Introduction

Anterior segment imaging is a rapidly advancing field of ophthalmology. New imaging devices such as rotating Scheimpflug imaging (Pentacam-Scheimpflug) and anterior segment optical coherence tomography (AS-OCT) (Visante OCT and Slit-Lamp OCT) have recently become commercially available. These new devices supplement the more established imaging tools of Orbscan scanning slit topography and ultrasound biomicroscopy. All devices promise quantitative information and qualitative imaging of the cornea and anterior chamber.

They provide a quantitative angle estimation by calculating the angle between the iris surface and the posterior corneal surface. Direct angle visualization is feasible with the OCT device and Ultrasound biomicroscopy; they provide images of the scleral spur, ciliary body, ciliary sulcus and even canal of Schlemm in some eyes. Pentacam-Scheimpflug can measure net corneal power, a feature especially useful for cataract patients having undergone previous corneal surgery. Anterior segment OCT can measure corneal flap depth following LASIK and anterior chamber width prior to phakic intra-ocular lens implantation. the advent of new imaging devices may herald the dawn of a new era for ophthalmic diagnosis. **[1]**

Anterior segment imaging has significantly altered the diagnosis and evaluation of glaucoma. The information gained with new imaging modalities provides clinicians with both qualitative and quantitative information about anatomical relationships of the anterior segment**. [2]**

Introduction

Ophthalmologic applications of OCT began with retinal imaging before using it in anterior segment. OCT imaging of retina was helpful in identification of local defects in the nerve fiber layer that occur in early stages of glaucoma. **[3]**

Nolan (2008) described the two main anterior segment imaging modalities and summarized their applications, strengths and weaknesses. Ultrasound biomicroscopy and more recently AS-OCT are imaging modalities that can be used to obtain two dimensional (2-D) images of the angle and surrounding structures. Ultrasound biomicroscopy has the advantage of being able to illustrate the ciliary body and therefore give clinicians information on mechanisms of primary angle closure and also diagnose other abnormalities such as cyclodialysis clefts. Moreover, AS-OCT is a non-contact and rapid method of imaging the angle and anterior segment that has great potential in the diagnosis and follow-up of patients with angle closure. **[4]**

High-frequency ultrasound biomicroscopy (UBM) is the most established anterior segment imaging device, providing objective, high-resolution images of angle structures. UBM allows for visualization of structures in the posterior chamber that are otherwise hidden from clinical observation and can augment gonioscopy in the qualitative and quantitative evaluation of pathologic changes leading to angle closure. Most commercially available instruments use a 50- to 80-MHz transducer with a lateral and axial physical resolution of approximately 50 μm and 25 μm, respectively. **[5]**

Introduction

Anterior segment OCT is highly sensitive in detecting angle closure when compared with gonioscopy. More persons are found to have closed angles with OCT than with gonioscopy**. [6]**

Anterior segment optical coherence tomography is recently developed method that allows for objective and quantitative imaging of anterior segment structures and angle configuration. **[7]**

Ultrasound biomicroscopy (UBM) had played the dominant role in objective imaging of the anterior chamber angle until optical coherence tomography (OCT) was introduced in 2003. **[8]**

Advantages of OCT over UBM include noncontact methodology, with consequent reduction of patient discomfort and risk of corneal injury, and the ability to image the eye in the sitting position. AS-OCT and SL-OCT rely on infrared light of 1310 nm wavelength to provide images of the anterior segment; however, AS-OCT and SL-OCT cannot image structures posterior to the pigment epithelium of the iris and ciliary body owing to absorption of light by this layer. **[2]**

The width and depth of the anterior chamber angle in eyes with PACG increased significantly after cataract extraction and IOL implantation and became similar to that in eyes with OAG and that in normal eyes, which may lead to the decrease in IOP seen in the postoperative period. **[9]**