Rethinking Gonioscopy
Anthony DeWilde, OD FAAO

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• Nothing to Disclose

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Rethinking Gonioscopy

How angles close
Using gonioscopy to grade
New technology

Goals
Misconceptions
Diagnostic Accuracy
Prognosis/Treatment
New Technology

Underutilized
Don’t understand value
Difficult

Not all angle closure is acute
Not all acute glaucoma is angle closure
Subacute

Most primary angle closure is subacute
Spend months to years asymptomatic
May not catch during exam
Acute closure is uncommon

Symptoms

Secondary Closure

Not all acute glaucoma is primary angle closure
Uveitis
Rubeosis

Difficult

Technically difficult to handle
Practice
Few good references
gonioscopy.org

Indications

Elevated IOP
Asymmetric IOP
Vascular
CRVO, DM, OIS
Trauma
Every Glaucoma patient!!
Contraindications

- Hyphema?
- Open Globe
- Compromised Cornea

Risk Factors

- Age
- Race (Asian, Eskimo)
- Shorter Axial Length
- Shallow Anterior Chamber
- Lens

Accuracy

Classify type of glaucoma
Leads to better treatment

Accuracy

- POAG
- NTG
- Angle Closure
- Rubeotic
- Uveitic
- Pigmentary/Pseudoexfoliation
Accuracy

Many different methods
  - Van Herrick
  - Shaffer
  - Spaeth

Why Change?

Gonioscopy should grade occludability

Why Change?

Spaeth tells us
  - Occludability
  - Relationship of Iris to TM
  - Easier to monitor for change

Spaeth Method

Normal Angle - Video

Video from gonioscopy.org - Used with written permission

Spaeth Method

Spaeth Method

Spaeth Method
Angle of Insertion

Steep or Regular

Steep or Regular

TM – Iris Relationship

Go to most narrow angle
A = Anterior to TM
B = Behind TM
C = Scleral Spur
D = Deep (Ciliary Body)
E = Very Deep
Compression

If angle is narrow, may need compression
How far back does it go?
Check for PAS

Compression Gonioscopy - Video

Video from gonioscopy.org - Used with written permission

Occludable

Who is occludable?
30 and 40 are not
10 and 20 are
Not all occludable angles will occlude

Who needs treatment?

Who needs treatment?

Increased IOP
ONH and/or VF progression
PAS - current or aborted
Symptoms
Other eye
### Provocative Tests

<table>
<thead>
<tr>
<th>Test</th>
<th>Sensitivity</th>
<th>Specificity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dark Room Gonio</td>
<td>66%</td>
<td>80%</td>
</tr>
<tr>
<td>OCT (after 3 minutes)</td>
<td>90%</td>
<td>57%</td>
</tr>
<tr>
<td>Friedman 1972</td>
<td></td>
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</tbody>
</table>
  - Dark room         | 48%         |             |
  - Prone             | 71%         |             |
  - Pharmacologic     | 58%         |             |

*J Glaucoma 2012 Mar;21(3):155-9*
Treatment

- Laser Peripheral Iridotomy
- Argon Laser Iridoplasty
- Cataract Surgery

Plateau Iris

- Plateau Iris Configuration
- Plateau Iris Syndrome
- “Double Hump”

Acute Treatment

- Diamox not fast enough
- Isosorbide and Osmoglycin not available
- Paracentesis
- Cannot do this if angle is narrow

Quigley

Two factors influence risk of closure

- Iris proximity to TM
- Iris volume

Acute Treatment

- Meds!
- Consider Iopidine

- Cornea is edematous
  - Underestimate by as much as 20%

- If cornea is clearing, IOP is improving
Possible mechanisms:
- Iris volume increase on dilation
- Choroidal expansion

**Advanced Tech**

Ultrasound Biomicroscopy (UBM)
Scheimpflug photography
Anterior Segment OCT (ASOCT)


**Benefits**
- Good visualization of angle
- Documentation
- Patient education

**UBM**

Similar to B-Scan
- Uses higher frequency
- Images anterior segment

**Pros**
- Quantitative/Qualitative view of ACA
- Correlates well with gonioscopy
- Plateau Iris
- Confirm efficacy of LPI

**Cons**
- Best imaging requires coupling with eye bath
- Inconvenient
- May be difficult to interpret
Scheimpflug

Anterior Segment images from slit lamp
Noncontact optical system
Common system is Pentacam

Pros
- Inexpensive
- Good correlation with gonioscopy

Cons
- Not as good as OCT or UBM
- No view of angle structures

OCT

Objective measures
- Iris curvature
- Lens vault
- Iris volume
- Anterior chamber depth
- Anterior chamber width

Pros
- Can do in dark room
- Good sensitivity
- Many doctors already have OCT
**OCT**

Con
- May overestimate risk
- Questionable specificity
- Cannot visualize behind iris

**Imaging**

All technology is a complement to gonio
- Cannot visualize angle as well as gonio
- Cannot compress

**Imaging**

Need prospective trials
- LPI vs Monitoring
- None can predict which angles close