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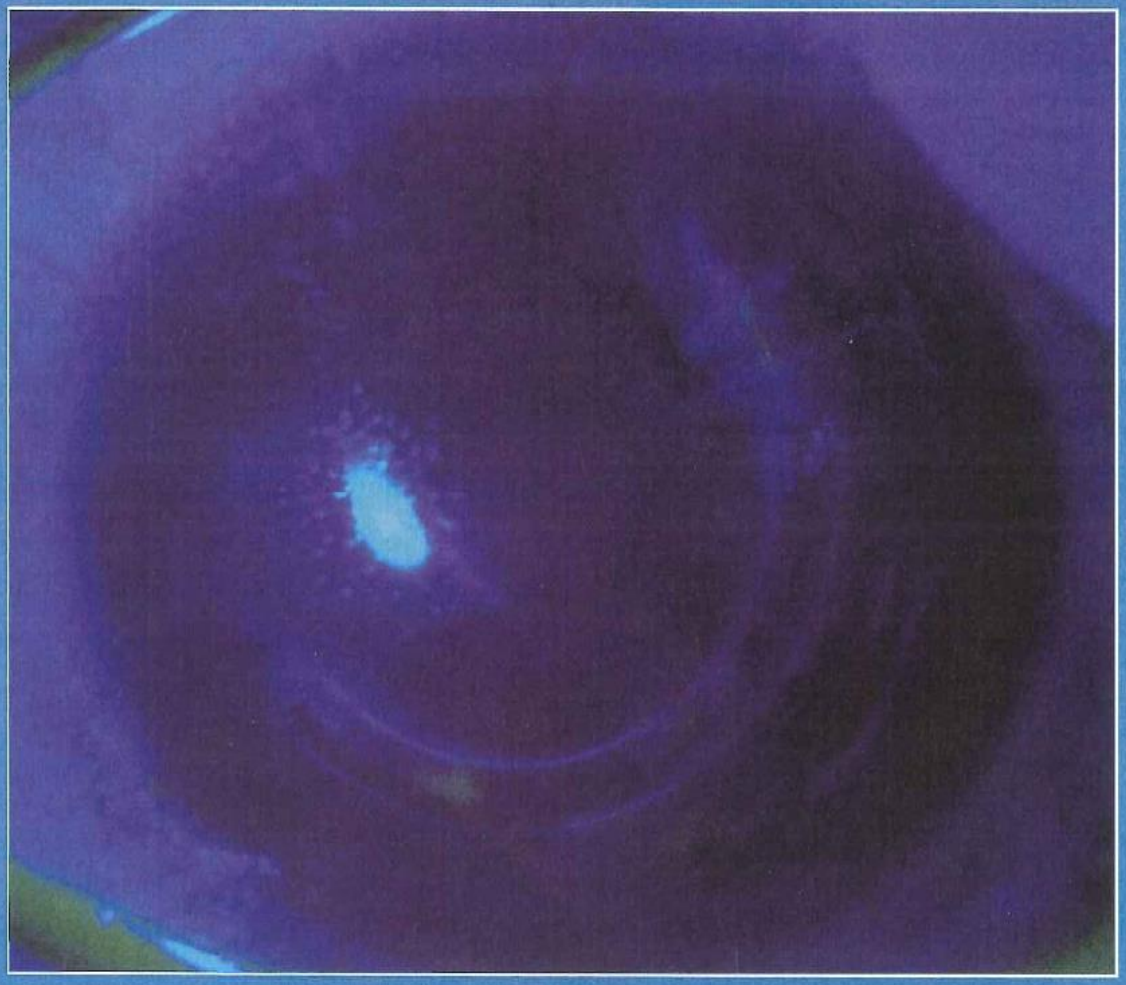

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Mini-Incision Lower Lid Blepharoplasty

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Blepharoplasty for the upper or the lower lid performed using a scalpel or scissors has always required additional surgical maneuvers and instrumentations to obtain hemostasis, resulting in significant postoperative edema and ecchymosis, a delayed healing and bad scarring; therefore, the patient is not able to have a rapid return to work and social life. In this time and age and the modern style of life, an increasing number of our patients ask for noninvasive surgery for beautification and rejuvenation with minimal recovery time. I have noticed also in my clinic that more and more young adults requesting blepharoplasty with 1 main concern and that is the time they can go back to work and to their social life. To achieve this goal, the surgical technique and instrumentation are key elements. There has been a lot of interest in the use of various types of lasers to incise eyelid tissues[1–4] because it is generally believed that lasers can incise tissue with less tissue damage than what occurs with electrocautery.[5]

Traditional electrocautery used has a platinum wire that is heated to red heat with electric current; it can cause considerable tissue damage. Laser as well is not, with its potential for tissue destruction because of increased lateral heat. However, radiosurgery is the use of ultrahigh frequency radio signal to incise, excise, ablate, or coagulate tissue yet with minimal tissue alteration. Soft tissue resistance to these radio waves causes the water cells to heat, resulting in cellular molecular dissolution. The radio waves leave the Ellman Dual frequency Surgitron at a frequency of 4.0 MHz above AM and below PM frequencies through a headpiece. A fine wire electrode is used to make skin incision and orbicularis muscle and orbital fat resection.

The incision is pressureless, smooth, and bloodless, with minimal to no lateral heat spread. High-frequency waves in surgical procedure have been investigated for decades,[6] showing that 4.0 MHz is the frequency for cutting soft tissue and that a fully filtered wave produced a minimal tissue alteration. The Ellman Surgitron (Ellman International Inc, Hewlett, NY) has the capacity to deliver a variety of waveforms—filtered: pure cutting; partially rectified: hemostasis; and fully rectified: cutting with hemostasis.[7] In comparison with CO_2 laser, radiosurgery causes less heat damage. Clinically, tissue incised using ultrahigh frequency radiosurgery (Ellman Surgitron) at appropriate parameters have no visible thermal artifacts and no predisposition toward wound dehiscence as seen after CO_2 laser.

Histopathologically, the cellular architecture disruption was less in tissue incised with dual radiofrequency unit than with CO_2 laser.[8–10] Once you have the right instrumentation, the right technique will enhance your results, avoid complications, and allow your patient a rapid return to work or to normal social life. For lower lid blepharoplasty, the strategy is to remove the herniated orbital fat without adversely altering the shape and contour of the lid fissure in avoiding any potential complications and in allowing a fast recovery for the patient. The transconjunctival approach to lower lid blepharoplasty gained a lot of popularity. This is, on the one hand, due to a greater awareness of the potential complications by the patients interested in aesthetic surgery and, on the other hand, to the fact that the number of patients who are interested in having blepharoplasty is increasing. Moreover, patients request blepharoplasty at an earlier age.

Historically, the transcutaneous approach has been the surgical technique of choice to resect herniated fat resulting sometimes in lower lid ectropion, noticeable scar, and lower lid retraction—the last one being the most common and dreaded complication of the transcutaneous lower lid blepharoplasty. The other complications are excessive skin removal, rounded and blunted lateral canthus, excessive or insufficient fat removal resulting in overcorrection or undercorrection, diplopia, or hemorrhage.[11,12]

The transconjunctival technique was first described back in 1924 by Bourquet.[13] This approach was popularized by Tessier[14] in 1973, who used the conjunctival approach to the orbital floor and maxilla in congenital malformation and trauma. The traditional conjunctival approach with incision extending from the punctum to the lateral canthus can result in complications including cicatricial ectropion, lower lid retraction, canthal dehiscence, canalicular laceration, buttonhole laceration, punctal eversion, excessive or insufficient fat removal, diplopia, hemorrhage, buttonhole laceration of lower lid, and conjunctival prolapse, or chemosis.

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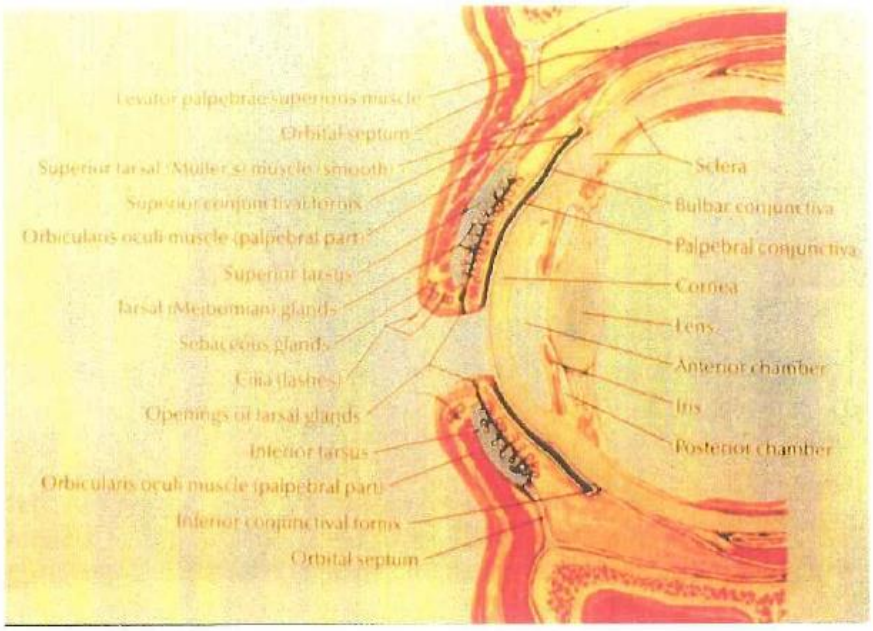

FIGURE 1. Sagittal cross-section of the eyelids. The fat pads and the anterior and posterior lamella.

In this era of endoscopic surgery, mini-incision cataract surgery and phacoemulsification, and suture technique for facial rejuvenation and beautification, the mini-incision transconjunctival lower lid blepharoplasty achieves the same goal but significantly reduces surgical manipulation and complications. It also allows a faster recovery.

■ ANATOMY

The lower eyelid is divided into an anterior lamella with skin and orbicularis and a posterior lamella with tarsus and conjunctiva. The capsulopalpebral fascia in the lower lid is analogous to the levator aponeurosis of the upper lid. It originates from attachments to the muscle fibers of the inferior rectus muscle. It divides as it encircles the inferior oblique muscle, then joins to form Lockwood suspensory ligament. The capsulopalpebral fascia inserts onto the inferior tarsal border and sends strands to the inferior conjunctival fornix, the suspensory ligament of the fornix. The orbital septum, a multilayered thin sheet of fibrous tissue, rises from the periosteum over the inferior orbital rim. The orbital septum fuses with the capsulopalpebral fascia at or below the inferior tarsal border (Fig. 1).

There are 3 fat pockets in the lower lid: the medial, the central, and the lateral fat pocket. In transconjunctival

FIGURE 2. Incision through conjunctiva and capsulopalpebral fascia to access the nasal fat pad.

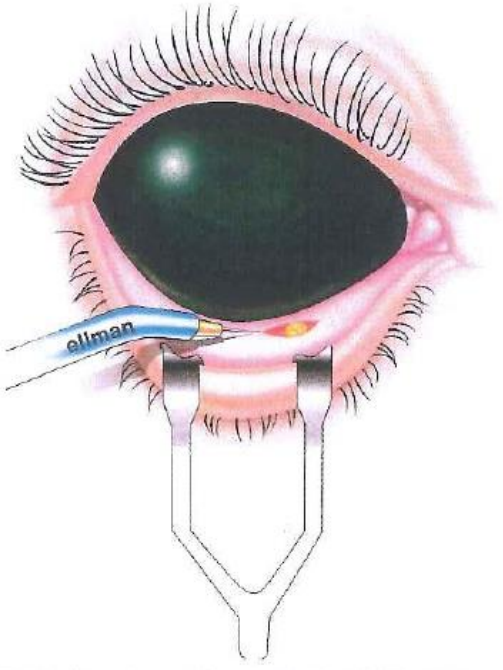

FIGURE 3. Drawing of the buttonhole incision.

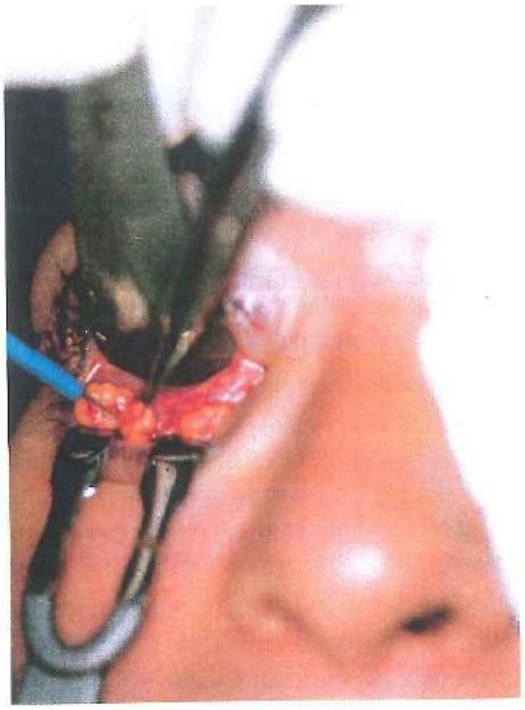

FIGURE 4. Chedly lid retractor in place; the 3 lower eyelid fat pads are nicely exposed.

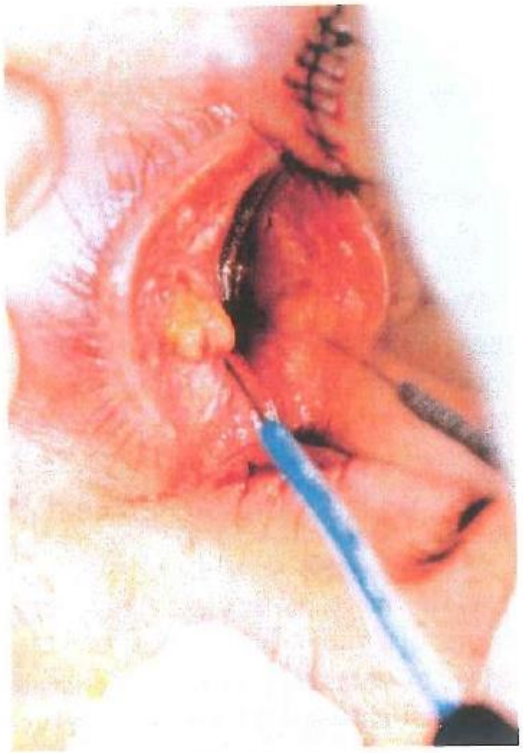

FIGURE 6. Lower eyelids fat prolapse.

blepharoplasty, the entrance into the orbital fat is made posterior to the orbital septum. Therefore, the anterior lamella is not violated.

■ SURGICAL TECHNIQUE

As mentioned in the Introduction, the instrument used for this technique is the Surgitron FFPF unit with footswitch assembly (Ellman International Inc, Hewlett, NY). The radiosurgical unit delivers high-frequency waves at 4.0 MHz, the optimal frequency to cut soft tissue because this has been investigated decades ago. The Ellman Surgitron has the capacity to deliver a variety of waveforms. The one used for lower lid blepharoplasty is the fully rectified current, which is 50% cutting and 50% hemostasis.[15] The A3 electrode for transconjunctival approach is used; however, the new alloy micro-RF electrodes are very promising because they require less power with significant reduction in thermal temperature and tissue drag (Figs. 2 and 3).

The anesthesia is performed by infiltration of the fornix with 2 to 3 mL of 2% lidocaine with 1/100,000 epinephrine. A lid plate is placed, achieving protection to the globe and helping the orbital fat to herniate; the fornix is exposed using the newly designed lid retractor (Fig. 4).[16] The "Chedly lid retractor" is an insulated lid retractor

FIGURE 5. The 3 lower eyelid fat pads removed separately.

FIGURE 7. Before blepharoplasty.

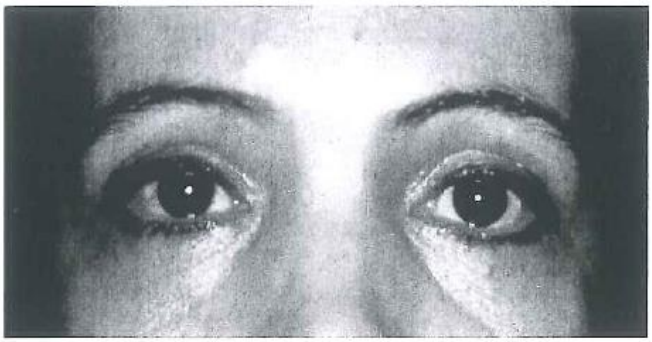

FIGURE 8. Postoperative view. Nice symmetrical result.

FIGURE 10. After blepharoplasty.

safe to use with the radiosurgical unit or CO_2 laser; it retracts the lid on its full length and the whole field of fat prolapsing is well exposed. Therefore, there is an easy access to the fat to be resected from each of the 3 fat pockets; this also facilitates the assessment of fat to be resected and allows cauterization of any occurring bleeding (The Chedly lid retractor can also be used in upper lid blepharoplasty, in ptosis surgery, in trichiasis, and in various other lid surgical procedures) (Fig. 4).

The radiofrequency unit is set on a fully rectified waveform for blended cutting and homeostasis (50% + 50%). The power is set at its lowest power and increased by increments of 0.5 until a smooth cut without tissue drag is achieved through conjunctiva and lower lid retractor. Quick, light, smooth strokes are used to make a fine exact incision without charring, with minimal lateral heat spread or collateral tissue damage. An incision through conjunctiva and retractors is made at the lower border of the tarsal plate for the medial, the central, and the lateral fat pad (if a lateral fat prolapse has been assessed preoperatively). With the lid plate pressure applied on the globe, the fat pad is teased out, held with a forceps, and resected using the radiosurgical unit. The fat is easily resected, and if there is any bleeding, it is easily controlled by simply grasping the bleeding tissue with the forceps and touching it with the electrode. There is no need to change instruments or to clamp the fat with a hemostat across its base before resecting it and cauterizing the fat stump as is done traditionally.

FIGURE 9. Before 4 lids blepharoplasty.

The amount of fat to be removed (Figs. 5 and 6) is assessed preoperatively, for the central, the nasal, and the lateral fat pad, and helped by the surgeon's experience. With the mini-incision technique, there is an accurate evaluation of fat to be removed; the fat is resected for each fat pocket away from the muscle structures. There is no need for sutures. A combination of antibiotic-steroids is placed in the fornix, and ice packs are placed on the closed eyes.

■ DISCUSSION

Cosmetic surgery and cosmetic eyelid surgery, in particular, is a field where the surgeon must reach excellence in his results. Therefore, blepharoplasty needs to be performed with extreme caution by a well-trained surgeon, who is familiar with the eyelid anatomy, thereby avoiding complications and poor results and allowing the patient a fast recovery.

The mini-incision transconjunctival blepharoplasty helps achieve these goals. The newly designed Chedly lid retractor helps the exposure and facilitates the procedure. The Chedly lid retractor avoids having only limited exposure of the surgical field as is the case with conventional retractor, requiring your assistant to move a conventional retractor from one side of the eyelid to the other side following the fat resection site. This reduces the trauma to the surgical field and, therefore, reduces the surgical time and allows a faster recovery for the patient. The standard and traditional lower lid blepharoplasty, with incision all the way from the punctum to the lateral canthal angle, with almost a total disinsertion of the lower lid retractors, could result in lower lid ectropion, lower lid retraction, conjunctival prolapse, injury to the canalicular system, and injury to the inferior oblique muscle. With the mini-incision transconjunctival lower lid blepharoplasty, the above complications are avoided; the recovery is very fast with minimal edema and minimal ecchymosis. The patient can be in his or her office on the third day after the surgery. It is a weekend procedure. This is due not only to the mini-trauma caused by the technique but also to the use of the radiosurgical unit, which allows us—with quick light smooth strokes—to make a

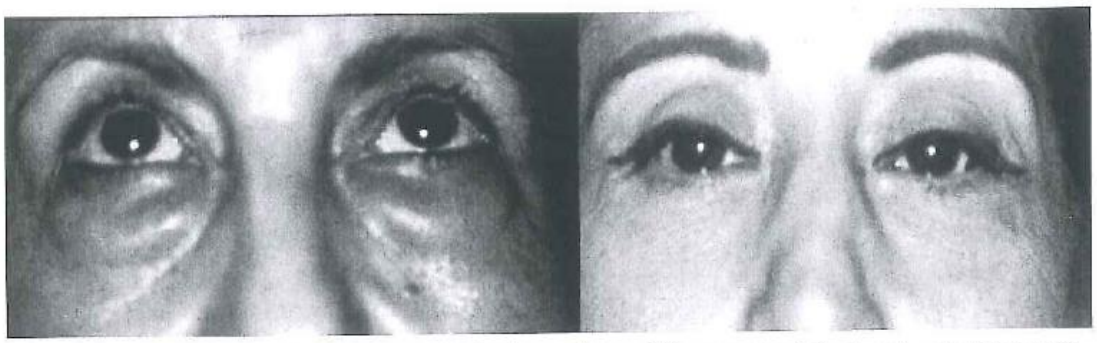

FIGURE 11. Before and after mini-incision lower-lid blepharoplasty. Nice symmetrical and natural result.

fine incision and bloodless fat resection without charring, with minimal lateral heat spread or collateral tissue damage. The mini-incision for lower lid blepharoplasty is about minimal manipulation, minimal trauma, and minimal recovery time (Figs. 6–11).

■ CONCLUSIONS

In cosmetic eyelid surgery, there is a no tolerance for error and complications. A patient selection, a thorough evaluation of the deformity, and an accurate surgical procedure with the proper instrumentation are the keys to obtaining optimal results.

The strategy in lower lid blepharoplasty is to remove the herniated orbital fat without adversity in altering the shape and contour of the lid fissure.

Radiosurgery helps control bleeding and tissue damage during dissection, allowing a faster surgery and a quick recovery.

The thinner the electrode, the less lateral heat damage is induced. However, the downside of a thinner tip is that it provides less hemostasis than a wider one.

The empire needle is ideal for lower lid blepharoplasty. The RF devise is set on cut-coag mode.

The incision at the lowest border of the tarsal plate does not require sutures.

You do not need to clamp, cut, and cauterize the fat when you use the radiofrequency devise.

For upper lid blepharoplasty, the skin is incised on a cutting mode to reduce the collateral tissue damage. The Ellman Surgitron is then set on cut-coag mode for skin resection.

The mini-incision technique reduces the surgical manipulation, provides accurate evaluation of fat removal with no suture, and allows fast recovery.

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