



ALEXANDRIA
UNIVERSITY



Pediatric Glaucoma Course Diagnosis

By

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EOS 2019

Childhood Glaucoma – Diagnosis & Assessment

- What arouses the suspicion of glaucoma in a child? (presentation)
- How to proceed with a child in case of suspicion of glaucoma? (workup)
- What conditions could be mistaken for glaucoma in a child? (differential diagnosis)

Childhood Glaucoma – Diagnosis & Assessment

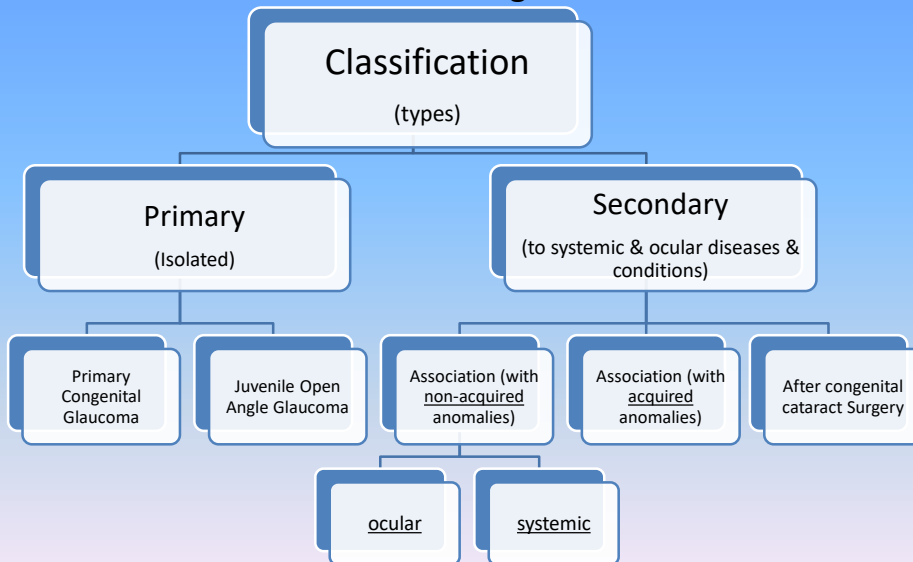
- What arouses the suspicion of glaucoma in a child? (presentation)
- What are the possible types of glaucoma in children? (classification)

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Childhood Glaucoma – Diagnosis & Assessment

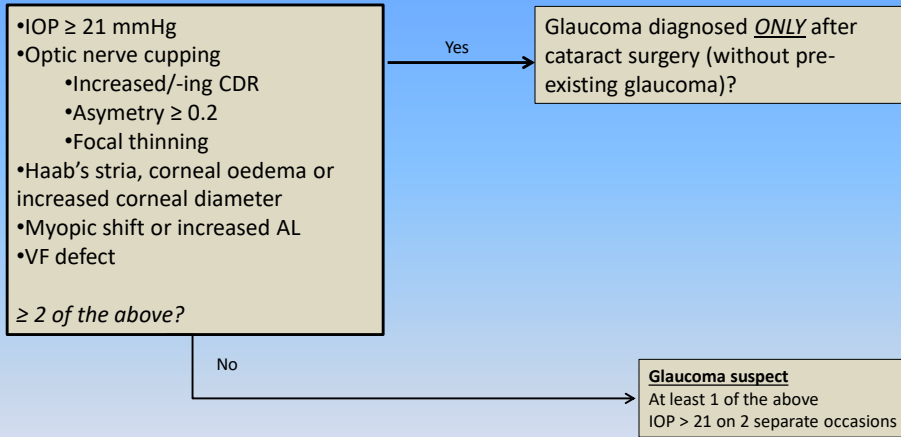


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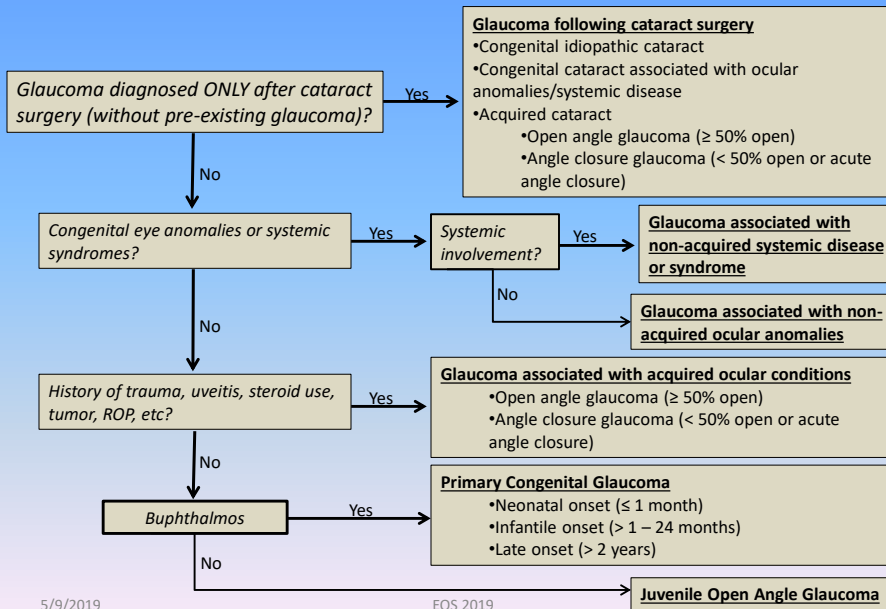


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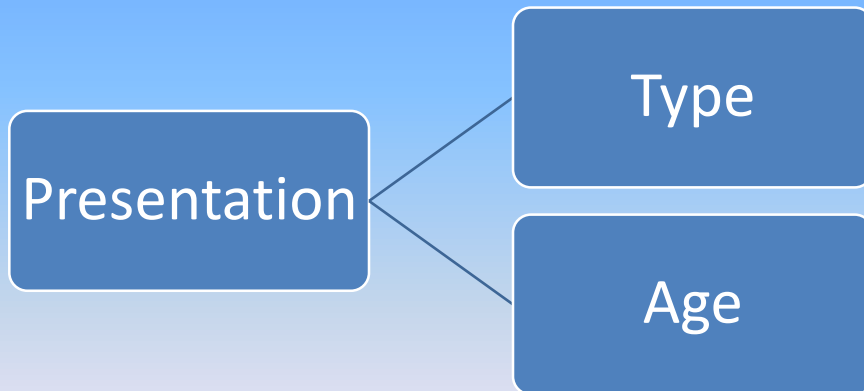
Childhood Glaucoma – Diagnosis & Assessment



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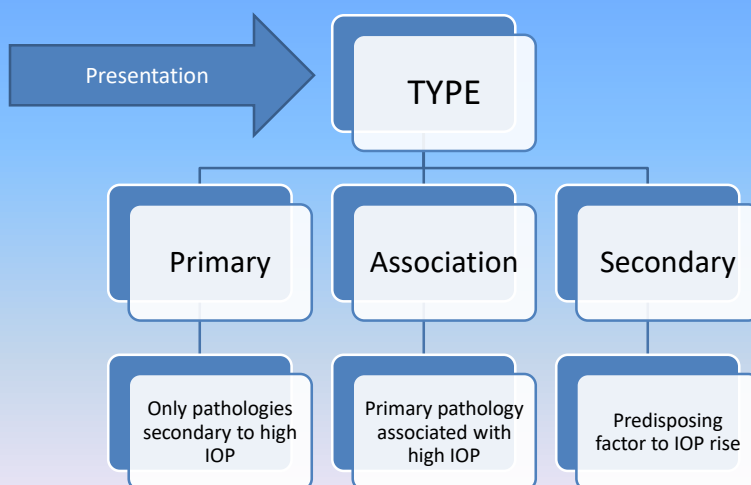


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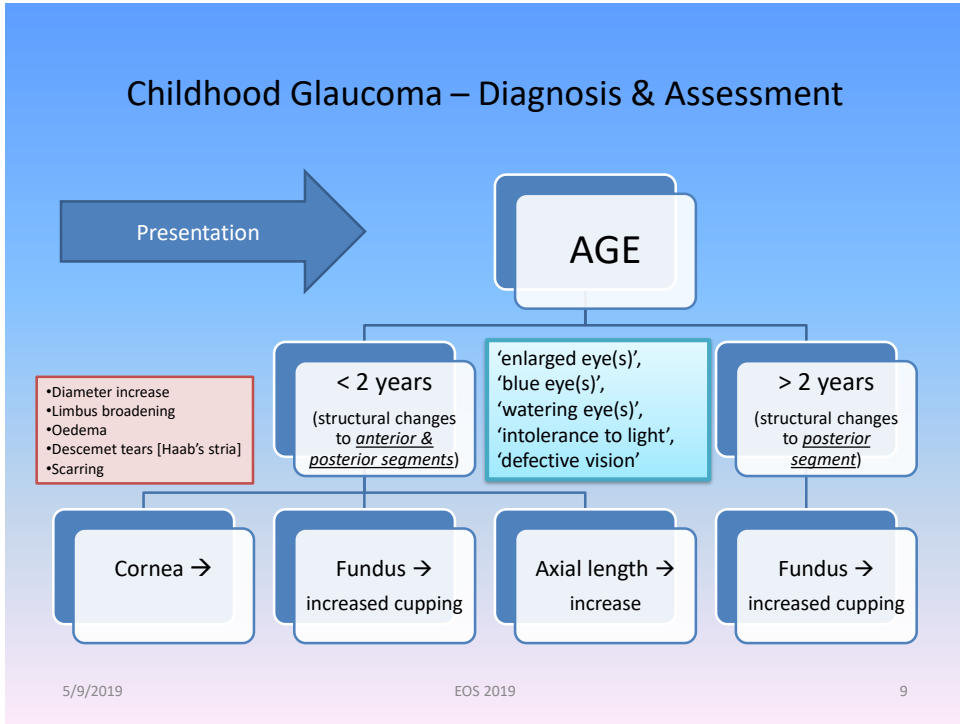


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Childhood Glaucoma – Diagnosis & Assessment



Childhood Glaucoma – Diagnosis & Assessment

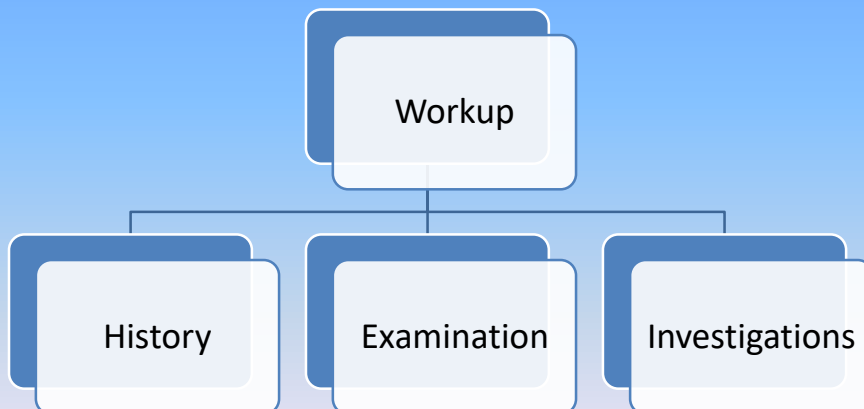
• **Presentation:**

- “Abnormal colour of the eye” لون عينه متغير
 - “Intolerance to light & watering” يبدمع او مش يستحمل النور
 - “Large eye” عينه كبيرة
 - “Defective vision” ما بيشوفش كويس
 - “Abnormal appearance of the eye” (AS Dysgenesis) شكل عينه مختلف (→ associations or secondary)
 - Accidental → associated ocular &/or systemic condition (→ associations or secondary)
- Any type
-

Childhood Glaucoma – Diagnosis & Assessment

- How to proceed with a child in case of suspicion of glaucoma? (workup)

Childhood Glaucoma – Diagnosis & Assessment



Childhood Glaucoma – Diagnosis & Assessment

- General guidelines
 - Keep an accurate **record** of every encounter with the child including all parents' or care providers' comments, examination findings & investigations results
 - If in doubt of the diagnosis, **repeat** the examination at a later date
 - It is the **progression** over time of any ocular parameter that is more important for diagnosis rather than the absolute value at any time point
 - In terms of significance for diagnosis & follow up of treatment effect
 - the **optic nerve status** is the most significant,
 - then the **axial length**,
 - then the **corneal diameter**,
 - then the **IOP**,
 - then the **refractive state**

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Childhood Glaucoma – Diagnosis & Assessment

- History
 - Presenting complaint
 - Antenatal Hx
 - Maternal infection, radiation, drugs → teratogenic
 - Natal Hx
 - Forceps delivery → birth trauma → cloudy cornea
 - Postnatal Hx
 - Admission to NICU → ROP → secondary glaucoma
 - Associated conditions
 - Ocular → e.g. congenital cataract
 - Systemic → e.g. Sturge-Weber syndrome

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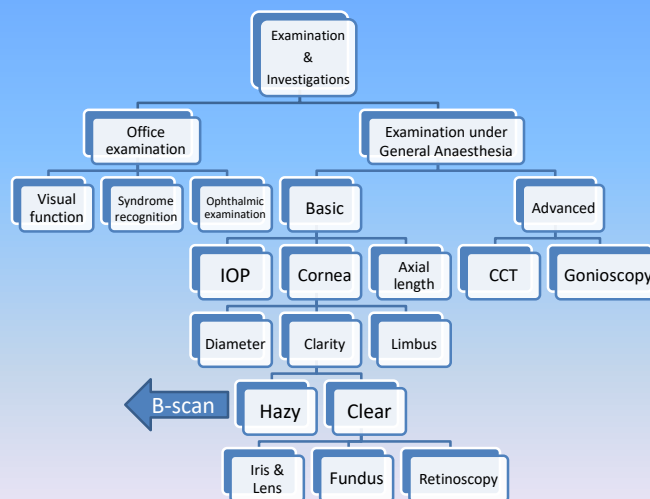
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- History

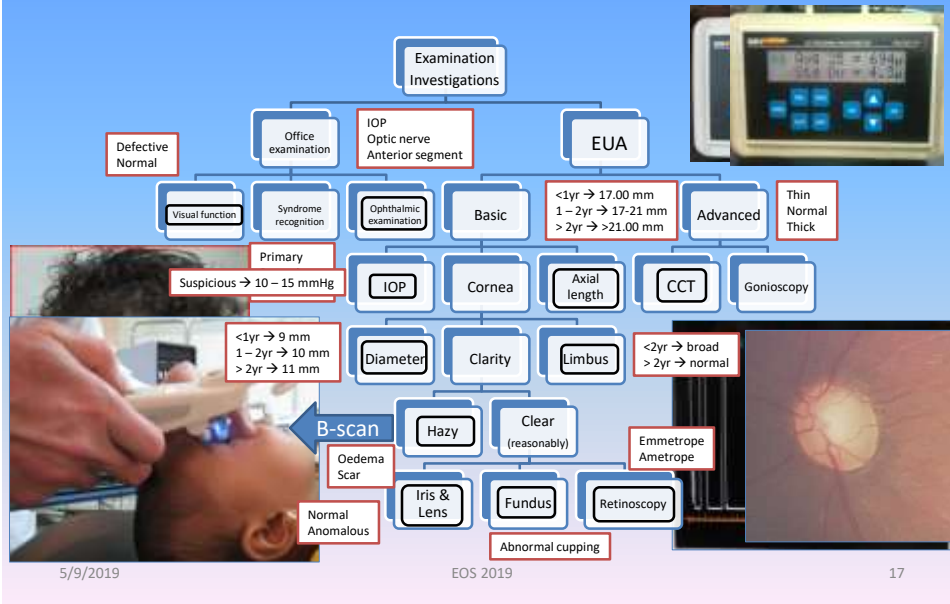
- Presenting complaint
- Antenatal Hx
- Natal Hx
- Postnatal Hx
- Associated conditions

Significant in secondary childhood glaucoma

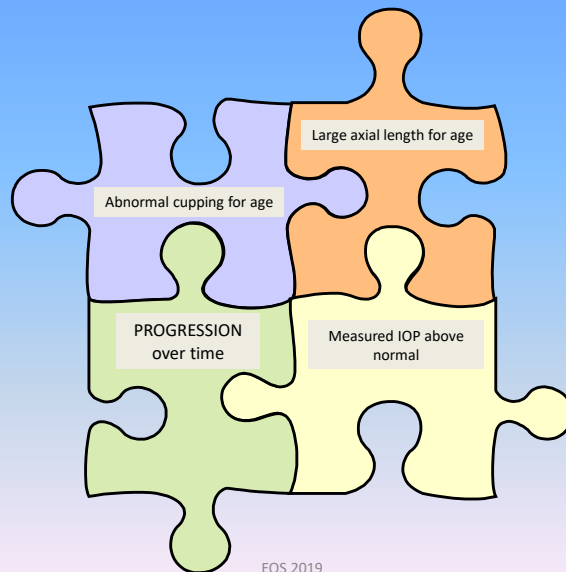
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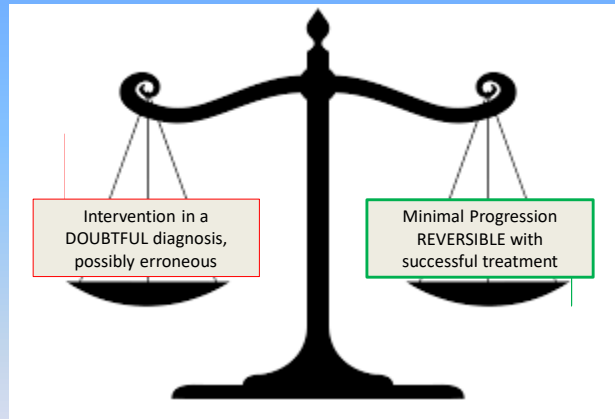
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Congenital Glaucoma – Diagnosis & Assessment



Congenital Glaucoma – Diagnosis & Assessment



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Congenital Glaucoma – Diagnosis & Assessment

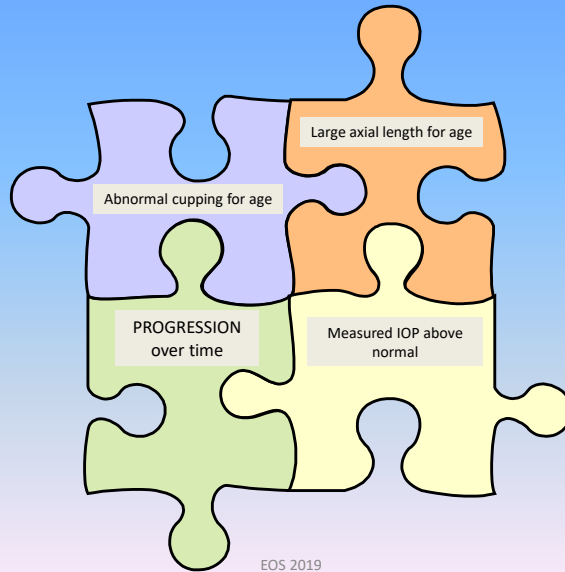
- What conditions could be mistaken for glaucoma in a child? (*differential diagnosis*)

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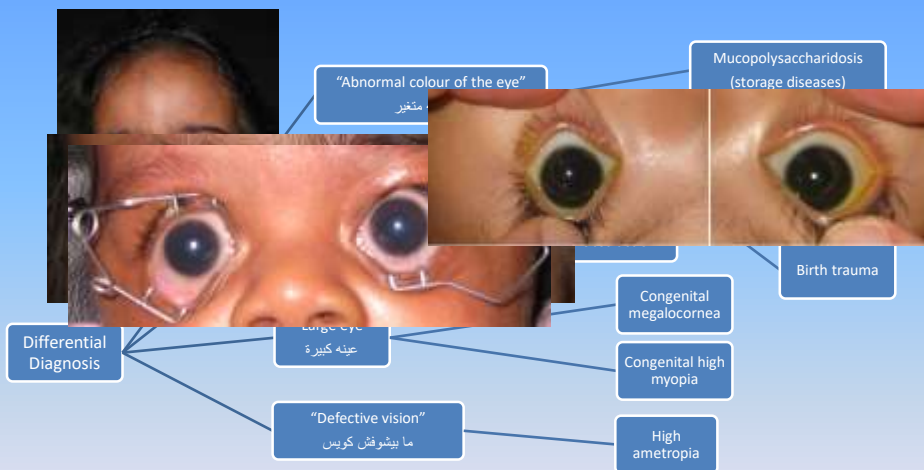


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Congenital Glaucoma – Diagnosis & Assessment



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Primary Congenital Glaucoma – Diagnosis & Assessment

- Examination & investigations of a child with glaucoma / glaucoma suspect
 - Few practical issues

Primary Congenital Glaucoma – Diagnosis & Assessment

- Office examination
 - Note the pupil & its abnormalities without mydriasis
- EUA
 - Examine through a *dilated* pupil → cyclopentolate 1% (/15 min for 1 hour before exam)
 - Use *inhalational* anaesthesia (Sevoflurane®) → use the same anaesthetic technique every visit
 - Augment GA with *topical anaesthesia*

Congenital Glaucoma – Diagnosis & Assessment

- IOP
 - Timing to measure → once the eyes become central in position during GA
 - Standardize tonometer, timing of measurement
 - Most reliable → applanation (*Perkin's*)
 - At least use the same tonometer for the same eye of the same patient for every follow up visit
 - Normal value under GA → 15 mmHg

Congenital Glaucoma – Diagnosis & Assessment

- Anterior segment
 - Best examined by ***portable slit lamp***
 - Otherwise:
 - *Indirect ophthalmoscope* with a short working distance to provide a binocular magnified view
 - *Direct ophthalmoscope* with a +10D or a +15D lens dialed in to provide a monocular magnified view
 - In older children; ordinary fixed slit lamp

Congenital Glaucoma – Diagnosis & Assessment

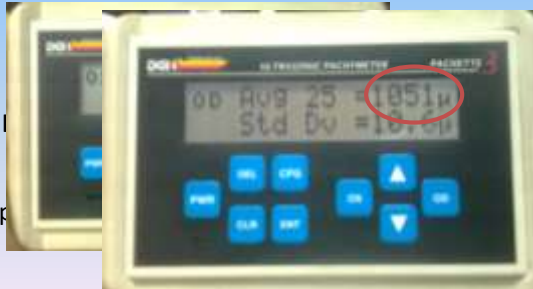
- Anterior segment

- Cornea

- Diameter → white to white (*caliper, broad limbus*)
- Clarity → oedema, scar, clear
- \pm CCT

- Anterior chamber

- Depth
 - Deep → p



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Congenital Glaucoma – Diagnosis & Assessment

- Anterior segment

- Iris pattern

- Primary → normal
- Secondary →

- Stump of iris tissue seen: **Aniridia**
- Peripheral iris processes (+ posterior embryotoxon): **Axenfeld anomaly**
- Peripheral iris atrophic (\pm pseudopolycoria, corectopia): **Reiger's anomaly**
- Collarette attached to periphery of corneal opacity: **Peter's anomaly**
- Irregular wandering iris vessels: **Anterior Segment dysgenesis**
- Lens
 - Clear

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Congenital Glaucoma – Diagnosis & Assessment



Aniridia (OU)



Right Peter's Anomaly with
Microphthalmia

March 2015

Congenital Glaucoma – Diagnosis & Assessment



Aniridia with subluxated cataractous lens



Aniridia with subluxated cataractous lens

March 2015

Congenital Glaucoma – Diagnosis & Assessment



Atrophic peripheral iris (*Reiger's anomaly*)

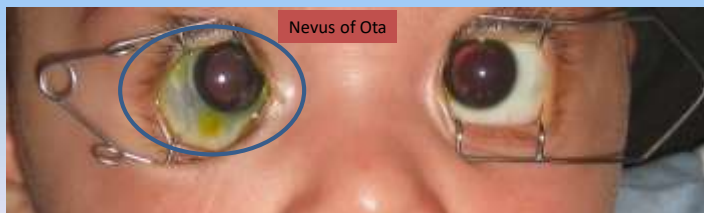


Atrophic peripheral Iris with corectopia & pseudopolyoria (*Reiger's anomaly*)

March 2015

Primary Congenital Glaucoma – Diagnosis & Assessment

- Anterior segment
 - Conjunctiva
 - Site of future intervention
 - Anomalies → associations & secondary



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Primary Congenital Glaucoma – Diagnosis & Assessment

- Posterior segment
 - Fundus
 - Best examined by ***indirect ophthalmoscope***
 - Optic nerve
 - Cup/disc ratio ($\rightarrow > 0.3$, *assymetry*)
 - Neuroretinal rim
 - Retina
 - Free

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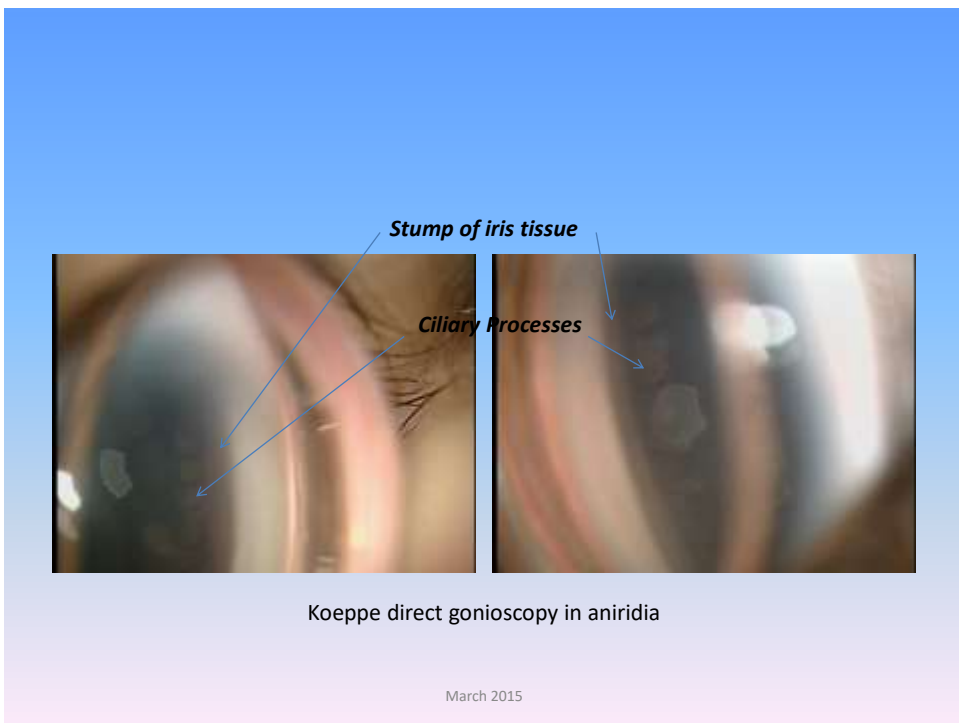
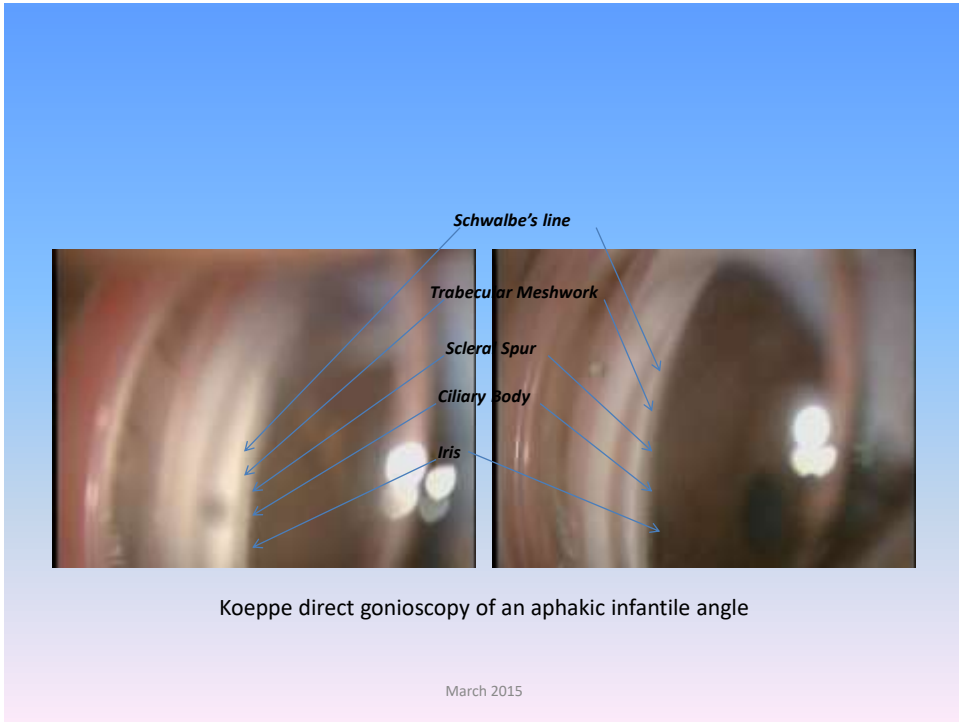
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Gonioscopy:

- Infantile angle:
 - Trabecular Meshwork: if seen, is not pigmented
 - Scleral spur: if seen, glistening white
 - Iris:
 - Insertion:
 - Flat
 - Concave
 - Wrap around
 - Position:
 - Anterior into TM or sclera spur
 - Posterior into ciliary body
- Posterior embryotoxon (\pm peripheral iris processes):
Axenfeld anomaly
- Peripheral iris stump: aniridia

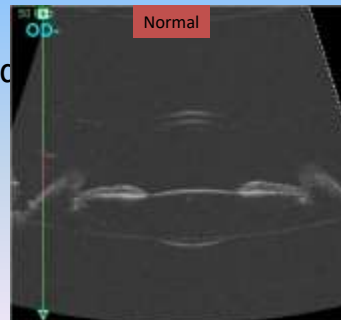
March 2015



Congenital Glaucoma – Diagnosis & Assessment

- Investigations

- A scan → Axial length (*change mode according to eye condition, e.g. phakic, aphakic, pseudophakic*)
- B scan → Media opaque
- UBM → Associations & Secondary (*primary → normal*)



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Congenital Glaucoma – Diagnosis & Assessment

- Take home message

- All parameters of the evaluation have to be considered as one unit & weighed in the diagnosis & evaluation of the case
- If doubt arises, progression over a short time interval is the clue for diagnosis
- Do not use topical IOP lowering medications before establishing a diagnosis

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Thank you