Cataract Patient Care

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Giovanni Caboto Club

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Objectives

- Diagnose and differentiate between types of cataracts
- Know when to refer for assessment
- Basic knowledge of available intraocular lenses
- Basic understanding of technique
- Understand post-operative management and recognize major complications
Outline

- Anatomy of the eye and lens
- Diagnosis of a Cataract
- History of Cataract Surgery
- Pre-operative Discussion
- Technique
- Intraocular Lenses
- Intraoperative Challenges
- Post-operative Management
Anatomy of the eye
Anatomy of the eye

Fig. 2. Sagittal horizontal section of the adult human eye.
Anatomy of Human Lens
Diagnosis of a Cataract
Diagnosis of a Cataract

**SYMPTOMS**

- Blurred vision
- Gradually progressive
- Painless
Diagnosis of a Cataract

- Signs of Cortical Cataract
  - Spokes in red reflex
Diagnosis of a Cataract

- Signs of nuclear cataract
  - Oil droplet red reflex
Nuclear Cataract
History
History

- India 600 BC

Fig. 2. Sagittal horizontal section of the adult human eye.
Extracapsular cataract extraction
Jacques Daviel
Paris 1748

History
History

- 1940’s
- Sir Harold Ridley
- Intraocular lenses
History

- Phacoemulsification
- Charles Kelman
- New York 1960’s
History

- Viscoelastics
- Foldable IOLs
Pre-operative Discussion
Pre-operative Discussion

- Age
- Health (i.e. able to lie on back)
- Medication (Alpha-blockers)
- Visual needs
- Refractive error (myopes will need reading glasses)
Pre-operative Discussion

- Informed consent
  - Risks
  - Benefits
  - Alternatives
Pre-operative Discussion

- IOL selection
  1. Monofocal (foldable vs. rigid)
     - Toric
     - Aspheric
     - Filtering
  2. Multifocal
     - Toric
     - Aspheric
     - Filtering
  3. Accommodative
Pre-operative Discussion

- Pre-treatment with topical medication
  - Antibiotic
  - NSAID
Technique
Video

CATARACT SURGERY PART 1
Technique

- **Instrumentation**
  - Blades (keratomes, paracentesis etc.)
  - Visco devices
  - Second instruments (choppers, spatula etc.)
Technique
Technique

- **Instrumentation**
  - Phacoemulsification machines
    - Venturi-type pump
Technique

- Nuclear Removal
  - Phaco chop
  - Divide and conquer
  - Chip and flip
Video

CATARACT SURGERY PART 2-Nuclear removal
Intraocular Lenses
Intraocular Lenses

1. Monofocal (foldable vs. rigid)
   - Toric
   - Aspheric
   - Filtering

2. Multifocal
   - Toric
   - Aspheric
   - Filtering

3. Accommodative
IOL selection

- Rigid
  - Polymethylmethacrylate (PMMA)
IOL selection

- Foldable
  - Silicone
  - Acrylic
Toric Lenses
Toric Lenses

- Designed to correct corneal astigmatism
- Available in cylinder powers from 1.5 to 6.00 diopters
Aspheric Lenses
Basis for Aspheric IOLs

- Minimize positive spherical aberration inherent in conventional IOLs
- Improve image quality over that of conventional IOLs
Real world IOL results

- 25% reduction in contrast sensitivity with a spherical IOL vs. aspheric IOL
Reduced Contrast Sensitivity

- Leads to difficulties in:
  - Driving at night, or in rain or fog
  - Judging distances
  - Walking down steps
  - Recognizing faces
  - Reading instructions on a medicine container
  - Navigating unfamiliar environments
Filtering Lenses
Filtering Lenses

- Cataract extraction removes eye’s natural blue light filter
- Retina exposed to higher levels of blue light than before
- Filtering lenses block much of the blue/violet wavelength similar to the normal non-cataractous human lens
Accommodative Lenses
Accommodative Lenses

- Accommodative IOLs have hinges to mimic the accommodative process of the natural lens
- Reduce dependence on reading glasses
Accommodative Lenses

DUAL OPTIC IOL

- Dual optic IOL will likely provide enhanced amplitude of accommodation
- Will require highly precise pre-operative biometry calculations
Light Adjustable Lens
Video

CATARACT SURGERY PART 3-
Intraocular lens implantation
Intraoperative Challenges
Intraoperative challenges

- Small pupil
- Dense cataract
Intraoperative Challenges

- Management of small pupil

**MECHANICAL/SURGICAL**

1. Two-instrument Iris Stretch (Kuglen or Y-Hooks)
2. Iris Stretch: Beehler Device (2 or 3 pronged instrument)
Intraoperative Challenges

- Management of small pupil
  Iris Retractors/Hooks
  - Iris retractors (silicone or titanium) use silicone cinches to adjust the iris position
Intraoperative Challenges

- Management of dense cataract
  - Capsular dyes (vision blue)
Post-operative management
Post-operative management

- Follow-up
  - One day
  - One week
  - One month
Post-operative management

- Topical medication
  - Antibiotic
  - Nsaid
  - Steroid

![Images of topical medications]
Post-operative complications
Post-operative complications

- Iris prolapse
  - Iris repositioning
  - Pupil constricting injection
Post-operative complications

- Post-operative inflammation
  - Steroid
  - Manage IOP
Post-operative complications

- **Endophthalmitis**
  - Endophthalmitis vitrectomy study
    - Vitreous tap and intravitreal antibiotic injection
    - Vitrectomy and intravitreal antibiotic injection
References


THANK YOU