Review Article :

MANAGEMENT OF SHALLOW ANTERIOR CHAMBER FOLLOWING TRABECULECTOMY

Dr. Samabesh Swain, Prof. Suchitra Dash, Prof. BNR Subudhi,
Asst. Prof. Dr. Rajendra Behera

WHY SHALLOW ANTERIOR CHAMBER OCCURS IN ANY FILTERING SURGERY ?

May be due to a) Wound leak, b) pupillary block, c) overfiltration, d) malignant glaucoma (aqueous misdirection) most commonly.

CAUSES AND MANAGEMENT

1.High intraocular pressure with shallow anterior chamber :

Causes

I. Pupillary block
II. Aqueous misdirection
III. Suprachoroidal hemorrhage

Management :

I. **PUPILLARY BLOCK :** Pupillary block may occur with a non-patent peripheral iridectomy.

- SIGNS:
- High IOP and flat bleb.
- Negative Seidel test.
- Iris bombe with a non-patent iridectomy.
- TREATMENT:
- YAG laser to the pigment epithelium at the iridectomy site if Anterior iris stroma is largely penetrate or New laser iridotomy is performed.

II. AQUEOUS MISDIRECTION

(Malignant Glaucoma)

• Anterior rotation of the ciliary processes and iris root leads to aqueous misdirection (ciliolenticular block)which causes blockage of aqueous flow occurs in pars plicata of the ciliary body so that aqueous is forced backwards into the vitreous.

• SIGNS: 1.High IOP and absent bleb.

• 2. Negative Seidel test.

• TREATMENT : A. Initially:

• 1.Mydriatics (atropine 1% and phenylephrine 10%) :-To dilate the ciliary ring and increase the distance between the ciliary processes and the equator of the lens which tightens the zonules so that the lens is pulled posteriorly into its normal position.

• 2. Intravenous mannitol: If mydriatics are ineffective.

• B.Later stage: If medical therapy fails –

A)Nd:YAG laser fired through the iridectomy : Disrupt the anterior hyaloid face and reduces the vitreous volume and break any ciliary block.

B)In pseudophakic eyes - laser posterior capsulotomy and disruption of the anterior hyaloid face is done.

C)Cyclodiode is effective in some cases.

D)Pars plana vitrectomy is performed if laser therapy fails: Sufficient vitreous gel is excised to allow free flow of aqueous to the anterior chamber.

III. **SUPRACHOROIDAL HEMORRHAGE:**

• SIGNS & SYMPTOMS:- Delayed postoperative SCH - Abrupt onset of pain, nausea and loss of visual acuity.

• DIAGNOSIS:- Examination shows a

peripheral and central flat AC, loss of red reflex and appearance of dark brown dome-shaped choroidal elevations.

• USG- Blood in the suprachoroidal space.

• Serial ultrasound examinations are needed to evaluate the size of the hemorrhage and also the liquefaction of the clot.

• TREATMENT:- Treatment of postop. suprachoroidal hemorrhage is directed toward control of the IOP and relief of pain.

• Most of these eyes do well with conservative management.

• Small hemorrhages can resolve spontaneously with topical and systemic steroids.

• Larger hemorrhages will require drainage.

• Indications for drainage :- Intolerable pain, a persistent flat anterior chamber, and massive "kissing" choroidal detachments.

• Drainage is usually done once liquefaction occurs (usually two to four weeks) usually through an inferiorly placed sclerotomy with constant infusion of BSS in the AC.

• Drainage through a sclerotomy into the suprachoroidal space reveals liquefied blood, which usually is red or black.

2. LOW INTRAOCULAR PRESSURE WITH SHALLOW OR FLAT AC AND FLAT BLEB :

Causes:

I. CONJUNCTIVAL WOUND LEAKS

II. SEROUS CHOROIDAL DETACHMENTS

III. RARELY, INADVERTENT CYCLODIALYSIS CLEFT

Management :

• I. CONJUNCTIVAL WOUND LEAKS: Hypotony without a visible bleb - Possibility of a conjunctival leak and the Seidel's test usually localizes the site.

• The surface of the bleb and suture line should be tested for a leak.

• Management depends upon : Size and position of the leak, Appearance of the bleb, Depth of the AC & Whether antimetabolites were used or not.

• TREATMENT:- In eyes with a deep AC and a well-formed bleb, a small leak along the suture line heals well, either spontaneously or with conservative treatment.

• In eyes that receive antimetabolites, even small leaks may not heal and surgical closure may be needed.

• Large leaks along the suture line need closure.

• Surface leaks are difficult to close surgically and conservative treatment should be tried.

CONSERVATIVE TREATMENT :

• Patching of the eye, aqueous suppressants and the use of antibiotic drops known to induce scarring such as gentamycin or tobramycin.

• If there is no response, temporary tamponade is given.

• In eyes that fail to respond, then by surgical correction.

• Best way to avoid postoperative leaks is to meticulously close the conjunctiva intraoperatively.

• **Temporary tamponade :** If the above measures are ineffective then temporary tamponade of the conjunctiva is given.

• HOW IT HELPS? It enhances spontaneous healing by simple pressure patching.

• WHAT IS TO BE GIVEN?? Bandage contact lens (at least 16 to 17 mm), collagen shield, Tamponade with Simmons shell or symblepharon ring, tissue adhesives such as

cyanoacrylate or fibrin glue, and autologous blood injection.

• The Simmons' shell is a 22-mm, dome-shaped rigid shell of transparent polymethylmethacrylate.

III. SEROUS CHOROIDAL DETACHMENT :

• Precipitating factor - Hypotony.

• Detachments may further reduce aqueous flow and start a vicious cycle.

• TREATMENT:-

• Most cases usually resolve on conservative therapy.

• Conservative therapy consists of frequent topical steroids and cycloplegics with or without systemic steroids along with management of the event precipitating hypotony.

• If all measures fail, surgical intervention is necessary, especially in cases of cornea-lenticular touch or large non-resolving effusions.

• Choroidal drainage is usually done under general or local anesthesia.

CHOROIDAL DRAINAGE :

• **STEP 1:** Eye is rotated upwards using an inferior corneal or rectus traction suture.

• Infero-nasal or infero-temporal quadrants can be chosen for drainage, depending on the most dependent area of detachment.

• **STEP 2:** After incising the conjunctiva and Tenon's layer in a radial manner about 5-6 mm away from the limbus, a radial scleral incision is made and slowly dissected to reach the suprachoroidal space. Escape of straw-colored fluid is seen on reaching the suprachoroidal space.

• **STEP 3:** During the drainage, AC deepening with BSS or viscoelastic should be done.

• **STEP 4:** Pressure on sclera near sclerotomy and passing a spatula between the sclera and the choroid through the sclerotomy facilitates drainages.

• **STEP 5:** Gentle cautery to edges of the sclerotomy helps in keeping it open allowing a continuous drainage of fluid.

• **STEP 6:** The conjunctiva and Tenon's layers are closed in layers.

• It may take several months for the complete resolution of detachment and cataract formation is commonly seen.

3.LOW INTRAOCULAR PRESSURE WITH SHALLOW OR FLAT AC & ELEVATED BLEB

• Excessive filtration (**OVER-FILTRATION**) is the common cause.

• The condition usually resolves spontaneously.

• CAUSE :- Scleral flap leakage due to insufficient resistance to outflow by the lamellar scleral flap.

• Bleb leakage through an inadvertent buttonhole or due to inadequate closure of the conjunctiva and Tenon capsule is most common cause.

• SIGNS :

• Low IOP with a well formed bleb in a scleral flap leak and flat in a bleb leak.

• Seidel test is negative in a scleral flap leak and a positive in a bleb leak.

• The cornea may manifest signs of hypotony such as folds in Descemet membrane.

• Choroidal detachment may be present.

TREATMENT : INITIAL CONSERVATIVE TREATMENT :

• Observation with 1% atropine and pressure patching, with judicious use of aqueous suppressants to reduce the excess aqueous outflow to prevent PAS formation and malignant glaucoma. If the above measures are ineffective then temporary tamponade of the conjunctiva is given.

• DEFINITIVE TREATMENT:- Inserting additional conjunctival sutures.

• Transconjunctival scleral flap suture.

• If potentially serious shallowing is present, the anterior chamber can be reformed with a viscoelastic substance.

• Choroidal detachments rarely require drainage.

FACTORS AFFECTING MANAGEMENT :

• Duration since surgery

• Type of surgery - use of antimetabolites

• Degree of anterior chamber shallowing

• Clinical Picture

• Visual acuity

• IOP

• Bleb characteristics

• Condition of the Optic nerve head

• Posterior chamber findings

• Cause of shallow/ flat anterior chamber

PERSISTENCE OF SHALLOWING MAY LEAD TO :

• Formation of peripheral anterior synechiae, Failure of filtration, Lenticular changes, Corneal decompensation, Posterior synechiae, Hypotonous maculopathy.