

Stop Blaming the Septum

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Purpose: To identify if isolated surgical violation of the orbital septum predisposes to “middle lamellar” scarring and subsequent postblepharoplasty lower eyelid retraction.

Methods: A retrospective review of patients who underwent transconjunctival blepharoplasty in either a postseptal (orbital septum undisturbed) or preseptal (septal incision required) plane was performed. Patients undergoing skin excision, orbicularis muscle plication, and canthal suspension were excluded. The presence of clinically apparent postoperative lower eyelid retraction and limitation of forced superior eyelid excursion (forced traction testing) were assessed.

Results: Two hundred eighty-eight patients (576 eyelids) were evaluated. One hundred fifty-eight patients (316 eyelids, 55%) had transconjunctival blepharoplasty performed in a postseptal plane and 130 patients (260 eyelids, 45%) in a preseptal plane. Two hundred two patients (404 eyelids, 70%) had forced traction testing performed postoperatively. After surgery, there were no patient complaints of change in lower eyelid position, subjective physician assessment of clinically apparent lower eyelid retraction, and only 1 case (0.5%) of a positive forced traction test in a patient with conjunctival scarring after significant postoperative infection.

Conclusions: Lower eyelid scars leading to eyelid retraction after blepharoplasty are not likely related to “isolated” orbital septal scars (middle lamellar scars). Their designation as a “multilamellar scar” is more appropriate.

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Postblepharoplasty lower eyelid retraction (PBLER) has been linked to transcutaneous surgery and 3 primary physical findings: 1) unaddressed eyelid laxity, 2) anterior lamellar shortage, and 3) a “middle lamellar scar.”^{1–9} The middle eyelid lamella has been consistently referenced to in the literature as the orbital septum.^{10–12} While the authors agree that internal

eyelid scarring can be a critical component of PBLER, they have long questioned the validity of designating this as a scar of the orbital septum (middle lamella) exclusively. Many reports have described septal manipulations such as resection,¹³ cautery,^{14–16} and repositioning (septal reset)^{17–19} in association with blepharoplasty without an increased incidence of lower eyelid retraction. In addition, in transconjunctival blepharoplasty (TCB), the orbital septum is, by definition, violated when a preseptal approach to eyelid/orbital fat is preferred. Lower eyelid retraction has not been a prominent postoperative problem in these cases.^{20–23}

In an effort to determine if a clinically significant middle lamellar scar develops after lower blepharoplasty surgery, the authors performed a retrospective analysis of patients who underwent TCB in either the preseptal (requiring septal division to access fat) or postseptal (direct approach to fat with preservation of orbital septum) planes. This allowed a comparison of outcome between approaches in which septal division was the differentiating variable. In both approaches, there were no patient complaints of a change in lower eyelid position after surgery, no surgeon assessment of clinically obvious postoperative lower eyelid retraction, and only 1 case of a positive postoperative forced traction test (limitation of superior eyelid distraction)²⁴ in a patient who developed a cicatricial entropion related to conjunctival scarring. The study findings confirm the supposition that a scar of the orbital septum (middle lamella) in isolation is not typically a clinically significant cause of PBLER and that eyelid scars leading to PBLER are more likely multilamellar in nature.

METHODS

A retrospective chart review of patients undergoing isolated TCB, with or without fat transposition, by the authors from January 2012 to January 2014 was performed. Patients who had adjunctive canthal or orbicularis suspension, skin excision, cutaneous laser, a history of trauma, thyroid or other eyelid inflammatory disease, previous surgery, or presented with lower eyelid malposition were excluded. All patients were from the private practices of the authors, and all cases were performed at outpatient surgical centers not affiliated with the hospitals at which the surgeons maintained privileges. No patient or patient records included in this report are associated with these institutions. As such, an institutional review board approval was not attained. Informed consent was obtained for each procedure, and the review adhered to the standards of the Declaration of Helsinki and was compliant with the Health Insurance Portability and Accountability Act. Two of the authors (J.P.F., A.J.) performed all procedures in the preseptal plane (between

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the orbicularis muscle and orbital septum), requiring division of the orbital septum to access eyelid/orbital fat, and the other 2 of the authors (R.S., G.G.M.), in the postseptal plane, allowing direct entry to fat while leaving the septum undisturbed. Patients were seen at routine follow-up periods postoperatively, assessed for limitation of forced upwards lower eyelid displacement (forced traction testing),²⁴ and evaluated for lower eyelid malposition (retraction and ectropion) and other complications.

SURGICAL PROCEDURE

All surgical procedures were performed under conscious sedation or general anesthesia depending on associated procedures and patient preference. The lower eyelids were anesthetized with 2 ml of 1% lidocaine with 1:100:000 Epinephrine on each side. When surgery was performed preseptally, an incision was made just below the tarsus through conjunctiva and lower eyelid retractors the full width of the lower eyelid. Blunt dissection with a cotton-tip applicator ensued in the postorbicular fascial plane to the orbital rim. The orbital septum was then divided to access fat (Fig.). When a postseptal approach was selected, the lower eyelid was inferiorly displaced with simultaneous globe retropulsion as previously described.²⁵ This ballooned the conjunctiva forward better exposing the depths of the posterior eyelid lamella. An incision was made toward the fornix below the fusion point of the orbital septum and lower eyelid retractors, and fat was entered directly (septum left intact) (Fig.). Fat was then either excised or transposed into the subperiosteal or supraperiosteal plane as previously described.^{20,21,23,26–28} The conjunctival wound was either allowed to heal by secondary intent or sutured with 1–2 buried, interrupted 6-0 Plain Gut sutures. Adjunctive aesthetic facial procedures were performed as planned prior to surgery (brow lifts, upper blepharoplasty, fat transfer, facelift, etc.).

RESULTS

Two hundred eighty-eight patients (576 eyelids) were included in the study. Two hundred seventeen patients (75%) were women and 71 patients (25%) were men. The mean patient age was 55 years (range, 32–90 years), and the mean follow up after surgery was 6 months (range, 2–11 months). One hundred fifty-eight patients (55%) had TCB performed in a postseptal plane and 130 patients (45%) in a preseptal plane. One hundred seventy-three patients (60%) had simultaneous fat transposition, and 156 patients (54%) other non-lower eyelid procedures, including browlifts, upper blepharoplasty, facial fat grafting, and rhytidectomy. There were no patient complaints of postoperative change in lower eyelid position, and no surgeon subjectively noted a clinically apparent case of lower eyelid retraction. One patient, who had surgery in the postseptal plane, developed a cicatricial entropion. This was related to postoperative infection with subsequent conjunctival scarring requiring revision with buccal mucous membrane grafting. This patient's revision yielded an acceptable result. Seventeen patients (6%) had transient postoperative chemosis, 2 of which (12%) developed self-limiting mechanical ectropion resolving in each case within 3 weeks with or without topical and/or oral steroid medication. Two hundred two patients (70%) had forced traction testing performed postoperatively. Only 1 patient (0.5%), who developed the postoperative entropion, developed clinically significant reduction in forced upwards displacement of the affected eyelid postoperatively.

DISCUSSION

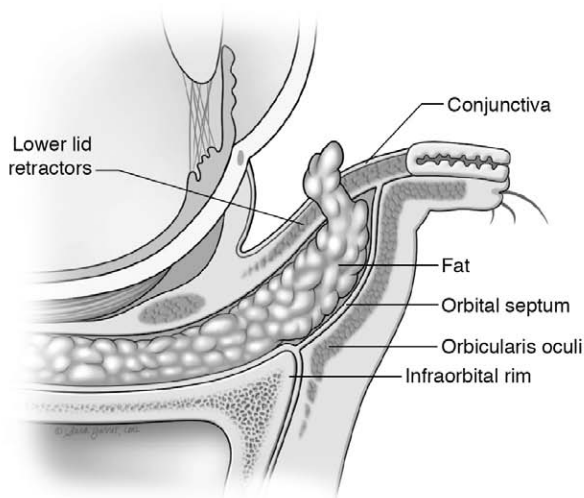
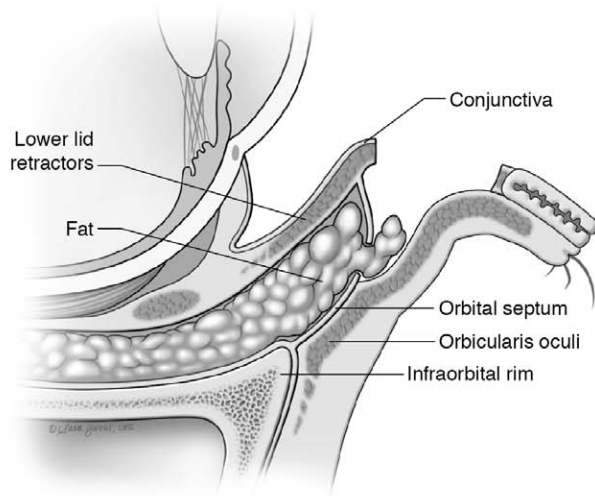
Eyelid scarring can play a prominent role in the development of PBLER, and the cicatrix can occur in any layer of the lower eyelid. The lower eyelid has traditionally been divided into anterior (skin/muscle), middle (orbital septum), and posterior (conjunctiva/tarsus/lower eyelid retractors) layers or lamellae.^{10–12} It

has been the middle lamella, or the orbital septum, which has been considered the main culprit in internal eyelid scarring and subsequent retraction after lower blepharoplasty.^{11,12,29–31} While a septal scar surely contributes to PBLER, numerous reports have shown that surgical manipulation of the septum need not lead to PBLER.^{13–23} In addition, the authors of this report (J.P.F., A.J.) who routinely employ a preseptal approach to TCB (requiring septal division) have not noted postoperative cicatricial changes leading to eyelid retraction. As such, it is the authors belief that in trained and experienced hands, a scar significant enough to cause eyelid retraction after standard primary lower blepharoplasty “typically” does not occur from disruption of the septum only. This study evaluated this point by comparing eyelids that did or did not undergo septal division during lower blepharoplasty.

Two hundred eighty-eight patients underwent lower TCB. Forty-five percent of patients had surgery performed with a preseptal dissection, mandating septal incision. The remaining 55% of patients had surgery performed via a postseptal approach leaving the orbital septum intact (Fig.). As patients undergoing canthal, orbicularis muscle, and skin manipulation were excluded in this report, the only variable in surgical approaches between the patient groups was septal division. Fat transposition was an added adjunct when deemed appropriate, but this manipulation has not typically been associated with lower eyelid retraction, and a roughly equal number of procedures were performed with each surgical approach. If isolated surgical manipulation of the septum, in primary lower blepharoplasty without a history of eyelid trauma or an inflammatory process, does lead to an eyelid cicatrix with retraction of clinical significance, it should have occurred to some degree in this series. Yet, it did not. Not one patient in this study complained of a change in eyelid position after surgery, and surgeons did not subjectively note clinical retraction in any patient. This is not surprising, as PBLER is generally not associated with transconjunctival surgery.^{10–12,29,32} However, it does suggest that the septum, as an isolated structure, is generally not a cause of surgically induced internal eyelid scars of clinical relevance and that other factors must be involved in the development of eyelid scars and subsequent lower eyelid retraction.

Of note is that it has previously been suggested that accessing inferior orbital/lower eyelid fat anteriorly during blepharoplasty requires division of the postorbicularis fascia and not the septum.³³ The belief is that eyelid fat prominence is due to a separation of the distal septum from the capsulopalpebral fascia allowing fat to protrude forward—that is, a true “septal hernia.”^{33,34} In this scenario, isolating fat preseptally in TCB would not require a septal incision. While this may occur in some cases, the authors in this report who performed surgery preseptally did not find this to be the case. They paid strict attention to pulling on the white tissue overlying fat in the prespatal dissection group. In all cases, this traction test revealed tissue fixed to the orbital rim consistent with the orbital septum.

Much of what is known about PBLER is from reports/studies which are over 30 years old. At that time, the most common procedure performed for lower eyelid aesthetic rejuvenation was a transcutaneous approach lower blepharoplasty in which the skin, muscle, and septum are violated during surgery. This is the patient population that develops PBLER,^{22,29,32} with a reported incidence of 6% to 20%.²² However, in this approach, there is no way to isolate what the effect of septal division is on the outcome of surgery. In the current report, the authors limited gross tissue disruption to the septum only by using the 2 described transconjunctival approaches to access fat. This reduces the tissue planes surgically divided from 3 to 1 (septum only), clearly a better measure of how septal violation affects

Transconjunctival Post-septal Approach**Transconjunctival Pre-septal Approach**

Artists drawing of transconjunctival postseptal (**top**) and pre-septal (**below**) approach to eyelid/orbital fat in lower blepharoplasty. Note in the postseptal approach, the orbital septum is undisturbed, and in the preseptal approach, it is divided.

lower eyelid position after surgery. The authors would like to emphasize that they are not suggesting that septal division does not lead to scar formation. Certainly, histopathologic evaluation of this tissue would show typical changes associated with scarring. However, this is a normal repair mechanism just as is a scar in the conjunctiva after TCB (which rarely will lead to cicatricial entropion). The argument is not that a scar does not form, but rather that in the hands of a well-trained and experienced surgeon, it is typically not “clinically significant.”

The authors are also aware that in particular cases septal disruption can lead to a cicatrix with eyelid retraction. For instance, if the septum is imbricated to the orbital rim in a misguided attempt at wound closure, or if it is aggressively surgically traumatized, scarring with secondary eyelid malposition can occur. However, these instances are not the norm amongst well-trained aesthetic eyelid surgeons. In a recent personal communication with a respected oculofacial plastic surgeon

(Jonathan Dutton, M.D., Oct 16, 2014), one of the authors (G.G.M.) was informed that this surgeon has seen lower eyelid retraction, related to a septal scar, after TCB in patients referred to him. The authors believe that this is an unusual circumstance, which is more likely related to technique than to tissue response. In a combined 55 years of practice among the 4 authors of this report, PBLER after TCB, in either plane of dissection, has only been noted in 2 cases. In each case, it was not a cicatricial process but rather related to over-resection of fat with unaddressed lower eyelid laxity in the presence of negative vector eyelid topography. The assumption was that loss of inferior eyelid support from overzealous fat debulking and poor canthal tendon integrity in the setting of a devolumized midface allowed inferior eyelid margin migration. The authors concede that other surgeons may have experienced otherwise (practice patterns vary). However, as stated, it is documented that PBLER is a very rare occurrence after transconjunctival surgery.^{10-12,29,32}

In a recent report identifying the incidence of etiologic factors present on initial examination of patients with PBLER, it was found that all cases (100%) occurred after transcutaneous surgery (0% after TCB) and that orbicularis weakness was the most common finding present (86% of eyelids).³² If all patients who presented with PBLER had transcutaneous surgery, then this approach to surgery is the predisposing event. As orbicularis weakness was such a prevalent finding and each patient had an infraciliary incision for surgery, it supports (as previously stated) that the skin/muscle/septal incision is the critical initiating factor leading to eyelid malposition, “not” an isolated septal event. In fact, in cases of TCB when skin pinch is added as an adjunct, there is also a very low incidence of PBLER.²⁹ This suggests that isolated skin excision without added muscle/septal violation is also probably not a clinically significant cause of lower eyelid retraction after blepharoplasty. In the end, it seems that the orbicularis muscle (an anterior lamellar structure) may play a role in this process.

The main limitation of this study is that exact preoperative and postoperative margin reflex distance 2 (MRD2) measurements were not taken. As the study findings are from a retrospective analysis of patients undergoing cosmetic blepharoplasty, and not from a prospective evaluation of lower eyelid position after blepharoplasty, detailed measurements of preoperative (MRD2) were not routinely performed. As such, the authors cannot say for sure that there were not nominal changes in eyelid position after surgery. However, all the authors are diligent in assessing abnormalities in lower eyelid position when present. Also, all patients who manifested lower eyelid malposition on initial evaluation were excluded from the report, and no such obvious changes were noted on physical or photographic evaluation of patients after surgery. As exact MRD2 measurements were not documented, the authors emphasize that there were no subjective “clinically relevant” changes in eyelid position after surgery. Also supportive of this is that no patient complained of a change in eyelid position after surgery. In an aesthetic patient population, any such changes would surely be voiced. The authors believe that this is compelling evidence that lower eyelid position was stable after surgery. The other study limitation is that in those patients who underwent midface and/or lower eyelid fat transfer, support from this tissue substrate may have masked lower eyelid retraction in the patient group who underwent septal division. In a recent report, it was shown that lower eyelid and malar fat grafting can elevate the lower eyelid 0.5 mm at almost 1-year follow up.³⁵ However, the authors of that report³⁵ did not state if their patient population had concomitant blepharoplasty, and the study did not suggest that malar and eyelid fat grafting prevents eyelid retraction after blepharoplasty. Still, the current authors agree this is a potential confounding variable.

The only true way to assess the effect of septal violation on lower eyelid position after blepharoplasty is to compare outcomes of surgery when the septum is preserved or divided. The belief that middle lamellar or orbital septal scars lead to PBLER emerged from outcomes to transcutaneous lower blepharoplasty, which is a procedure with too many confounding variables (skin and muscle incision/excision, septal incision) to substantiate this statement. Transconjunctival blepharoplasty, on the other hand, by virtue of its inherent anatomic options for plane of dissection, allows this comparison and better assesses such conclusions. As the data from this report show that there were no patient complaints, or subjective physician assessment, of PBLER, and that forced traction testing (performed in 70% of patients) of patients was free in all but 1 case (infection related), the authors believe that redefining PBLER eyelid scars as multilamellar, rather than middle lamellar, is appropriate. This, in turn, emphasizes the need to protect other eyelid structures (i.e., orbicularis muscle) besides the orbital septum to prevent PBLER. Future studies, potentially guided by ultrasound imaging, electromyography, and histopathology, may prove very useful to this end.

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