# STANDARDIZED CLINICAL PROTOCOLS

# **Cataract Surgical Protocols**





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# SURGICAL PROTOCOL FOR ADMINISTERING ANAESTHESIA

# 1. Block Room

- Block room doctor should wash their hands
- Checking of emergency kit (adrenaline, atropine, Deriphylline, Dexamethasone, hydrocortisone, phenergan, mephentin, diazepam, O2 cylinder with kit, I V Kit, syringes, plaster, scissors, I V normal saline, Intubation kit, Suction apparatus, etc) should be done every day.

# 2. Selection of Anaesthetic solution

- To all normal patients 2% Xylocaine 30 ml mixed with adrenaline 0.5 ml (1:1000) with 1 amp. Hyaluronidase.
- To patients with hypertension and cardiac diseases 2% xylocaine with 1 amp Hyaluronidase (1:1)

As the time taken for cataract surgery is short, it may not be necessary to add Bupivocaine along with xylocaine for anaesthesia. The only advantage may be that the patient may not feel the pain for a long time as there is prolonged anaesthesia. At the same time it is known that the bupivocaine produces lid edema and chemosis.

# 3. Quantity of anaesthetic solution

• For peribulbar block - 6 to 7cc

# 4. Needles

- For facial & peribulbar block use No.23, 1" disposable needle
- Alternatively we can use sub conjuntival No 26G,1/2" disposable needle through trans conjunctival route.



# 5. Checking the case records

- Confirm the name of the patients. If you find two or more with the same name, confirm patients relative routinely with place. E.g. W/O, H/O, F/O, M/O, S/O
- Confirm the eye to be operated
- The type of surgery to be performed
- The type of cataract
- Vision with refraction
- IOP & ducts
- IOL power & size
- Check for completeness of record
- Recheck for specific systemic diseases (e.g. asthma, etc.)
- Any systemic diseases like DM,HT,IHD
- Any complicating conditions like PXF, Subluxated lens, rigid pupil etc.
- Whether diabetes controlled FBS < 140mg%

# **BP** < 100mmhg diastolic and < 160mmhg systolic

# 6. Hypotony

• Massage is to be either digital or by super pinky.

# Contra indicated In

- o Subluxated lens
- Resurgeries
- Perforating injury

# Vigorous massage avoided in

- o PXF
- o Myopia
- o Traumatic cataract
- Hyper mature cataract

# Corneal status, anesthesia and akinesia checked



# 7. I.V. Mannitol

2.5 cc per kg body weight of 20% Mannitol to be given about half an hour before surgery.Avoid in uncontrolled HT, cardiac patients, and renal diseases. Before starting drip check BP & CVS examination.

# Indications

- IOL exchange / explants
- Subluxated cataract
- Associated with R.D, VH (optional)
- Traumatic cataract
- Secondary IOL
- In recommended glaucoma cases

Patient is moved on the stretcher and is told to avoid ambulation for 6 hours.

# 8. Informing the surgeon

- Inform the operating surgeon in case of any complicating condition.
- Inform if surgery other than cataract / IOL
- Patients with the same name, check the address in details & also the eye examination findings

# 9. Decision regarding the postponing the case

- DM RBS > 200 MG%
- BP diastolic > 90mmhg, systolic > 150mmhg
- Severe wheezing
- Any complication of local anaesthesia
- Positive conjunctival cultures
- Local factors any infection of lids and adnexa
- IOP of more than 30 mm hg in spite of all medications, except in lens-induced glaucoma.



# 12. Managing Anaesthetic Complications

# A. Vasovagal syncope :

This is the most common complication

- The patient to be made to lie down in supine position and the legs raised up. The room should be airy. The patients clothes should be loosened
- Monitor pulse and BP
- Give IV atropine one amp. If there is bradycardia or hypotension.
- To keep resuscitation equipment ready like oxygen cylinder, endotracheal tube, laryngoscope, ambu bag, scalp vein set, emergency drugs.
- Periodic check of expiry dates of emergency drugs.
- To inform anaesthetist or physician, if patient does not have adequate recovery.

# B. <u>Seizures</u>

- Make patient lie down
- Turn face to the side
- Insert a mouth gag
- Intravenous diazepam if required
- Oxygen therapy

# C. <u>Retro bulbar haemorrhage</u>

- Pressure pad and bandage
- Start patient on acetazolamide, check tension
- Lateral canthotomy if required
- Postpone surgery if possible
- Fundus examination



#### STANDARDIZED PRE-OPERATIVE PROTOCOL FOR CATARACT SURGERY

#### The purpose of the pre operative assessment is to:

- Confirm the diagnosis of visually significant cataract
- Ensure the cataract is the cause of the visual symptoms
- Determine if there is co-existing ocular pathology
- Ensure the patient wishes to undergo surgery & understands specific risks if any
- Assess systemic problems and to manage it

#### 1. Admission:

Admission is done one day earlier or 2 hours prior to surgery (For local patients, who had pre op. investigations earlier) on the day of surgery

- a. Patient is preferably seen by the operating surgeon, especially if they for posted for re-surgery or have other associated complications requiring deviation from regular surgical technique.
- b. Slit lamp examination in detail and to look for conjunctival congestion, discharge, cornea, AC depth, lens maturity (in Phaco cases) and phacodonesis.
- c. Pupillary reaction to rule out APD
- d. Posterior segment evaluation of both eyes, if view is sufficient.
- e. Ask for history of systemic illness/ allergy to drugs.
- f. To explain about possible conversion to routine ECCE with IOL in cases with small pupil and advanced nuclear sclerosis who want phacoemulsification.
- g. One-eyed patient should be given identification markings.

#### 2. Investigations

#### a) Routine Investigations: For all cases

- 1. Visual acuity for both eyes
- 2. Intraocular pressure IOP
- 3. Duct including application of pressure over the sac region
- 4. Blood pressure
- 5. Urine sugar
- 6. Blood sugar (optional)



# b) Additional investigations

- 1. ECG for adults (For known cardiac patients, those with history suggestive of cardiac ailments), very old people
- 2. Chest x-ray (If advised by physician)

# c) Additional investigations: For GA cases

- 1. Blood Count, HB%
- 2. ECG, chest x-ray for adults
- 3. Weight of the patient
- 4. Check up by anaesthetist.

# d) Conjunctival culture is required in the following cases

- 1. One eyed patients
- 2. DCT done before Cataract Surgery
- 3. H/O Chronic infection eg. Blepharitis
- 4. Duct not free & partially free with clear fluid
- 5. Uncontrolled diabetes mellitus
- 6. In post Trabeculectomy patients going for cataract surgery
- 7. Any H/O previous intraocular surgery (preferably) .

# e) Checking of Xylocaine sensitivity

Optional in patients with h/o drug allergy.

# 3. Biometry

An interocular difference in axial length of more than 0.3mm or K readings which vary by more than one dioptre requires confirmation. These results should only be accepted when repeated measurements show consistent results

When there are large differences between the K readings and/or axial lengths, consider the possibility of amblyopia or vitreous opacities such as asteroid hyalosis. An amblyopic eye may have been forgotten by the patient and may not be corrected in the current spectacle prescription.

For highly myopic eyes (axial > 28mm), B-scan should be carried out to determine the presence or otherwise of staphylomata.

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| Axial length (mm) | Formula           |
|-------------------|-------------------|
| < 22 mm           | SRK T             |
| 22 – 24.5 mm      | Hoffer Q or SRK/T |
| > 24.6 mm         | SRK/T             |

The SRK T is regarded as a very good general formula.

# The doctor doing the pre operative assessment also should formulate a surgical plan including:

- Type of anaesthesia (Including need for stand by anaesthetist)
- IOL type and power (order special lenses if required)
- Incision placement and astigmatism reduction procedures if appropriate
- Complexity of surgery e.g. small pupil, pseudoexfoliation, previous eye surgery
- Level of surgical experience required

# 4. Pre-medication

All patients should wash their face with soap and water. The ward nurse should then clean the brow region and lid margin with 5% povidone iodine solution

- Topical antibiotic: 6 8 times previous day and hourly on the day of surgery
- Preferred antibiotics Ciprofloxacin eye drops
- Diazepam 5 mg: Previous night (optional)

There is no need for pre operative oral or parenteral antibiotics. In high risk cases T.Ciprofloxacin 500mg twice daily for 3 days may be useful.

# 5. Instruction regarding dilatation

- Tropicamide with phenylephrine 1 drop every 15 min. 2 to 3 times
- Plain Tropicamide for hypertensives and cardiac cases
- Ketrolac eye drops 3 times every 15 min.
- Dilate 90 minutes before surgery.

# 6. Patient's cleanliness

• -Bath before surgery.



- Hair cut if necessary previous to surgery.
- -Clean clothes to be worn.

# 7. No clipping of eye lashes if drapes are used.

**Technique for applying the drape**: Apply drapes taking particular attention to ensure its tight adherence at the medial canthus, nasal bridge and naso – labial fold. Keep the adhesive slightly redundant over the open eyelids while applying. However, prevent corneal touch. Lift the temporal edge of the adhesive at the lateral canthus and make a horizontal slit upto the medical canthus. At the medical canthus, extend the cut in a "V" or "T" shaped manner. Insert the eyelid speculum through the slit opening in such a manner that the eyelid margin and eyelids are wrapped with the edges of the adhesive.

#### 8. Pre - Operative counseling:

Explain to the patient about the anaesthesia, surgical procedure, the level of pain they may experience during surgery, about draping etc., Also explain about the post op. follow up and explain the do's and don'ts during the post op. period. Group counseling is preferred.

# 9. Day of surgery

One eyed and diabetics patients to be given preference in surgery list Clean clothing to be worn by the patients Light food before surgery advisable Constrict pupil for secondary AC IOL

# **Medication:**

T.Alprazolam 0.25 mg (Optional)- In the morning T.Acetazolamide – 1 hour before surgery



#### PRE OPERATIVE PROTOCOL FOR MANAGEMENT OF SYSTEMIC DISEASES

#### Decision Making on patients with systemic diseases

#### **Diabetes**

Criteria for admission; RBS < 200 mgs % Criteria for surgery Urine Sugar nil/1+ With FBS < 160 mgs % on the day of surgery On the day of surgery To stop oral anti diabetic drugs on the morning of surgery If on insulin, 1/3 of the dose to be given in the morning

#### **Hypertension**

#### Criteria for admission

BP up to 160/90 mm hg

#### Criteria for surgery

Systolic pressure  $\leq$  150 mm hg

Diastolic pressure  $\leq$  90 mm hg

#### Upper limit is 180/100 mm hg

For cases coming from camp having high BP, give sedatives first before starting antihypertensive drugs. Check the BP in the ward before going to OT.

#### On the day of surgery

Routine medication should be taken

To avoid adrenaline in local anaesthesia



#### Cardiac cases

#### Criteria for admission

A recent ECG & clearance by physician

Surgery to be undertaken a minimum of 3-6 months after myocardial Infarction

Oral antiplatelet need not be stopped for cataract surgery

If on oral anticoagulants to check for prothrombin time

If less than 18 seconds can be taken for surgery

# On the day of surgery

Routine medication to be continued .

No adrenaline in anaesthetic solution or phenylephrine for dilation.

To provide stretcher or wheel chair .

Cautery should not be used in patients with pace makers.

# Stand by physician or anaesthetist

# **Asthmatics**

#### Criteria for admission

1. Asthma should be under control with drugs

2.To continue the medicines during hospital stay

3. Check for wheeze before surgery and if present give IV bronchodilators or steroids

# On the day of surgery

Avoid plastic drapes

Special care for ventilation while draping. All asthmatics need an airway during surgery.

Use Oxygen / Nebulizer during surgery if the patient is uncomfortable.

# Inj. Deriphylline / Dexamethasone 1 amp. IV, SOS

Switch off the air-conditioner (optional)

Avoid NSAIDS. If needed to use tablet nimusulide / paracetamol



#### **Renal Failure/renal transplant**

Avoid tablet diamox and NSAIDS If at all, use paracetamol If systemic antibiotics are needed give Oral or IV ciprofloxacin

#### Any septic focus

Dental infection, history of purulent discharge Treat adequately before surgery.

# Physician's opinion essential

Uncontrolled DM & HT cases if BP >170/100 - Physician opinion RBS above 200 mg% Known cardiac problems Recently diagnosed uncontrolled asthmatics Renal failure/transplants Liver disease Known bleeding disorders Other systemic problems if any (To be decided by doctor) Patients with systemic illnesses are encouraged to go back to their treating physicians for control of their problem and get it controlled before coming for admission. Admitted if the patient is unwilling to go back and allow them to stay few days to prepare them before surgery.

# Choice of sedation

Anxious or uncooperative patients should be given IV midazolam. This should be given only by the anaesthetist



# **POST-OPERATIVE MANAGEMENT**

# **Routine Management of uncomplicated cases**

#### On the day of surgery:

*Before surgery:* T.Acetazolamide – 1 hour before surgery

After surgery: T. Paracetamol 500 mg, repeated after 8 hours if needed.

# Planned ECCE / SICS / with IOL / without IOL :

First dressing can be done 8 hours after surgery.

#### Look for the following findings (pupil to be dilated)

- Section Apposition of Wound / Wound Leak / Gape
- Cornea Epithelial Defect, Edema, SK
- A.C. Hyphema, Hypopyon, Cortical Matter, Depth
- Iris Iritis, Fibrinous reaction
- IOL Centration
- Pupil Round, Mobility, Vitreous
- PC Opacity, Rent, Vitreous disturbance
- Vitreous Vitreous disturbance
- Fundus -Red Glow

The main aim of postoperative examination in the morning is to look for any early sign of infection, as one has to withhold the steroids and start other intensive measures.

#### **Routine Medication – 1<sup>st</sup> day**

- Immediate post-op analgesic tablets along with Tab. Acetazolamide SR 1 tab –optional.-if required.
- Combined Antibiotic & Steroid eye drops are applied four to six times per day as required
- Homatropine 1 time per day.



# Discharge Timing

- Base Hospital patients 1<sup>st</sup> PO day
- Camp  $-1^{st}$  PO day / ideally on the second or third day.
- Keeping the camp patients for one extra night will help to properly counsell them about follow up, post op. medications, health education as well for motivating them to motivate others in the community to come for surgery.

# On discharge check the following:

- Vision with pin hole
- Fundus

# On discharge explain about:

- Medications
- Precautions
- Routine follow up
- S.O.S. Calls
- Advise the patient regarding tapering dose of Combined Antibiotic & steroids
  Ofloxacin with prednisolone & ofloxacin with dexamthasone eye drops.
  - 6 times a day 7 days
  - 5 times a day 7 days
  - 4 times a day 7 days
  - 3 time a day 7 days
  - 2 time a day 7 days
  - 1 time a day 7 days
  - Cycloplegics (Homoatropine / Cyclopentolate ) & NSAID (Diclofenac) drops or other medications given if required – for 10 days.

Like the pre operative period, there is no need for systemic antibiotics or for prolonged use of additional topical antibiotics.



#### **Special Instruction during Discharge:**

- Encourage mobility and early resumption of routine activities
- No head bath for 7 days /camp patients 30 days.
- Normal diet from the day of operation
- No river or pond bath (dip in) for 3 months
- After suture removal no pond or river bath for at least 1 week
- TV viewing & reading if comfortable
- Not to drive two wheelers without protecting glasses
- Not to lift heavy weight for ECCE with sutures
- Dark glasses to be used for one month for outdoor activities till regular glasses

#### To report immediately if they have:

- Redness
- Pain
- Sudden diminution of vision

#### **Routine follow up**

#### FIRST follow up – After 30 days ;

- Refraction, Slit lamp exam. Fundus exam.
- Glass prescription if visual recovery is satisfactory
- If visual acuity is not good look for CME & Start NSAID drops
- Follow up SOS or after 6 months.

The patients who have undergone Manual SICS can be given spectacles after 30 days. However it is preferable to see conventional ECCE – IOL patients after three months for refraction and removal of sutures, if required.



# **MEDICATION PROTOCOL FOR CATARACT SURGERY**

# I. Pre operative:

- 1. Ciprofloxacin eye drops: 2 drops for 6 times on the day before surgery.
- 2. T.Alprazolam 0.25 mg 1 tablet at bed time

# II. On the day of surgery:

# For dilatation

- Tropicamide with phenylephrine 1 drop every 15 min. 2 to 3 times
- Plain Tropicamide for hypertensives
- 1% cyclopentolate 1 drop every 15 min. 3 times
- NSAID eye drops 3 times every 15 min.

**Before surgery:** T. Alprazolam 0.25 mg (Optional)- In the morning

T.Acetazolamide – 1 hour before surgery

# Anaesthetic solution for giving retro or peribulbar block

- Normal patients: 2% Xylocaine (30ml) mixed with 0.5 ml of *adrenaline with* (1:1000) with 1,500 units of Hyaluronidase.
- Patients with hypertension and cardiac diseases: 2% xylocaine with 1,500 units of Hyaluronidase (with Bupivocaine (1:1)-optional.

# Quantity of anaesthetic solution

- For peribulbar block 6 to 7 cc
- For facial block 3 cc

# After surgery in the ward on the day of surgery

- 1. T. Acetazolamide SR 1 tablet SOS.
- 2. T.Paracetamol 1 tablet twice daily
- 3. T.Alprazolam 0.25mg at bed time



# III. First postoperative day

- 1. Combined Antibiotic & Steroid eye drops are applied four to six times per day as required
- 2. Homatropine 1 time per day.
- 3. Other drugs like acetazolamide and NSAID drops or tablet to be given if required

# IV. After discharge

3 bottles of steroid antibiotic solution of 5 ml each

Advise the patient regarding tapering dose of Combined Antibiotic & steroids

- 6 times a day 7 days
- 5 times a day 7 days
- 4 times a day 7 days
- 3 time a day 7 days
- 2 time a day 7 days
- 1 time a day 7 days

Cycloplegics (Homoatropine / Cyclopentolate) & NSAID (Ketrolac) drops or other medications given if required – for 10 days

There is no need for routine use of oral antibiotics either pre operatively or post operatively. Antibiotic steroid combination eye drops is sufficient for post operative use and there is no need for additional antibiotic eye drops.

