AS-OCT Findings In Cases Of PCG

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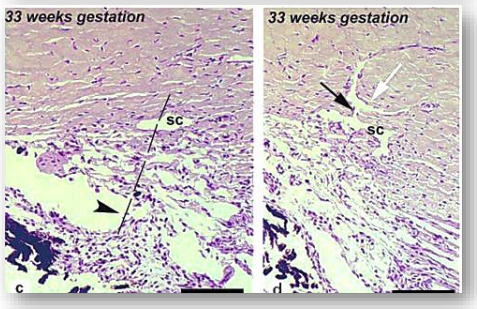
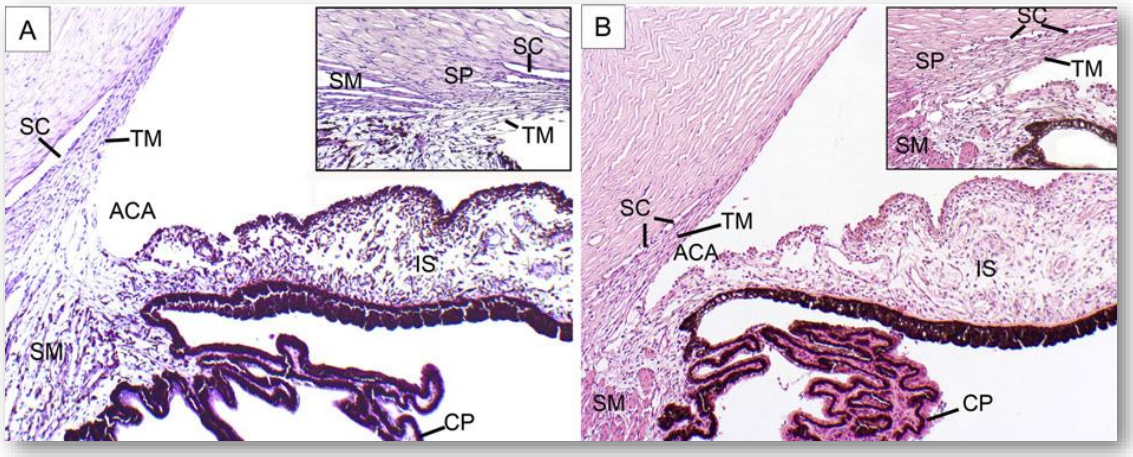
Development of ACA

- Trabecular meshwork formation occurs at 12–22 weeks of gestation
- Schlemm's canal becomes visible at 16 weeks of gestation
- Becomes clearly defined with intercanal links by 36 weeks
- Development of ACA continues after birth to resemble the adult structure by 8 years (*Ramirez et al., 2004*)



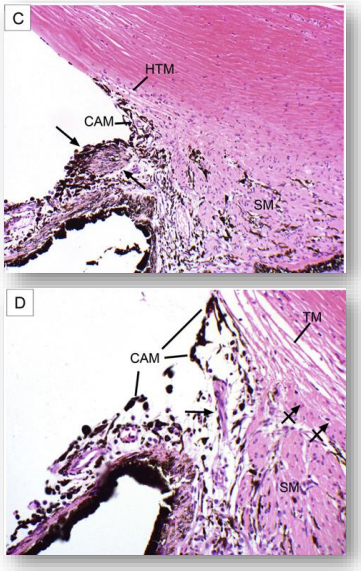
Histology of infantile ACA



(Perry et al 2012)

Primary Congenital Glaucoma (PCG)

- Arrested development of ACA takes place during intrauterine life (3rd trimester) resulting in immature ACA
- Degree of severity of PCG is totally dependent on stage of arrest of angle maturation
- Old theory, membrane occluding the angle
  (justification with falling of iris back) (*Barkan, 1955*)
- Then came the theory of trabecular obstruction to the flow of aqueous humor (*Anderson, 1981*)



(Perry et al 2012)

ACA visualization in vivo

- Gonioscopy
- Ultrasound biomicroscopy (UBM)
- Anterior segment optical coherence tomography (ASOCT)

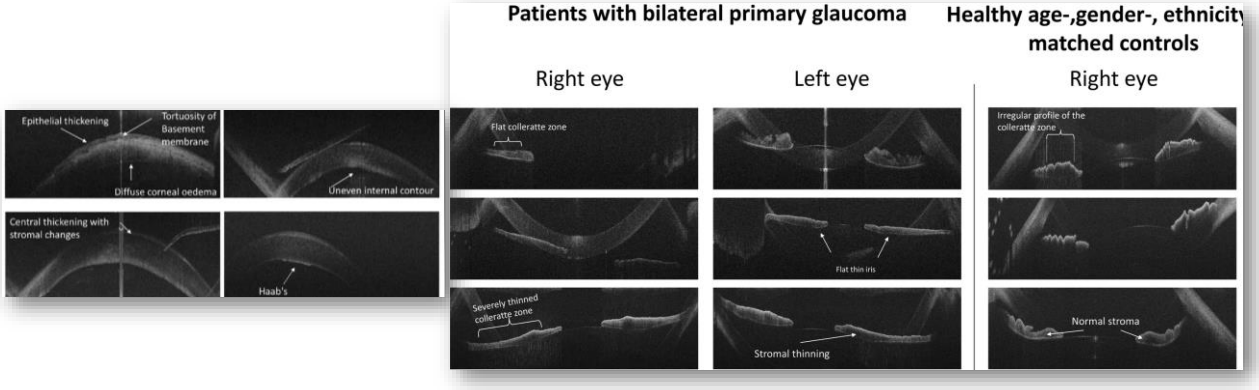
ASOCT

- Optical coherence tomography (OCT) is analogous to UBM, but light is used instead of sound
- Non-contact exam vs Gonioscopy & UBM
- No GA
- AS OCT provides good repeatability and reproducibility for quantitative and qualitative analyses of the angle recess
- High spatial resolution, high-speed image acquisition so less time of exam
- It has the ability for standardization of scans

(V.K. Shinoj et al 2016)

ASOCT

- ASOCT findings in PCG were addressed by *Cauduro etal 2012* in 2 cases , by *Pilat etal 2017* in one case & *Pilat etal 2019* in 22 patients age ±5 yrs



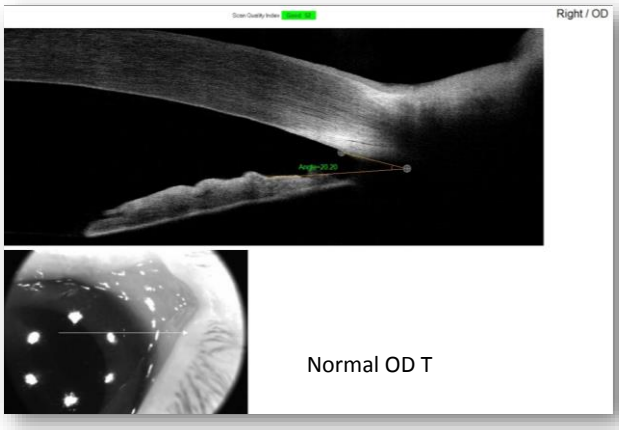
Pilat etal 2019

- We carried out a prospective observational study using HH-ASOCT to describe the anterior chamber angle in infants with PCG and age matched controls (*Jan2018-Dec2018*).
- No history of any surgical intervention.
- Corneas were either clear or partially opaque to allow for imaging.

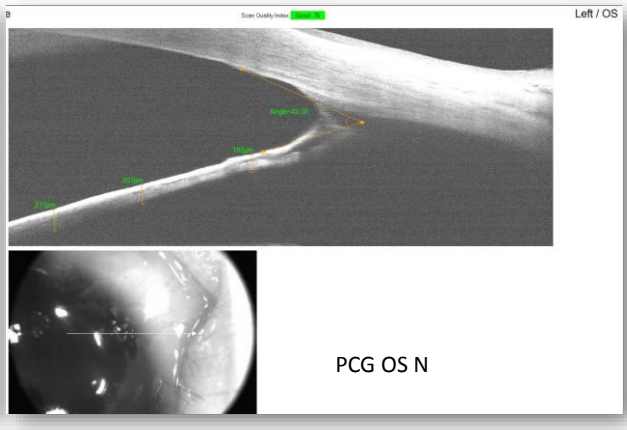
HH-ASOCT

- We used HH-ASOCT (*OPTVUE IVUE SD-OCT*) to describe ACA in 26 eyes of PCG and 22 eyes normal infants (mean age, IOP, CD, CCT)
- High spatial resolution *(5μ axial resolution)*, high-speed image acquisition *(26000/sec)*
- All cases were examined while spontaneously sleeping
- Examined in room light with no dilation

HH-ASOCT



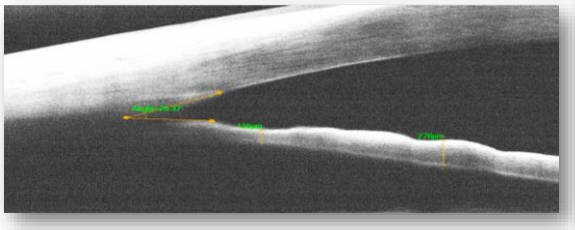
Normal OD T



PCG OS N

HH-ASOCT (*ACA measurement*)

Normal



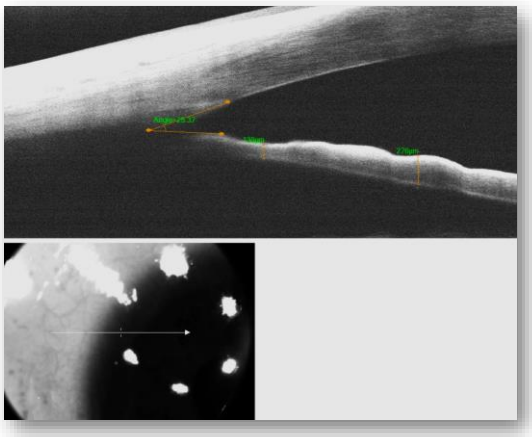
- Mean nasal and temporal ACA was 30.4 ±5.6° & 32.5 ±6.2°

PCG

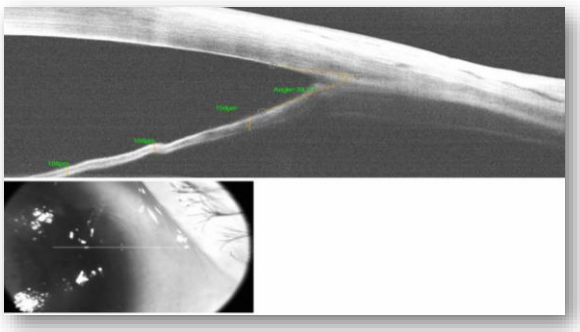
- Mean nasal and temporal ACA Was 39.3±6.6° & 40.1±5.3°

HH-ASOCT (*Iris thickness*)

- **Mean IT near the iris root was 160.3 ± 38.6 µm (Normal)**

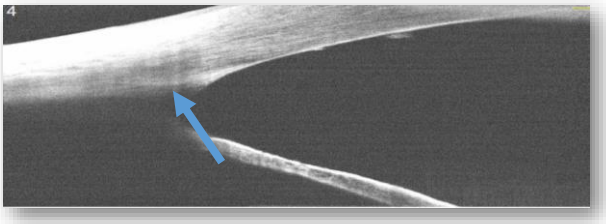


- **Mean IT near the iris root was 121.7 ± 43.9 µm (PCG)**



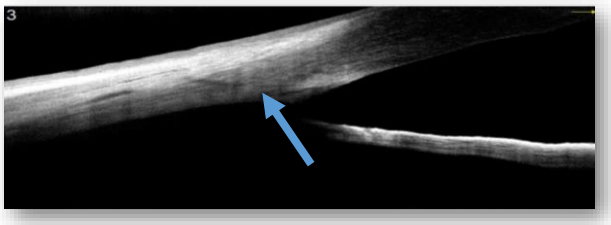
HH-ASOCT (*Scleral Spur identification*)

Poorly identified in 15 (68.2%)
Well identified in 5 (22.7%)



Normal

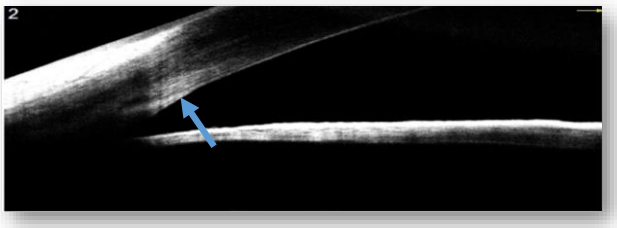
Poorly identified 5(19.23%) eyes
Clearly identified in 2 (7.7%) eyes



PCG

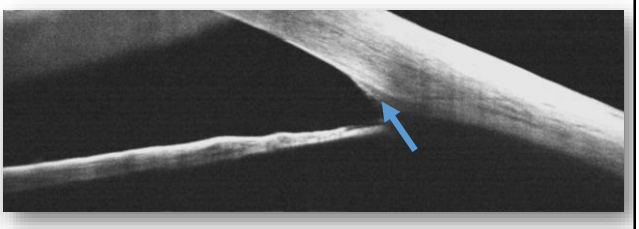
HH-ASOCT (*Trabecular meshwork*)

TM 100% identified



Normal

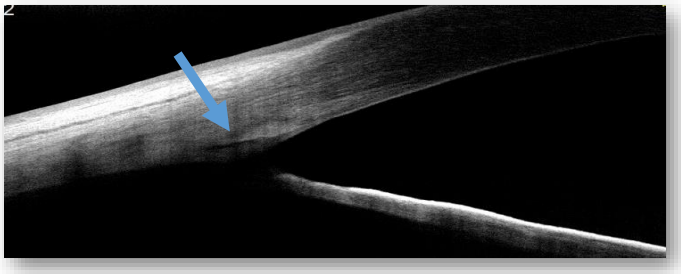
TM identified in 9 eyes



PCG

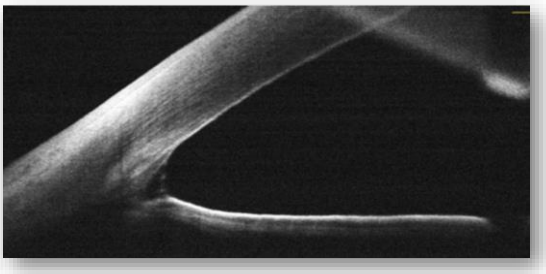
HH-ASOCT (*Schlemm's canal identification*)

16 eyes



Normal

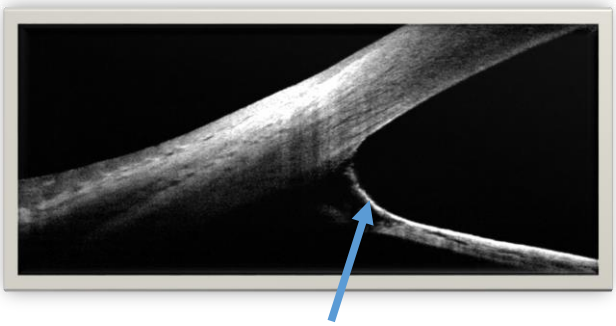
4 eyes



PCG

HH-ASOCT

- Abnormal structure within the angle was evident in 7 eyes, Hyper reflective tissue in 5 eyes with PCG



Hyperreflective tissue

Abnormal tissue

To Conclude

- HH-ASOCT is a useful diagnostic tool in pediatric age group being non contact
- Doesn't require GA
- Displays the anterior chamber angle & anterior segment pathology if any
- HH-ASOCT in cases of PCG can help in predicting the surgical outcome

Thank You For Your Kind Attention