Use of the Slit Lamp & Angle Assessment

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Features

• Illumination system

• Magnification via binocular microscope
Illumination System

1. Unfiltered
2. Heat absorbing
3. 10% Grey
4. Red free
5. Cobalt blue

Height Filters & Cobalt Blue

- Knob changes illumination from narrow to fully open
- When checking angles, it should be at the narrowest width
- If performing Goldmann tonometry, it should be at the widest

Width of Slit
Basic Components: Magnification & Movement

1. Eye pieces
2. Magnification changer
3. Joy stick
4. Lock
5. Base carriage

Magnification

Most slit lamps have:
• 2 objective settings (1 and 1.6)
• 2 eye piece options (10x and 16x)
• Total magnification ranges thus from 10x-25x

Power On
Focus the Microscope by

1. Adjusting interpupillary distance
2. Adjusting the eye pieces (set at 0 or dial in your refraction)
3. Checking magnification is on 1x setting

Patient Position

- Switch on power & unlock base screw
- Cleaning the forehead bar
- Changing paper strip fromchner
- Comfortably sitting of pt. and the examiner
- Counselling the patient
- Proper positioning of the pt.
- Target fixation
- Adjust exposure to correct for examiner’s refraction error and interpupillary distance
- Children may need to stand, or they can sit on parent’s lap or kneel on a stable chair

Focus Patient’s Eye

- Microscope straight
- Light column 20-30 degrees from side
- Microscope moves via joystick
- Move laterally
- Move in and out
  - The closer the SL, the narrower the slit
- Bimanual
Adjust the Illumination

- Brightness: filters
- Width: slit vs broad beam
- Height: long vs pinpoint
- Cobalt blue

Video Tutorial from UBC Medicine

Anterior Segment Examination

- Systematic examination of the eye from front to back
Anterior Segment Exam

- The SLE looks at the structures of the front third of the eye
  - Lids and Adnexa
  - Conjunctiva and Sclera
  - Tear Film
  - Cornea
  - Iris
  - Anterior Chamber
  - Crystalline Lens

Many doctors will also examine the
- C:D Ratio
- Macula

Using a 78 or 90 diopter lens instead of the direct ophthalmoscope

Lids and Lashes

![Image of lids and lashes]
Cataractous Crystalline Lens as Seen Through the SL

Retroillumination

Retrolumination

Red reflex test: A red light beam is directed through the pupil and reflects off the retina to reveal lens opacity (best with dilated pupil) and its transformation (best with undilated pupil).
Basic Anatomy

- Average axial length of human eye – 24mm
- Myopic eye is longer
- Hyperopic eye is shorter

Review of the Anterior Chamber

Purpose of Angle Assessment

- Determine Anterior Chamber depth
- Precaution for dilation

Why ?
Analogy

Penlight Technique

- Theory is that if the light can get through the AC, so can the aqueous

Pre and Post Dilation
Using the Slit Lamp to Assess Angles

Open Angle vs. Closed

Open Angle vs. Closed
**Technique**

- Position patient as you would for exam
- Place mirror shaft at 60 degrees from right temple
- Intensity high; slit low
- Begin at Right temple, Right nasal, Left nasal, left temple
- If narrow look at 6:00 and 12:00

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**Van Herrick’s Technique**

- Used to evaluate anterior chamber angle
  - Narrow slit beam close to limbus with illumination angle 60° and medium magnification:
  - Compare the width of cornea seen by optical section with the dark section seen between ant. surface of iris & back of cornea

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**Van Herrick’s Technique: Grades 4 through 1**

**Interpretation:**
- Grade 4 – open anterior chamber angle 1:1 ratio
- Grade 3 – open anterior chamber angle 1:2 ratio
- Grade 2 – narrow anterior chamber angle 1:4 ratio
- Grade 1 – risky narrow anterior chamber angle less than 1:4 ratio
- Grade 0 – closed anterior chamber
Myope or Hyperope?

PUPIL ASSESSMENT

Pupil Assessment

- Measure pupils in dim light and bright light in millimeters

- A good resource
  - https://www.richmondeye.com/wp-content/uploads/2014/10/d0591500b64e96eb4853b2990e86d90a.htm
PERRLA

- Pupils are Equal Round and Reactive to Light and Accommodation

Direct Response vs. Consensual Response

- Direct response:
  - When you shine a light in the right eye the right pupil should constrict

- Consensual response:
  - When you shine a light in the right pupil the left pupil should also constrict

Detecting APD with Swinging Flashlight Test

- No Light
- Normal Response to Light
- Positive RAPD of Right Eye
Video Tutorial - RAPD

Abnormalities

Anisocoria - different size pupil  Iris Coloboma (irregular pupil)

Importance of Dilation

• Notify physician prior to dilation if any pupil abnormality detected that is not previously documented or changed.
• Discuss importance of dilation with patient