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## VITRECTOMY IN ENDOPTHALMITIS.

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Endophthalmitis is a dreaded disaster following any eye surgery. Fortunately, the incidence has reduced in the current era, but it still occurs in spite of the usual aseptic precautions. The incidence varies from 0.07 % to 0.3 %.

### **Etiology**

Gram Positive organisms:	90-95%.
Gram Negative organisms:	6%
Fungal :	3%

Risk Factors: various risk factors have been implicated which substantially increase the risk of getting Endophthalmitis.

Vitreous loss: with inadequate Vitrectomy and incarceration of vitreous in the wound.

Wound leak: large tunnels, inadequately sutured tunnels or wounds made with blunt, repeatedly used knives and with faulty wound apposition.

Prolonged time of surgery

Repeated insertions and removal of instruments  
? Prolene Haptics of I.O.L.

Diabetes

Infected instruments: especially canulated ones and improperly sterilized e.g. I/A Canulas, Phaco probes and tubings, used in multiple operations without re-autoclaving.

Infected solutions: Irrigating Solutions e.g., Normal Saline, Ringer Lactate, B.S.S, Viscoelastics, Miotics and Anaesthetics (Xylocard)

Immuno compromised individuals with septic foci elsewhere in the body

Type of operation: The commonest occurrence of endophthalmitis is after:

Cataract surgery, with I.O.L. implants

Glaucoma operations: thin filtering blebs and use of anti metabolites like Mitomycin C or 5FU.

Penetrating Keratoplasty

Vitrectomy

Suture removal: dragging the exposed suture into the wound / A.C

YAG capsulotomy (P. Acnes) release from encapsulated plaque.

### Clinical Features (symptoms) :

Diminished vision

Pain

Discharge and watering

Photophobia

Redness

Blepharospasm

Signs:

Reduced vision

Ciliary congestion

Corneal haze/ Oedema/ Abscess

Flare

Hypopyon

Fibrinous pupillary membrane

Loss of iris pattern

Loss of red reflex: should be assessed frequently

Absence of fundal visualization: retinal vessels not seen

### Differential Diagnosis:

Vitreous hemorrhage

Iridocyclitis

Retained cortex

Dislocated lens / nucleus fragment

Globe perforation during anaesthesia

### Management of Endophthalmitis:

The management of Endophthalmitis revolves around intense medical treatment, intravitreal antibiotic injections and if the response is not favorable to do a vitrectomy.

Vitrectomy: The timing is slightly controversial and needs surgeons judgment regarding immediate or delayed surgical intervention taking into account the risk and benefit to the patient.

#### Immediate vitrectomy (Advantages)

Obtains sample for vitreous culture

Clears ocular media

Removes toxic products/ vitreous scaffold

Reduces bacterial load

Intravitreal antibiotic at the end of procedure,

increases the antibiotic concentration within the eye.

#### Delayed vitrectomy (Advantages)

Easier to operate on a non inflamed eye

Tissue is less friable

Visualization is better

Preoperative evaluation:

Frequent clinical assessment

Exclude chronic Dacryocystitis

Absence of Red Reflex/ Fundal details

Increase of Hypopyon/ corneal abscess

U.S.G. B scan note: - The extent/ density of vitreous involvement

- Retinal/ Choroidal detachment

- Lens fragment

- I.O.F. B.

Aqueous tap: Culture positive in 40%  
 Vitreous Biopsy culture positive in 60%

### **Vitreotomy: Procedure**

Open Sky Vitrectomy: can be done with A/C wash if the wound is gaping and the cornea is totally opaque. I.O.L should be removed and a core Vitrectomy done. The wound should be closed by interrupted, thick sutures (8/0) with large sclero corneal bites.

Pars-plana Vitrectomy: three sclerotomies are made with a sharp MVR blade and 20 gauge needle, as blunt blades often cause wound gapes. Vitreous aspirate is taken before starting the infusion to get an undiluted sample for culture. Infusion fluid bottle should be at a low height to prevent wound gapes. Visualization can be improved by removing the pupillary exudates with a bent 26-gauge needle. If this does not help remove the I.O.L through a limbal incision. A core Vitrectomy is performed using a high cut rate, low suction and a long infusion canula. There should be minimal traction on the inflamed and friable retina. Do not try to create PVD. Thus, use a good cutter to reduce vitreous traction and stay away from the retina. Clear the vitreous cavity as best as possible and close the sclerotomies. Intravitreal antibiotics are injected at the end of the procedure.

A penetrating keratoplasty may be needed if the cornea is melting or sloughing off. The results are poor in these cases.

Dosage of Intravitreal antibiotics:

Vancomycin 1mg in 0.1ml  
 Ceftazidime 2.25mg in 0.1ml

Amikacin 400ug in 0.1ml

A combination of either Vancomycin and Ceftazidime or Vancomycin and Amikacin is preferred to cover the range of gram positive and gram negative organisms

**Endoscopic Vitrectomy**: has been tried with an endoscope and visualizing the details on a T.V. monitor. It is particularly useful when the cornea is opaque and the visualization is poor.

**Prognosis**: is better if the Vitrectomy is done at an early stage, initial visual acuity is better than M.B., there is low virulence of the organism, a low organism load, and infection is restricted to the anterior part of the vitreous.

### **Complications:**

Wound gape  
 Bleeding  
 Corneal oedema  
 Corneal decompensation  
 Miosis  
 Iotrogenic retinal tears  
 Retinal detachments  
 Vitreous hemorrhage  
 Pthisis bulbi  
 Recurrence of infection.

Judicious care and judgment has to be exercised during the performance of this procedure as the safety window is very narrow. Functional results may be poor in late cases, but it certainly reduces the pain, and hastens recovery. It may also help medico-legally to justify ultimate blindness in spite of utmost care, effort, and surgical intervention.