Introduction

The cornea is the most powerful refractive surface of the eye accounting for almost two-thirds of its total optical power. Measurement of its shape has an important role in a variety optometric and ophthalmological techniques such as contact lens fitting and refractive surgery. With the development of modern day process large amounts of information that have enabled that reconstruction of the cornea using detailed models. ***(Dave T., 1998)***

With the increase in corneal laser refractive surgery, there is a greater need for precise evaluation of the corneal surface. Topographic evaluation also has served to highlight long term complications of procedures like radical keratotomy and the promise of newer surgical procedures like photorefractive keratectomy, laser in situ keratomileusis, penetrating keratoplasty, and cataract surgery. ***(Rao, et al., 2000).***

Corneal topography provides a colour-coded map of the corneal surface. The power in dioptres of the steepest and flattest meridians and their axes are calculated and displayed. ***(Kanski J., 2007).***

Classification of normal corneal topography is an important step in the process of characterizing the shape of normal and pathologic corneas. ***(Stephen J., et al., 1990).***

Corneal topography is indispensable tool in the preoperative screening of refractive surgery candidates. ***(Renato A., et al., 2003).***

The corneal topography is used to quantify irregular astigmatism and corneal warping associated with contact lens wear, to diagnose early keratoconus and to evaluate changes in corneal shape after refractive surgery, corneal grafting and cataract extraction. ***(Kanski J., 2007).***

The information on regional corneal thickness, corneal elevation and axial corneal curvature obtained with the Orbscan corneal topography system from normal eyes provides a reference for comparison with diseased corneas. The Orbscan corneal topography is a useful tool to evaluate both corneal topography and corneal thickness. ***(Z. Liu, et al., 1999).***

Corneal topography pattern recognition combined with quantitative diagnostic indices is useful for the screening and classification of keratoconus with the Orbscan II being more sensitive in screening for keratoconus than TMS-2N ***(Li L., et al., 2007).***

The Pentacam imaging device (oculus), uses a rotating Scheimpflug camera to image the anterior segment of the eye. It is a non contact instrument that provides, in a single scan, anterior segment imaging (2-dimensional and 3- dimensional), anterior and posterior corneal topography, complete corneal pachymetry and densitometry of lens opacities ***(Yaniv B., et al., 2005).***

The Pentacam measures 25.000 data points over the cornea in less than 2 seconds. ***(Jau-Der H., et al., 2009).***

The Pentacam can be used to measure both anterior and posterior corneal curvatures. This device ascertains corneal power from both anterior and posterior corneal surface measurements. A " true-net power map" that shows the refractive power of the cornea at any given point (the instrument calculates the refractive power of both surfaces and adds them together) ***(Jeong H., et al., 2009).***

Pentacam pachymetry may be substituted for ultrasound pachymetry in central corneal thickness measurements in the post LASIK patients. ***(Joseph B., et al., 2008).***

The Anterior Segment Optical Coherence Tomography (AS-OCT) has been newly developed as a high resolution, non contact customized tool for anterior segment evaluation of the eye. One of its uses is cross sectional visualization and measurement of the central corneal thickness. Rapid acquisition during the AS-OCT pachymetry scan can reduce motion artifacts, ensuring an accurate and repeatable pachymetry map result. Its relative ease of use in particular makes it a promising alternative to traditional ultrasound methods of pachymetry. ***(Paul S., et al., 2007).***

Anterior Segment OCT is a non contact technology that performs 256A scans in 125 ms for a low-resolution image, or 512 A scans in 250 ms for a high-resolution image, using near-infrared light. This achieves a resolution of approximately 18µm axially and 60µm laterally with a depth of penetration of 3 to 6 mm depending on scan type. ***(Charles J., et al., 2009).***