


# Glaucoma: basics

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## Overview

Def:


- optic neuropathy, progressive ON damage with characteristics VF loss

IOP? high IOP  $\neq$  glaucoma but the strongest risk factor

- the only modifiable

Other risk factors:

- Low CCT
- Race
- Age
- Family hx



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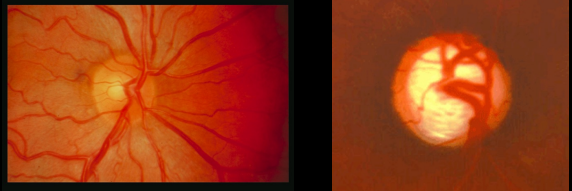
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## ONH damage

Damage: predilection to sup and inf poles (ISNT rule)



AAO PPT



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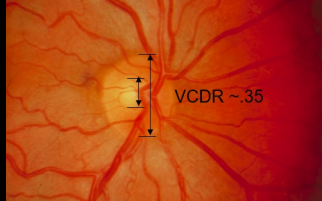
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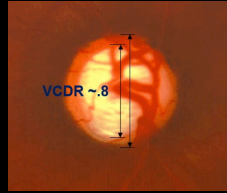
# ONH damage

Exam: vertical cup-disc ratio

Normal ONH



Glaucomatous ONH



AAO PPT



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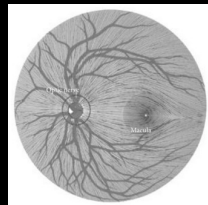
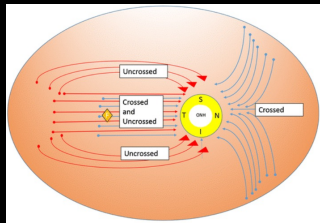
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# RNFL



Dinkin

Castello

Ref:  
• Dinkin M. Trans-synaptic Retrograde Degeneration in the Human Visual System: Slow, Silent, and Real. *Curr Neurol Neurosci Rep.* 2017;17(2):16. doi:10.1007/s13246-017-0725-2  
• Castello P. The afferent visual pathway: deciphering a structural-functional paradigm of multiple sclerosis. *ISRN Neurosci.* 2013;2013:134868. Published 2013 Nov 6. doi:10.1155/2013/134868



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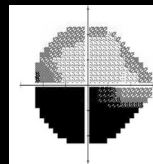
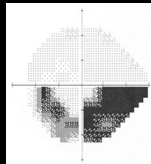
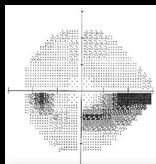
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# Visual field changes



Cioffi, AAO

Sowka

Henderson et al

Ref:  
• Sowka Joseph. Visual field defects common in glaucoma subtypes. *Review of optometry.*  
• Henderson AAO, Jiang H, & Marek J. Characterization of retinal microvasculature in acute non-arteritic anterior ischemic optic neuropathy using the OCT retinal functional imager: a prospective case series. *Eye and Vis* 6, 3 (2019). <https://doi.org/10.1186/s40602-019-0126-x>



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# Work up

## Initial work up:

- VA, APD, color plates, IOP (G-applanation), CCT
- Gonio, stereo disc photos
- OCT rNFL + GCA (macula)
- HVF

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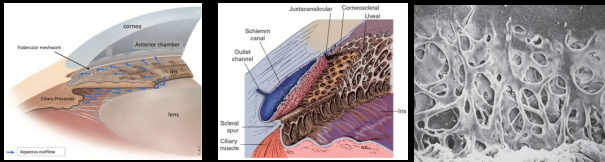
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# POAG: Management

$$IOP = \frac{\text{Aqueous Formation Rate } (\mu\text{L}/\text{min})}{\text{Outflow Facility } (\mu\text{L}/\text{min}/\text{mmHg})} + \text{Episcleral Venous Pressure (mmHg)}$$



BCSC 2022

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# POAG: Management

$$IOP = \frac{\text{Aqueous Formation Rate } (\mu\text{L}/\text{min})}{\text{Outflow Facility } (\mu\text{L}/\text{min}/\text{mmHg})} + \text{Episcleral Venous Pressure (mmHg)}$$

## Pew! Pew! ( laser) vs Drops?

- GLT study (1990): ALT > Timolol
  - ALT grp:
    - lower IOP with fewer drops
    - better VF at 7&9yrs
    - \*\*prior to prostaglandins, CAI, alpha agonists and SLT

Ref: Spaeth GL. The Glaucoma Laser Trial (GLT). Ophthalmic Surg. 1995; 16(4):227-228.

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# POAG: Management

$$IOP = \frac{\text{Aqueous Formation Rate } (\mu\text{L}/\text{min})}{\text{Outflow Facility } (\mu\text{L}/\text{min}/\text{mmHg})} + \text{Episcleral Venous Pressure (mmHg)}$$

## Medications

- Prostaglandins; e.g Latanoprost
- BB: e.g timolol
- Alpha-agonists: e.g brimonidine
- CAlS: dorzolamide
- Combination: Cosopt, Combigan
- RKI: Rhopressa (netadursil)



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# Follow up

## Work up:

- VA, APD, IOP (G-applanation)
- OCT/HVF
- Annually-> gonio, stereo disc photos



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# Management

$$IOP = \frac{\text{Aqueous Formation Rate } (\mu\text{L}/\text{min})}{\text{Outflow Facility } (\mu\text{L}/\text{min}/\text{mmHg})} + \text{Episcleral Venous Pressure (mmHg)}$$

## When drops fail?

- MIGS
- Cytophotocoagulation (CPC)
- Trabeculectomy
- Tube shunts



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## Take home points

- Glaucoma 2nd cause of blindness worldwide
- POAG is a diagnosis of exclusion
- APD, color plates can tease out mimickers
- Disc photos > exams



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## Thank you!



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