

Retro-Orbital Injection of Fat Autograft in Post-Traumatic Enophthalmos

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Introduction

- Retro-orbital fat volume reduction has been reported in patients with enophthalmos followed by trauma which could be restored by a suitable fat autograft.
- Three main steps are:
 1. Harvesting of auto graft fat from donor site.
 2. Transfer and purification(Refinement) of graft.
 3. Placement of graft in retro-orbital space.

Case report

Thirty two year old male presented with complaints of recession of left eye ball since 2 years after trauma to the eye by wooden stick. On examination the left eye was recessed by 6 mm as measured by Hertel's exophthalmometry in comparison to right eye. Patient had no light perception in left eye. Total white cataract and posterior synechiae were present on evaluation. Retinal detachment was diagnosed on B scan in left eye. Right eye was normal.



Intervention

- Under general anaesthesia, tumescent fluid (solution of 1 mg of epinephrine, 200 mg of lidocaine, and 5 mEq of sodium bicarbonate in 1 L of normal saline) was injected at donor site.
- Autogenous fat was harvested from thigh using a 4mm diameter liposuction cannula.

- The graft was refined by 2000 rpm centrifuge for 3 minute, with 10 minute standing.
- The extremely small parcels of fat were injected by 14-gauge needle into multiple layers of intramuscular cone in retro-bulbar space.
- The volume of fat injected was 7 ml.

Outcome

- The volume of fat injected was 7 ml, with increase in exophthalmometry measurements 6mm immediate after surgery and 5 mm after 6 months. Final recession was only 1mm as compared to right eye after 6 month.
- There were no embolic complications. The procedure was well tolerated by the patient systemically.



Complication

Edema, ecchymosis and under correction was noted. Edema and ecchymosis was resolved in 2 weeks. Under correction of 1 mm was well accepted by the patient.

Conclusion

- Retro-orbital injection of fat autograft allows sustained correction of persistent post-traumatic enophthalmos.
- Two main limitation of refinement process of fat grafting are :
 - a) Poor resorption if not properly refined as in standing method because of decreased surface area between graft and recipient.
 - b) Adipocyte cell death if refined by centrifuged method.
- Understanding how different handling techniques affect adipocyte survival without compromising the refinement is crucial to optimizing long-term results.

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