



CERTIFICATE OF ATTENDANCE

THIS IS TO CERTIFY THAT

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HAS ATTENDED AS

Speaker

5th INASCERS BIENNIAL MEETING 2019

Jakarta, 22-24 February 2019

Hadi Prakoso, MD

Chairman
Organizing Committee



Setiyo Budi Riyanto, MD

President
INASCERS

SMALL PUPIL PHACO WITHOUT IRIS RETRACTOR : CAN WE HANDLE IT?

MUHAMMAD HIDAYAT

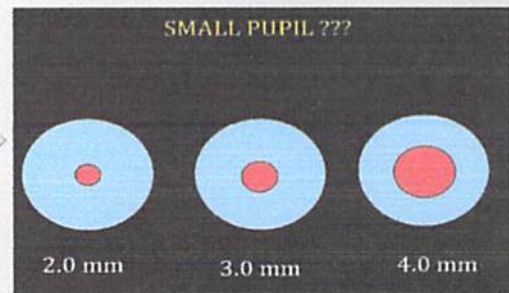
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INTRODUCTION

SMALL PUPIL CATARACT

A relatively common problem experienced during cataract surgery

Defined as pupil <4 mm in diameter → Prevalency 2 %



SMALL PUPIL

- Major challenge → Lack of visualization

Difficult CCC

Sculpting

Segment
removal

Cortical clear
up

IOL
Implantation

COMPLICATION

- Posterior Capsule Rupture
- Corneal endothelial cell loss
- Vitreous loss
- Dropped nuclei
- Iris trauma, damage
- Capsular phimosis

TECHNICAL CHALLENGES OF SMALL PUPIL PHACO

- Reduced red reflex
- Increased risk of iris damage
- Iris bleeding
- Problems in ensuring in-the-bag IOL placement
- Iris prolapse from wound
- Incomplete evacuation of the cortical material
- Small anterior capsulorhexis size

COMMON CAUSE OF SMALL PUPIL

- Post uveitis cataract (posterior synechiae)
- Pseudoexfoliation syndrome
- Diabetic patients
- Floppy iris syndrome (when on alpha blocker drugs)
- Prolonged miotic therapy
- Neurological conditions



CLASSIFICATION OF SMALL PUPIL

FUNCTIONAL

(Hyporeactive, lazy pupil)



Pupil dilate under pharmacological effect

- High hyperopes
- Constantly medicated eyes
- Elderly

ANATOMICAL

(Fixed pupil)



Not dilate to mydriatic drugs :

- Inflammatory (post uveitis)
- Traumatic
- Neurological disease
- Chronic miosis (iatrogenics)

FUNCTIONAL SMALL PUPIL

Pharmacological treatment

- Phenyleprine 10 %
- Tropicamide 1%
- Ketorolac 5 % (NSID)
- Intracameral adrenalin : 0,5 ml
adrenaline 1:1000
- Heavy viscoelastic

Mechanical Treatment

- Iris hook
- Bheeler pupil dilator
- Keuch pupil dilator

FIXED PUPIL/ ANATOMICAL

Mechanical treatment

- Nylon hook
- Stretch pupiloplasty
- Iris rings
- Malyugin pupil dilator

Incisional treatment

- Spinctectomy
- Iridotomy
- Iridectomy

PUPILS THAT DO NOT RESPOND ADEQUATELY :

• **Patients with pseudoexfoliation syndrome :**

- Have a higher risk for complications
- Poor pupil dilation and compromised zonular integrity

• **Patients with topical Medications for Glaucoma**

Permanent pupillary miosis related to synechiae

Poor dilation from hypertrophy of the pupillary sphincter muscle

▪ **Diabetes**

- The pupil is smaller and less response to mydriatic agents , due to diabetic neuropathy
- Constriction of the pupil during cataract surgery is more obvious .

MEDICAL AND SURGICAL MANAGEMENT OF THE SMALL PUPIL

TWO GOALS IN MANAGING SMALL PUPIL

A. Pharmacological

B. surgical techniques

- **Primary :**

- Medical pre medication for proper surgical preparation
- Achieve adequate pupil size to perform safe cataract removal

PHARMACOLOGICAL APPROACH

Preoperative → starts 2 days before surgery.

- Phenylephrine 2.5%
- Tropicamide 1 %
- Cyclopentolate 1%
- Ketolorac 0.5%

SURGICAL TECHNIQUES

- Posterior synechia → synechial released devices
- A high-viscosity viscoelastic is used to dilate the pupil.
- Surgical methods to enlarge the pupil can be classified into :

1. Pupil stretching



2. Iris cutting



3. Iris retaining

OPERATIVE

INTRACAMERAL MYDRIARTICS

I: 1000 (1 mg/ml) Epinephrine

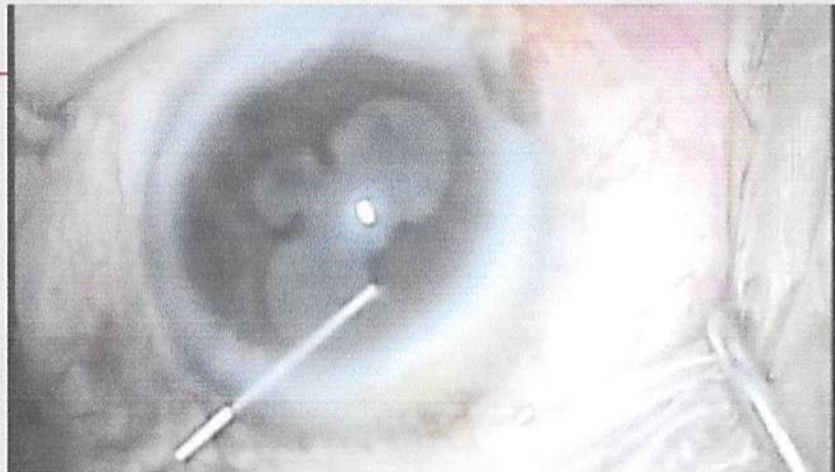
Lidocain/ Epinephrine mixture

CAN WE DO CATARACT SURGERY IN SMALL PUPIL?

Without Iris-retaining devices ?

Pupillary mydriasis can be achieved by :

- Injection of an ophthalmic viscosurgical device
- Membranectomy
- Release of Posterior Synechiae
- Pupil Stretching

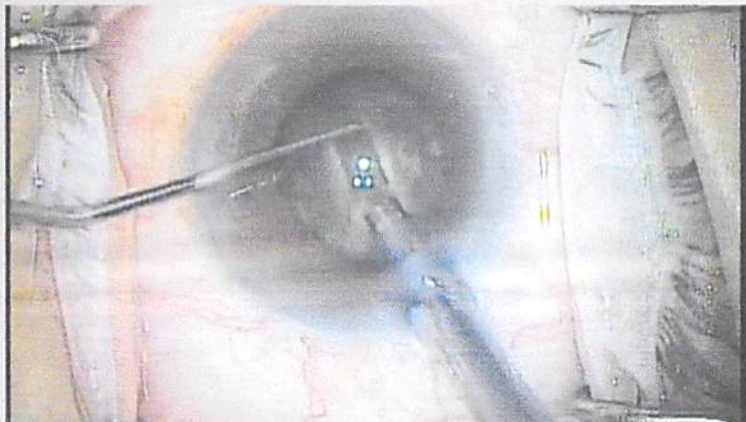


THE PHACOEMULSIFICATION TECHNIQUE

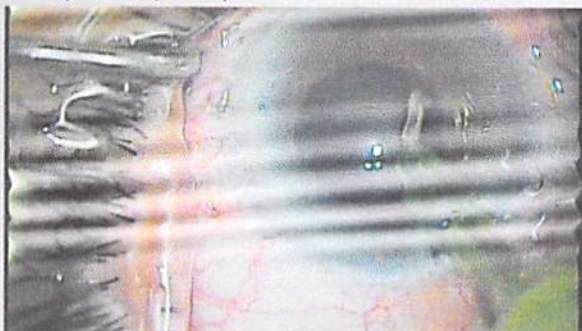
- A longer clear corneal incision
- High-viscosity viscoelastics
- The capsulorrhexis underneath the iris



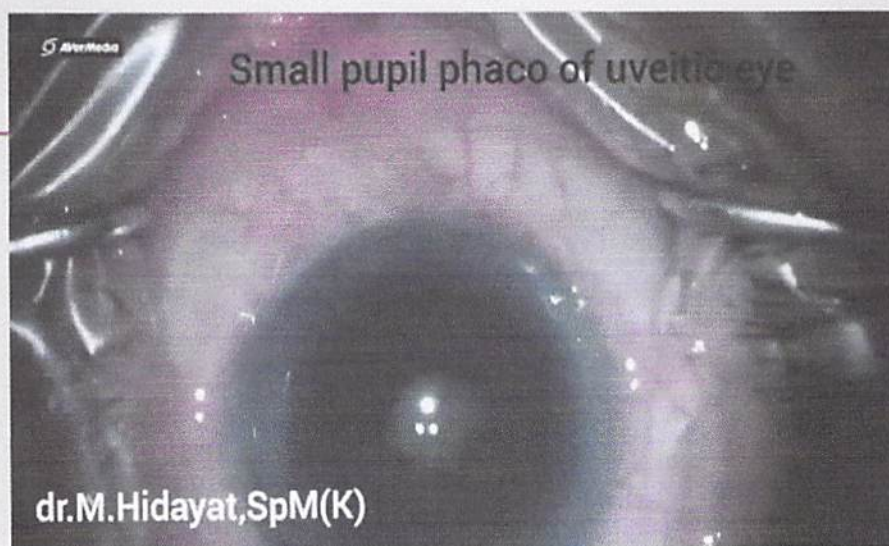
- Endocapsular vertical chopping phaco-technique



- Last piece emulsify can be done in AC
- I/A tips 45° (curve)



- IOL Implantation
- Remove VES
- All parameter lower than usual



CONCLUSION

- ✓ A complete medical history is critical in identification of patients with pharmacologically induced pupillary miosis.
- ✓ The use of NSAIDs preoperatively, support mydriasis and/or prevent miosis.
- ✓ **A specific techniques for small pupil must be safe, quick, effective and has same result with cataract surgery through normal pupils.**

