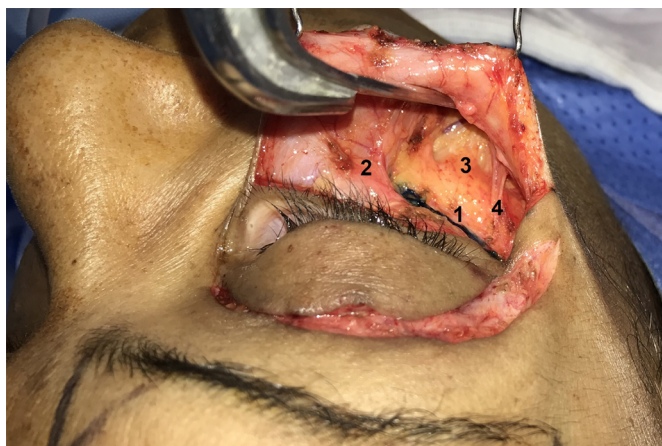


Figure 7. Infraorbital dissection. Dissection plane: lower release between the orbicularis muscle and orbital margin (blue line) (1). Muscle insertions are preserved medially (2). Lower to the blue line, we see the medial part of the SOOF (3), a zygomatic-facial nerve branch (4).

The fat pockets of the lower eyelid are treated, and a modified canthopexy, inspired by the Lessa⁹ technique is routinely performed: a nylon thread 5.0 crosses the fascia and the periosteum of the upper orbital margin, just above the lateral cantal tendon. Next, the needle is passed caudally under the skin and the muscle flap that sequesters upper and lower blepharoplasty incisions, being externalized in the latter. Then, the suture includes the superolateral part of the lower tarsal plate, where it joins the lateral cantal tendon. Finally, the needle returns to the upper incision, repeating the anchorage in the periosteum to complete the node without excessive tension. In secondary surgeries or patients with significant horizontal eyelid laxity, especially the elderly, canthopexy is replaced with a tarsal strip lateral canthoplasty technique.

The skin of the lower eyelid to be resected is calculated, extending the lower vertex of the marked triangle (Figure 2) a few millimeters lower, with medial obliquity. Care should be taken at this stage, calculating to remove a smaller amount of skin than is believed to be excisable. Over the years, this skin has been caudally distended by the weight of the soft tissues of the middle third of the face, which will be repositioned and fixed in a superolateral area. Initially, one may think that all this skin is surplus, but it will retract later, which can contribute to possible complications, such as scleral show and ectropion.

At the end of this incision in the lower eyelid, the skin is temporarily fixed to the medial part of the marked triangle (Figure 2) for medial skin excision. The excised skin strip is always asymmetrical, with a wider lateral part than the medial. Lateral to the triangle fixation, the orbicularis muscle is dissected from the skin⁷ and resected in its redundant cranial portion (Figure 8). The remaining muscle flap will be fixed with four to five nylon 5.0 sutures in the LOT located immediately under the lateral incision of the skin, starting at a level just below the lateral cantal ligament at the lateral orbital margin.

These sutures efficiently pull the lower eyelid in a superolateral direction, providing the desired mid-third lift with satisfactory support for mediofacial tissues. (Figure 9).

Excess superolateral skin is carefully resected at this time. The lateral incisions of the upper and lower blepharoplasties are 0.5 to 1.0 cm from each other and are slightly divergent (Figure 2). This allows large skin resections in the region with skin flaps of the upper and lower eyelids anchored in these two almost parallel margins. This fact makes it unnecessary to use peripheral incisions to consume this excess skin.

The same surgical steps are performed on the contralateral eyelid, and the skin closure is completed with monofilament nylon 6.0. Postoperative care is like conventional blepharoplasty, except for the greater edema. It is recommended to use cold compresses for 10 minutes, several times in the first 36 hours and then moderately heated bags and lymphatic drainage after the fifth day. We removed the stitches on the fourth or fifth postoperative day.

RESULTS

The procedure successfully achieves rejuvenation of the forehead and middle third of the face. With corrugator myectomy, the glabella wrinkles are attenuated, and the eyebrows move away. Depressions where the corrugator muscles were resected, were avoided with grafts from resected fat bags. There were no complaints about open palpebral fissures.

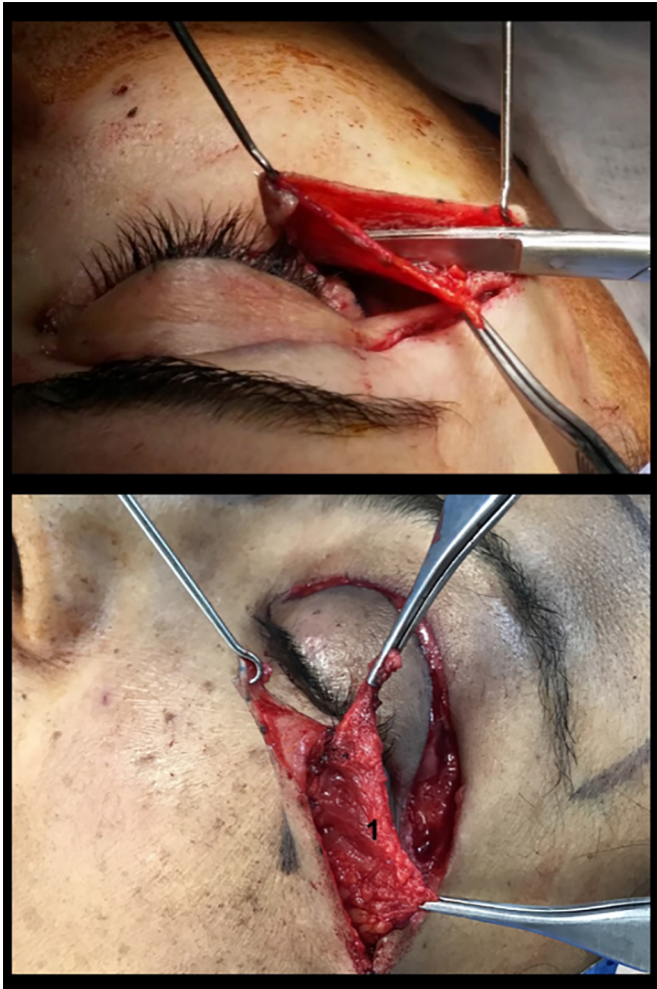


Figure 8. Orbicularis muscle flap. Superior: The muscular detachment of the skin that will be laterally resected. Lower: dissected orbicularis muscle (1). This muscle will be resected in its redundant cranial portion and fixed to the LOT and periosteum immediately below the lateral skin incision.



Figure 9. Mediofacial repositioning. Right-sutured orbicularis muscle flap, providing adequate support for mediofacial tissues. Notice the different descent from the middle third with the same force applied by both fingers.

Eyebrow lifting was effective and was maintained in the long term. The most common intercurrent was bilateral paraesthesia in the frontal and parietal scalp, spontaneously resolved after a few months. In most cases, temporary paralysis of the frontal muscle was observed to varying degrees¹⁰.

The elongation of the lower eyelids, the skeletonized infraorbital appearance, the prominent nasojugal sulcus, and the malar fat pad ptosis^{17,18} were adequately treated as the eyelid/cheek junction was raised (Figures 10 to 16). In addition, the repositioning of the orbicularis muscle creates a belt⁸, which, together with the canthopexy^{9,17}, avoids complications such as scleral show or ectropion.



Figure 10. Results. Patient one. Patient 44 years before (left) and six months after the operation (right).



Figure 11. Results. Patient two. Patient 59 years before (left) and nine months after the operation (right).

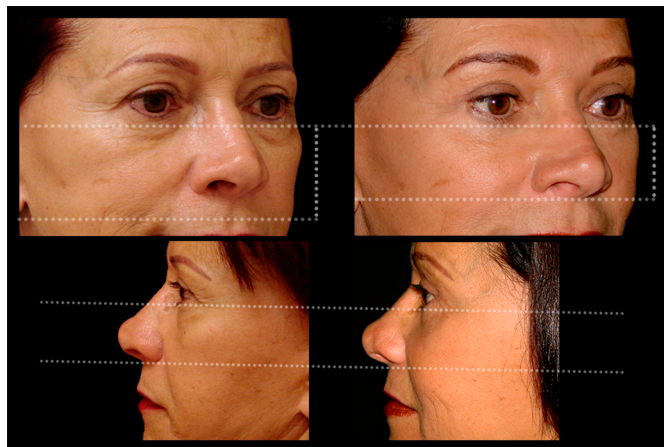


Figure 12. Results. Patient 3. Patient 60 years before (left) and 12 months after the operation (right). Vertical white lines show the different positions of the mediofacial tissues: an important survey of the structures can be observed if we take the two white horizontal lines dotted as references to the largest left lateral facial projections.



Figure 15. Results. Patient 6. Patient 53 years before (left) and 18 months after the operation (right).



Figure 13. Results. Patient 4. Patient 56 years before (left) and 12 months after the operation (right).

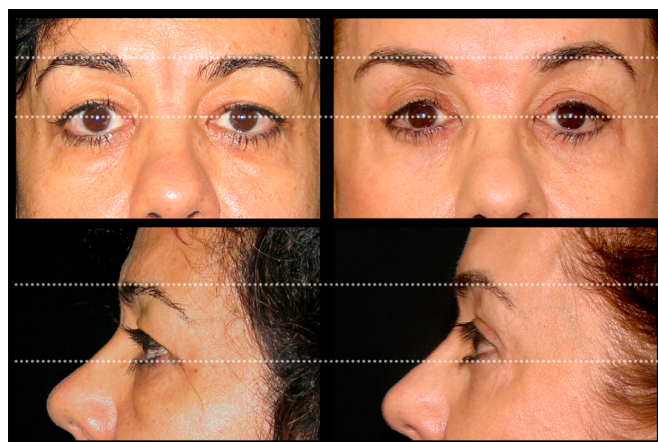


Figure 16. Results. Patient 7. Patient 52 years before (left) and nine years after the operation (right). After nine years, we can see the eyebrows kept elevated concerning the preoperative period.



Figure 14. Results. Patient 5. Patient 54 years before (left) and 22 months after the operation (right).

There is greater edema in the immediate postoperative period when compared to classical blepharoplasties due to greater dissection and tissue mobilization.

The results were observed in a 23-year follow-up and were stable long-term (Figures 10 to 16).

Intercurrences and complications

We reviewed 139 medical records of operated patients from January 2010 to December 2019. We observed as intercurrent the temporary disconnection of the lateral part of the lower eyelid of the globe treated conservatively. Complications were considered when associated with the scleral show, observed in 15 cases (10.8%); the treatment consisted of elevating the skin from the zygomatic region with Micropore® to the frontal area, on average for 41 days, leading to the proper positioning of the structures during healing. A case of

mild ectropion (0.72%) was recorded and thus treated for 180 days. In these 16 complications, we identified as predisposing factors: 4 secondary blepharoplasties, two patients with exophthalmia and associated conjunctivitis in two patients. Chemosis was observed, treated with eye drops with corticosteroids and usually presenting rapid resolution. In 19 patients (13.7%), the chemosis persisted for more than ten days (mean of 47 days), and only two cases (1.44%) required tarsorrhaphy and conjunctival perforations for complete treatment¹⁹. The final scars needed revision by lateral retractions in 5 cases (3.6%). A small hematoma (0.72%) on the left lower eyelid was surgically drained.

DISCUSSION

Dermatochalasis is often associated with frontoparietal soft tissue ptosis^{1,2} and mediolateral tissues¹⁷. The aesthetically ideal female eyebrow is arched, located 0.5 to 1.0cm above the upper orbital margin. The male eyebrow is flatter and positioned on or just above this orbital margin²⁰.

Transpalpebral elevation was initially described in 1982²¹, followed by numerous articles^{2,5,6,10,20,22-25}. In 1990, McCord and Doxanas⁶ described a blepharoplasty associated with the transpalpebral suspension of the eyebrow and the galeal adipose cushion treatment. They recommended less detachment (limiting eyebrow elevation) and no treatment of depressive muscles, favoring ptosis recurrence.

Other techniques proposed this treatment^{2,11-13,22}, allowing less downward traction in the eyebrows. However, they needed other incisions, such as the^{2,26}.

The orbicularis muscle flap showed efficiency in treating the lower eyelid and the middle third of the face^{7,27,28}. The risks are mispositioning of the eyelid and scleral show. A lateral canthopexy, without the lateral cantal ligament section⁹, helps prevent such complications.

McCord et al. (1998)⁸ Combined repositioning of the orbicularis repositioning to subperiosteal detachment of the malar area to treat the middle third of the face. Hester et al. (1998)³ also treated the middle third by a subciliary incision. After a 5-year experience, the authors described the use of canthopexy in 90% of patients, avoiding poor positioning of the lower eyelid¹⁷.

The technique described here treats the upper two-thirds of the face using only upper and lower blepharoplasty incisions. The lower margin of skin excision made in the upper eyelid fold ensures sufficient skin coverage to the eyeball (Figure 2). In addition, the upper orbital margin can be easily accessed through this incision, without injury to any important structure. Next, dissection is performed in the galeal plane, releasing the galeal adipose cushion and the frontal muscle (Figures 3 and 4)^{1,10}.

The described transpalpebral elevation uses a modified McCord and Doxanas (1990)⁶ technique, with wider dissection of the frontal area in the galeal plane and more fixation sutures, for a more effective ascent. Myectomy of corrugator muscles is associated^{2,11-13}, resulting in smoothed glabella wrinkles and preventing ptosis recurrence. The supraorbital nerve trunk is observed in direct vision, having the superficial branches preserved over the frontal muscle and the deep branches under the galea, which receives the eyebrow fixation sutures. Eyebrow elevation allows reduced excision of the upper eyelid skin, safely achieving good results.

The mediolateral structures are effectively elevated with the repositioning of the orbicularis muscle since the lower fat compartments are connected to it through the SMAS^{8,14}. As a result, the aspect of rounded and aged face changes to an inverted triangle shape, with volumization of the zygomatic regions, leading to a rejuvenated facial expression.

Long-term glucocorticoid infiltrated with anesthetics in the dissection area and postoperatively, oral prednisolone, 40mg/day, five days, provides less edema and more comfort to the patient²⁹.

CONCLUSION

Enlarged blepharoplasty, as we call it, can contribute to the surgical aesthetic and functional improvement of the periorbital region by managing the upper two-thirds of the face in a single surgical procedure and using only incisions of upper and lower blepharoplasty.

It presented reduced rates of complications, and the outcomes were gratifying and were maintained in the long term.

COLLABORATIONS

ACJ

Analysis and/or data interpretation, Conception and design study, Conceptualization, Data Curation, Final manuscript approval, Formal Analysis, Investigation, Methodology, Project Administration, Realization of operations and/or trials, Supervision, Validation, Visualization.

SASRF

Writing - Review & Editing.

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