SUMMARY

Keratoconus is a non-inflammatory disorder, characterized by corneal thinning and anterior protrusion. Detection of this disease is particularly important among candidates of refractive surgery, in whom the prevalence of keratoconus and subclinical keratoconus has been reported to be greater than in the normal population; keratorefractive procedures may have unsatisfactory results and cause postoperative complications in these patients. Moreover, apart from excessive ablation of corneal tissue, unidentified subclinical keratoconus is considered to be the main cause of ectasia after LASIK.

Clinical diagnosis of keratoconus in eyes with biomicroscopic, keratometric, and retinoscopic signs is not difficult. Moreover, advances in Placido disk-based computerized videokeratoscopy have lead to a variety of quantitative indices that have been found to be highly sensitive and specific in aiding with the diagnosis of keratoconus. Diagnosis of forme fruste keratoconus or subclinical keratoconus is more challenging. The terms “forme fruste keratoconus” and “subclinical keratoconus” were introduced to indicate a very early preclinical stage of the disease, in eyes that do not show the classical keratometric, retinoscopic, or biomicroscopic signs, but show subtle topographic features similar to clinical keratoconus on videokeratoscopy. However, an exact diagnosis of subclinical keratoconus is more difficult, because threshold criteria remain to be defined. Placido disk-based computerized videokeratoscopy only examines the anterior corneal surface.

The Pentacam (Oculus, Germany) is a relatively new instrument that images the anterior and posterior corneal surfaces employing a rotating Scheimpflug camera. Measurements of

corneal thickness and posterior elevation with the Pentacam rotating Scheimpflug camera have been reported to be highly reproducible and repeatable, but unlike those obtained with Orbscan topography, little is known about what constitutes normal or abnormal posterior corneal elevation measured with this method.

This study was conducted with aim of detection the prevalence of corneal ectasia among candidates of LASIK surgery who showed normal pattern of corneal topography. The study was conducted on 400 eyes.

The exclusion criteria were:

- Cases with a history of corneal surgery or with extensive corneal scarring.
- Pellucid marginal degeneration.
- Contact lens warpage that persist after discontinuation of contact lens wear.

Six parameters were evaluated in every eye:

1. The Belin's method for diagnosing keratoconus by the refractive map display; with the diagnosis of keratoconus is made if the elevation of the corneal front surface off the BFS at the thinnest point >15μm or >20 μm for corneal back surface.
2. The average progression index with the diagnosis of keratoconus is made if the PI is > 1.0.
3. The apex-thinnest location distance with the diagnosis of keratoconus is made if it's more than 0.7mm.
4. The pachymetric difference between the apex and the thinnest location with the diagnosis of keratoconus is made if its more than 4 μm.

5. The elevation of the corneal front surface at thinnest point in the difference map of Belin/Ambrosio enhanced ectasia display.
6. The elevation of the corneal back surface at thinnest point in the difference map of Belin/Ambrosio enhanced ectasia display.

From our study we have 7 cases topographically free But show posterior Ectasia by pentacam maps with remaining 393 cases completely normal.

So we can conclude that the Refractive surgeons need to understand topography in order to screen patients properly and may at times have to choose a procedure (LASIK, surface ablation, phakic IOL) or elect not to proceed based on topographic findings. Newer technologies (Like Pentacam) that look at other physical properties of the cornea are evolving, and their potential usefulness is unknown. Refractive surgery, like all medical procedures, will never be risk free. The physician's job is to offer patients the best possible care. It is the legal system's role not to hold ophthalmologists to the unattainable goal of totally risk-free surgery.

Pachymetric data provided by the Pentacam HR as the average progression index and the pachymetric difference between the apex and the thinnest location are important in diagnosis of keratoconus.