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Lower Blepharoplasty in Eyelids Previously Injected With Hyaluronic Acid Gel Filler

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Abstract

As under-eye filler injection has become widespread, it is important to understand possible differences and outcome of lower blepharoplasty in these patients. Herein, we describe our experience to address under-eye fat prolapse (via lower blepharoplasty) in patients with "residual fullness" after previous eyelid hyaluronic acid gel injections. Retrospective analysis of patients undergoing (transconjunctival) lower blepharoplasty (with fat repositioning) by one surgeon in eyelids previously injected with hyaluronic acid gel (+/− hyaluronidase), with "residual fullness." Minimum follow-up time was 6 months. Preoperative and postoperative photographs at longest follow-up visit were evaluated by blind observers. Patient satisfaction was recorded using questionnaire. Surgical anatomy was observed. Total of 15 patients (28 eyelids; 13 females, 2 males) underwent lower blepharoplasty in eyelids previously injected with hyaluronic acid gel (latter to treat under-eye hollowness [tear trough deformity] and/or to camouflage under-eye fat prolapse ["bags"]). All patients had at least one prior hyaluronic acid gel injection with "residual fullness." Ten patients had also received at least 1 previous hyaluronidase injection. Mean age was 47 years (range, 28-68 years). The surgical anatomy was slightly to moderately distorted with soft tissues (orbital fat, sub-orbicularis oculi fat, orbicularis oculi muscle) being more "spongy" with less clear delineation of surgical landmarks, septa, and fat pads. All patients reported satisfaction with surgical outcome, with no complications or reoperations. Three patients received "touch-up" filler injections. "Revision" lower blepharoplasty can be done safely and effectively to address "residual fullness" in eyelid previously injected with hyaluronic acid gel (+/− hyaluronidase).

Keywords

lower blepharoplasty, hyaluronic acid gel, eyelid filler, tear trough deformity, cosmetic eyelid surgery, revision eyelid surgery

Cross-linked hyaluronic acid gel has been commercially available for soft-tissue augmentation in Canada and Europe since 1997 and was approved for use by the US Food and Drug Administration in December 2003.[1] In addition to its cosmetic use in filling facial rhytids, it is now widely used to treat under-eye hollowness (aka tear trough deformity) and/or to camouflage under-eye fat prolapse or "bags."[2-4] However, under-eye hyaluronic acid gel filler injection has several limitations, besides its relatively temporary effect and possible skin changes. Improper placement or excessive amount of filler injection can create unhappy patients. Improper selection of patients can also result in unsatisfactory outcomes as patients with true fat prolapse may be better served with lower blepharoplasty rather than filler injection with unnatural "puffy" results. Many of these patients later opt to receive hyaluronidase injections to remove the filler with some having worsening results. Hence, many patients who have had under-eye hyaluronic acid gel treatment still end up wanting a more permanent "fix" through lower blepharoplasty.

There is also the question of short-term and long-term anatomical changes that can occur with fill injection in the under-eye area and its implication when performing future lower blepharoplasty. Herein, we describe the author's experience to address under-eye fat prolapse (via transconjunctival lower blepharoplasty with fat repositioning) in patients with "residual fullness" after previous hyaluronic acid injections.

Methods

In this retrospective study, charts of consecutive patients undergoing transconjunctival lower blepharoplasty (with fat repositioning) in eyelids previously injected with hyaluronic acid gel were reviewed. All surgeries were performed by one surgeon (M.T.) in private practice from January 2013 to December

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Figure 1. Forty-nine-year-old female, with history of 3 cycles of hyaluronic acid gel injections and hyaluronidase to improve under-eye hollows (tear trough deformity) and "bags," underwent transconjunctival lower blepharoplasty with fat repositioning. (A and B) Preoperative and (C and D) 6 months postoperative photographs.

2015. 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, adherent to institutional review board approval standards. Written consent for publication of clinical photographs was also obtained from each patient and kept on file. The surgical procedure was performed according to previously published technique.[5,6] If there was evidence of filler present, hyaluronidase was injected either prior or during the operation (mixed with local anesthetic).

The surgical anatomy was observed. Preoperative and postoperative photographs at longest follow-up visit were used for analysis. All photographs were obtained by the author (M.T.) using a standardized technique in the frontal position with the eyelids open and facial muscles relaxed. Blind observers analyzed the photos. Patients without digital preoperative and postoperative photographs for review were excluded from the study. Patients with less than 6 months follow-up were also excluded. Patient satisfaction was recorded using questionnaire. In addition to customary questions/examination between the patient and the surgeon, a phone call was placed by the surgical coordinator to the patient after the latest postoperative follow-up appointment (average 9 months; range, 6 months to 2 years).

Results

The surgical anatomy was slightly to moderately distorted with the soft tissues (orbital fat, SOOF fat, orbicularis oculi muscle) being more "spongy" with less clear delineation of surgical landmarks, septa, and fat pads. The "residual fullness" was orbital fat prolapse in all patients, mixed with filler material in 7 cases.

Total of 15 patients (28 eyelids) underwent successful lower blepharoplasty in eyelids previously injected with hyaluronic acid gel (latter not by the author). There were 13 females and 2 males, with mean age of 47 years (range, 28-68 years). All patients had at least 1 prior treatment with hyaluronic acid gel injection with "residual fullness." Ten patients had also received at least 1 previous hyaluronidase injection by previous injector. The author injected 3 patients with additional hyaluronidase 1 to 2 months prior to surgery, without significant change. Additional 4 patients received hyaluronidase injection during the operation (mixed with local anesthetic). Grossly visible filler material in the surgical planes either disintegrated or were removed using blunt dissection.

The average follow-up after surgery was 9 months (range of 6 months to 2 years). Subjective patient satisfaction was very high in all cases. There were no complications and no reoperations. The patients received "touch-up" hyaluronic acid gel injection 1 to 3 months after lower blepharoplasty in areas of relative hollowness or to improve contour irregularities, likely because they did not have enough repositioned fat to efface the eyelid/cheek junction. Representative examples are shown in Figures 1 to 3.

Discussion

Injectable tissue fillers, namely hyaluronic acid gel, have a definite role as an alternative to invasive surgical procedures to treat under-eye hollowness and prolapsed fat ("bags").[2-4] However, they have many limitations as already described. Moreover,

Figure 2. Forty-five-year-old female, with history of 2 cycles of hyaluronic acid gel injections and hyaluronidase to improve under-eye hollowness (tear trough deformity) and "bags," underwent transconjunctival lower blepharoplasty with fat repositioning plus conservative skin pinch excision. (A and B) Preoperative and (C and D) 6 months postoperative photographs.

their short-term and long-term effect on lower eyelid anatomy remains unknown, especially as greater number of younger patients are receiving these treatments, who are perhaps expected to have future lower blepharoplasty in their lifetime.

In this study, we aimed to understand the gross anatomical changes, pertinent to surgical anatomy, that can occur in patients undergoing transconjunctival lower blepharoplasty (with fat repositioning) in patients who had previously received hyaluronic acid gel injections (with or without hyaluronidase). The author is not aware of any other such study. We found that there are some gross changes which occur that are important to understand. The soft tissue anatomy, including orbital fat, SOOF fat, and orbicularis oculi muscle, become more "spongy" with less delineation of surgical landmarks, septa, and fat pads. In essence, the surgical procedure becomes that of a "revision" lower blepharoplasty, so a good understanding of the anatomy is critical in achieving the best outcome. More blunt dissection should be utilized, rather than sharp dissection, in the planes of orbital fat and septa.

The aesthetic results of our study were highly satisfactory. There are important points to consider here. Most of these patients had undergone prior filler injection, and perhaps followed by hyaluronidase injection, with unhappy results, so they were very eager to see improvement. Moreover, this author has observed worsening of under-eye fat prolapse in patients with prior trauma (iatrogenic or not) with resultant edema, which can theoretically cause attenuation of septa with resultant worsening prolapse of orbital fat pads and/or hastened progression of SOOF fat "shrinkage." Many of these patients had undergone further filler injection to further camouflage the "bags" with unhappy outcome. Many of these patients have also received hyaluronidase injection to remove excess filler, with some having had multiple cycles of filler and hyaluronidase injections, all with unsatisfactory outcome. The injector needs to be aware of phenomenon of worsening fat prolapse and consider lower blepharoplasty as treatment, instead of assuming that the "residual" fullness is filler or edema only.

Figure 3. Sixty-one-year-old female, with history of previous lower blepharoplasty followed by multiple cycles of hyaluronic acid gel injections and hyaluronidase to improve under-eye hollowness (tear trough deformity) and "bags," underwent transconjunctival lower blepharoplasty with "spongy tissue" removal. (A) Preoperative and (B) 6 months postoperative photographs.

The effect of hyaluronidase on the eyelid tissue cannot be determined from this study given confounding variable

of prior filler injection with tissue changes as noted above. However, the author believes hyaluronidase should be used to eliminate any residual filler present, either prior to surgery or during the operation mixed with the local anesthetic, to reduce tissue distortion encountered during surgery.

Some patients in the study had received hyaluronic acid filler injection many years ago with good results, but now had worsening age-related fat prolapse and/or wanted a more permanent solution to treat under-eye fat prolapse. Although the surgical anatomy was less distorted in these patients, it was still apparent. These patients also had highly satisfactory outcome.

There are important limitations to our study that must be taken into account when considering the implications of the data. This is a retrospective, nonrandomized study of a small number of patients with relatively limited follow-up period who were treated with filler injection from various injectors with perhaps different techniques, timing, frequency, and so forth. Some had also received hyaluronidase injection. Last, as this study was observational, pathology slides were not obtained and analyzed. Future studies can certainly improve on these limitations discussed here.

Conclusions

In conclusion, (transconjunctival) lower blepharoplasty (with fat repositioning) has a definite role in patients previously treated with under-eye hyaluronic acid gel injections. It can be done safely and effectively to address "residual fullness" after previous hyaluronic acid gel filler (with/without hyaluronidase) injections. The "residual fullness" is inevitably orbital fat prolapse with/without undissolved filler material mixed with the fat or scar tissue. Given the anatomical changes that do occur after filler injection, "revision" lower blepharoplasty is a more proper term.

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