

Autologous Fat Grafting for Treating Blepharoplasty-induced Lower Eyelid Retraction

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Summary: Autologous fat grafting for blepharoplasty-induced lower eyelid retraction offers potential for a long-term solution while avoiding the morbidity associated with posterior lamellar spacer grafts. By combining traditional methods of lifting the retracted lower eyelid with autologous fat grafting, both functional and aesthetic concerns can be successfully addressed in these patients. (*Plast Reconstr Surg Glob Open* 2016;4:e1190; doi: 10.1097/GOX.0000000000001190; Published online 23 December 2016.)

Blepharoplasty-induced lower eyelid retraction remains a challenging condition to treat successfully. Lower eyelid malposition may be associated with symptoms of corneal exposure including tearing, photophobia, epiphora, and foreign-body sensation.¹ Numerous techniques have been described to correct this condition, which include the use of posterior spacers in conjunction with eyelid-lifting measures.

Various techniques of autologous fat grafting have been described and are becoming increasingly popular as a primary surgical procedure and as an adjunct to other procedures.^{2,3} The authors have considerable experience with the use of periocular fat grafting and fillers in their approach to rejuvenation of the periocular aesthetic unit and management of cicatricial ectropion.⁴⁻⁶ This report summarizes the authors' surgical techniques and results, which suggest a real benefit from combining autologous fat grafting with traditional lifting techniques as a substitute for using a posterior spacer graft in the management of the retracted lower eyelid after blepharoplasty.

PATIENTS AND METHODS

Surgical Technique

Autologous fat harvesting was performed using a Coleman-type technique.⁷ Fat grafting was performed in combination with various lifting procedures, as a substi-

tute to a posterior spacer graft, to function as a scaffold that provides additional vertical support to the eyelid.

1. Fat harvesting and preparation: This surgical approach was performed by the senior authors (FB, JF, and MH) in 10 bilateral eyelid malposition cases for a total of 20 eyelid elevation procedures. All cases were performed under intravenous propofol anesthesia with supplemental local anesthesia. Two percent of Xylocaine with 1:100,000 epinephrine was injected around the lower eyelids and in the submental area with a 30-gauge needle. Tumescant anesthetic agent was infiltrated in the outer thigh or suprapubic area where liposuction was performed. A 2-hole Coleman harvesting cannula with a blunt tip was attached to a 10-ml Luer-Lok syringe, enabling manual aspiration of the fat. Fat was manually filtered and then placed into 3-ml syringes and then placed upright in a sterile bowl to allow separation of the fat. Once the fat settled, the infra- and supranatant were decanted out, leaving the pure yellow fat. The pure fat was transferred to 1-ml syringes via a Luer-Lok connector.
2. Fat injection and lifting procedures: All 3 senior surgeons performed similar fat injection techniques and lifting procedures as indicated. Any necessary lifting procedures were performed concurrently with fat preparation and before fat injection. Lifting procedures included inferior retractor recession and lateral canthoplasty. Autologous fat was injected into the lower eyelid hollow below the orbicularis oculi muscle plane in all cases with 1-ml Luer-Lok syringes and blunt fat-injecting cannulae. A range of 3 to 6ml of harvested fat was injected per side. Previous experience with fat grafting indicated that 33% to 50% would likely be resorbed, so overcorrection was performed in all cases. Harvested fat was placed in all cases in small aliquots that were delivered with several fanning passes to avoid clumping of

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Fig. 1. Harvested fat was placed in all cases in small aliquots that were delivered with several fanning passes to avoid clumping of the fat and improve take and contour. Fat injections were placed from below in the cheek area spanning the orbital bone and septum.

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RESULTS

Final patient satisfaction with the aesthetic results in our case series has been very high, summarized in Table 1. There were no cases of reoperation and a mean follow-up period of over 16 months postoperatively. Mean lower eyelid elevation achieved was 5 mm. Clinical photographs of the results are shown in Figures 2 and 3. Autologous fat grafting helped improve the eyelid malposition and at the same time the accompanying infraorbital hollowness after excessive subtractive lower

eyelid blepharoplasty in all cases. Minor side effects of injections included bruising and mild contour irregularities at the sites of injection. Contour irregularities did not worsen over time, as further fat resorption occurred. There were no vision-threatening complications from autologous fat injections.

DISCUSSION

The principal role of fat grafting in the setting of postblepharoplasty ectropion is to push/stretch the anterior and middle lamellae up across the entire horizontal length of the retracted lower eyelid while the posterior lamella is being released. At the same time, retractor release and lateral tightening remain necessary to further elevate and stabilize the retracted eyelid. Fat stem cells may also improve internal scarring and reduce further cicatrix formation.⁸ In this preliminary series, we were able to provide significant improvement in eyelid position while avoiding the use of a posterior lamellar spacer graft. Posterior lamella spacers have not been used by the authors in surgical management of blepharoplasty-induced lower eyelid retraction for some years.

Goldberg et al⁹ successfully utilized hyaluronic acid gel filler for the management of cases of less-severe postblepharoplasty lower eyelid retraction where the lateral canthus did not require repositioning, working via an adjustable stenting and tissue expansion effect. Fezza¹⁰ described successful treatment of lower eyelid cicatricial ectropion also using hyaluronic acid filler. Stretching of the anterior lamella was achieved by adding hyaluronic volume, avoiding a skin graft. This was similar to our premise of adding fat injections to bolster the lower eyelid and improve retraction by filling.

Most of the improvement in lower eyelid elevation results from the surgical lifting procedures. Fat grafting improved infraorbital hollowness in all cases. The

Table 1. Surgical Procedures Performed: Results of Autologous Fat Grafting and Surgical Lifting

	Demographics	Adjunct Procedures Performed	Volume of Fat Injected per Side (ml)	Amount of Lower Eyelid Elevation (mm)	Patient Satisfaction
Patient 1	43-y-old woman	Lateral canthoplasty and inferior rectus recession	4	5	High
Patient 2	66-y-old woman	Lateral canthoplasty and inferior rectus recession	4.5	6	High
Patient 3	47-y-old woman	Lateral canthoplasty and inferior rectus recession	3	4	High
Patient 4	50-y-old woman	Lateral canthoplasty and inferior rectus recession	3.5	4	High
Patient 5	54-y-old woman	Lateral canthoplasty and inferior rectus recession	6	5.5	High
Patient 6	48-y-old woman	Lateral canthoplasty and inferior rectus recession	4	5.5	High
Patient 7	52-y-old woman	Lateral canthoplasty and inferior rectus recession	3	5	High
Patient 8	55-y-old woman	Lateral canthoplasty and inferior rectus recession	5	5.5	High
Patient 9	47-y-old woman	Lateral canthoplasty and inferior rectus recession	4	5.5	High
Patient 10	59-y-old man	Lateral canthoplasty and inferior rectus recession	3	4	High

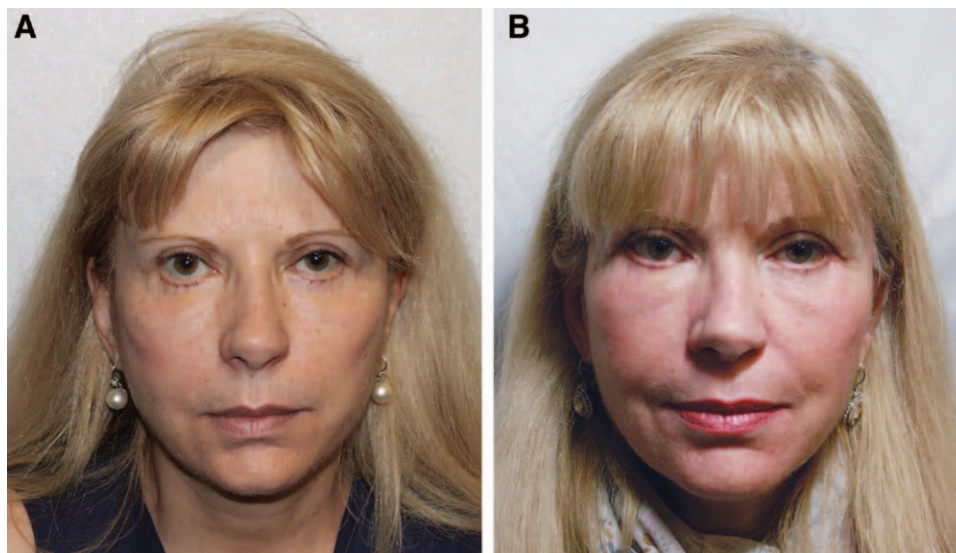


Fig. 2. A patient with previous 4-eyelid blepharoplasty and persistent lower eyelid retraction. The patient underwent inferior retractor recession and lateral canthoplasty combined with 5 ml of autologous fat grafting per side. A, Pretreatment and (B) 2-month follow-up, with improvement in retraction.

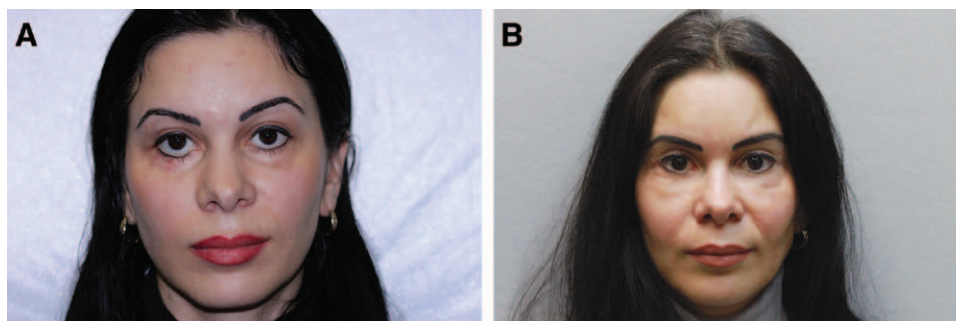


Fig. 3. A patient with previous 4-eyelid blepharoplasty and persistent lower eyelid retraction. The patient underwent inferior retractor recession and lateral canthoplasty combined with 4 ml of autologous fat grafting per side. A, Pretreatment and (B) 6-month follow-up, with improvement in retraction.

authors agree that it is impossible to rate the amount of effect provided by the 2 different procedures. All the mentioned additional procedures aim to elevate the lateral canthal angle while the central and medial support is provided by the fat, similar to the effect of a posterior spacer. The authors typically inject 3 ml per side and even up to 8 ml on a severe case if the patient has negative vector and severe eyelid retraction. Judging the right amount of fat to inject depends on patient anatomy, goals, and quality of the fat.

CONCLUSIONS

In conclusion, the authors' experience suggests that for management of blepharoplasty-induced lower eyelid retraction, autologous fat grafting plays a useful role in optimizing both the functional and aesthetic rehabilitation, in combination with standard lifting techniques. This is the first case series demonstrating the use of autologous fat grafting as an adjunct procedure for the correction of postblepharoplasty lower eyelid retraction.

Prospective studies and longer follow-up of more patients are needed to confirm the authors' successful use of this treatment modality. Further studies may include the use of fat grafting alone to correct postblepharoplasty lower eyelid retraction.

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PATIENT CONSENT

Patients provided written consent for the use of their images.

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