

Rugby World Cup 2015: All Blacks put in strong second half in Tonga win

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All Blacks Rugby World Cup Sport ...



All Blacks prop Tony Woodcock scores against Tonga during their Rugby World Cup pool match against Tonga. Photo / Getty
Brett Phibbs

All Blacks 47 Tonga 9

Rugby: Magic Mooloos claim Shield

By Campbell Burnes

9:26 PM Friday Oct 9, 2015

Hawkes Bay Rugby Team ITM Cup Ranfurly Shield ...



Waikato celebrate during their Ranfurly Shield win over Hawkes Bay. Photo / Getty

**Waikato 36
Hawkes Bay 30**

Disclosures

- No financial interests other than Optometry Practice owner
- Full time optometrist
- Not a glaucoma prescriber
- ODOB Board Chair
 - Previously assessed self audits as part of a screening committee
 - Gives great insight into the practicing habits of optometrists individually and generally
- Do I have an agenda?
 - Pet project – reduce unnecessary referrals to ophthalmology while ensuring safe practice

Are Traditional Assessments a waste of time

Anterior Chamber Assessment

- There are a wide range of imaging devices available now to help diagnose glaucoma which now begs the questions
 - Do I need to do gonioscopy?
 - Is OCT a substitute for gonioscopy?
 - Is Van Herick a reasonable predictor for narrow angles?
 - What is an occludable angle?

What is the purpose of anterior chamber assessment

- To identify 'occludable' angles
- To identify primary angle closure
- To identify secondary glaucoma risk factors
- To assess the architecture of the angle

What is an occludable angle

- A consensus definition of the characteristics of an 'occludable' drainage angle has come into common usage in epidemiological research. If the posterior (usually pigmented) trabecular meshwork is seen for less than 90° of angle circumference, this is termed an occludable angle. However, this remains an arbitrary division that has not been validated. Defining "occludable" angles in population surveys: drainage angle width, peripheral anterior synechiae, and glaucomatous optic neuropathy in east Asian people. Foster et al
- This corresponds approximately to a Shaffer grading of less than grade 2 in three or more quadrants.
- An untreated primary angle closure suspect patient has an estimated 22% (Thomas et al. 2003) to 30% (Wilensky et al. 1996) chance of developing angle closure over 5 years.

Van Herick – pros

- Van Herick
 - Quick



Van Herick – cons

- Temporally and nasally (if free from anatomical shadows) only
 - 65% of narrowest angle not temporally. Gispets et al found narrowest angles to be temporally in 35% of cases, followed by 24% nasal, 22% superior and 19% in the inferior quadrant. (Using Scheimpflug photography(Pentacam))
 - A lot of studies have shown the superior angle to be the narrowest
- ACA ratio dependant on corneal thickness – thin cornea results in larger ratio than thicker cornea
- Technique important
 - Light beam perpendicular to cornea at limbus (within 10 degrees)
 - Illumination 60 degrees from optical axis of microscope.
 - Can not differentiate between occludable and occluded angle

Grading Van Herick

Van Herick Grade	Limbal anterior chamber depth: corneal section thickness expressed as a fraction	Modified Van Herick grade with limbal ACD expressed as a percentage of corneal section thickness
Grade 0	0	0%
Grade 1	$< \frac{1}{4}$	5% 15%
Grade 2	$\frac{1}{4}$	25%
Grade 3	$\frac{1}{4}$ to $\frac{1}{2}$	40% 70%
Grade 4	1 or greater than 1	$\geq 100\%$

Van Herick as a screening test

Several Studies have been done on the ability of Van Herick technique to reliably detect potentially occludable angles and on detecting primary angle closure glaucoma

- Sensitivity (the proportion of those with the disease correctly identified by the test)
- Specificity (the proportion of those without the disease who are correctly identified as normal by the test)
- However – even with high sensitivity and specificity provide an indication of the clinical effectiveness of a screening test they do not take into account the prevalence of a condition in a given population. As prevalence of ACG is reasonably low the proportion of individuals testing positive who have angle closure is still likely to be low.

Van Herick as a screening test

- Data from nine published studies comparing van Herick with gonioscopy
 - Using a grade 1 Van Herick ($\leq 15\%$) sensitivity ranged from between 56.3% and 86.3% and specificity varies from 85.7% to 100%
 - Using a grade 2 van Herick cut off ($\leq 25\%$) sensitivity ranged from between 64.2% and 99.2% and specificity ranged varies from 57.9% to 96%
- 70% to 77% of primary angle closure suspects will not develop signs of primary angle closure within 5 years
 - ?Can optometrists better manage these suspects in practice?
 - When is it advisable to treat with peripheral iridotomy?
- What is the 'ideal' false positive rate???
 - Identifying those with occludable angles who are going to progress is a challenge and decisions should be influenced by risk factors such as ethnicity age and gender.

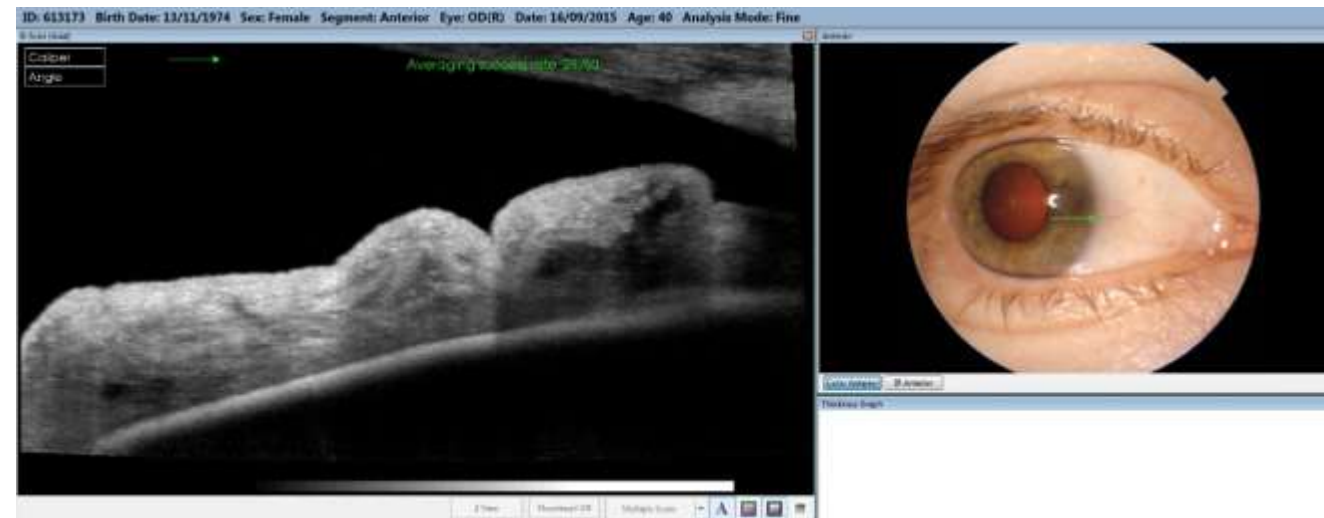
Van Herick as screening for occludable angles

- High sensitivity and specificity
- Using 25% limbal chamber depth as cut off will capture nearly all occludable angles.
- Optometrists simply can't refer all patients with narrow angles measured with van Herrick as there will be a large proportion of 'occludable' but low risk angles that are unnecessarily referred
 - Discuss with local ophthalmologist what they want to see.
- Need to do gonioscopy on all 'occludable' angles identified with van Herick to identify those really at risk

Indications for van Herick

- Every patient every time
- NICE guidelines state that whenever gonioscopy is not possible eg in people with physical or learning disabilities, that van Herick test is an acceptable alternative.

Van Herick/OCT



Self Audit quotes - Gonioscopy

- Questions on gonioscopy added to self audit as evidence from previous years auditing that gonio could be a weak point.
- Examples of answers to gonio question
 - I do not do gonioscopy, as I have no lens. I use Van Herick technique and include this in letters when concerned over angles
 - I perform gonio on less than one patient per week... While I have performed gonioscopy on patients seen to have narrow anterior chamber angle ratios, I also consider referral... If a patient has narrow anterior chamber angles noted on slit-lamp examination, and they are not currently under the care of an ophthalmologist, I will discuss referral to an ophthalmologist for further assessment, with possible outcomes of prophylactic YAG laser peripheral iridotomy or cataract surgery, or monitoring/discharge.
 - In the past I have not performed gonioscopy a lot and this is one of my areas of improvement that I am concentrating on and now do a lot more as indicated

Gonio – pros

- Gonio
 - Direct view
 - Angles structures seen – pigment/angle recession etc
 - Relatively quick
 - Cheap
 - Indentation

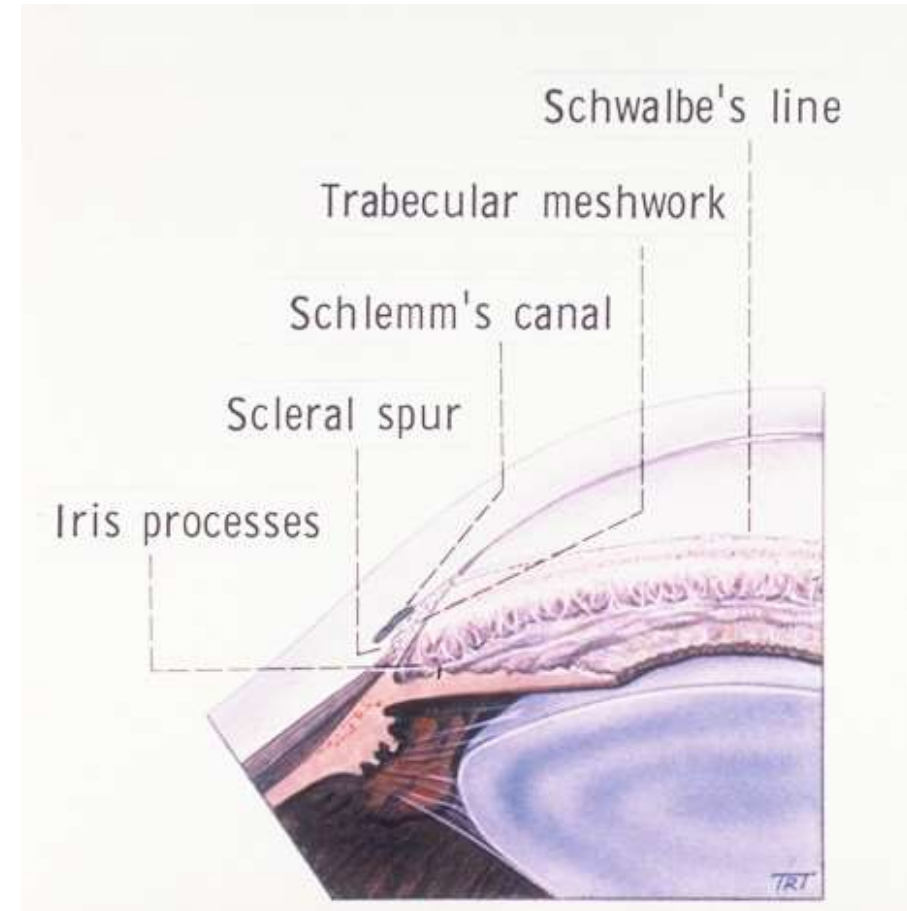
Gonioscopy - cons

- Limitations
 - Experience and skill of the examiner
 - Discomfort for some patients – co-operation
 - Actual positioning of the lens
 - Patient line of gaze
 - Variations in pupil diameter associated with illumination conditions
 - Grading scheme used
- ***You need to use anaesthetic***
- Gonioscopy remains the gold standard and is what all other methods of angle assessment are graded against.

Gonioscopy Landmarks

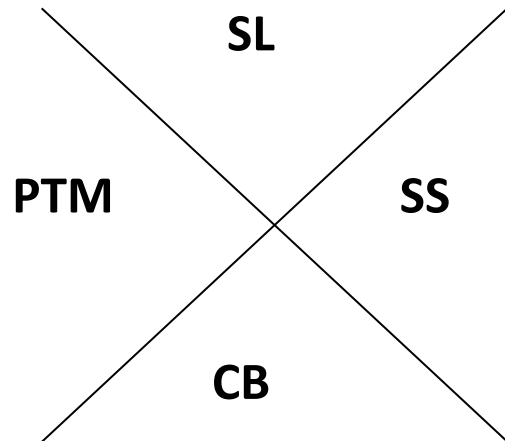
Anterior to posterior

- Schwalbe's line
 - Can be found by looking for the point where the two reflections meet – anterior opaque line.
 - The junction between the posterior cornea (Descemet's membrane) and the trabeculum
- Trabecular meshwork
 - Often split into anterior (pale) and posterior (pigmented) parts
- Scleral spur
 - Narrow, dense, shiny whitish band
 - Posterior to the trabeculum, most anterior part of the sclera
 - If this structure is seen, there is very little chance the angle can close
 - Often the easiest structure to identify
- Ciliary body
 - Dull brown, slate grey or pinkish band
 - Tends to be narrower in hyperopic eyes and wider in myopic eyes
 - Wide open angle incapable of closing
- Iris processes



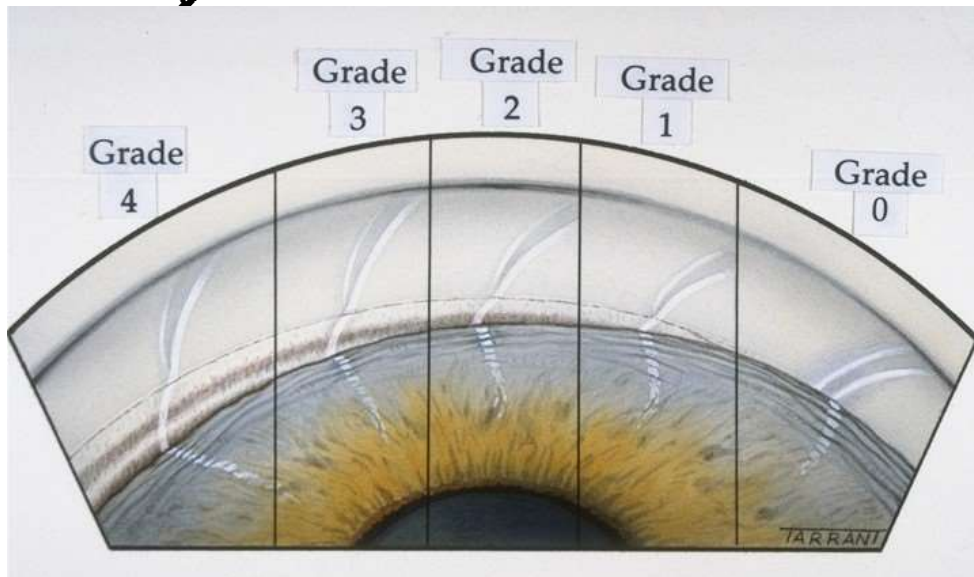
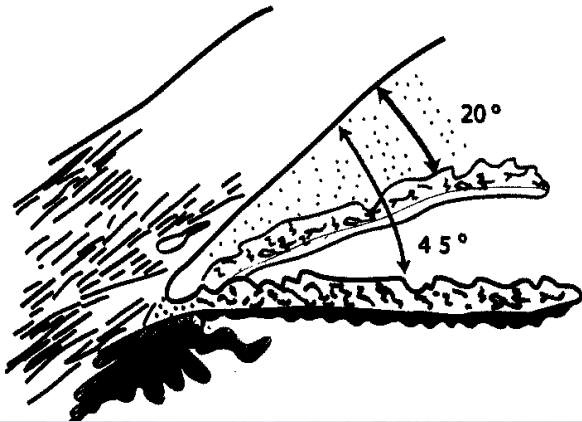
Simplest Recording System

- Record the most posterior structure visible
 - Record angle not mirror position



Shaffer Grading System

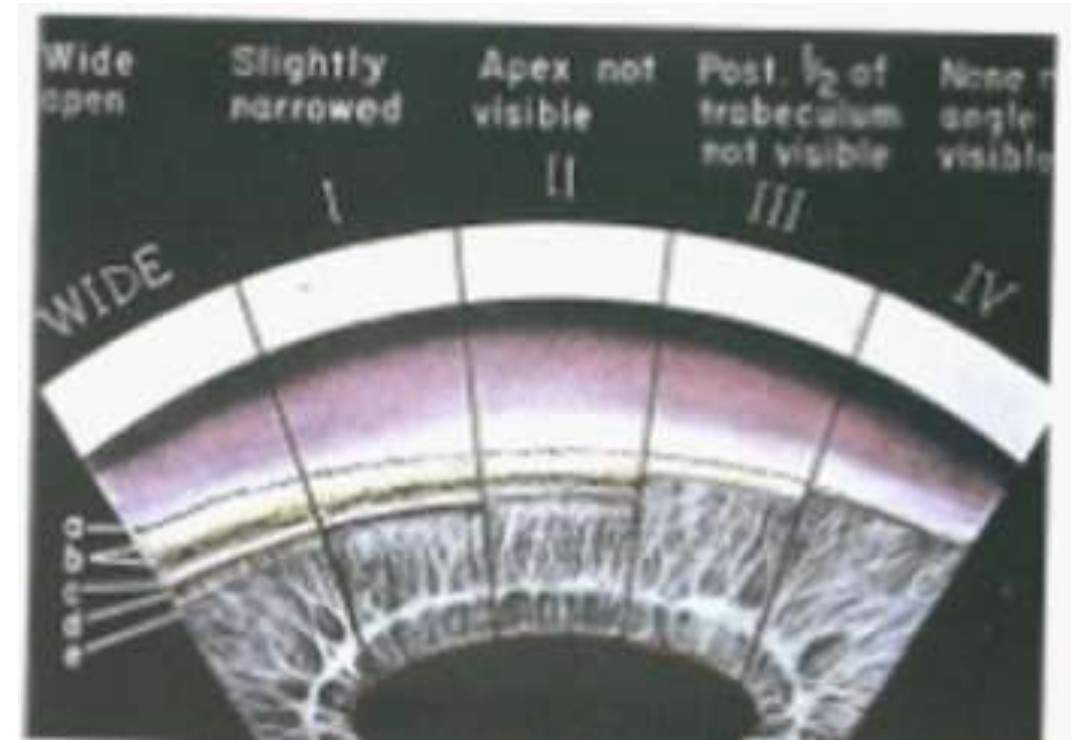
- Based on angular width of the angle recess



- Grade 4: $45^\circ - 35^\circ$ angle, incapable of closure
- Grade 3: $35^\circ - 20^\circ$ angle, incapable of closure
- Grade 2: 20° angle, closure possible but unlikely
- Grade 1: $\leq 10^\circ$ angle, closure possible
- Grade 0: 0° angle, closed

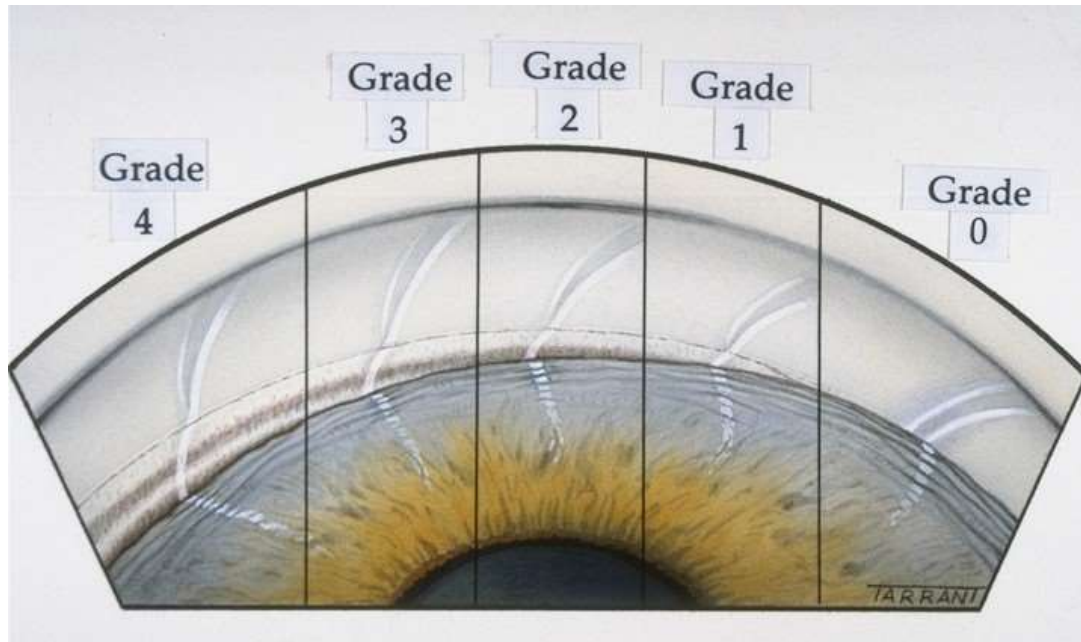
Scheie Classification

- Based on structures visible
- Wide open All structures visible
- Grade I Iris root visible
- Grade II Ciliary body obscured
- Grade III Post trab obscured
- Grade IV Only SL visible

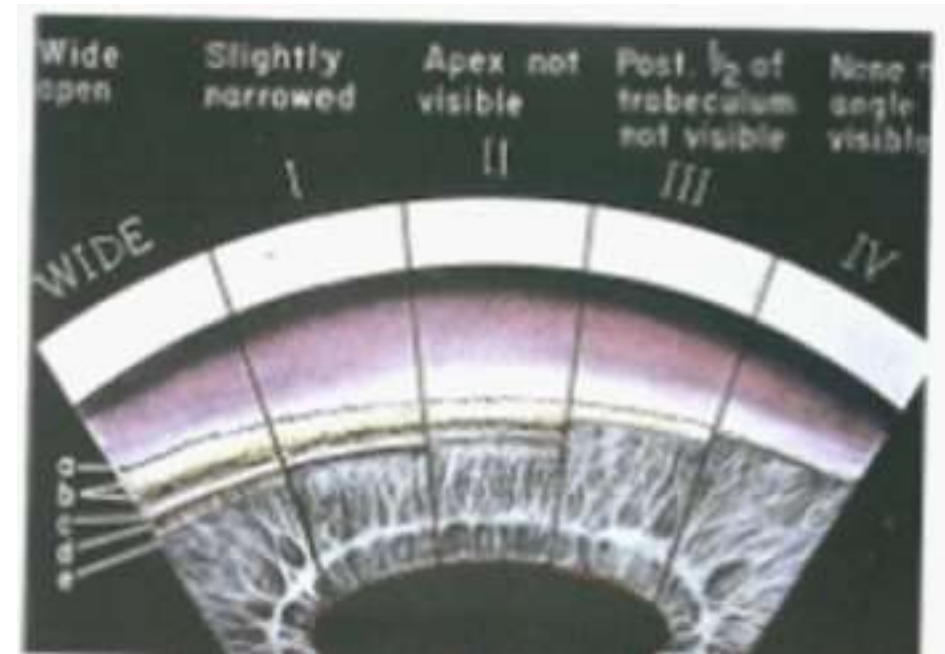


Schaeffer vs Scheie

Schaeffer



Scheie



Spaeth Grading System (used by Glaucoma Specialists)

- 4 parts
 - Iris insertion - capital letter
 - A = Anterior to Schalbe's line (SL)
 - B = Between SL and scleral spur
 - C = sCleral spur visible
 - D = Deep: ciliary body visible
 - E = Extremely deep: > 1mm CB
 - Apparent insertion is recorded in brackets (when hidden by iris)
 - Angle of anterior chamber – number
 - The angular approach of the peripheral iris to the recess of the anterior chamber angle (Range from 0 - 50°)
 - Curvature of iris - lowercase letter
 - Original classification – r (regular), s (steep), q (queer)
 - Recent modification - b = bowing anteriorly, p = plateau configuration, f = flat, c = concave posterior bowing
 - Pigmentation of PTM
 - Range 0 – 4 (No pigmentation to intense pigment)

Primary Angle Closure

- We've discussed what an occludable angle is but what about angle closure?
- Chronic Angle Closure is an occludable angle with
 - Peripheral anterior synechiae
 - Elevated IOP
 - Excessive pigment deposition on the superior trabecular meshwork
 - Ischaemic sequelae of acutely raised IOP
 - (distortion of the radially oriented iris musculature, iris stromal atrophy or glaucomflecken)¹
- Primary Angle Closure Glaucoma
 - An occludable angle with signs of angle closure and glaucomatous optic neuropathy
- An optometrist glaucoma prescriber **must:**
 - Immediately refer a patient with angle closure glaucoma as an ocular emergency. In the rare event that emergency treatment is to be initiated by an optometrist, it is expected that every attempt would be made to consult with an ophthalmologist prior to initiating treatment.

1. Detection of gonioscopically occludable angles and primary angle closure by estimation of limbal chamber depth in Asians: modified grading scheme. Paul J Foster et al

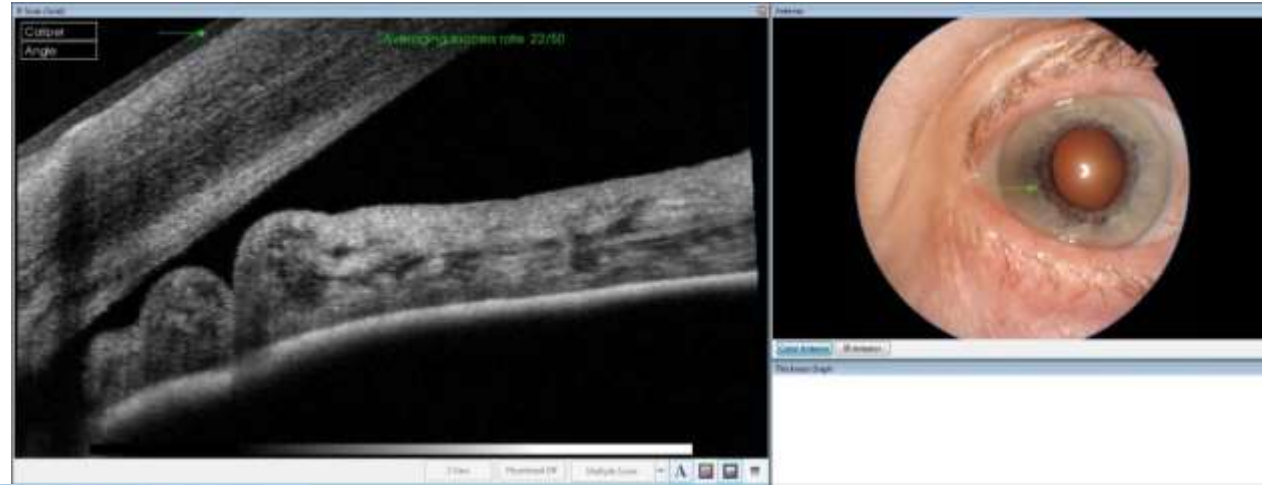
How should we be recording

- Would be great to be consistent with ophthalmology
 - My opinion is that Spaeth is the ideal grading system
- Record as many key components as possible
 - Ideal to record structures seen
 - Don't use grading – identify structure or use Spaeth Capital letter
 - Angle depth and grading system used
 - Document estimate of angle or
 - Van Herick ok for estimate of angle depth
 - A description of the shape of the iris
 - I use OCT to do this – haven't quite mastered the art of assessment with gonio
 - Pigmentation of angle recorded

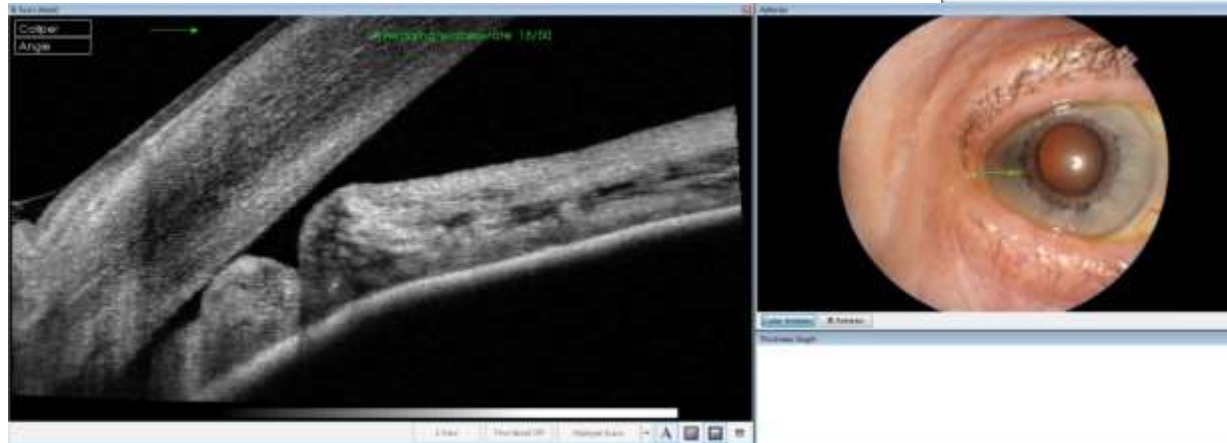
Optometrists Role

- Better Referrals
 - Reduce false positive referrals while maintain low false negatives
 - Discuss with local ophthalmologist what they want to see and what is likely to get treatment
 - Hospitals overloaded - HWNZ recommended Optometrists gain authorised prescriber status to help reduce tertiary referrals – Optometrists can manage more glaucoma suspects, including narrow angles, to reduce burden on Ophthalmology
- Management
 - Encouraged to monitor more closely ‘occludable angles’
 - Understanding gonio, Van Herick and OCT pros and cons for angle assessment and the risk factors and odds of developing angle closure

OCT example – light conditions



Taken in the light



Taken in the dark

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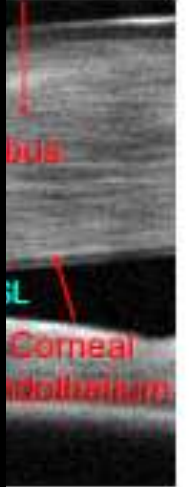
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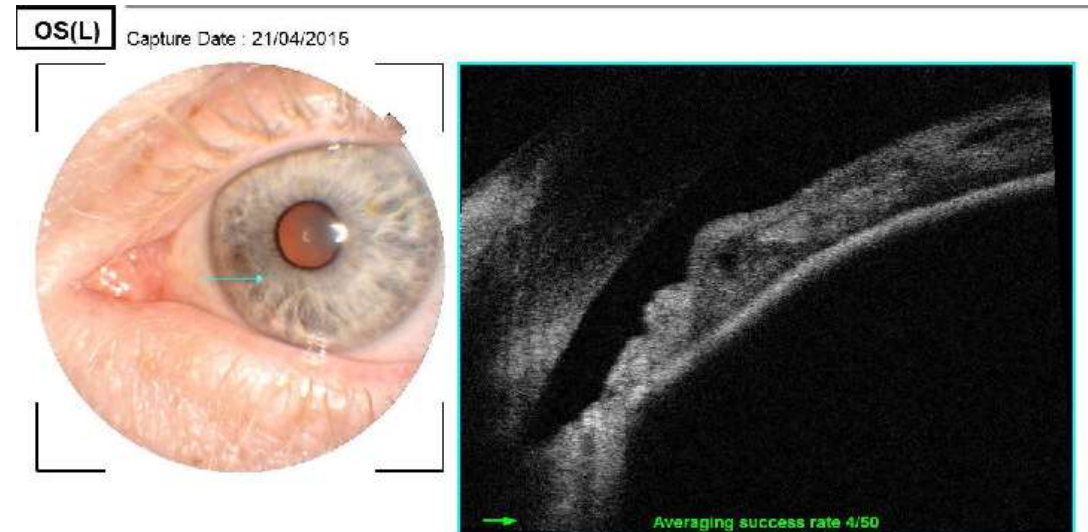
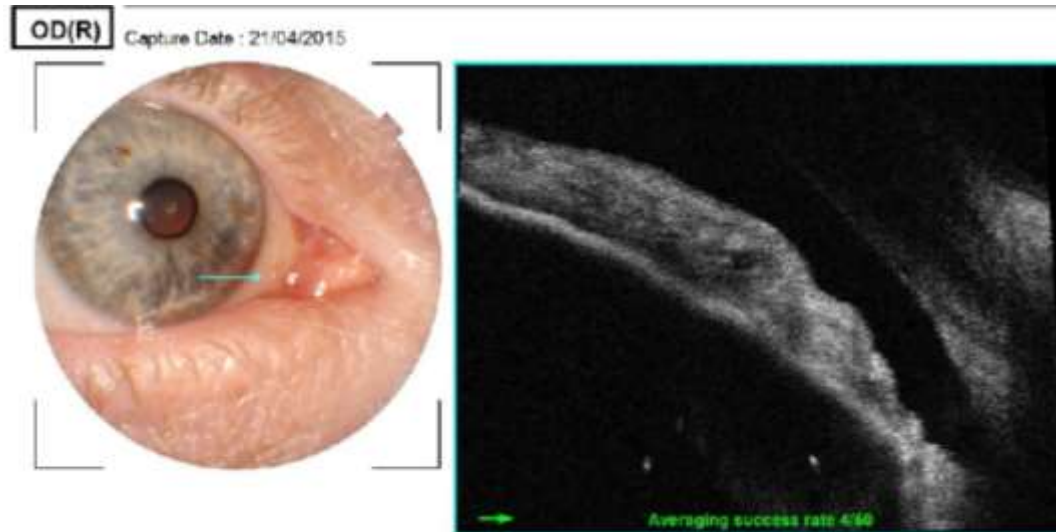
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OCT example – steep iris

- Narrow anterior chamber noted with Van Herick though angle appeared reasonably wide
- Unusual appearance with gonio - didn't really know what I was looking at
- OCT shows angles open – this case referred due to complexity of extremely narrow AC which is a significant risk factor for angle closure



Summary

- Need to see angle and structure
 - Only way to do this is with gonio
 - Van Herick sensitive at picking up 'occludable angles' based on Schaeffer grade 2 scale but has many limitations
 - All techniques should be done with minimum light to see angle at its narrowest
 - OCT great for confirming findings and showing iris configuration and angle and potentially a more accurate result for those not confident in gonioscopy
- Optometrists are well placed to better monitor glaucoma suspects whether open or narrow angle
 - Practice gonioscopy and use OCT imaging or ophthalmology referrals to self educate
 - Discuss with local ophthalmologist what they want to see – no point referring a suspect who will not be treated but work within your comfort zone

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