

## The device that will be most useful to assess the angles in the next 10 years will be...

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### **Anterior Segment OCT (ASOCT) Will Be Most Useful to Assess the Angles in the Next 10 Years**

**Edgar U. Leuenberger, MD, DPBO**

Primary angle closure is responsible for the majority of bilateral glaucoma blindness in Mongolia, India, China, and Singapore based on published data in the 80s, 90s, and 2000s.<sup>1,2,3</sup> Recently, using the United Nations World Population Prospects, angle closure glaucoma is projected to affect 23 million people worldwide by 2020 and 32 million by 2040.<sup>4</sup> To address this forecast of preventable blindness, an accurate assessment of the anterior chamber angle is important in detecting appositional closure early enough so that laser iridotomy can be performed to relieve pupillary block and to prevent visual loss from primary angle closure glaucoma. Hence, a diagnostic tool that can screen for angle closure will be most useful in the next 10 years.

Dark room indentation gonioscopy and anterior segment – optical coherence tomography (ASOCT) have been shown to aid the clinician in screening for angle closure, with the former being considered as the gold standard. However, gonioscopy is fraught with weaknesses. Given that gonioscopy requires skill and utilizes visible light, inadvertent indentation of the cornea and pupillary constriction during gonioscopy

may make narrow angles look open. Hence, narrow angles could be missed. In contrast, ASOCT is non-contact, quick, objective, and uses infrared light. These advantages make dark room ASOCT most useful in screening for angle closure. ASOCT has also been shown to detect more closed anterior chamber angles than gonioscopy particularly in the superior and inferior quadrants.<sup>5,6</sup> Finally, unlike gonioscopy, ASOCT has the potential for use in population-based screening.

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**Gonioscopy Will Be Most Useful to Assess the Angles in the Next 10 Years****Ernesto C. Pangalangan, Jr., MD, DPBO**

For angle evaluation in 10 years, will the anterior segment optical coherence tomography (ASOCT) replace gonioscopy? In spite of the advent of sophisticated instrumentation such as the ASOCT, gonioscopy will still remain invaluable when doing angle evaluation.

Gonioscopy allows a direct examination of the anterior chamber angle.<sup>1-4</sup> It gives the most accurate and objective picture of the angle being examined. Secondly, it is an affordable procedure. It does not even cost a fraction of the ASOCT. And third, it is exceptionally practical. Gonioscopy is a clinic procedure which can be done in 5 to 10 minutes. Lastly, unlike the ASOCT, gonioscopy is not dependent on resolution of any machine or technician proficiency.

Gonioscopy enables one to (1) quantify angle pigmentation, (2) recognize angle neovascularization, (3) distinguish between synechial versus appositional angle closure, and (4) visualize tumors/cysts in the angle. Presently, ASOCT has no capability to give information on angle neovascularization.<sup>1-4</sup> All of the advantages will greatly impact the manner on how we will carry out the proper management of our glaucoma patients.

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**Consolidating the Evidence****Manuel B. Agulto, MD**

Gonioscopy allows for proper evaluation of anterior chamber angle and makes glaucoma diagnosis, treatment, and follow-up accurate and adequate.

Clinicians can quickly and correctly evaluate patients by having a firm grasp of the factors that affect illumination of the eye and the techniques to prevent putting undue pressure on the cornea. With dim light gonioscopy, the clinician may diagnose correctly angle pigmentation, new vessels, tumors, and cysts. With proper gentle touch on the gonioscopic lens, one does not unduly open a narrow angle. Indeed, gonioscopy done by a well-trained clinician will reveal the true clinical status of the anterior chamber angle.

With advances in technique and technology, we may expect easier and accurate evaluation and monitoring of the anterior chamber angle features. With lights-off or infrared gonioscopy, using anterior segment optical coherence tomography ensures correct diagnosis of appositional and synechial angle closure. Surely population-based screening will be easier with proper documentation. To complete the gonioscopic picture, the use of the ultrasound biomicroscope will give the total image of the situation at the posterior chamber plus the iris thickness.

With adequate gonioscopic training and complete understanding of the anterior segment anatomy, glaucoma diagnosis and pathophysiology will be made clear.