

Cornea and Anterior Segment Parameters and Their Importance in the Eye Disease

Mustafa Berhuni^{1*}

¹ *Dr Ersin Arslan Training and Research Hospital, Ophthalmology Clinic, Gaziantep, Turkey.*

Dear Editor,

Corneal and anterior segment parameters (ASP) are valuable in diagnosis and risk assessment of diseases such as glaucoma and keratoconus and it is also an valuable tool in patient selection and surgical planning of excimer laser refractive surgery. Devices where cornea and anterior segment parameters are measured include Sirius System, Pentacam, Orbscan, Galilei, Anterior Segment Optical Coherence Tomography (ASOCT). Savini et al. found the Sirius System to be reliable in corneal and anterior segment measurements (1). Similarly, a study by Huang et al. found excellent reliability and reproducibility in measuring corneal thickness in healthy eyes using Sirius Topography (2). Studies comparing the Sirius System with Pentacam, Galilei and ASOCT devices in terms of corneal and anterior segment parameters have been carried out. Anayol et al. compared Sirius, Pentacam and Galilei devices in terms of ASP, and reported that devices could not be used interchangeably for these measurements (3). Milia et al. reported that the Sirius device was not equivalent to ASOCT for ASP (4).

Central Corneal Thickness (CCT) is an important clinical parameter for determining the risk of glaucoma as well as in determination of suitable candidates for excimer laser refractive surgery and selection of the surgical procedure to be performed. Many population studies have been performed regarding to CCT. Using Ultrasonic Pachymetry (USP) Nangia et al. found the mean CCT of $514 \pm 33 \mu$ in the Indian population above 30 years of age (5). Hwang et al. reported a mean CCT measurement of $530.9 \pm 31.5 \mu$ in the Korean population over 40 years of age (6). Using specular pachymetry Tamidokoro et al. found a mean CCT measurement of $521 \pm 32 \mu$ in the Japanese population above 40 years of age (7). Using ASOCT Ang et al. found the mean CCT to be $561,4 \pm 34.1$ in the Indian population over 40 years of age (8). Studies of CCT measurements in the Turkish population are also available. Altınok et al. reported the mean CCT to be $552,2 \pm 35,9 \mu$ in males and $552,3 \pm 35,4 \mu$ in females between 6 and 88 years of age (9). In a study by Goktas et al. of Turkish patients with cataracts between 44 and 90 years of age using specular microscopy the mean CCT was reported as $500 \pm 37 \mu$ (10).

Cornea and anterior segment parameters measurement may be helpful for ophthalmologists on evaluating glaucoma, candidates for excimer laser refractive surgery.

*Corresponding author: Mustafa Berhuni, E-mail: mustafaberhuni@gmail.com, ORCID ID: 0000-0002-5725-

References

1. Savini G, Barboni P, Carbonelli M, et al. Repeatability of automatic measurements by a new Scheimpflug camera combined with Placido topography. *J Cataract Refract Surg.* 2011;37:1809-16.
2. Huang J, Savini G, Hu L, et al. Precision of a new Scheimpflug and Placido-disk analyzer in measuring corneal thickness and agreement with ultrasound pachymetry. *J Cataract Refract Surg.* 2013;39:219-24.
3. Anayol MA, Güler E, Yağcı R, et al. Comparison of central corneal thickness, thinnest corneal thickness, anterior chamber depth, and simulated keratometry using galilei, Pentacam, and Sirius devices. *Cornea.* 2014;33:582-86.
4. Milla M, Pinerio DP, Amparo F, et al. Pachymetric measurements with a new Scheimpflug photography-based system: intraobserver repeatability and agreement with optical coherence tomography pachymetry. *J Cataract Refract Surg.* 2011;37:310-16.
5. Nangia V, Jonas JB, Sinha A, et al. Central corneal thickness and its association with ocular and general parameters in Indians: the Central India Eye and Medical Study. *Ophthalmology.* 2010;117:705-10.
6. Hwang YH1, Kim HK, Sohn YH. Central corneal thickness in a Korean population: the Namil Study. *Invest Ophthalmol Vis Sci.* 2012;53:6851-5.
7. Tomidokoro A, Araie M, Iwase A. Corneal thickness and relating factors in a population-based study in Japan: the Tajimi study. *Am J Ophthalmol.* 2007;144:152-4.
8. Ang M, Chong W, Tay WT, et al. Anterior segment optical coherence tomography study of the cornea and anterior segment in adult ethnic South Asian Indian eyes. *Invest Ophthalmol Vis Sci.* 2012;53:120-5.
9. Altinok A, Sen E, Yazici A, et al. Factors influencing central corneal thickness in a Turkish population. *Curr Eye Res.* 2007;32:413-9.
10. Goktas A, Gumus K, Mirza GE, et al. Corneal endothelial characteristics and central corneal thickness in a population of Turkish cataract patients. *Eye Contact Lens.* 2012;38:142-5.