

POSTOPERATIVE COMPLICATIONS

Cataract surgery through technically demanding excellent outcome, postoperative complications are common. Early detection and treatment of postoperative complications gives good visual prognosis. Proper preoperative evaluation with a good postoperative care prevents a patient from going into catastrophic, vision-threatening complications.

Types of surgery:

1. ECCE – Extra Capsular Cataract Extraction
2. SISCS – Small Incision suture less Cataract Surgery
3. PHACO

Types of Surgeries	Mild	Moderate	Severe
ECCE	Lid edema, SCH, chemosis, SK, epithelial and endothelial damage	Corneal edema, FM, iritis, Hypheama, Pupillary capture, CME, PCO, residual cortex	Hypopyon, endophthalmitis, DM stripping, iris prolapse, papillary block, Secondary glaucoma, shallow AC, broken sutures, Toxic suture syndrome, Suture infiltration
SISCS	Lid edema, chemosis, SCH, SK, epithelial defect	Corneal edema, Iritis, FM, hyphaema, papillary capture, PCO, Decentered IOL, residual cortex, CME	Endophthalmitis, DM stripping, iris prolapse, papillary block, secondary glaucoma
PHACO	Lid edema nd, chemosis, SCH, SK, epithelial aendothelial damage		

Lid edema

Swelling of the lid is due to injury with instruments, iritis, or allergy. It is treated with anti-inflammatory drugs, steroids. If allergy is the reason anti-histamine drugs are given.

Chemosis

Chemosis is congestion & collection of fluid in the conjunctiva.

Causes

- a) Injury to the conjunctiva with instruments during surgery.
- b) Prolonged massage in block room
- c) Intraoperative sub conjunctival injection
- d) Allergic to eye drops such as tropicamide, Lidocaine
- e) Post operative Iritis & endophthalmitis.

Treatment

Chemosis absorbs spontaneously & some patients need anti-inflammatory drugs. Tab.Cambiflam/ Brufen is given to relieve the pain

Sub conjunctival Haemorrhage (SCH)

It is a collection of blood beneath the conjunctiva. Injuries, Retrobulbar haemorrhage, Bleeding disorders, Hypertensive, Uncontrolled cough are the causes for SCH. This is also absorbed spontaneously within 2-3 weeks.

Corneal abnormalities

Corneal transparency is the one of the major factor for a good vision. After cataract surgery cornea can lose it's transparency for many reason. They are

a) Epithelial defect

Rupture of epithelium by instruments, swabs, pad, leads to epithelial defect. After retro bulbar injection eye is opened for long time which may lead to epithelial defect. Patient has the symptoms like pain, blurring vision & irritation. Discontinuation of epithelium seen through slit lamp. Sometimes fluorescein staining is needed.

Treatment

Only antibiotic ointment with pad & bandage. Steroids may be stop for better healing.

b) Corneal edema

Prolonged irrigation & aspiration, trauma to endothelium, pre existing corneal problem are causes.

Signs:

1. Increased IOP>30 mm/hg
2. Iritis
3. Descemets membrane stripping
4. Endothelial damage

Treatment

1. Timolol eye drops & Tab. Diamox are given to reduce the IOP
2. Oral glycerol /IV mannitol given for uncontrolled increase in IOP

3. Frequent use of steroids speed up recovery.
4. Hypertonic saline drops
5. Cycloplegic eye drops twice per day & steroids 2 hourly may reduce the iritis

Striate keratopathy

It may occur immediate post operative day & incidence is higher if the pre-existing corneal dysfunction present. It's present as a localized stromal & epithelial edema especially seen in superior half of the cornea indicates intraoperative trauma.

Causes

Operating trauma -Trauma to endothelium by instruments, IOL, Swabs, excessive irrigation of balanced salt solution. This can be prevented by maintaining a deep AC by using the Air bubble or visco elastic material. Tight suture is another reason for striate keratitis.

Management

In general it resolves 4 to 6 weeks after cataract surgery. As a rule if cornea periphery is clear it resolved with time. In most of the cases 0.1 % of dexamethasone sodium resolves it. Corneal edema in periphery with 3 months usually it doesn't clear. Such patients require PKP.

Detachment of Descemet's membrane

Descemet's membrane is an elastic membrane & it's loosely bound with the stroma & thus allowing easy separation from stroma.

Causes

1. Enter in to the globe with inadequate incision
2. Faulty instrumentation
3. Fluid is injected between the DM & Stroma

Management

1. Small DM detachment is common & doesn't require active treatment.
2. Wider detachment needs to be treat early. If it's diagnosed intra-operatively Air bubble should leave in to the AC. This will helps to holding the DM to stroma.
3. If it is extensive then full thickness corneal suture is needed until the healing occurs.
4. It can be prevented by using proper instrument & putting adequate incision.

Endothelial damage

The corneas can decompensate if large amount of endothelial cells are damaged. In Endothelial damage visual prognosis is low because endothelium cannot regrow.

Causes

1. Trauma with surgical instruments intra-operatively
2. Constant touch by vitreous or IOL post operatively.
3. Pre operative inflammatory condition.

Management

1. It can be prevent by maintains deep AC as far as possible.
2. Endothelial cell count should be documented for pre existing corneal problem & NS-4 cataract
3. PKP may be helpful in severe cases.

Depth abnormalities

The AC may become shallow or flat in any kind of IOL surgery for many reasons. It is an absolute emergency in which treatment should consider immediately without delay. It produces permanent damage like IOL touching the cornea, secondary glaucoma. Following conditions are the reason for the flat AC.

Wound leak

The main reason for the wound leak are

- a) Size of the section is larger than the normal
- b) Loose suture or wound gap
- c) Inadequate & improper suturing to the wound
- d) External trauma after surgery even during suture removal
- e) Too rapid absorption of suture in early post operative periods

Management

1. If wound is too large, proper resulting & AC reformation to be done. Wound leak can be diagnosed by sidels test. Apply 2 drops 2% fluorescent solution over the section. If wound leak is present fluorescent solution getting diluted at the site of leak. Often gentle press to the globe is needed to confirm the site of leak.
2. Cyclopent eye drops is applied with pad & bandage.
3. Carbonic unhydrase inhibitor & beta-blockers may decrease the aqueous out flow
4. Avoiding the use of steroids enhance the spontaneous closure of wound.

Pupillary Block

It is an emergency condition. Pupil may block with many materials such as IOL, Vitreous, and cortex. Pupillary block leads to rise in IOP & produce secondary glaucoma.

Causes

1. AC IOL without PI
2. Vitreous touching the pupil
3. IOL capture

Treatment

1. Inj. Mannitol 20% & Tab. Diamox are given to reduce IOP.
2. First YAG PI done for ACIOL. Still not respond surgical PI should be done.
3. IOL repositioning done for IOL capture.

Residual cortex

This is some amount of cortex material retain even after surgery. This is due to improper aspiration of cortex material, PXF, small pupil, pc rent where the cortex could not remove completely. Small residual cortex usually doesn't make cause problem unless they are touching the endothelium or obstructing the AC angle. Small piece of cortex will get absorbed by using steroids. Lot of cortex or cortex not getting absorbed need AC wash.

Hyphema

By definition it is a blood in the AC. Main source for hyphema is intraoperative injury to Iris. Other reason for hyphema are iridodialysis bleeding disorders.

Treatment

1. Usually it resolves spontaneously.
2. Severe cases patient should be monitor carefully & Give the complete rest to the patient
3. Apply double pad & bandage.
4. Timolol, Tab.Diamox & Tab. Streptovit (Vit.C)
5. Recurrent bleeding with increased IOP needs hyperosmotic therapy & rarely AC wash.

Hypopyon

Pus in the AC is called hypopyon. This can be sterile or infectious condition.

Causes

1. Infection – It may be pre operative or post operative
2. The incidence if hypopyon is high in complicated cataract, phacolytic or phacomorphic glaucoma. First color of the hypopyon noted, if it's yellow usually infectious condition.

Treatment

Color of the hypopyon is noted. If it is yellow most of the time infectious condition. First AC tab should be taken to find out the organism which cause hypopyon. Antibiotic eye drops used hourly & Cycloplegic eye drops used.

Iritis

Inflammation of the iris is called iritis.

Due to surgical trauma or using of toxic material irregular shape in IOL leads to Fibrin formation. Such a cases Intensive therapy of steroids & antibiotics used. Dilation helps to break the fibrin membrane.

1. AC cells & flares:

It can be recognized by slit Lamp. Cells & flares are graded to +1- +4. Presence of cells & flares is the sign of intraocular inflammation. Steroid eye drops is used frequently depending on the severity.

Fibrin membrane

It appear as a dense fibrin net in the papillary area. Prolonged irrigation with balance – salt solution & unsterile IOL are the causes for fibrin membrane formation. It gets absorbed by using antibiotic & steroids hourly. If needed oral steroids to be given.

Iris prolapse

After cataract surgery iris may come out from the wound. Incidence of iris prolapse is more in

ECCE than phaco.

Causes

1. Inadequate or irregular suture, loose suture.
2. Size of the section is more than normal.
3. Injury to the eye
4. Positive pressure

Treatment

1. Hourly antibiotic drops
2. Repositioning & resuturing done if iris prolapse within 24 hours.
3. Excision done if more than 1 day

Bullous Kertopathy

This is usually comes in late postoperative period. The causes are Pre existing endothelial pathology, significant intraoperative endothelial damage, and chronic uveitis & in appropriate IOL design. Clinically it is present as stromal & epithelial edema. Patient may manifest as blurred vision early in the morning & improving later in the day. Chronic edema cause scarring. It can be managed by drops & ointment. Some cases bandage contact lens may be fitted. PKP is done for the cases, which are not responding to the other treatment.

1. Vitreous touch syndrome & vitreous wick syndrome.
2. Secondary glaucoma:

- a. Closed angle glaucoma:

Causes

1. Severe iritis
2. Pupillary block
3. Iris bombe & peripheral anterior synechiae

Treatment

1. Treat the causes like iritis
2. Anti-glaucomatous drug
3. Sometimes Trabeculectomy may required

Endophthalmitis

This is a visual threatening condition; delayed treatment would be cause severe visual loss. Endophthalmitis can present as an acute form or chronic form. Patient has the symptoms of mild to severe pain, redness, loss of vision, floaters, photophobia...ECT. The hallmark endophthalmitis is vitreous inflammation. Other findings are eyelid & periorbital edema, chemosis, corneal edema, AC reaction, hypopyon; the causes are introduction of toxic material into the eye. It can also spread through unsteriled material, Intra cameral injection, even it can comes from the unsterile surgeon hand or assisting people.

Investigations

1. Vitreous culture is taken in a sterile condition. This is to identify the type of organism which cause the endophthalmitis & also we can differentiate the sterile endophthalmitis from infectious endophthalmitis.

2. Ultrasound to confirm the diagnosis. It has the characteristic like RCS (Retina, choroids & sclera) Complex thickening, vitreous exudation.

Treatment

Immediate diagnosis & treatment may give the better visual prognosis. Antibiotic can give intra vitreally. Intense therapy of antibiotics & steroids helpful to reduce the reaction of endophthalmitis. Once the diagnosis is made refer the patient to retina specialist without delay. Many cases require core vitrectomy.

Posterior capsular opacification (PCO)

This a late postoperative complication in which the white membrane formed behind the IOL.

This can be managed by YAG capsulotomy.

ystoid Macular Edema (CME)

This is the one of the visual affecting complication, it may occur early to late post op periods. It present without anterior complication. Reason Some of the cases shown improvement. It can be diagnosed by Fundus fluorescent angiography & optical coherence for CME after cataract surgery is still unknown. But it is believed that increase perifovealor capillary abnormality. Now they give the intra vitreal steroids.tomography. The later one is preferable as it is a non-invasive procedure.