

Original article

BLEPHAROPLASTY - OUR EXPERIENCE

БЛЕФАРОПЛАСТИКА - НАШЕ ИСКУСТВО

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Abstract

One of the most popular aesthetic surgery procedures is blepharoplasty. Preoperative planning and tissue resection can reduce complications and improve outcomes. Although some patients want blepharoplasty to address age-related changes in the skin of their eyelids, the procedure is more of a sculpture and contouring of the overall aesthetic unit. In this paper we present the history, basic anatomy, indications and surgical technique of upper and lower blepharoplasty. The importance of the preoperative patient evaluation for blepharoplasty has also been stated. We present our experience in blepharoplasty surgery done at the University Clinic for Plastic and Reconstructive Surgery in a three-year period, along with the complication rate and outcome. We have briefly described the techniques of standard upper and lower eyelid blepharoplasty. Practically, the rejuvenation of this complex anatomical area requires a combination of therapies including fat excision, repositioning or transfer, simultaneous brow or mid-face lift, and adjunctive treatment for skin resurfacing and periorbital hollows.

Keywords: blepharoplasty, upper eyelid, lower eyelid, complications

Апстракт

Една од најпопуларните процедури во естетска хирургија е блефаропластиката. Предоперативно планирање и ткивна ресекција може да помогнат да се намалат компликациите и да се подобрат резултатите. Иако некои пациенти сакаат блефаропластиката да ги реши промените поврзани со возраста и стареење на кожата на нивните очни капаци, постапката е повеќе од оформување и контурирање на една цела естетска единица. Во овој труд ја презентираме историјата, основната анатомија, индикациите и хируршката техника на горната и долната блефаропластика. Наведена е и важноста на предоперативната евалуација на пациентот за блефаропластика. Ви го претставуваме нашето искуство од операцијата на блефаропластика направена на нашата клиника во период од три години, стапката на компликации и исходот. Накратко ги опишавме техниките на стандардна блефаропластика на горните и долните очни капаци. Практично, подмладувањето на оваа сложена анатомска област бара комбинација од терапии, вклучувајќи отстранување на масно ткиво како и негово репозиционирање или трансфер, симултано подигнување на веѓите или средината на лицето и дополнителен третман за обновување на површината на кожата и периорбиталните вдлабнатини.

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Клучни зборови: блефаропластика, горен очен капак, долен очен капак, компликации

Introduction

The history of blepharoplasty dates back to more than 2000 years ago when Susruta described eyelid surgery in the Susruta-tantra. Also, about 25 A.D. Aulus Cornelius Celsus, a first century Roman philosopher, described the excision of upper eyelid skin for the “relaxed eyelid” in his *De re Medica*. The first medical illustration of the aging eyelid was published in 1817 by Beer. One year later Von Graefe first used the term “blepharoplasty” to describe a case of eyelid reconstruction following a cancer resection. In 1844 Sichel described “ptosis adiposa” as a condition by which the excessive upper eyelid skin fold was filled with fat. Fuchs later correctly recognized the role of the fascia attachments between skin, orbicularis, tarsus, and the levator in the development of the supratarsal skin fold and the importance of its recreation. In 1907, the American surgeon Conrad Miller wrote one of the first books on cosmetic surgery entitled *Cosmetic Surgery in the Correction of Facial Imperfection*. Suzanne Noel,

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a Parisian surgeon, wrote a book on cosmetic eyelid surgery. In the 1950s Castanares detailed the anatomy of the eyelids and made a contribution by identifying the role of orbicularis resection. Flowers in the 1970s introduced the supratarsal fixation for the low eyelid crease [1].

One of the most popular aesthetic surgery procedures is blepharoplasty. Preoperative planning and tissue resection can reduce complications and improve outcomes. Although some patients want blepharoplasty to reduce age-related changes in the skin of their eyelids, the procedure is more of a sculpture and contouring of the overall aesthetic unit. Skin texture changes with loss of elasticity and wrinkle formation, fat redistribution, enophthalmos, and anterior fat displacement with a lower eyelid orbital fat prolapse characterize the aging process in the eyelid complex. A local examination and surgical treatment strategy can achieve best results once the origin of the deformity and the accompanying periorbital anatomy are identified [2].

This surgery is a procedure of treating abnormalities, deformities, and disfigurements of the eyelids for functional, aesthetic, or both purposes. The most prevalent reason is cosmetic one, in which extra skin and fat are removed and/or redistributed to improve appearance [3]. Upper eyelid blepharoplasty is often paired with a ptosis surgery since the upper eyelids are drooping or ptotic in many situations. The levator aponeurosis is relocated on the tarsal plate and the upper eyelid height is titrated. Excess skin and fat are removed once the upper eyelid height is determined to produce a more youthful appearance. Upper blepharoplasty, on the other hand, may be recommended for functional reasons, such as upper eyelid fat, orbicularis hypertrophy or laxity, or skin laxity. In most cases, levator dehiscence is the cause of upper eyelid ptosis. Infections, trauma, tumors, and inflammation can all lead to dehiscence. Myasthenia gravis, trauma, orbital or eyelid tumors, congenital ptosis, third nerve palsy, or Horner syndrome are some of the less prevalent reasons of upper eyelid ptosis. Before performing a correction, it's critical to make sure the ptosis is caused by levator dehiscence. Advancement of the levator will not provide adequate lift if there is inadequate levator function (less than 4 mm), hence a frontalis sling technique is required to elevate the eyelid [4]. Shortly, we will give a quick review of the anatomy of the upper and lower eyelid.

Anatomy

Anatomy of the upper eyelid [5] (Figure 1):

1. The 4 layers contribute to the fascial framework of the upper eyelid.
2. The first is the orbicularis (superficial) fascia.
3. The second layer is the deep fascia of the upper lid and acts to retain the orbital fat.
4. The third layer is the levator aponeurosis.

5. Tarsus.

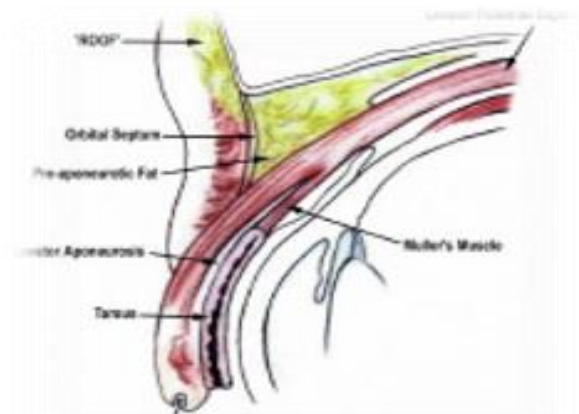


Fig. 1. Anatomy of upper eyelid

Lower eyelid anatomy [5] (Figure 2):

1. The lower lid margin commonly rests 1-2 mm above the inferior border of the limbus, making a gentle S curve.
2. The delicate skin of the lower eyelid is closely adherent to the underlying tarsus superiorly.
3. The orbicularis oculi muscle is closely adherent to the overlying periorbital skin and is designated into three zones: pretarsal, preseptal, and orbital regions.
4. Orbital septum.

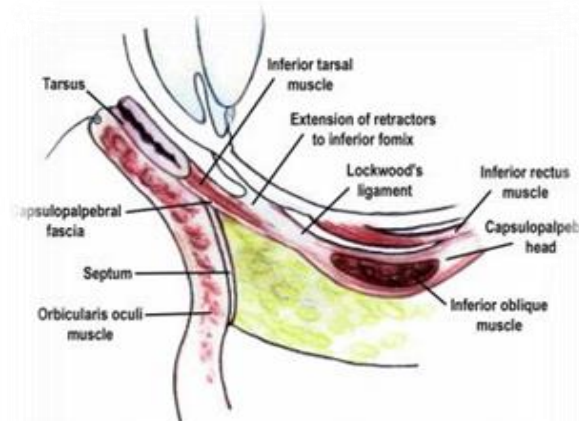


Fig. 2. Anatomy of lower eyelid

Material and methods

This study was performed at the University Clinic for Plastic and Reconstructive Surgery in Skopje, North Macedonia. In a three-year period, from 2018 to 2020, there were a total of 118 patients, of whom 79% were females and 21% were males, with mean age of 44.5 years (range 35-60).

Surgical technique

The upper lids should be injected superficially, with 2% lidocaine with 1:100,000 epinephrine using a 27 to

30-gauge needle. Skin incision can be made either with a No 15 Bard Parker blade or the radiofrequency monopolar cautery. Conservative fat excision can be performed as part of upper lid blepharoplasty. Retro-orbicularis oculi fat can be accessed beneath the lateral orbicularis overlying the superior orbital rim. Resection has been described to help decrease heaviness of the upper lid and lateral brow. The sub-brow fat pad can be repositioned during wound closure with use of eyelid suspension sutures. This can be done with two to three absorbable sutures that incorporate the orbicularis from the lower and upper edge of the incision along with the superolateral arcus marginalis. These sutures might result in early over-correction of the upper eyelid leading to lagophthalmos, which improves within days after the surgery. The skin incision can be closed using running or interrupted sutures with various absorbable or permanent materials [6]. As for transcutaneous lower lid blepharoplasty, the ‘skin pinch’ technique is ideal for skin laxity alone, with no fat prolapse. It is approached through a subciliary incision with the skin elevated off the orbicularis. The amount of skin to be resected can be estimated with a skin pinch between forceps. Redundant skin can be removed conservatively and redraped without disturbing the under-

lying orbicularis. The more aggressive ‘skin-muscle flap’ method is also approached through a subciliary incision, undermining the skin and orbicularis. The pretarsal orbicularis fibers should remain intact, and the skin and preseptal orbicularis are elevated as one flap. Dissection can be continued along the orbital septum to the level of the orbital rim. Periorbital fat is approached through small incisions in the septum. Orbicularis muscle fibers and skin can be excised at closure; however, damage to the orbicularis may lead to lower lid malposition and orbicularis denervation [7].

Results

The study included a total of 118 patients, of whom 79% were females and 21% were males (Figure 3), with the mean age of 44.5 years (range 35-60). The incidence of complications was 8.5 % (n=10). The complications (Figure 4) were 1 patient with hematoma (10%) that was treated with conservative care. Six patients had chemosis (60%); 70% of patients were with canthopexy, which at the end spontaneously resolved. Two patients had asymmetry (20%) and both of them were managed with retraction. Only 1 patient was with ectropion (10%), which was surgically treated.

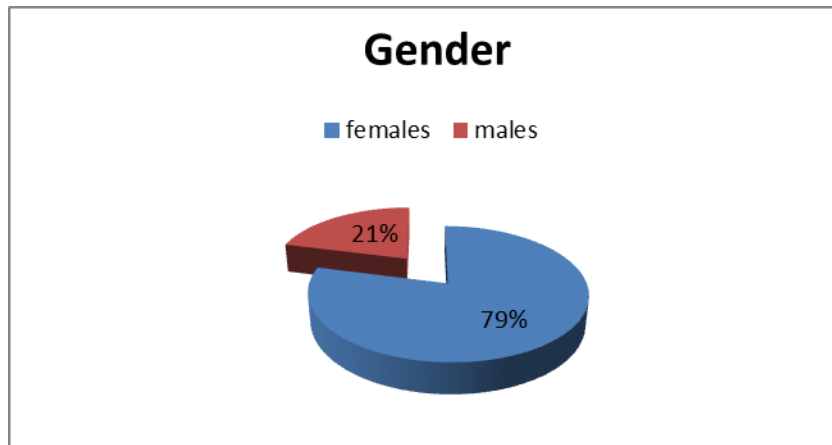


Fig. 3. Gender distribution among patients with blepharoplasty

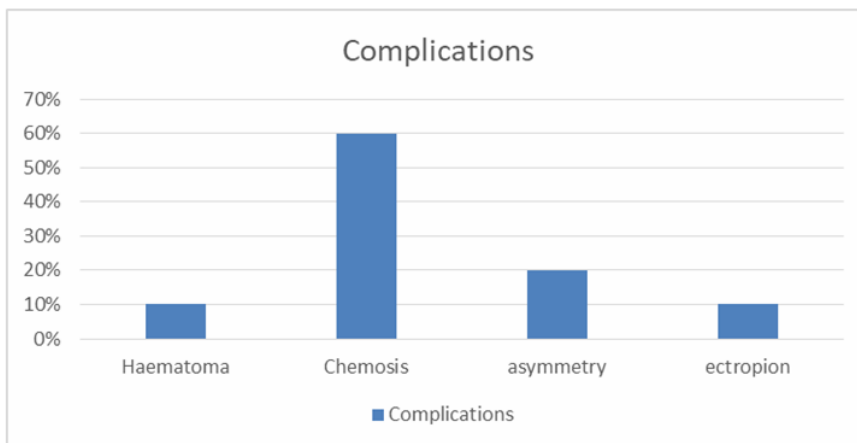


Fig. 4. Percentage complications in patients with blepharoplasty

Discussion

Preoperative patient evaluation for blepharoplasty should document medical and ophthalmologic history. Ophthalmologic history should include vision, corrective lenses, trauma, glaucoma, allergic reactions, excess tearing, and dry eyes. Cahill KV *et al.* [8], in their study state that preoperative indications for upper blepharoplasty should include margin reflex distance 1 (MRD(1)) of 2 mm or less, superior visual field loss of at least 12 degrees or 24%, down-gaze ptosis impairing reading and other close-work activities, a chin-up backward head tilt due to visual axis obscuration, symptoms of discomfort or eye strain due to droopy lids, central visual interference due to upper eyelid position, and patient self-reported functional impairment. Upper eyelid dermatochalasis is the loss of elasticity and support in the skin. It can create a fold of excess upper eyelid skin, which can impair the function of the eye, including supero-lateral visual field obstruction. Evaluation of pre-septal and eyebrow fat pads is important in redefining the superior sulcus. Assessment of patient's old photographs aids the surgeon in restoring the youthful look. Upper eyelid ptosis should also be noted, since it can be corrected simultaneously. As Naik MN *et al.* [9] state that lower eyelids should be assessed for skin excess and fat herniation, which typically presents as medial, central, and lateral fat pads. Downward displacement of the lateral canthus can result from disinsertion, laxity, or the presence of a prominent eye. Lower lid distraction test can determine the degree of laxity and guide lower eyelid canthal repositioning. The posterior displacement of the orbital rim in relation to the anterior cornea and lower lid margin, a negative vector, should be noted preoperatively. Brow ptosis is assessed by evaluating the position of the eyebrow in relation to the superior orbital rim. Asymmetry in the upper and lower eyelids and brow position is common and should be recognized and addressed individually.

Lyon DB *et al.* [10], in their paper state that upper lid blepharoplasty is a procedure associated with a high level of patient and surgeon satisfaction. New insights into the anatomic underpinnings of the periorbital aging process have enabled more successful and reproducible surgical results. In this paper, we have given a detailed description of the relevant anatomy and integrated it into the surgical philosophy for upper lid blepharoplasty. Preoperative markings should be made with the patient sitting upright in neutral position with the brow properly positioned. The eyelid crease is situated above the ciliary margin approximately 8 to 9 mm in women and 7 to 8 mm in men. The lower limit of excision should be along the eyelid crease, and the lateral extent of the marking should be limited by an imaginary line joining the lateral end of the brow to the lateral canthus. Possible complications include upper

eyelid retraction with scleral show from anterior lamellar inadequacy, lagophthalmos, acquired diplopia and corneal exposure. The most common complication of cosmetic surgery is failure to meet patient's expectations. This can be avoided by preoperative counseling and identifying reasonable expectations. There have been no long-term outcomes studies for upper eyelid blepharoplasty. However, because of natural aging, the benefits of an upper blepharoplasty should endure at least a decade. If fat is removed properly, very likely pseudoherniation of orbital fat will not occur in a long period. As previously said, the opposite consequence, hollowing, will pose the greatest problem in the coming years. The descent of the brows is a significant aspect in determining the lifespan of an upper lid blepharoplasty. This condition will increase hooding by creating a pseudoredundancy of upper eyelid skin. Aging can lead to a number of aesthetic changes in the lower eyelid. Common complaints include eyelid bags, circles under the eye, wrinkles around the eye, or a tired look. Anatomically, relaxation of the orbital septum, orbicularis muscle, and skin can cause protrusion of intraorbital fat leading to eyelid bags. The traditional procedure in lower eyelid blepharoplasty was to remove the pseudoherniated fat via skin incision. A recent, more conservative approach has included repositioning of the herniated fat in cases of tear through deformity into the subperiosteal space. Both these approaches may be accompanied by strengthening procedures for the attenuated septum or septorrhaphy [11]. Severe complications, such as visual loss from orbital hemorrhage, orbital injection, or posterior optic nerve infarction are extremely rare, but have been described. Other possible complications are lower eyelid retraction with scleral show, lagophthalmos, corneal exposure and acquired strabismus [12].

Mack WP *et al.* [13] in their paper *Blepharoplasty complications* clearly state that when we do upper and lower lid blepharoplasty, it is recommended to be done with preservation of orbicularis muscle and its innervations. Regarding cosmetic eyelid surgery, the surgeon should strive to avoid skeletonization and hollowing deflation by repositioning and reinforcing tissue with an emphasis to restore fullness to achieve facial aesthetic balance between the forehead, eyelids, and mid-face. A combination therapy is also possible when applying hyaluronic acid fillers, botulinum toxin or autologous fat transfer in this area.

Conclusion

We have briefly described the techniques of a standard upper and lower eyelid blepharoplasty. Practically, the rejuvenation of this complex anatomical area requires a combination of therapies including fat excision, repositioning or transfer, simultaneous brow or mid-face lift, and adjunctive treatment for skin resurfacing

and periorbital hollows. Patients with pseudoherniated fat pads in the upper and lower eyelids, as well as excess skin and hooding in the upper eyelids, might consider blepharoplasty. While the results of the device used - cold steel vs. laser - are not conclusive, it appears that the transconjunctival technique is favored in the case of lower lid. Patients should anticipate to look less tired after these treatments, and should be informed about the risks and recovery time associated with blepharoplasty.

This type of surgery is a common and very successful procedure to erase the aging changes of the upper periorbital region. A precise preoperative evaluation, thorough understanding of the patient's goals and careful planning and execution of a procedure that involves an appropriate lifting and resection of the soft tissue from the eyelid and eyebrow are used to restore a more youthful upper facial appearance. Serious complications of upper blepharoplasty are rare and are minimized by proper patient preparation and education.

Conflict of interest statement. None declared.

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