Management of Hollowing and Herniation of Lower Eyelid Fat: Blepharoplasty Versus Injection Fillers

Dr. (Mrs.) Kasturi Bhattacharjee, Dr. Harsha Bhattacharjee

Aging leads to sagging of the eyelid tissues with weakening of the orbital septum thereby causing prominence of the orbital rim and bowing or herniation of the orbital fat producing the classic “double convexity deformity”. This defect is more prominent medially know as “tear trough deformity” and laterally known as “hollow eye deformity”. The hollowing effect of the tear trough deformity is the result of 3 factors. The first factor attributing to it is the fixed orbital septum and by the arcus marginal is medially. The second factor is attributed by the intersection of the lateral nasal musculature and orbicularis oculi muscle forming a “triangular gap”. The third factor causing this deformity is by the deficiency of fat and soft tissue in this area, giving the impression of a hollow depressed medial lower eyelid. Aging enhances this deformity due to ptosis of the neighbouring cheek tissue. Thus each anatomical entity needs to be addressed individually to provide a customized “best-fit” solution.

Though there appears to be excess of fat compartment but actually some fat compartments in the lower lid gets atrophied with age, along with atrophy and sagging of the subcutaneous tissue and skin. Thus removal of eyelid fat may simply alter this deformity to a “concavity/convexity deformity.” The lower eyelid fat needs to be redistributed or the deficient volume needs to be supplemented and this problem can be addressed both surgically and non-surgically. As routine blepharoplasty is basically a subtraction surgery involving excision of fat and skin, it does not correct the defect in totality. Thus injection of fillers to supplement the tissue loss has become more common. So the “best fit” solution is either by transperiosteal repositioning of the lower lid fat or by injection of filler to hollow areas below the eyelids (tear trough region) to “level out the playing ground”. This way one can improve the eyelid contour without creating or exacerbating the hollow appearance. The proposed
advantages of these techniques are that they improve the skeletonization of the infraorbital rim that is associated with aging along with improvement of the double convexity deformity.

Thus the aim of the present study is to compare the efficacy of lower lid blepharoplasty with fat repositioning versus injection of hyaluronic acid filler.

**MATERIALS AND METHODS**

Comparative interventional study of 22 patients having bilateral hollowing and herniation of lower eyelid fat from December 2009 to October 2011. Patients had undergone thorough ophthalmic and periorbital evaluation along with assessment of skin, underlying soft tissue contour and skeletal support. Patients were divided into 2 groups. Group I (n=11) undergoing bilateral lower lid full blepharoplasty with subperiosteal transfer of orbital fat. Group II (n=11) having bilateral hyaluronic acid injection into lower lid (0.3-0.5ml in each lid)

**Evaluation of Lower lid Blepharoplasty included**

1. Detailed history of any ocular and systemic diseases, previous surgery, history of any therapy like anticoagulation medications. A detailed psychological assessment of the patient to evaluate the patients expectation both realistic and unrealistic.
2. Patient informed consent
3. Detailed ophthalmic examination including best corrected visual acuity.
4. Test for dry eyes.
5. Preoperative documentation including a full face photo, midface photo, “Eye Box” photo image and tilt photo with the face being tilted downward and the patient looking in upgaze to demonstrate the amount and appearance of the herniated lower orbital fat. Evaluation of skin turgor, festoon or chronic inflammation.
6. Gape Test, Distraction Test for medial Laxity of lower Lid
7. Test for lateral laxity of Lower lid
8. Snap back test
9. Palpebral fissure Height, Levator palpebralis superioris muscle Action, MRD1 and MRD2
10. Evaluation of the herniation of Lower lid Orbital fat both in front gaze and in upgaze
11. Evaluation of prominent of Tear trough deformity or naso jugal fold.

In Group 1, all operations were done under General anaesthesia. Herein an incision through conjunctiva 4 mm beneath the tarsus from the edge of the caruncle to the lateral canthus was given, which avoided disruption of skin,
orbicularis or orbital septum and allowed rapid and direct entry into the orbital fat compartments. Once the fat pads were visualized the connective tissue septa were dissected with cotton tip applicator or with blunt dissection with Stevens scissors. For a wide exposure of the central and lateral fat pockets fascial bands were excised. Blunt dissection down to the arcus marginalis at the inferolateral orbital rim had been done for identification of lateral fat pad. Care had been taken to visualize central fat pad and the belly of the inferior oblique that separated the central and medial fat compartment. Careful fat isolation had been done beginning with the central fat pad and prominent vessels being coagulated. Repeated checking of the external eyelid contour had been done intermittently during the procedure. End point of fat excision was reached when the fat was flushed with orbital rim while applying light pressure on the globe. Repositioning of the fat over inferior orbital rim onto the superior face of the maxilla had been done to overcome the deformity. Herein an incision was made in the periosteum of inferior orbital rim from the area where the tear trough begins to the most nasal aspect of the orbital rim. A freer elevator was used to elevate the periosteum from the face of the maxilla for approximately 15 mm. Dissection was carried around the infraorbital neurovascular bundle. The medial and central fat pad were tied with double arm 5 O prolene suture and transposed subperiosteally and sutures were brought out from the skin and tied over bolsters. Debulking of the lateral fat pad was done conservatively and central and medial fat pad repositioned into the tear trough deformity. The conjunctival incision was closed with 6 O polyglactin. Postoperatively patients were advised ice compresses hourly in the first 48 hours and the bolsters were removed on 5th post operative day.

In Group 2, 11 patients were injected bilaterally with Hyaluronic Acid, a non animal based synthetic fillers. This consisted of 24mg/ml of Hyaluronic acid. It was injected deep along the inferior orbital rim and along the tear trough deformity. Injections were given in very small aliquots (0.02 ml) in a linear threading manner avoiding multiple puncture. After each injection, pressure was applied to the area to tamponade bleeding and prevent bruising.

RESULTS
The average postoperative follow up period was 18 months. The mean age was 52± 4.2 yrs. The female: male ratio was 4:1. Good eyelid lift was achieved in 19 patients. There was significant improvement in lid contour in 18 patients and moderate improvement in 1 patient. Worsened lid contour was seen in 2 patients of Group I in 6 weeks post operative period with lateral lower lid ectropion and another one patient of Group 1 with enhanced orbital hollowing and prominence of tear trough deformity found in 3rd month postoperative. Effective eyelid contour could be achieved in all patients with fillers (Group 2). However recurrence of palpebral bag and the tear trough deformity within
the follow up period was found in 9 patients of Group 2 (p=0.012) wherein Hyaluronic Acid filler had to be reinjected after 12 months in 4 patients, 14 months in 3 patients and 18 months in 2 patients of Group 2.

**Conclusion**

Injection Hyaluronic Acid Filler could address the anatomical entity of the individual eyelid and provided very pleasing and natural results though, it needed to be reinjected after 12-18 months. However it has the added advantage of being a non surgical procedure. Transcutaneous lower lid Blepharooplasty with subperiosteal fat transposition provided more permanent result ensuing in a customized “best Fit “solution.

**REFERENCES**

