COURSE DESCRIPTION

THE COURSE WILL HIGHLIGHT THE METHODS OF HANDLING POSTERIOR CAPSULE (PC) RUPTURE, ITS EFFECTIVE MANAGEMENT AND VARIOUS MODALITIES OF IOL IMPLANTATION.

BASIC FUNDAMENTALS

Early recognition and management of PC rupture is a key to prevent the sequential complications which can trail and have an adverse effect on the visual output. The following signs should be watched upon for early recognition of a PC rupture.

- Sudden deepening of anterior chamber with momentary dilation of pupil
- Sudden transitory appearance of red reflex
- Difficulty in rotating a previously mobile nucleus
- Undue tilting of one pole of nucleus
BASICS

- Lower down phaco parameters
- Low flow rate
- Moderate vacuum
- Low to moderate phaco burst energy to promote followability

MANAGEMENT PROTOCOL OF PC RUPTURE AND IOL IMPLANTATION

- In the context of a ruptured posterior capsule, the immediate reflex action to be deterred on behalf of the surgeon is to withdraw the phacoemulsification probe suddenly from the eye. A dispersive OVD from the side port incision should be used to plug-in the posterior capsule defect and fill and stabilise the anterior chamber followed by withdrawal of the phacoemulsification probe.
- The posterior capsule rupture when small is converted into a posterior capsulorhexis with stable margin facilitating the implantation of a one piece foldable acrylic IOL in the capsular bag. But if the capsular rupture opening is large, sulcus fixation of an IOL is preferable in cases with adequate anterior capsular margin support. A three piece foldable IOL implant imparts stability when the haptics are placed in the sulcus and the optic is captured into the anterior capsular opening. In cases of inadequate anterior capsular support, various methods of IOL implantation can be implicated like anterior chamber (AC) IOL, Iris claw Retrofixation, Sutured scleral fixation and Glued intrascleral haptic fixation of IOL which imparts a very stable intrascleral fixation.

LEARNING OBJECTIVES

At the conclusion of this course, attendees will be able to judge,
- How to effectively handle a case of posterior capsular dehiscence?
- Do’s and Dont’s upon recognition of PC rupture
- Management of vitreous and the importance and correct method of vitrectomy from anterior segment surgeons perspective
- Choice of Type and various methods of IOL implantation following PC rupture

TARGET AUDIENCE

The intended audience for this program are comprehensive ophthalmologists with an interest in anterior segment, and allied health personnel who are performing or assisting with cataract surgery.
COURSE OUTLINE

• Introduction to the surgical nightmare of intraoperative posterior capsular dehiscence
• Videos showcasing intraoperative PC rupture and ways to handle it judiciously
• Videos showcasing IOL implantation in the sulcus along with Optic capture
• Video showcasing Glued Intrascleral technique of IOL fixation (Glued IOL) and its modifications
• Videos showcasing IOL Scaffold and Glued IOL scaffold technique

HANDLING ASSOCIATED COMPLICATIONS OF PC RUPTURE

• Videos showcasing DMEK with Glued IOL
• Videos showcasing PDEK (Pre-Descemet’s endothelial keratoplasty) with Glued IOL
• Videos showcasing different modalities of vitrectomy
• Videos demonstrating how to handle dropped nucleus and dropped IOLs

TYPES OF VITRECTOMY - CONVENTIONAL ROUTE

• LIMBAL
• PARS PLANA

PARS PLICATA ANTERIOR VITRECTOMY
VITREOUS STAINING

- Triamcinolone acetonide binds to vitreous & facilitates vitreous recognition and removal
- Reduces post-op inflammation
- Preservative free Triamcinolone is available
- Thorough removal is a must postoperatively

VITRECTOMY END POINT

- Normal round, regular shape of pupil
- No iris movement during vitreous aspiration
- Deep anterior chamber

IOL IMPLANTATION IN PC RUPTURE - MEETING THE CHALLENGES

- In-The-Bag placement
- Sulcus placement
- Subluxated Bag-IOL Complex with dislocated endocapsular ring & segment

TACKLING MASSIVE ZONULODIALYSIS & SUBLUXATION
Lensectomy being done in a case of traumatic subluxated lens after creation of scleral flaps for Glued IOL.

Thorough vitrectomy

Leading haptic of 3-piece foldable IOL grasped with Glued IOL forceps

Leading haptic lies free & trailing haptic is flexed into the anterior chamber

Tip of trailing haptic is grasped

Both haptics are externalized followed by tucking & sealing the flaps with Fibrin glue

IOL SCAFFOLD


- IOL SCAFFOLD is a technique wherein following a PC rupture, the nuclear/cortical remnants are levitated in to the anterior chamber with the help of viscoelastic. A 3-piece foldable IOL is injected below the cortical remnants in a way that the leading haptic lies on the anterior surface of the iris and the trailing haptic lies extruded at the corneal incision. The foldable IOL acts as a scaffold, preventing the nuclear fragments from dropping in to the posterior chamber. The nuclear fragments are then emulsified with the help of phacoemulsification probe. Post-emulsification, the IOL is dialed in to the sulcus and stability is achieved.

- The IOL Scaffold technique effectively compartmentalizes the anterior and posterior chamber with a foldable IOL following a posterior capsule rupture; there by preventing the drop of any nuclear fragment in to the vitreous cavity.

- The IOL is placed directly in to the definitive position decreasing the surgical trauma to an already compromised eye. As it is a closed chamber technique; all the advantages of a small incision cataract surgery are retained.
GLUED IOL SCAFFOLD

Glued IOL and IOL Scaffold are two independent techniques employed for IOL fixation in cases of posterior capsular rupture with the difference that Glued IOL is done in cases of insufficient capsular support where sulcus fixation is not possible and IOL scaffold is done in cases of intraoperative PCR with large chunk of nucleus still left over for emulsification. In IOL scaffold, the IOL is either placed over the iris or the anterior capsular rim from where it acts as a scaffold compartmentalizing the anterior and posterior chamber; thereby preventing the nuclear fragments from dropping into the vitreous cavity. IOL scaffold cannot be performed in cases of iris deficiency or malformation or in cases of absence of anterior capsular rim. In such a scenario, Glued IOL Scaffold comes into play. It is a technique which amalgamates both the above described techniques and is employed in cases of posterior capsular rupture with insufficient iris/anterior capsular support. Glued IOL is performed initially followed by IOL scaffold; the initial IOL fixation acts as a scaffold followed by emulsification of the nuclear chunks with the phacoemulsification probe.

DISASTER MANAGEMENT

DROPPED NUCLEUS-TECHNIQUES:
- Posterior assisted levitation
- Phacofragmatome assisted emulsification of nucleus
- Phaco-tip assisted levitation of dropped nucleus.

SLEEVELESS PHACOTIP ASSISTED LEVITATION OF DROPPED NUCLEUS (SPAL)

Clinical outcomes of sleeveless phaco-tip assisted levitation of dropped nucleus.

*Br J Ophthalmol. Article in press*

SPAL technique is employed following an incidence of dropped nucleus. In this technique the vacuum is generated when phacotip is close to the dropped nucleus. A moderate amount of vacuum setting is enough to lift the nucleus adequately into the mid-vitreous cavity; followed by initiation of phaco power for adequate embedment. The advantage of holding the nucleus with a sleeveless phacotip enables a firm grip and the nucleus does not tend to fall back in to the vitreous cavity. The firmly embedded nucleus is then easy to levitate in to the anterior chamber. The recommended technique for employing ultrasound energy in the vitreous cavity is to lift the nucleus fragment away from the retinal surface by aspiration in the mid/anterior vitreous cavity, thereby limiting exposure of the posterior pole to ultrasound energy. Followed by successful levitation in to the anterior chamber, the dropped nucleus is then managed with either IOL scaffold or Glued IOL, depending on the status of sulcus support.

- Technical handling of a posteriorly dislocated IOL requires a lot of surgical expertise to avoid the risk of retinal traction and creating an iatrogenic tear. Removal of the silicon sleeve of extrusion cannula gives a wider access of the bore of the cannula to create an effective suction around the IOL. The vacuum created by the sleeveless-extrusion cannula is strong enough to hold the optic of an IOL in the vitreous cavity.
- This technique is effective for dislocation of any type of IOL including the plate haptic IOLs which are often difficult to grasp with a retinal forceps.

**SUMMARY**

- Anticipate and prepare for complicated cases
- Retro-pupillary removal of cortical matter and vitreous management allows a more efficient and complete removal of vitreous
- Do not hesitate to acknowledge your limitations & refer to an expert in case of difficulty
SUGGESTED READING


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