PERDAMI
PERSATUAN DOKTER SPESIALIS MATA INDONESIA

CERTIFICATE OF ATTENDANCE

This is to certify that

dr. Fitratul Ilahi, Sp.M

has attended

The 39th Annual Meeting Of The Indonesian Ophthalmologist Association

Yogyakarta, 30th October - 1st November 2014

as

Speaker

IDI ACCREDITATION:

SEMINAR NO. 203/IDI/WIL.DIY/SKP/VIII/2014 Participant 12, Speaker 10, Moderator 4, Co Moderator 4, Committee 2
DIDACTIC COURSE No. 204/IDI/WIL.DIY/SKP/VIII/2014 Participant 6, Speaker 6, Instructor 6, Committee 2

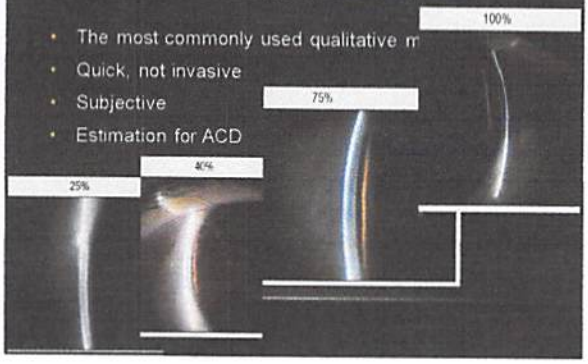
Prof. dr. Sidhardjo, SU.SpM(K)
Chairman of the Organizing Committee

Prof. Dr. dr. Nila Djuwita F. Moeloek. SpM(K)
President,
The Indonesian Ophthalmologist Association

ILLUSTRATIONS BY ELIZABETH

Van Herick's Technique
(1969)

- The most commonly used qualitative m
- Quick, not invasive
- Subjective
- Estimation for ACD



Van Herick method uses corneal thickness as a unit of measure

Grade 0	Iridocorneal contact
Grade I	Peripheral anterior chamber depth between iris and corneal endothelium is < 1/4 corneal thickness (occludable)
Grade II	>1/4 but <1/2 of corneal thickness
Grade III	≥1/2 of corneal thickness (non-occludable)

- Screening for primary angle closure
- 99% sensitivity compared to gonioscopic evaluation

Schaffer method

Grade	0	I	II	III	IV
Method					
Shaffer	Closed	10°	20°	30°	40°
Modified Shaffer	Schwalbe's line is not visible	Schwalbe's line is visible	Anterior TM is visible	Scleral spur is visible	Ciliary band is visible

GONIOSCOPY

- The Gold Standard for ACA assessment
- Use of slit lamp and gonio-lens (One, two, three and four mirror designs)
- It detect width of angle and graded on structures are visible
- Important to explain the mecanism of glaucoma ,diagnosis, management and follow up

GONIOSCOPIC TECHNIQUE

Indirect

Posner, Sussman, Zeiss ,Goldmann

Direct

Koeppe, Barkan, Wurst, Swan-Jacob

GONIOSCOPY TECHNIQUE

Direct	Indirect Gonioscopy
Diagnostic and surgical goniolens	The Goldmann Single mirror lens (Prototype) need coupling agent
Straight on view	Sussman four mirror lens , Posner lens
More panoramic	posterior curvature is similar to the cornea use coupling agent
Look deeper into ACA , useful examine fundus through the pupil, no distortion	Faster, simple, four mirrot not required viscous bridge an have small diameter
Especially for Nystagmus, irregular cornea	
Special equipment needed	

Shape and Iris configuration, posterior synechiae, trabecular pigmentation, glaucomflecken

- Schwalbe's Line
- Trabecular Meshwork
- Scleral Spur
- Ciliary Body b12and

PAS, Neovascular, Inflammation cell, fibrin, angle recession, pigment, pseudoexfoliation

Dynamic Gonioscopy

- Done with indirect technique
- Aqueous humor is forced into chamber angle
- Iridocorneal apposition >< Synechial closure

Gonioscopy narrow angle without indentation

Gonioscopy narrow angle with indentation, showing PAS

Indentation Gonioscopy

Methods for describing the angle

SITE of ANGLE INSERTION	ANGLE WIDTH (Shaffer)	PERIPHERAL IRIS CONFIGURATION

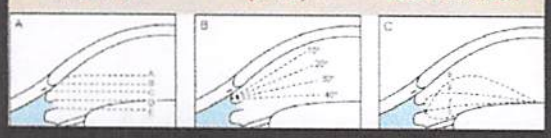


Table 9.1. Shaffer's system of grading the angle width

Grade	Angle width	Configuration	Chances of closure	Structures visible on gonioscopy
IV	35-45°	Wide open	Nil	SL, TM, SS, CBB
III	20-35°	Open angle	Nil	SL, TM, SS
II	20°	Moderately narrow	Possible	SL, TM
I	10°	Very narrow	High	SL only
0	0°	Closed	Closed	None of the angle structures visible

SL = Schwalbe's line, TM = Trabecular meshwork, SS = Scleral spur, CBB = Ciliary body band

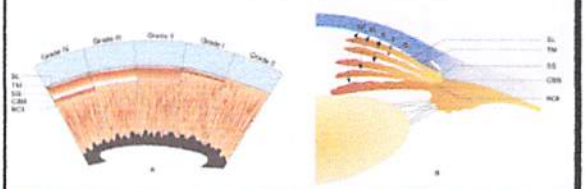
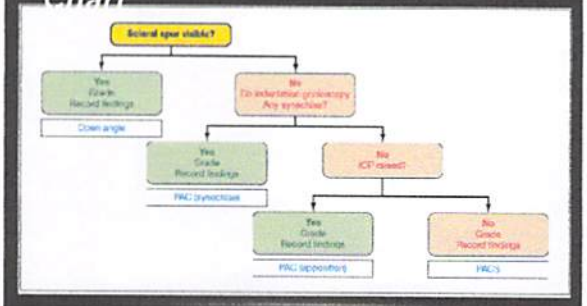


Fig. 9.2. Diagrammatic depiction of various angle structures (SL, Schwalbe's line; TM, trabecular meshwork; SS, scleral spur; CBB, ciliary body band; RCH, root of iris) as seen in different grades of angle width (Schaffer's grading system). A, Gonioscopic view. B, Configuration of the angle in cross section of the anterior chamber

Seagig Flow Chart



ULTRASOUND BIOMICROSCOPY (UBM)

- A high-resolution ultrasound technique imaging of structural details of the anterior chamber
- Uttilize probes 35MHz (50-80 MHz), B-Scan
- Tissue penetration 5mm
- Simple, use scleral shells and patient in a sitting position

Why do we perform UBM ?

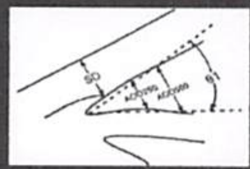
Diagnosis

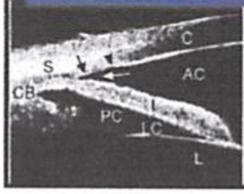
- Occludable or nonocclüdable angle
- Plateau iris Syndrome
- Pigment dispersion syndrome
- Ciliary body

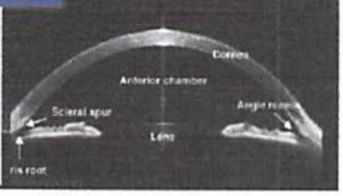
Management

- Guidance of glaucoma surgery
- Evaluation of filtering bleb, Sclerectomy , canaloplasty
- Evaluation of postoperative complications

- ✓ AOD250 (Angle Opening Distance) Angle structure influenced by iris configuration
- ✓ AOD500 (Angle Opening Distance)
- ✓ Landmark : Scleral Spur





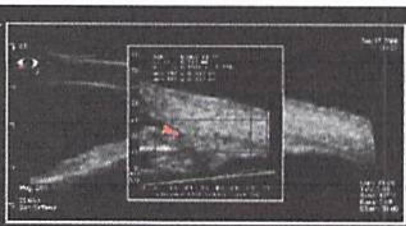


Parameter	Description	Range*		References
		Occludable angle (OA)	Nonoccludable angle (NOA)	
AOD500	Distance from cornea to iris at 500 μm from the scleral spur	0.11±0.04	0.29±0.13	(Henzan et al.)
TIA	Angle formed from angle recess to points 500 μm from scleral spur on corneal endothelium and perpendicular on surface of iris	10.3±5.9	24.2±9.3	(Henzan et al.)
TCPD	Measured from point on endothelium 500 μm from scleral spur perpendicularly through iris to ciliary process	0.62±0.11	0.77±0.36	(Henzan et al.)
ID	Measured from perpendicular 500 μm from scleral spur	0.40±0.05	0.41±0.05	(Henzan et al.)
ARA750	Area of triangle between angle recess, iris and cornea 750 μm from scleral spur	0.10±0.08	0.23±0.07	(Friedman et al., 2003) for NOA (Yao et al., 2007) for OA
ICPD	Distance from the posterior iris surface to the ciliary process perpendicular 500 μm from scleral spur	0.30±0.21	0.40±0.20	(Sihota et al., 2005)
ILCD	Length of contact between surfaces of lens and iris	0.79±0.22	0.98±0.41	(Sihota et al., 2005)

*All values (mean±standard deviation) are in mm except TIA which is in degrees and ARA750 which is in mm²

Abbreviations: AOD=angle-opening distance; TIA=trabecular-iris angle; TCPD=trabecular-ciliary process distance; ID iris thickness; ARA=angle-recess area; ICPD=iris ciliary process distance; ILCD=iris-lens contact distance;

UBM RESULT



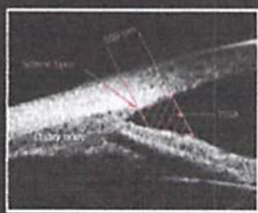
Anterior Segment OCT (1990)

- ❑ High resolution cross-sectional imaging
- ❑ Use 10-20 microns SLD
- ❑ Objective and quantitative assessment
- ❑ To evaluate Normal , abnormal AC configuration, ACD

PROTOTYPE OCT	OCT 1	OCT 2000	STRATUS OCT	VISANTE OCT	SLOCT
1991	1995	2002	2005		

AS-OCT

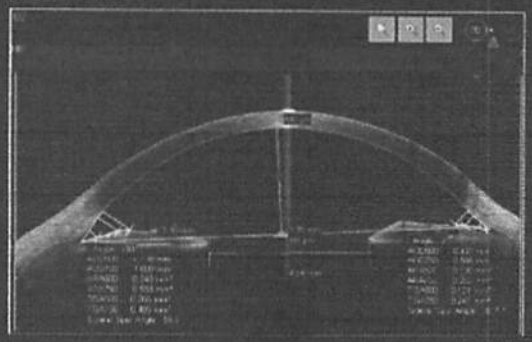
- ❑ Landmark : Scleral Spur
- ❑ Parameters :
  - ✓ Angle Opening Distance at 500μm (AOD 500)
  - ✓ Trabecular-iris Space Area at 500 μm (TISA 500)



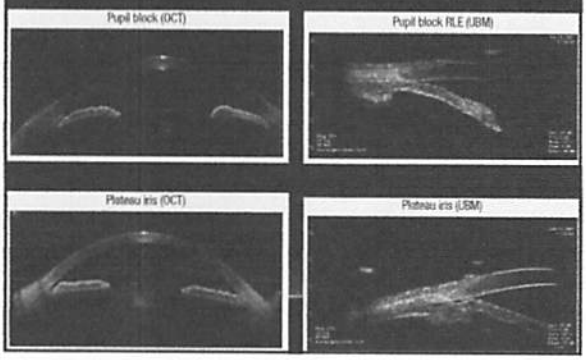
OCT Specifications Comparison

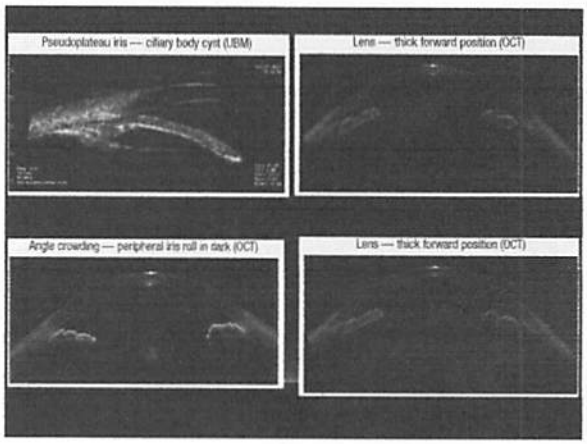
Specification	Stratus	Cirrus	Visante	RT-Vue
Domain	Time	Spectral	Time	Spectral
SLD Wavelength	820	840	1310	840
Scan Speed/sec	400	27000	2000	26000
Axial Resolution	<10μm	5μm	18μm	5.0μm
Tranverse Res	20μm	15μm	60μm	15μm
Scan Depth	2mm	2mm	6mm	2-2.3mm
Optical Power	750μW	<725μW	<6500μW	750μW

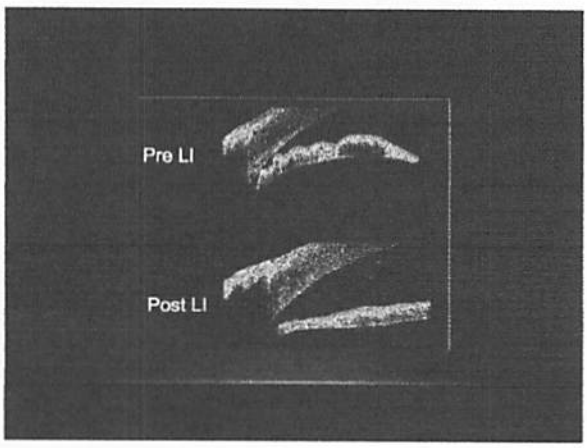
OCT Result



OCT UBM







UBM VS ASOCT ?

UBM

- easy to use, fast
- Supine position
- Scleral shell Contact
- Axial resolution 50μm
- Ability to see posterior of iris

ASOCT

- Non contact, up right
- Rapid, easy to use
- Higher resolution, axial resolution 10-20μm
- Minimal visualizing the ciliary body, supra-choroidal space
- Sensitivities 98%
- Specificity between 55-85%

Take Home Message

- ✓ New technologies for assessment of AC an useful additional quqlitqtive information to obtained with traditional tools
- ✓ Gonioscopy is gold standard for AC assessment
- ✓ Optimal assessment will make better diagnosis and management

Thank You…Wassalam