



CANADIAN ASSOCIATION OF OPTOMETRISTS
ASSOCIATION CANADIENNE DES OPTOMÉTRISTES

Introduction to Slit Lamp Utilization

Presented by:
Dr. Allison Scott



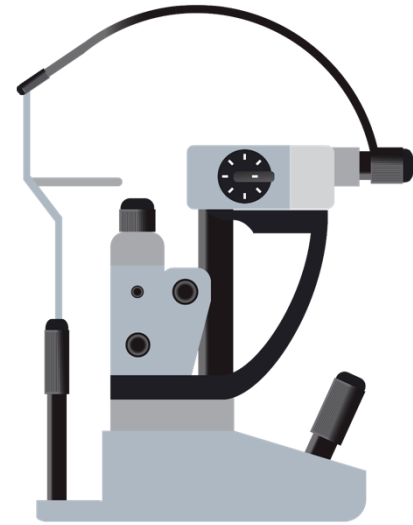
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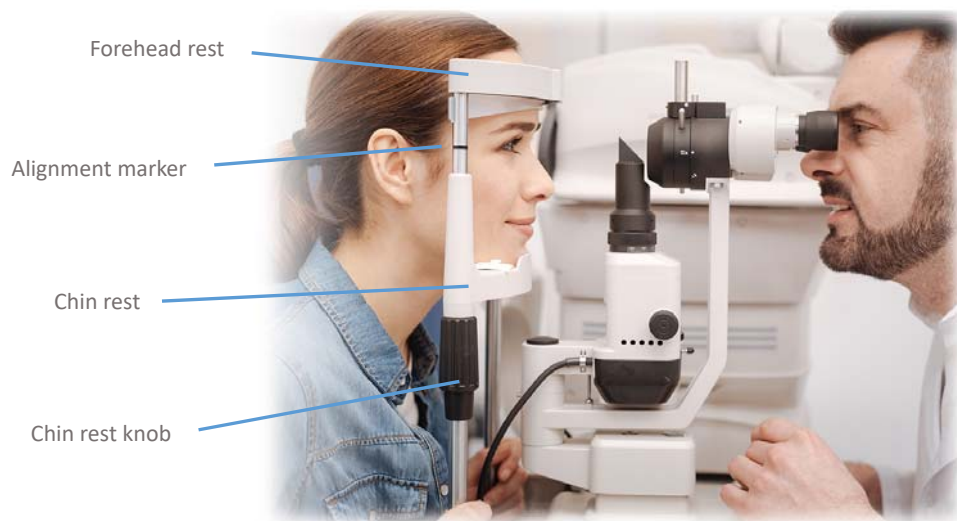
Slit Lamp Examination

The slit lamp is an essential tool used during the comprehensive eye exam. Made up of a microscope and bright light, it allows the optometrist to examine the different structures of the eye.



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Positioning the Patient



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Binocular Eye Pieces

- Focus eye pieces for your prescription
- Adjust for your interpupillary distance

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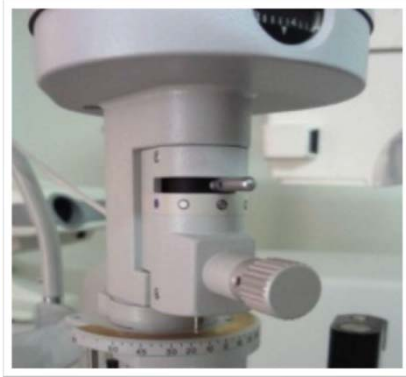
Joystick & Magnification

- Focus with movement forward, backward, laterally and diagonally. Rotate to lower or elevate the light beam.
- Magnification can be changed with between 6-40x



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Slit Height and Width



Slit height, filter colour and angle



Slit width

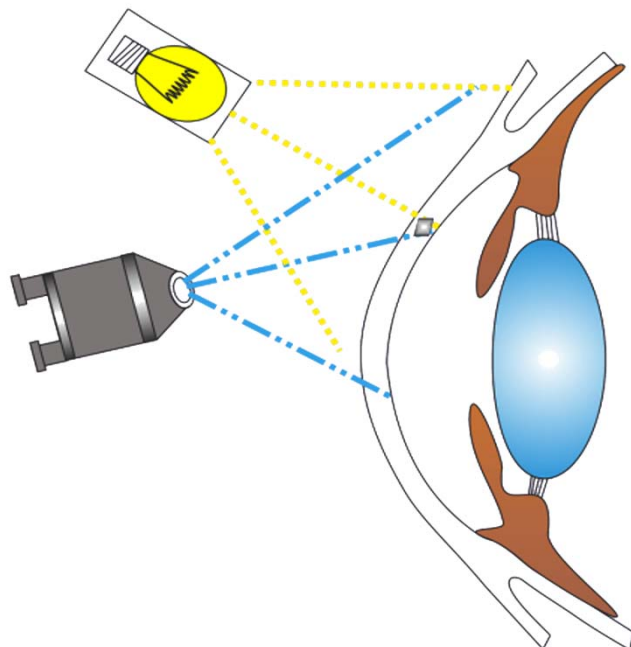
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Diffuse Illumination

- Beam Angle: 45°
- Beam height: Max
- Beam width: Max
- Mag: 6-10x
- Illumination: Medium

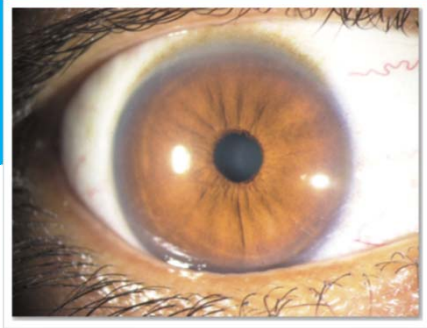
Used to examine:

- Overview of eye and adnexa
- NaFl can be used to look at FB and defects with cobalt blue filter



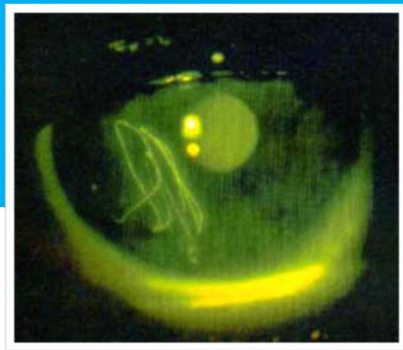
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Diffuse Illumination

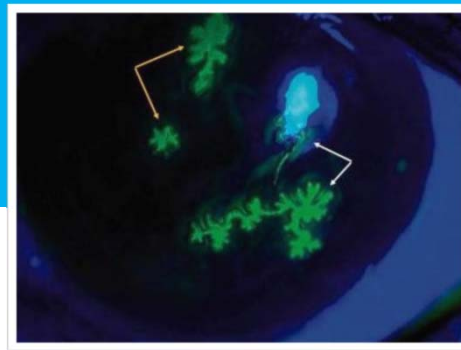


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Cobalt blue filter



Photos courtesy of www.qjmed.oxfordjournals.org



Photos courtesy of www.wickioptik.ch

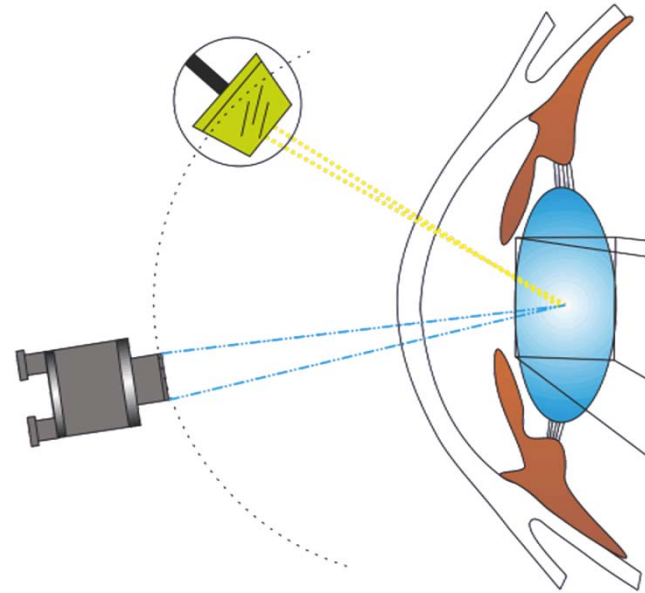
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Optic Section

- Beam Angle: 45°
- Beam height: Max
- Beam width: Nearly extinguished
- Mag: 10-16x
- Illumination: Med-Max

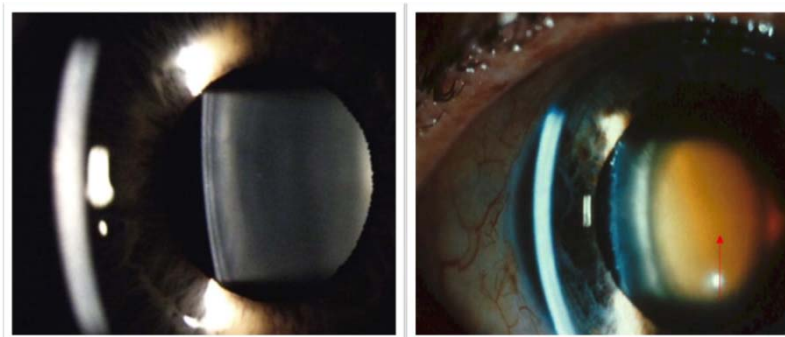
Used to examine:

- Depth of foreign body
- Stromal thinning
- Layers of cornea
- Anterior chamber depth
- Layers of the lens



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Optic Section – The Lens



Clear Lens

Photo courtesy of
www.clinicalgate.com

Brunescent Cataract

Photo courtesy of
www.classconnection.s3.amazonaws.com

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Optic Section – The Cornea

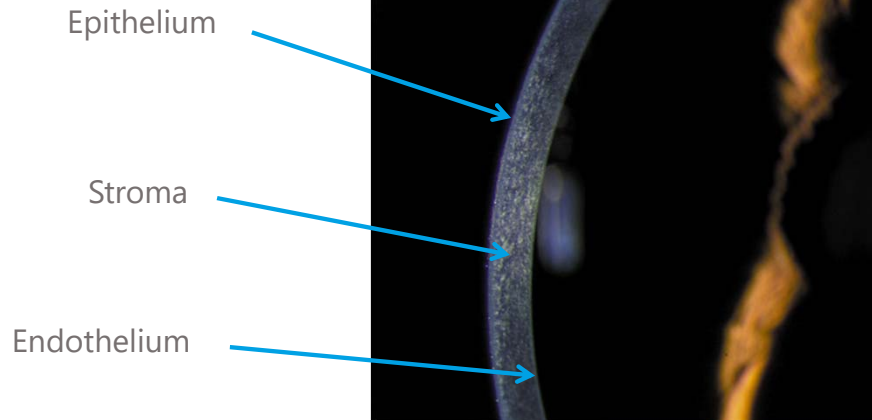


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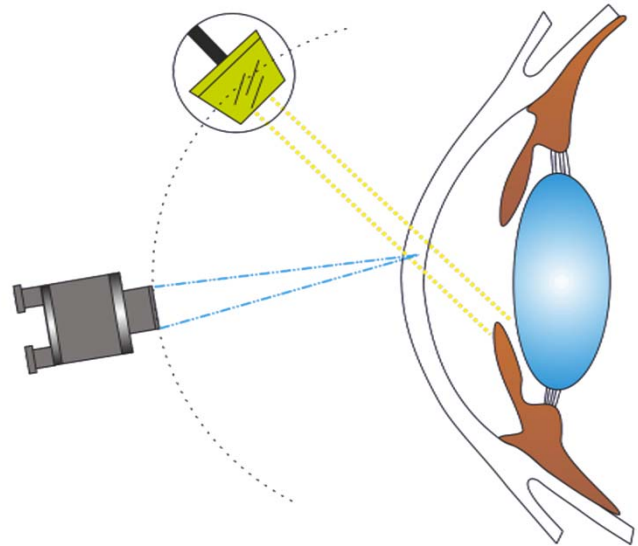
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Parallelepiped

- Beam Angle: 45°
- Beam height: Max
- Beam width: 1-2mm
- Mag: 10-16x
- Illumination: Medium

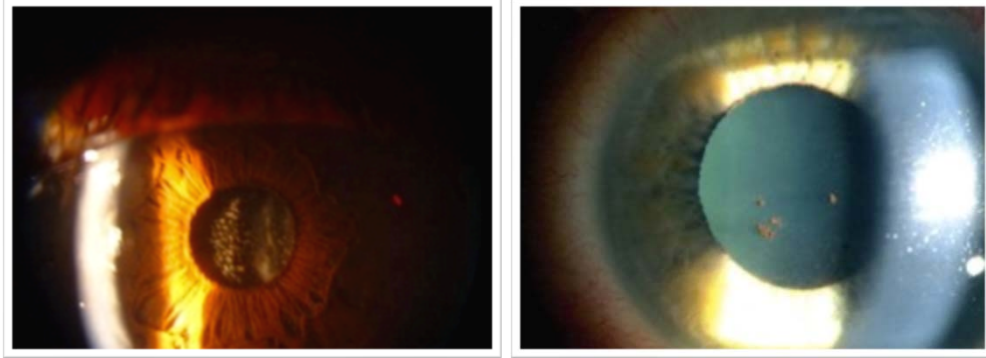
Used to examine:

- Cornea
- Iris
- Lens



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Parallelepiped – The Iris



Photos courtesy of: www.slideshare.net

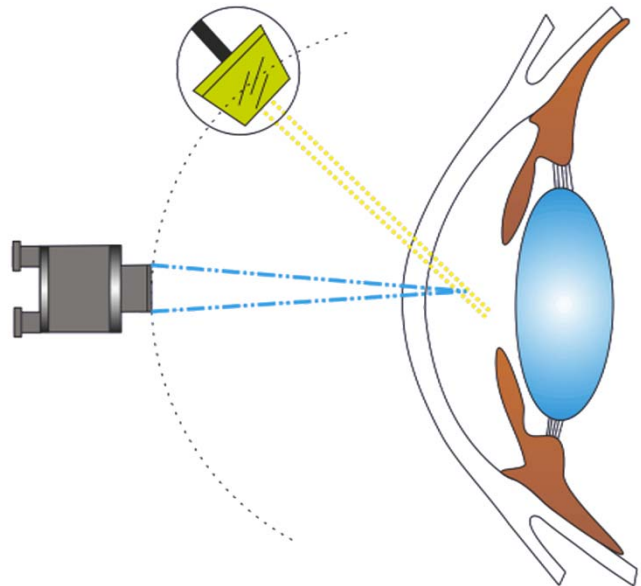
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Conical Beam

- Beam Angle: 45°
- Beam height: 1-2mm
- Beam width: 1-2mm
- Mag: 10-16x
- Illumination: Max

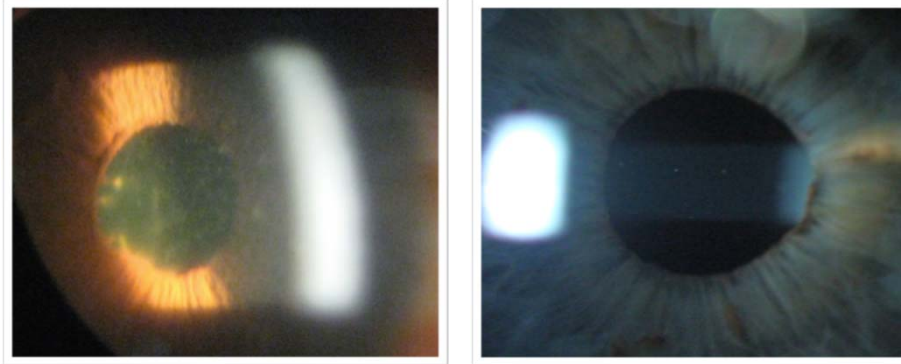
Used to examine:

- Inflammatory cells & protein in AC



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Conical Beam - Cells & Flare



Photos courtesy of: www.keeler-symphony.com

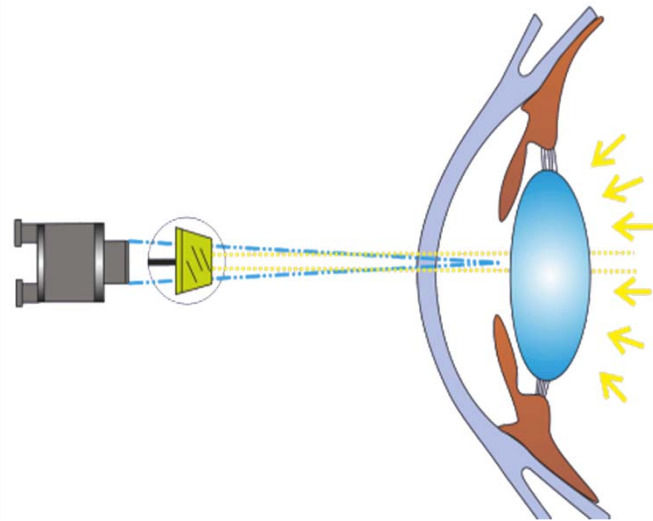
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Fundus Retro Illumination

- Beam Angle: 0°
- Beam height: 6mm
- Beam width: 1-2mm
- Mag: 6-10x
- Illumination: Med

Used to examine:

- Lens Opacity



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Retro Illumination – The Lens

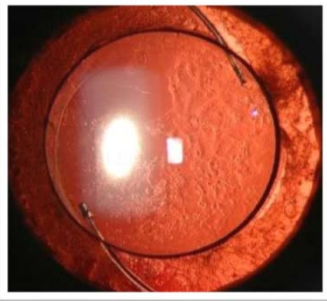


Photo courtesy of
www.eyerounds.org

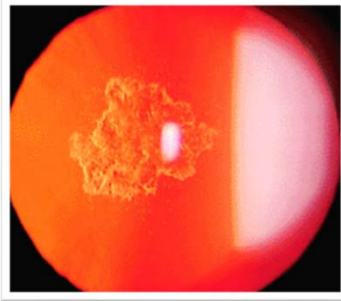


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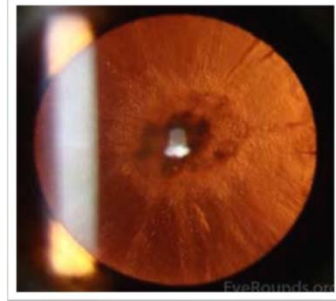


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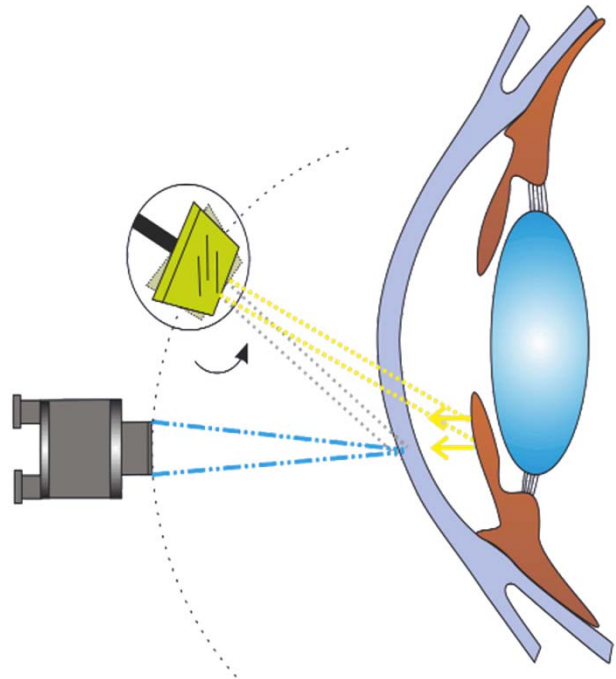
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Indirect Illumination

- Beam Angle: 45°
- Beam height: 6mm
- Beam width: 1-2mm
- Mag: 6-10x
- Illumination: Med

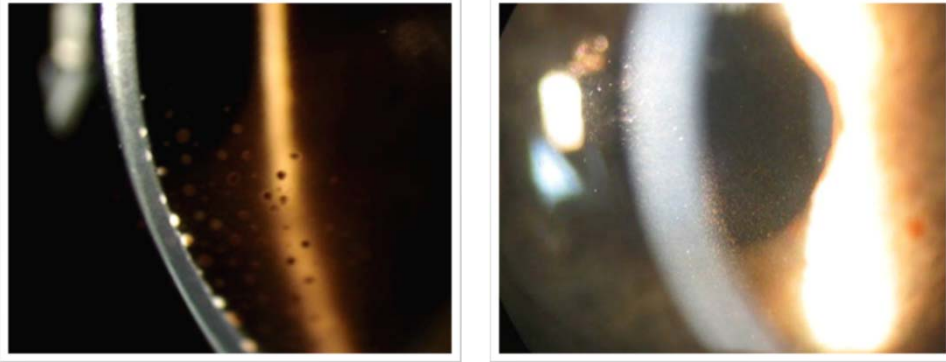
Used to examine:

- Corneal Opacity
- Endothelium



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Indirect Illumination - Cornea



Photos courtesy of: www.rootatlas.com

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Removing a Foreign Body

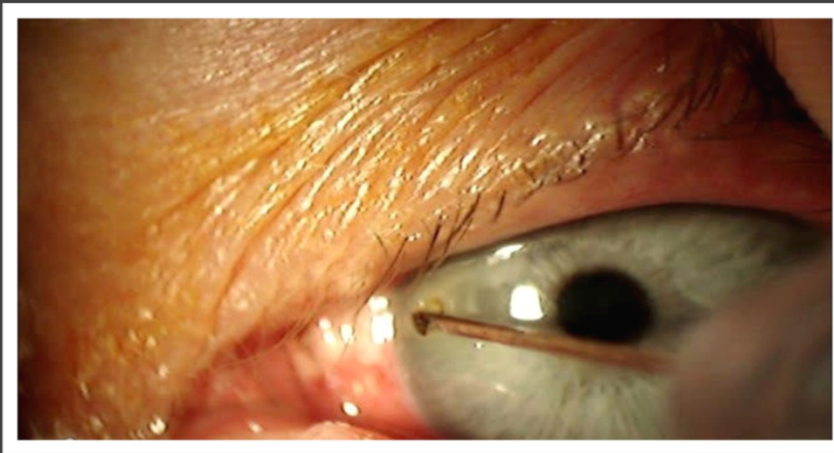


Photo courtesy of: www.rootatlas.com

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Removing a Foreign Body

Step 1: Take a careful history

What?

- Metal, dust, vegetative matter etc.

When?

- Helps with treatment plan after removal (chances of infection, inflammation and rust increase with time)

Where?

- Work? Home? Safety glasses?

How?

- Helps to determine force of penetration



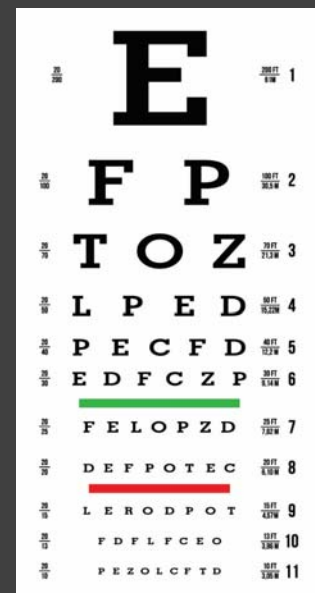
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Removing a Foreign Body

Step 2: Take entering visual acuities

Step 3: Anesthetize the eye (patient comfort)

- Proparacaine, Tetracaine



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Removing a Foreign Body

Step 4: Locate the foreign body

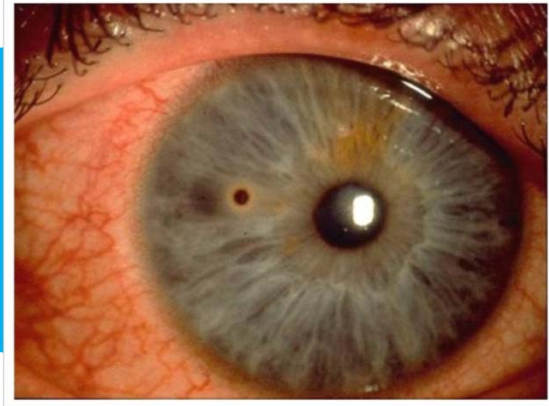
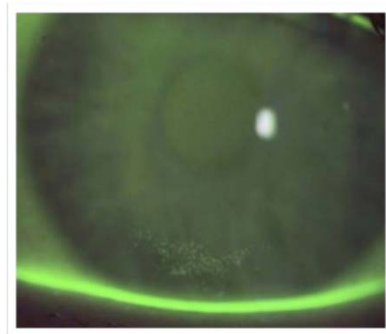


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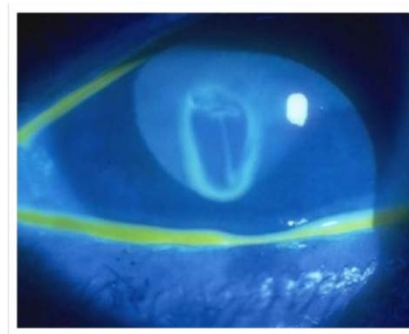
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Removing a Foreign Body

Step 5: Check for penetration – Seidel Test



Negative



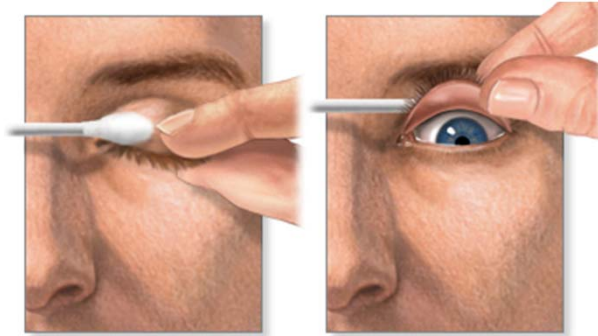
Positive

Photos courtesy of: www.bauschlomb.com

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Removing a Foreign Body

Step 6: Invert eyelid to look for trapped foreign body



Twist cotton-tipped
swab upward

Look downward

Photos courtesy of: keckmedicine.adam.com

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Removing a Foreign Body

Step 7: Choose your removal instrument

- Magnetic spud
- 25-gauge 5/8" needle
- Jeweler's forceps



Photo courtesy of: www.alf-img.com

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Removing a Foreign Body

Step 8: Take a Tangential Approach

- Always approach the foreign body tangentially to avoid corneal perforation



Photo courtesy of: www.iyting.com

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Removing a Foreign Body

Step 9: Remove Rust Ring

- If metal is lodged in the cornea for more than 4-6 hours

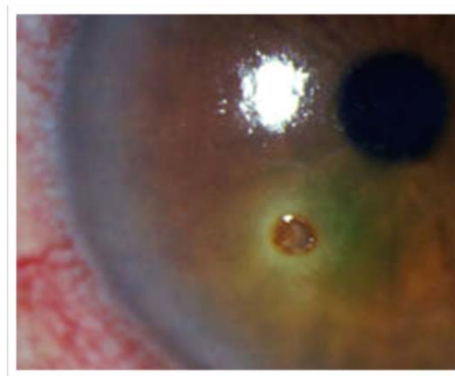


Photo courtesy of: www.fprmed.com

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Removing a Foreign Body

Step 10: Rx Appropriately

- Broad-spectrum antibiotic for one week



Photos courtesy of: www.vigamox.com

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Foreign Body

Case Examples



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Case 1

- 45 year old male
- One month history of foreign body sensation
- Following helping with foam insulation in walls
- Sent from ER



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Case 2

- 35 year old male
- One day foreign body sensation
- Following removing car muffler
- Sent from ER



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Case 3

- 50 year old female
- One week foreign body sensation
- Not severe but unrelenting



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Questions?
Comments?

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Thank You!

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References

<http://www.intechopen.com/books/ophthalmology-current-clinical-and-research-updates/imaging-in-ophthalmology>

<http://www.oculist.net/downaton502/prof/ebook/duanes/graphics/figures/v8/0040/001af.jpg>

http://clinicalgate.com/wp-content/uploads/2015/03/B9780702051944000079_f007-005-9780702051944.jpg

<https://classconnection.s3.amazonaws.com/129/flashcards/1910129/png/nuclearcataract-14220B91AAD79CBFC80.png>

<http://www.slideshare.net/dkar2013/slit-lamp-instrumentation-and-illumination-techniques>

<http://www.keeler-symphony.com/images/default-source/making-sense/flare-and-cells.jpg?sfvrsn=4>

<http://www.eyerounds.org/atlas/pages/combined-cataract/Cataract-combo-THUMB.jpg>

http://www.college-optometrists.org/filemanager/root/site_assets/museum/artgallery/RETRO-ILLUMINATION_OF_INTRAOCULAR_LENSlarge.jpg

<http://www.mrcophth.com/examinationtechniques/slit-lampexamination.htm>

<http://www.rootatlas.com/wordpress/wp-content/uploads/2007/08/uveitiskp1.jpg>

http://www.akorn.com/images/products/17478-263-12_full.jpg

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References

<https://qph.cr.quoracdn.net/main-qimg-766467c3befc5f3732449cc22eec7056>

<http://dnn.bauschlomb.com/Portals/109/DNNGallery/20776/Positive-Seidel-test-with-blue-light-fluorescein.jpg>

<http://alf-img.com/show/staining-corneal-rust-ring.html>

<https://i.ytimg.com/vi/m6P9y0ZITpg/hqdefault.jpg>

http://www.fprmed.com/Pages/Physical_Findings/Images/Eyes.h41.jpg

http://www.vigamox.com/img/vigamox/prod_img.png

<https://www.reviewofoptometry.com/article/foreign-body-removal-in-12-steps>

<http://qjmed.oxfordjournals.org/content/108/7/595>

<http://www.wickioptik.ch/adverse.htm>

<http://keckmedicine.adam.com/graphics/images/en/19662.jpg>

<http://www.aao.org/young-ophthalmologists/yo-info/article/emergent-eye-exam>