



CORNEAL MELT AND MANAGEMENT OF THE COMPLICATION

Ophthalmology

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KEYWORDS

A 85 year old female with history of pain redness and sudden onset of severe watering and loss of vision in her left eye since 3 days . Patient known case of chronic kidney disease has undergone cataract surgery in both of her eyes with no significant ophthalmic history.

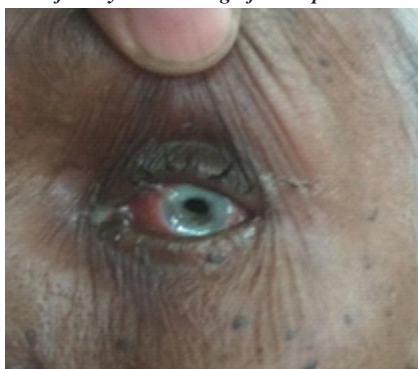


Figure 1 : corneal melt in a 85 years old female

On examination patient has

Segment of eye examined	Right eye	Left eye
Vision	6/9 partial with glasses	No perception of light
Anterior segment	Normal	Poor lid hygiene
1. Lids	Normal	Congested
2. Conjunctiva	No congestion	Vessels congested
3. Sclera	Clear	Corneal melt
4. Cornea	Normal in depth	No anterior chamber
5. Anterior chamber	Normal in colour	made out
6. Iris	Round regular reacting no RAPD	Stuck to the margins of the limbus due to large corneal perforation
7. Pupil	Pseudophakia	Not made out
8. Lens	Media Clear	No lens details made out
Posterior Segment	0.5 : 1 cdr	Ok
1. Vitreous	Ok	Normal in calibre normal
2. Disc	artery: vein ratio maintained	No vitreous details made out
3. Macula		No posterior pole details made out
4. Vessels		

Other investigations : patient had an elevated blood urea of 90 mg/dl and creatinine of 3.6 mg/dl.

Due to no perception of light and due to risk of development of sympathetic ophthalmitis the patient underwent evisceration and silicon ball implant . After 2 months patient was given a prosthetic shell and the cosmetic appearance was good .

Here we will discuss corneal melt and its complications and various managements of its complications

1. Medical management
2. Surgical management

Medical management

Autoimmune	1. High dose steroids
	2. Immunosuppressant

Infection	1. Topical antibiotics
Ocular surface	1. For dry eye a) punctual cautery, b) autologous serum drops c) bandage contact lens d) amniotic membrane graft e) tarsorrhaphy

Promote corneal healing :

1. Oral Doxycycline
2. Vitamin C
3. For microperforations 0.5 cms can give acetazolamide 250 mg two reduce intra ocular pressure
4. For perforations without leak can observe

Surgical treatment

If perforation size is less than 2mm in diameter two options based on clinical and anatomical status of perforation.

1. If the perforation is found to be with tissue loss cyanoacrylate glue can be used with a cotton tip applicator and a bandage contact lens to avoid irritation due to uneven surface.
2. If perforation is without a tissue loss only glue can be used.

Pedicule conjunctival flap

Indications

1. Non healing
2. Tropic ulcers
3. Low levels of growth factors in tear films

Procedure of pedicle conjunctival flap

1. Denuding of epithelium in the surrounding areas of perforation
2. A small conjunctival flap with a blood vessel pedicle is selected
3. Conjunctival flap sutured to raw area

Amniotic membrane grafting

Is useful when the involved area is having irregular margins and irregular depths

Indications

1. Impending perforation
2. Desmetocoele
3. Small perforations
4. Stromal melt

Grafts and transplants

For 3 mm non centre involving perforation patch graft can be done with donor cornea For large central perforations penetrating keratoplasty is done

Objectives of penetrating keratoplasty

Penetrating keratoplasty is a surgery where in the host's diseased cornea (full thickness) is transplanted with a donor cornea. It is one of the measures to overcome blindness caused due to various conditions affecting the cornea which hamper with the refractive ability, vision clarity and integrity of the cornea.

Indications of penetrating keratoplasty

1. Pseudophakic bullous keratopathy
2. Large perforated Corneal ulcer
3. Desmetocoele

4. Scars involving visual axis
5. Impending perforation
6. Keratoconus
7. Interstitial keratitis

In case if the affected eye is badly infected with no perception of light and having the risk of sympathetic ophthalmitis choice of evisceration or enucleation with ball implant and prosthetic shell is considered as the last mode of management.

Primary and secondary ball implant

Indications

1. Primary

- a) Eneucleation
- b) Evisceration
- c) Exentration

2. Secondary

- a) Poor ocular mobility
- b) Migration of implant
- c) Chronic infection
- d) Extrusion of implant
- e) Sulcus deformity

Orbital implants are contraindicated, in cases of

1. severe orbital infection,
2. severe trauma with possible orbital infection, or
3. a retained foreign body.

An implant is of the proper size when it is the largest implant that can be placed deep into the orbit without creating tension on the overlying tissues and while allowing adequate room for an artificial eye of sufficient thickness and **without enophthalmos and should have enough fornicial space for placement of shell in the future.**

In 1885, Mules was the first physician to report the use of an orbital implant, a glass sphere, after an evisceration .

Materials used for manufacturing orbital implants

- | | |
|--------------|----------------------|
| 1. Magnets | 10. Titanium mesh |
| 2. Gold | 11. Acrylics |
| 3. Silver | 12. Wool |
| 4. Glass | 13. Rubber |
| 5. Silicone | 14. Catgut |
| 6. Cartilage | 15. Peat |
| 7. Bone | 16. Agar |
| 8. Fat | 17. Polyethylene |
| 9. Cork | 18. Hydroxy appetite |

The implant may be placed into the orbit with or without being wrapped in a **homologous** or **autologous** material such as preserved

1. Sclera,
2. Dura
3. Fascia lata

Evisceration / Eneucleation surgery with ball implant important steps to be noted

Under local anaesthesia or general anaesthesia

1. Evisceration is done by first relaxing the conjunctiva and tenons fascia for 360 degrees and contents of the eye removed by a Cats paw scoop and care is taken to removed all the uveal tissue and the cavity is washed with absolute alcohol and appropriate sized ball implant placed and closed in three layers Sclera , Tenons fascia and Conjunctiva with 6.0 Prolene and confirmer is applied and eye patched with antibiotic eye ointment . Prosthetic Shell can be given after 2 months

2. Eneucleation is done in cases of malignancy and badly damaged eye with preservation of the recti muscles and the ball implant being wrapped in a well prepared donor sclera and the muscles attached to the sclera to give acceptable eye movements with tenons and

conjunctiva being closed in layers . If there is a deficit in the conjunctiva mucus membrane graft taken from oral cavity and conjunctiva is sutured.Remaining steps remain the same as evisceration.

Classification of implants

Integrated implanted	Non integrated implant
The porous nature of integrated implants allows fibrovascular ingrowth throughout the implant and thus also insertion of pegs or posts. Because of direct mechanical coupling it improve artificial eye motility. Examples : 1.Hydroxy appetite- Calcium phosphate 2.Bioceramic - aluminium oxide (Al2O3)	The material do not allow ingrowth of organic tissue into their inorganic substance and hence remains to have great risk of extrusion. Examples : 1.PMMA 2.Glass 3.Silicone

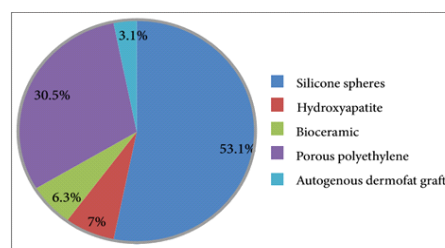


Fig. 1. Implants used for primary and secondary implantation

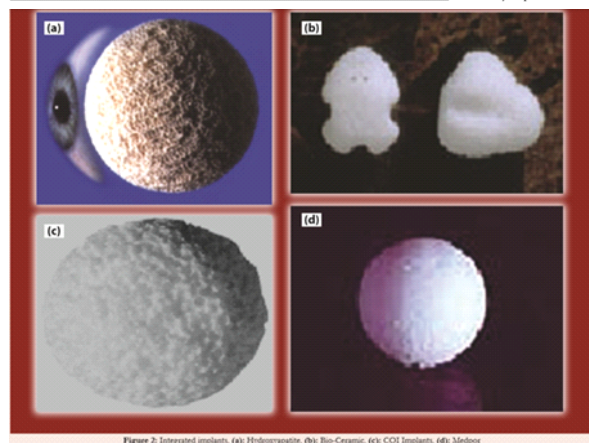


Figure 2: Integrated implants, (a): Hydroxyapatite, (b): Bio-Ceramic, (c): COI Implants, (d): Medpor

Integrated implants

Complications of ball implant and its incidence is depicted in the below picture.

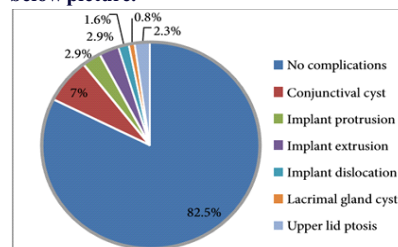


Fig. 2. Types of complications

CONCLUSION :

Ball implant after evisceration or enucleation is done for giving good ocular movements and good cosmetic appearance. Ball implant in children is done to prevent contraction of socket. Proper surgical techniques with placement of proper implant size and appropriate shell size gives patients good surgical outcomes and good cosmetic appearance

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