sciendo

10.2478/AMB-2025-0003

ORIGINAL ARTICLE

COMBINED SURGICAL APPROACH FOR SAFE AND EFFECTIVE REJUVENATION OF THE LOWER EYELIDS

Y. P. Yordanov

ASD Consult – Sofia, Bulgaria

Abstract. Background: *Blepharoplasty is among the most demanded plastic surgery procedures worldwide. The popularity of the eyelid surgical rejuvenation is closely related to the remarkable improvement in facial aesthetics that these procedures bring to the patients with relatively short recovery period. However, these surgical interventions are among the most challenging since form, function and aesthetics have to be equally considered, preserved and improved. This is particularly true when dealing with age-related changes of the lower eyelids.* ***Objectives:*** *To demonstrate the author's personal approach for obtaining safe and reliable results in aesthetic lower eyelid surgical rejuvenation combining transconjunctival approach for fat bags resection and pinch technique for excess skin excision.* ***Materials and Methods:*** *A retrospective chart review was conducted encompassing patients who underwent aesthetic lower blepharoplasty performed by the author between January 2020 and January 2024 by using the above mentioned combined surgical technique (transconjunctival approach + pinch skin resection). A minimum follow-up of 9 months was set. Exclusion criteria included previous surgeries and non-surgical procedures on the lower eyelids and underlying eyelid pathologies and comorbidities that affect the eyelids.* ***Results:*** *A total of 72 consecutive patients (mean age = 53.78 years; range: 34-70 years) underwent bilateral lower eyelid blepharoplasty for creation of youthful look and improving the quality of life. Out of them, 56 were female (n = 56; 77.78%) and 16 were male (n = 16; 22.22%). In five of the cases simultaneous upper blepharoplasty was performed too. One of the cases presented a rare and distressing intraoperative side effect of the local anaesthetics – transient anisocoria. Analysis of the outcomes demonstrated significant aesthetic improvement and high satisfaction rate among the patients presenting from mild to severe age-related deformities of the lower eyelids with no major complications in the series.* ***Conclusions:*** *The described combined surgical approach for lower eyelid surgical rejuvenation has shown to be safe and effective technique with high patient satisfaction rate. Since patient's safety and diminishing surgical risks is first priority in plastic surgery, this approach is recommended when fast and uneventful recovery with optimal outcome is aimed.*

Key words: *lower blepharoplasty, transconjunctival blepharoplasty, pinch technique, oculoplastic surgery, patient safety*

Corresponding author: *Yordan P. Yordanov MD, PhD, FEBOPRAS, ASD Consult, 38 Ivan Evst. Geshov Blvd, 1612 Sofia, Bulgaria, e-mail: yordanov_vma@abv.bg*

ORCID: *0000-0001-7142-3981*

Received: *04 December 2024;* ***Accepted:*** *02 January 2025*

INTRODUCTION

According to the official statistics of the International Society of Aesthetic Plastic Surgery (ISAPS), blepharoplasty is among the three most demanded plastic surgery procedures worldwide, being the eyelid surgery the most popular intervention among male patients [1]. The popularity of the eyelid rejuvenation is related to the remarkable improvement in facial aesthetics that procedures bring with a relatively short recovery period and an acceptable risk of complications [2]. However, this type of procedures is among the most challenging in aesthetic plastic surgery since form, function and aesthetics have to be equally considered, preserved and improved.

The goal of lower blepharoplasty itself is to correct the characteristic signs of aging affecting the lower eyelids, including excess skin, lid laxity, and orbital fat malposition [3-8]. There are two main approaches to lower blepharoplasty – transcutaneous and transconjunctival. In the traditional transcutaneous technique, a skin incision is made under the lash line to address excessive skin while accessing the underlying orbicularis oculi muscle (OOM) and fat compartments. With the transcutaneous approach, the main devastating intermediate and long-term complications are the ectropion and eyelid malposition [2]. They generally occur due to some of the below mentioned reasons or a combination of them: skin overresection, use of inappropriate vectors, weakening of the lower eyelid support due to denervation of the pretarsal portion of the OOM and scar contracture of the septum [3-6].

The transconjunctival approach enables the surgeon to spare the anterior and middle lamellae of the lower eyelid while accessing the fat compartments and thus to diminish significantly the risk of the above mentioned complications, among others benefits too [4, 7, 8]. Nevertheless, the transconjunctival technique itself does not treat the excess skin and the outcome in this regard largely depends on the skin ability to retract after the resection of protruding fat bags which may not be enough in patients with pronounced excess skin. In such cases additional procedures for skin tightening may be needed in order to achieve optimal rejuvenation of the periorbital area [2, 9].

As the patient's safety is first priority in aesthetic plastic surgery, the debate regarding the above mentioned approaches and which is better is still open. Continuous efforts are being made to utilize the benefits while excluding the disadvantages and diminish the risks of each one of them.

The aim of the present article is to demonstrate a single author's experience in aesthetic lower eyelid surgical rejuvenation combining resection of the fat bags via transconjunctival approach and reduction of the excess skin with pinch-technique.

MATERIALS AND METHODS

A retrospective chart review was conducted encompassing patients who underwent aesthetic lower blepharoplasty performed by the author between January 2020 and January 2024 applying a combined surgical approach: transconjunctival reduction of the protruded fat bags and pinch technique for skin reduction. Clinical data and photodocumentation were meticulously analyzed. A minimum follow-up of 9 months was established. Exclusion criteria included previous surgeries and non-surgical procedures on the lower eyelids and underlying eyelid pathologies and comorbidities that affect the eyelids.

Both written and verbal informed consent were obtained from each patient for the surgical procedure, possible risks and complications, and utilization of the patient's personal data and photographs. The study was carried out conforming to the guiding principles of the Declaration of Helsinki.

Preoperative markings and surgical technique

Preoperative markings were first made in the preoperative area while the patient is sitting up in primary gaze position. Later it was completed on the operating table to ensure that the scar extension of the pinch technique will lie in any of the crow's feet creases. The main markings are the tear trough ligament (TTL) and orbital retaining ligament (ORL) that separate the protruded orbital fats from the cheek (Fig. 1). The continuation of the skin resection in the outer third of the eyelid extending 2 to 5 mm pass the external canthus is also mark before infiltration of the

Fig. 1. Important facial landmarks in lower blepharoplasty. Tear trough ligament (1) and orbital retaining ligament (2) separate the protruded orbital fat pads (4) from the cheek. Another important landmark is the zygomatic cutaneous ligament (3)

anaesthetic solution. The extension of the scar largely depends on the excess skin and sagging. When simultaneous upper blepharoplasty was planned, marking were made as previously described by the author [10] and at least 10 mm of distance were kept between upper and lower incisions in the lateral canthal area to avoid deformities such as webbings and round eye sign which is quite difficult to be corrected.

All the procedures were performed under local anesthesia after deep sedation; surgical loupes with 2.5X magnification were used. 1.5-2.0 ml of anesthetic solution which contained equal parts of 1% Lidocaine and 0,75% Ropivacaine with Adrenaline 1:200 000 was injected subcutaneously into each lower eyelid and 0.5-1.0 ml was injected into the palpebral conjunctiva bilaterally. Right transconjunctival incision was made first 3 to 4 mm below the edge of the tarsus using a Colorado electrocautery needle on low-power cutting current. For inferior eyelid retraction a Desmarres retractor was used. Limited dissection in preseptal plane and conservative transeptal resection of the fat bags were performed. Gentle compression on the eyeball was usually performed by the assistant in order to identify more easy the fat bags as they tend to disappear when the patient is lying down on the operating table. Special attention was paid to the inferior oblique muscle during the resection of protruded orbital fat since its tendon is often found between the inner and middle lower eyelid bags. Hemostasis control with electrocautery was extremely important during the surgeries. Once the transconjunctival fat bags resection was accomplished, gentle irrigation of the conjunctival sac with physiological solution was performed and conjunctival incision was left to heal by secondary intention with good approximation of the edges, i.e. no conjunctival sutures were placed.

The second stage of the procedures was the pinch reduction of the excess skin according the technique described by Parkes and al. [11] with a small modification made by our team. Approximately 3 to 4 mm distally from the lash line, near the lateral canthus, the skin was grasped with toothed Adson-Brown tissue forceps to pinch the excess skin between its jaws, creating a fold which is parallel to the eyelid margin (Fig. 2 and Fig. 3A). Special attention was paid to the lid margin at the time of that maneuver: if too much skin was pinched and grasped, the created tension everted the lid margin and lash line which is

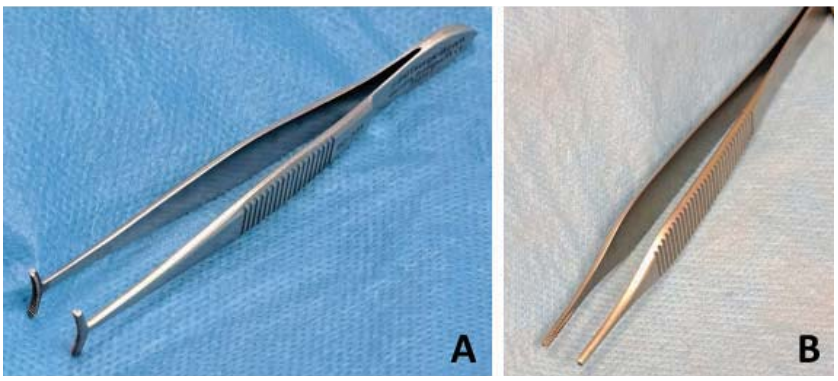

Fig. 2. Toothed tissue forceps used in lower blepharoplasty. (**A**) Green fixation forceps is useful in exact evaluation of the excess skin; (**B**) Adson-Brown forceps used for pinching, creating a mound of the delicate eyelid skin and holding it during the excision

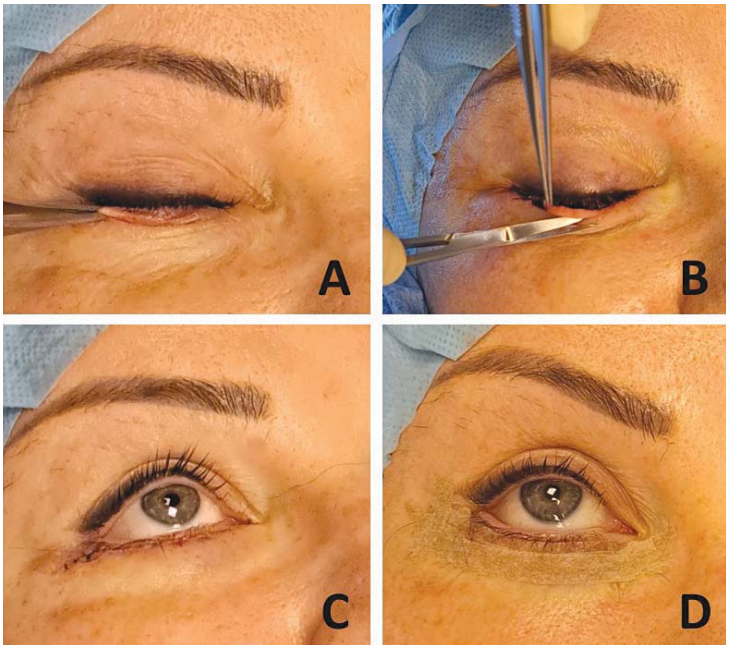

Fig. 3. Steps of the pinch-technique for skin reduction in lower blepharoplasty. (**A**) Redundant skin of right lower eyelid is pinched to an elevated, elongated mound that remains standing after Adson-Brown forceps is being removed. The pinching usually starts laterally and moves medially. (**B**) Pinched skin is being excised with sharp pointed scissors. Skin margins after the resection remain in good approximation. (**C**) Skin closure is performed with dyed 7-0 Prolene subcuticular running suture. (**D**) Overlapping sterile wound closure strips Omnistrip are used for wound coverage and giving support to the eyelid in the early postoperative period

highly undesirable. In such situation, the skin was released from the forceps, made smooth again and the maneuver was repeated. In order to achieve sufficient skin reduction, the skin ridge was created by grasping along the entire length of the lower eyelid to a point lateral to the inferior lacrimal punctum (Fig. 3A). The amount of skin to be clamped and resected decreased as approaching the punctum. That corresponds to the sagging pattern of eyelid skin which, speaking in general, resembles the sagging of the face and body skin- to the midline. A sharp pointed scissors was used to excise the pinched skin being hold with the forceps, leaving the skin edges in good apposition (Fig. 3B) The OOM was exposed but left intact which is a main goal of the pinch technique. In some cases limited dissection of the caudal skin margin was made in subcutaneous plan in not more than 1-2 mm extend to make easier the apposition of the skin edges. After meticulous hemostasis had been accomplished, the skin wound was closed with dyed 7-0 Prolene (non-absorbable polypropylene composed, by Ethicon Inc.) subcuticular running suture (Fig. 3C). Sterile wound closure strips Omnistrip (made of non-woven fabric, by Hartmann Inc.) were used for wound coverage and were kept in place for 4 to 5 days (Fig. 3D).

In the cases where upper blepharoplasty was also planned and executed, it was performed first (before intervening on the lower eyelids) according to the surgical protocol that has been previously described by the author [10].

Postoperative period and follow-up

Patients were instructed to use cool packs to the periorbital area for the first 6-8 hours after the surgery to minimize swelling and to maintain head position at or above the heart level to reduce edema. Antibiotic drops with a steroid component four times per day for the first week were prescribed. Patients were recommended to refrain from any strenuous activity for the first 10 to 14 days. Omnistrips and sutures were removed on postoperative days 4 or 5. Patients were advised that most of the swelling persists for 2 to 4 weeks after surgery and can be asymmetric.

The follow-up included clinical examinations at 4 to 5 days after the surgery, 1 month, 6 months, 9 months and 12 months postoperatively, and once per year after that.

Photographs were taken before the procedure and during the follow-up visits after the surgery. The surgical outcomes for each patient were evaluated independently by the author (Y.P.Y.) and by a dermatologist (Aylin Shef MD, PhD) who is an experienced clinician with main focus on facial aesthetic procedures. At the 1-year follow-up, patient satisfaction was also evaluated with a standardized patient satisfaction questionnaire about the facility and the procedure. The questionnaire was anonymous and was completed by every patient who presented on a tablet device at the time of the visit under the supervision of the chief nurse who was responsible for maintaining the facility and patient-care standards.

RESULTS

A total of 72 consecutive patients (mean age = 53.78 years; range, 34-70 years) underwent bilateral lower eyelid blepharoplasty for creation of youthful look and improving the quality of life. Out of them, 56 were female (n = 56; 77.78%) and 16 were male (n = 16; 22.22%) (Fig. 4). In 5 of the cases simultaneous upper blepharoplasty was performed too. All the patients were operated by the author under local anesthesia and deep sedation in a hospital setting according to the aforementioned treatment protocol of combined surgical approach for lower eyelid rejuvenation. The average operating time for the lower blepharoplasty only was 1 hour 58 minutes. Minimum follow-up time was 9 months as established, with an average of 1.2 years (range, 9 to 48 months) postoperatively.

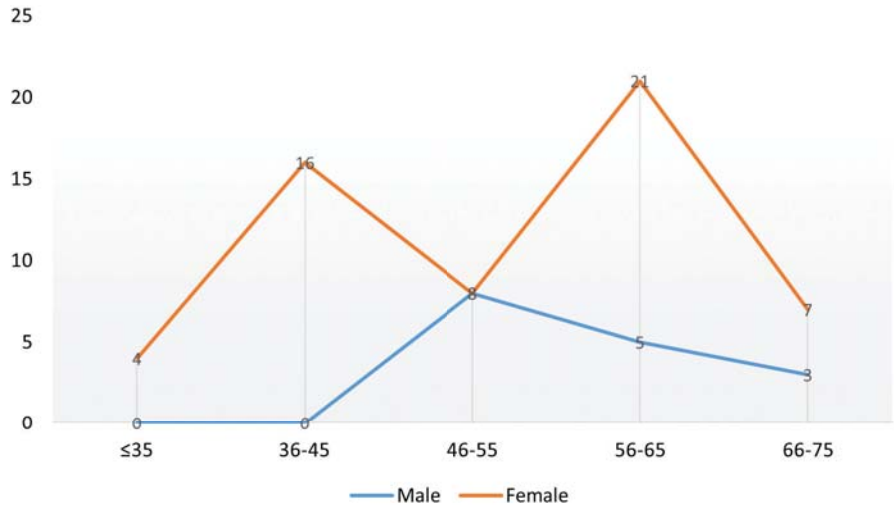

Fig. 4. Patients included in the study by sex and age at the time of the surgical intervention

No major surgical complications that required any kind of reoperation were registered in the series. Bruising was observed in 6 patients (n = 6; 6.94%) and Arnica-containing cream was prescribed with

rapid resolution of the condition. No prolonged swelling in the lower eyelids and no cases of hematoma, skin necrosis, skin loss or scleral show, ectropion or scar retractions were observed. Three patients presented unilateral chemosis in the postoperative period (n = 3; 4,17% of patients, 2.08% of the eyelids) and were treated conservatively with corticosteroid ointment (Dexamethasone 1mg/g) applied 6 times per day for a week. There were no revision surgeries in the series.

One of the cases, a 67-year-old woman with medical history of hypertension presented a rare intraoperative side effect of the local anesthesia, namely transient oblong anisocoria (Fig. 5). That event caused significant distress in both the surgical team and the patient. Because of that reason, it was reported and discussed in the scientific literature [12]. That was the only clinical case who stayed overnight at the hospital. All the other patients were discharged at the same day of the surgery after 6-8 hours of postoperative clinical observation in the ward.

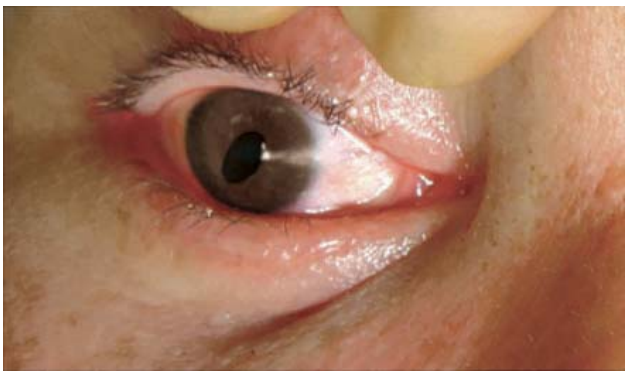

Fig. 5. Right eye of a 67-year-old woman with oblong anisocoria, intraoperative close-up view

69 patients (95.83%), including the patient mentioned above, rated their outcome as excellent, they were happy with the result and would recommend the procedure to others; 3 patients (4, 17%) said their result was very satisfactory.

Typical postsurgical outcomes from this case series are presented in Figures 6-8.

Fig. 6. Preoperative (first row) and 1-year postoperative (second row) photographs of a 39-year-old woman with mild dermatochalasis and asymmetrically protruded fat bags in her lower eyelids who underwent lower blepharoplasty for creation of more youthful look and symmetrization of the eyelids contour

Fig. 7. Preoperative (first row) and 1-years postoperative (second row) pictures of a 70-year-old man with severe dermatochalasis of his upper and lower eyelids and significantly protruded fat bags who underwent simultaneous upper and lower blepharoplasty for creation of youthful look and for improving his quality of life. Descent of the eyebrows from their normal anatomical position is visible before and after the surgery since blepharoplasty itself does not address the position of the eyebrows

Fig. 8. Preoperative view (first row) of a 71-year-old woman with severe dermatochalasis of her upper and lower eyelids causing her heaviness and also functional impairment – visual field obstruction. Protruded fat pads of the lower eyelids give her a remarkably tired look. Brow ptosis is also visible. On the second row: 1-year postoperative photographs after simultaneous upper and lower blepharoplasty, significant aesthetic improvement of the periorbital area is visible and corresponds to the self-reported improved quality of life. The eyebrows are still ptotic and the hanging of their lateral half gives a false impression of persistent residual upper eyelid skin

DISCUSSION

The most devastating long-term complications in classical transcutaneous lower blepharoplasty are ectropion and eyelid malposition [2-4, 6, 13]. According to scientific literature, the incidence of malposition of lower eyelid varies between 15 to 20% [2, 14, 15], and of ectropion is of approximately 1% [2, 16, 17]. In turn, lid malposition may lead to lagophthalmos and corneal exposure and often require further surgical treatment. It has been demonstrated that the dissection of musculocutaneous flap, or even of a skin flap only, can produce dysfunction of OOM due to denervation and/or interruption of the muscle fascicles. It further may contribute to ectropion, scleral exposure and rounded eye in the postoperative period [5]. That's why in our practice we always aim to preserve the OOM as a main structure that gives support to the inferior eyelid maintaining its tone and right anatomical position – at the level of the inferior corneal limbus.

In the transconjunctival approach the OOM is spared, the anterior and middle lamellae are left intact which is essential for prevention of the above mentioned complications. From the other hand, it entails faster recovery and also minimizes hypopigmentation [7, 9]. That's why it is preferred approach in author's practice and this study has clearly demonstrated the reason why: there was no complications of both functional and aesthetic entity and more than 95% of the patients rated their result as excellent and would recommend the procedure to others. Furthermore, the transconjunctival approach has another advantages too, for example: fat pad sliding could be successfully used for improvement of the tear trough deformity when indicated [18], also is indicated in younger patient with protruded orbital fat pads with no excess skin which often is a hereditary feature [7-9]. These indications in particular were out of the scope of the present work. However, the author finds the transconjunctival approach very useful in such situations.

The double approach to lower eyelid blepharoplasty combining transconjunctival fat bags removal and pinch technique for excess skin reduction was popularized in 1992 by Dinner and team [19] Nevertheless, the "no-flap" technique mentioned in the above cited article used for skin excision actually was described nearly two decades earlier by Perks and team [11] under the name "pinch" technique. For more than 30 years this combined approach has gained some popularity and to date it is mentioned in few articles [20-22]. To the best of our knowledge, in the Bulgarian scientific literature there is no mention in this regard. In our hands, this combined approach has shown to be safe and sophisticated which fully corresponds to the findings of others [20]. Similar to the study of Olivera Whyte and team from Buenos Aires [20], in the present series there was no case of conjunctival granulomas. The reason why the author also attributes to the no suturing technique for conjunctival closure.

For our patients the down time is extremely important and fast recovery is one of the leading demands among them. As the author has previously stated [10], the post-operative dressing plays an important role in terms of achieving uneventful recovery and good aesthetic outcome in blepharoplasty (Fig. 3D). It is an author's preference to use fine elastic strips for coverage of the incision scar and thus to give additional support of the eyelid in the early postoperative period. Similar to the upper blepharoplasty, those strips give sustainable stability for better healing of the lower eyelid scar for 4 to 5 days until the stitches are being removed and also reduce swelling. However, it's worth reminding that good preoperative planning, individualizing

the procedure according to every patient's needs and meticulous surgical technique are the main factors for fast recovery and optimal aesthetic and functional outcome.

CONCLUSIONS

The combined surgical approach for lower eyelid rejuvenation, which includes transconjunctival removal of protruded fat pads and pinch technique for excess skin resection, has shown to be safe and effective with high patient satisfaction rate. Since patient safety and diminishing surgical risk of complications is first priority in plastic surgery, this approach is recommended to any individual who seeks fast recovery and optimal outcome. Good surgical training and experience in oculoplastic surgery are critical success factors.

Conflict of Interest Statement: *The author declare no conflicts of interest related to this work.*

Funding: *The author did not receive any financial support from any organization for this research work.*

Ethical statement: *This study has been performed in accordance with the ethical standards as laid down in the Declaration of Helsinki.*

Informed Consent from Participants: *Informed consent was obtained from all participants included in the study.*

REFERENCES

1. ISAPS Global Aesthetic Survey. Available at: https://www.isaps.org/discover/about-isaps/global-statistics/global-survey-2023-full-report-and-press-releases/
2. Zoumalan CI, Roostaeian J. Simplifying Blepharoplasty. Plast Reconstr Surg 2016;137(1):196e-213e. doi: 10.1097/PRS.0000000000001906.
3. Seiff SR. Complications of upper and lower blepharoplasty. Int Ophthalmol Clin. 1992; 32(4): 67-77.
4. Rebowe RE, Runyan C. Blepharoplasty. 2023 Jul 24. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024 Jan.
5. Hwang K, Lee DK, Lee EJ, et al. Innervation of the lower eyelid in relation to blepharoplasty and midface lift: clinical observation and cadaveric study. Ann Plast Surg. 2001;47(1):1-5; discussion 5-7.
6. Karimnejad K, Walen S. Complications in Eyelid Surgery. Facial Plast Surg Clin North Am. 2016; 24(2): 193-203. doi: 10.1016/j.fsc.2015.12.008.
7. Baylis HI, Long JA, Groth MJ. Transconjunctival lower eyelid blepharoplasty. Technique and complications. Ophthalmology. 1989; 96(7):1027-1032.
8. Raggio BS, Winters R. Lower Lid Transconjunctival Blepharoplasty. 2023 Jul 24. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024 Jan.
9. Zarem HA, Resnick JI. Expanded applications for transconjunctival lower lid blepharoplasty. Plast Reconstr Surg. 1999; 103:1041–1043; discussion 1044.
10. Yordanov YP. Upper Eyelid Blepharoplasty: An Approach for a Simplified, Safe and Effective Procedure. Acta Medica Bulgarica 2024;51(3):18-23. doi: 10.2478/AMB-2024-0037.
11. Parkes M, Fein W, Brennan HG. Pinch technique for repair of cosmetic eyelid deformities. Arch Ophthalmol 1973;89(4):324-8. doi: 10.1001/archopht.1973.01000040326014.
12. Yordanov YP. Oblong Anisocoria During Aesthetic Lower Blepharoplasty in a Hypertensive Patient. Aesthetic Plast Surg. 2023. doi: 10.1007/s00266-023-03718-z.
13. Codner MA, Burke RM. Blepharoplasty. In: Thorne CH, Chund KC, Gosain AK, et al. eds. Grabb and Smith's Plastic Surgery, 7th edition. Philadelphia, LWW, 2014: 487-500.
14. DiFrancesco LM, Anjema CM, Codner MA, et al. Evaluation of conventional subciliary incision used in blepharoplasty: preoperative and postoperative videography and electromyography findings. Plast Reconstr Surg. 2005;116(2):632-9. doi: 10.1097/01.prs.0000173446.21513.47.
15. Lelli GJ Jr, Lisman RD. Blepharoplasty complications. Plast Reconstr Surg. 2010;125(3): 1007-17. doi: 10.1097/PRS.0b013e3181ce17e8.
16. Carraway JH, Mellow CG. The prevention and treatment of lower lid ectropion following blepharoplasty. Plast Reconstr Surg. 1990;85(6):971-81. doi: 10.1097/00006534-199006000-00025.
17. Patrocinio TG, Loredo BA, Arevalo CE, et al. Complications in blepharoplasty: how to avoid and manage them. Braz J Otorhinolaryngol. 2011;77(3):322-7. doi: 10.1590/s1808-86942011000300009.
18. Loeb R. Naso-jugal groove leveling with fat tissue. Clin Plast Surg. 1993;20(2):393-400; discussion 401.
19. Dinner MI, Glassman H, Artz JS. The "no flap" technique for lower-lid blepharoplasty. Aesthetic Plast Surg. 1992;16(2):155-8. doi: 10.1007/BF00450607.
20. Olivera Whyte LM, Seiler JI, Prezzavento G. Doble abordaje en blefaroplastia de párpados inferiores. Cir. plást. iberolatinoam. 2024;50(3): 265-270. doi: 10.4321/S0376-78922024000300005.
21. Kim EM, Bucky LP. Power of the pinch: pinch lower lid blepharoplasty. Ann Plast Surg. 2008;60(5):532-7. doi: 10.1097/SAP.0b013e318172f60e.
22. Rosenfield L. Pinch Blepharoplasty: A Safe Technique with Superior Results. Aesthetic Surg. J. 2007;27(2):199–203. doi: 0.1016/j.asj.2007.01.006