Anterior-Segment OCT – assisted topographic corneal epithelial thickness distribution imaging of 252 keratoconus patients

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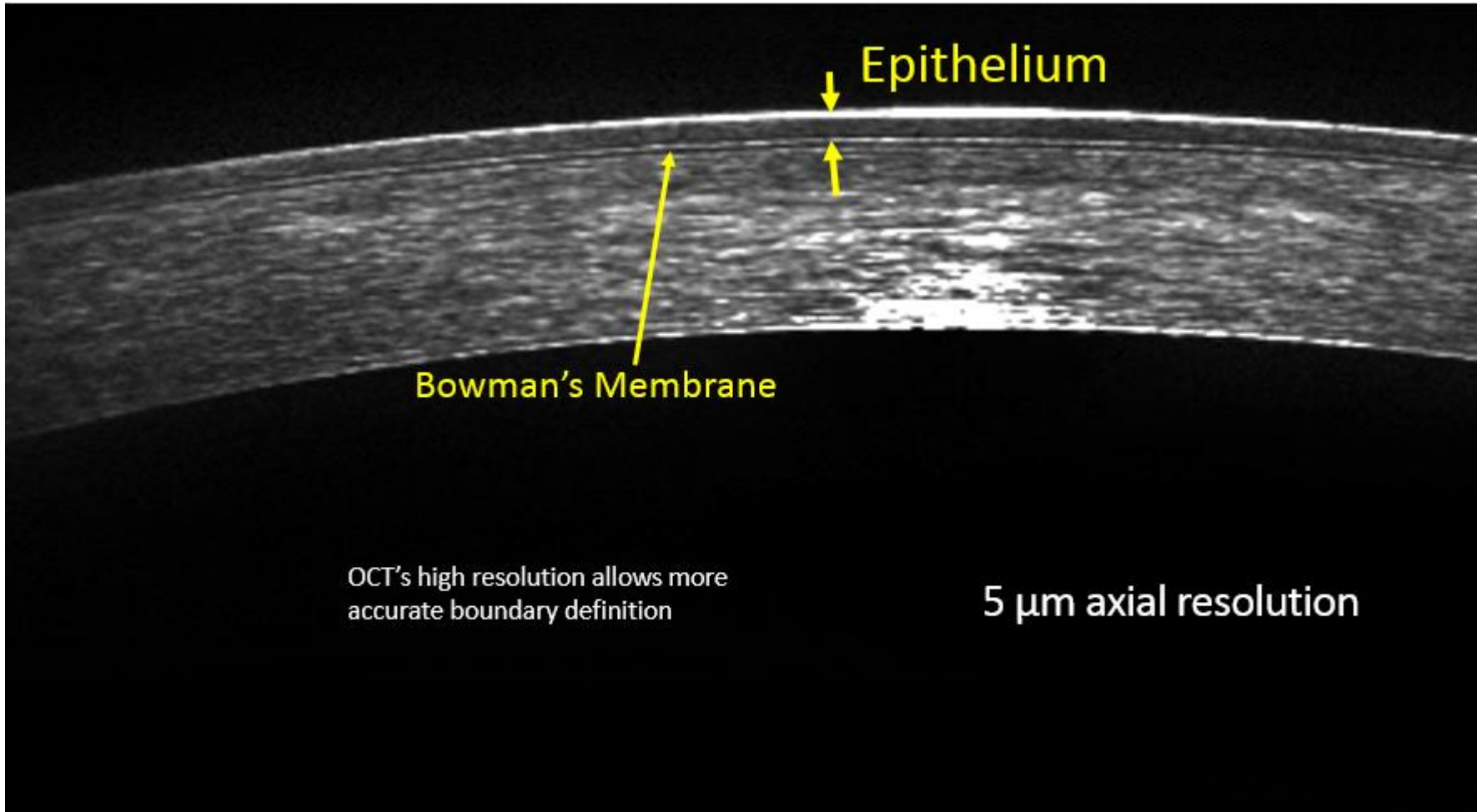LaserVision.gr
Institute for laser

Purpose

- To evaluate safety, efficacy and ease of measurement of epithelial thickness, and
  - To investigate patterns and descriptive statistics of epithelium distribution in keratoconic patients
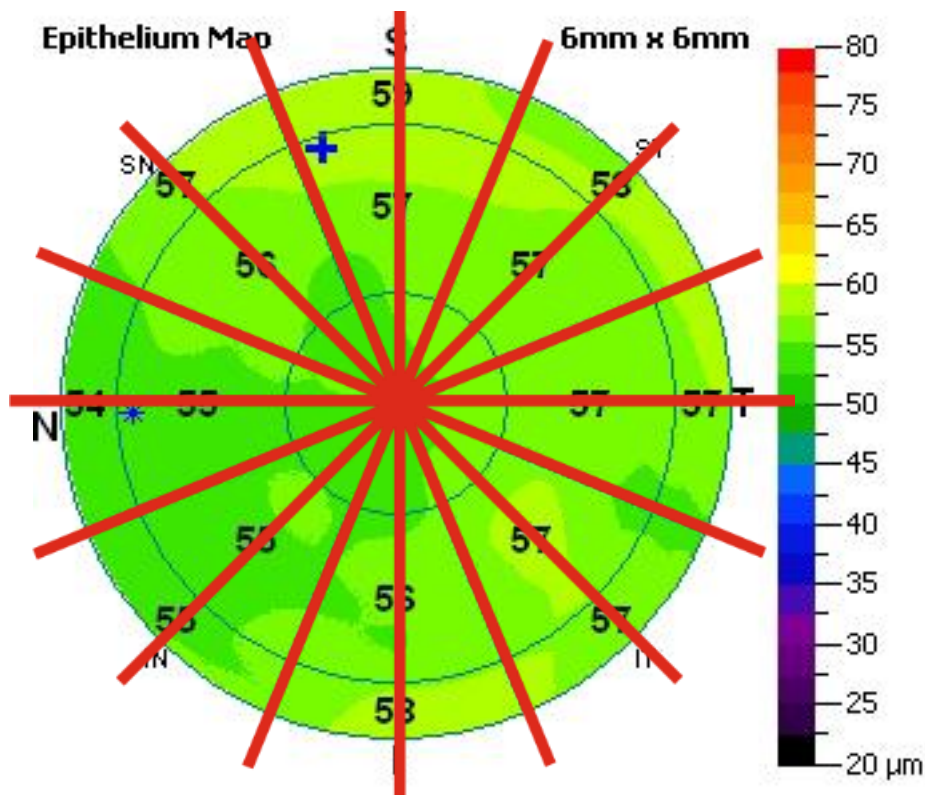 - to compare with Scheimpflug imaging keratoconus severity.
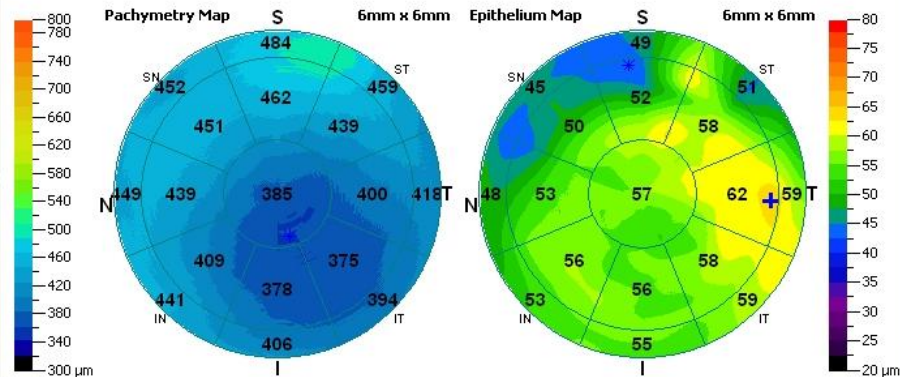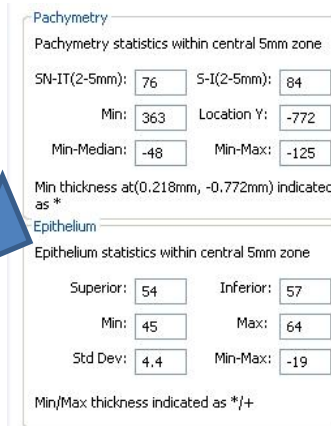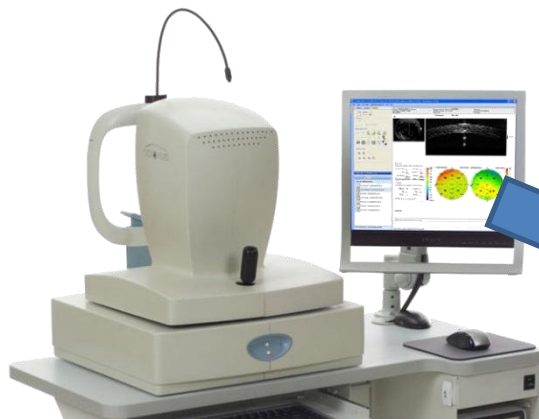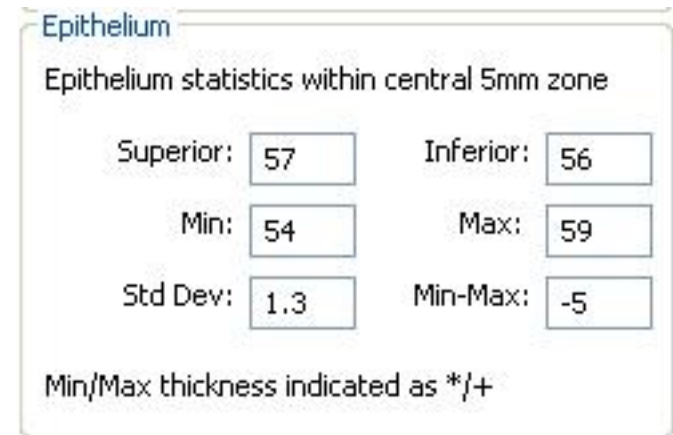
New Entrant: Anterior-Segment OCT

Epithelial 3-Dimensional mapping

Map produced by interpolation

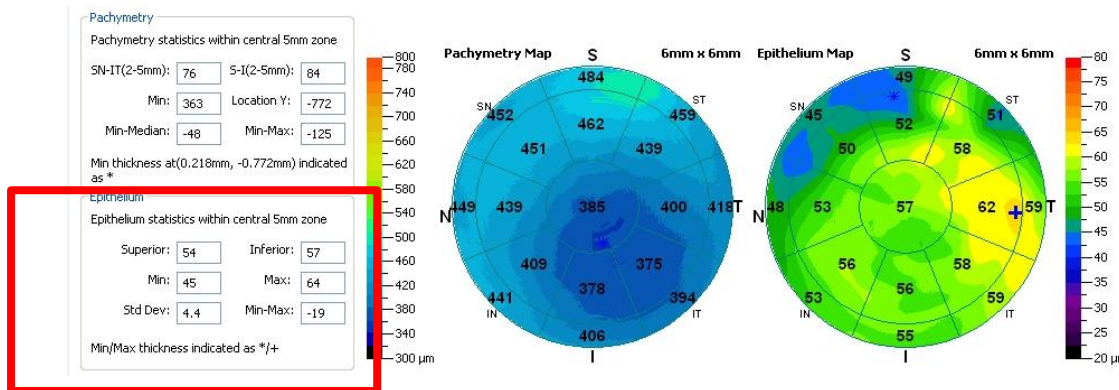Epithelial thickness statistics report

Methods

- Two age-matched groups:

  – Keratoconus (group A, n = 250) and Control (group B, n = 155).

We investigated

  – epithelial thickness (average, center, superior, inferior, min, max) an[...]
  epithelial topographic thickness distribution

How does the Epithelium look in a Normal Patient?
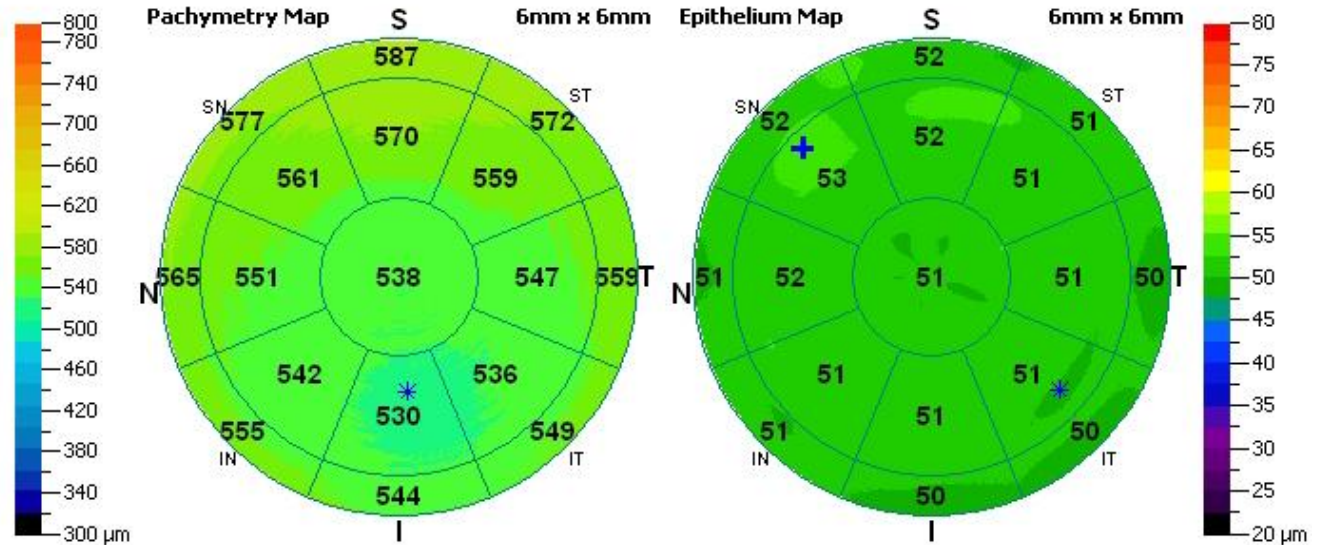
Kanellopoulos AJ, Asimellis G., *In vivo three-dimensional epithelial imaging of corneal epithelium in normal eyes by anterior segment optical coherence tomography: a clinical reference study.* Cornea 2013;32(11):1493-8
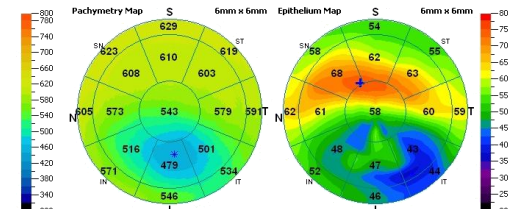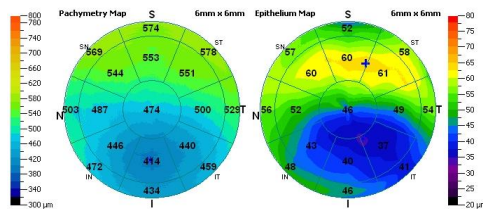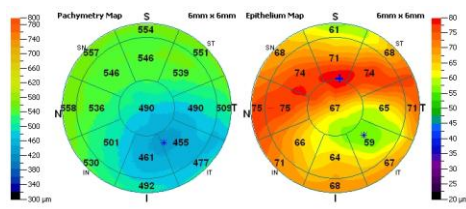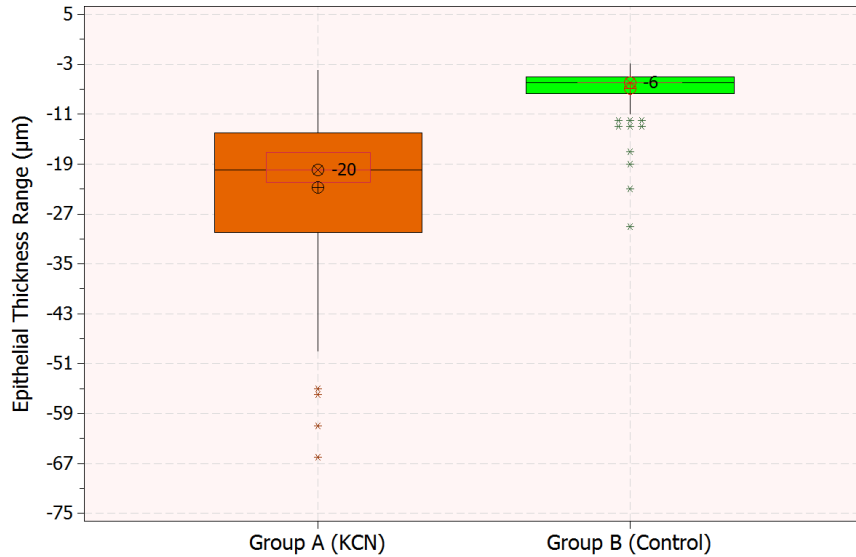
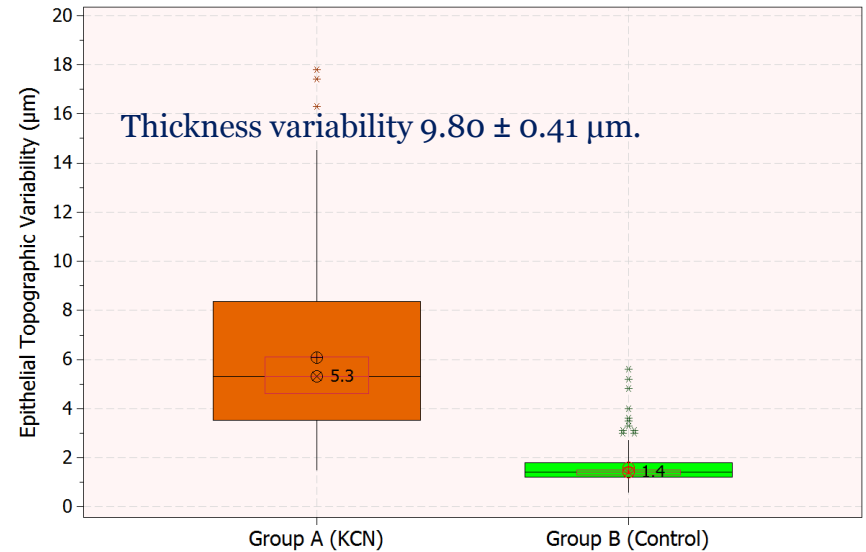# How does the Epithelium look in a Keratoconic Patient?
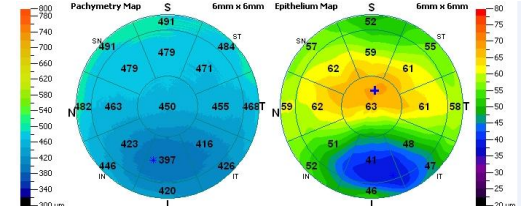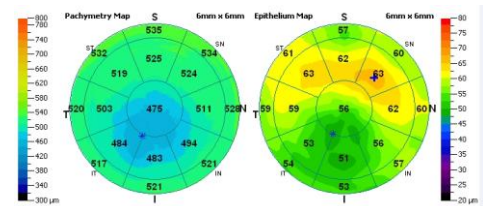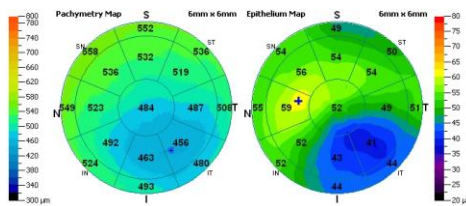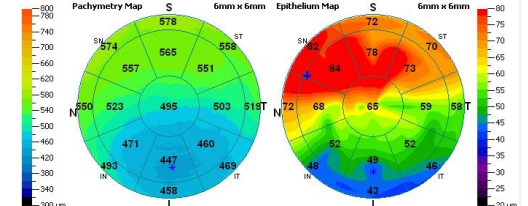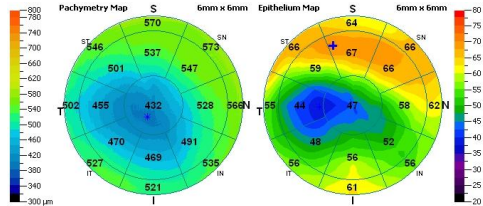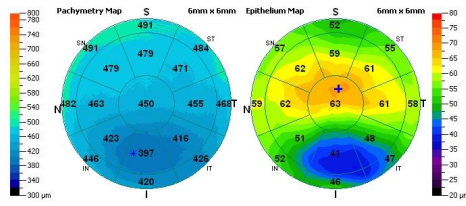
Epithelial Characteristics

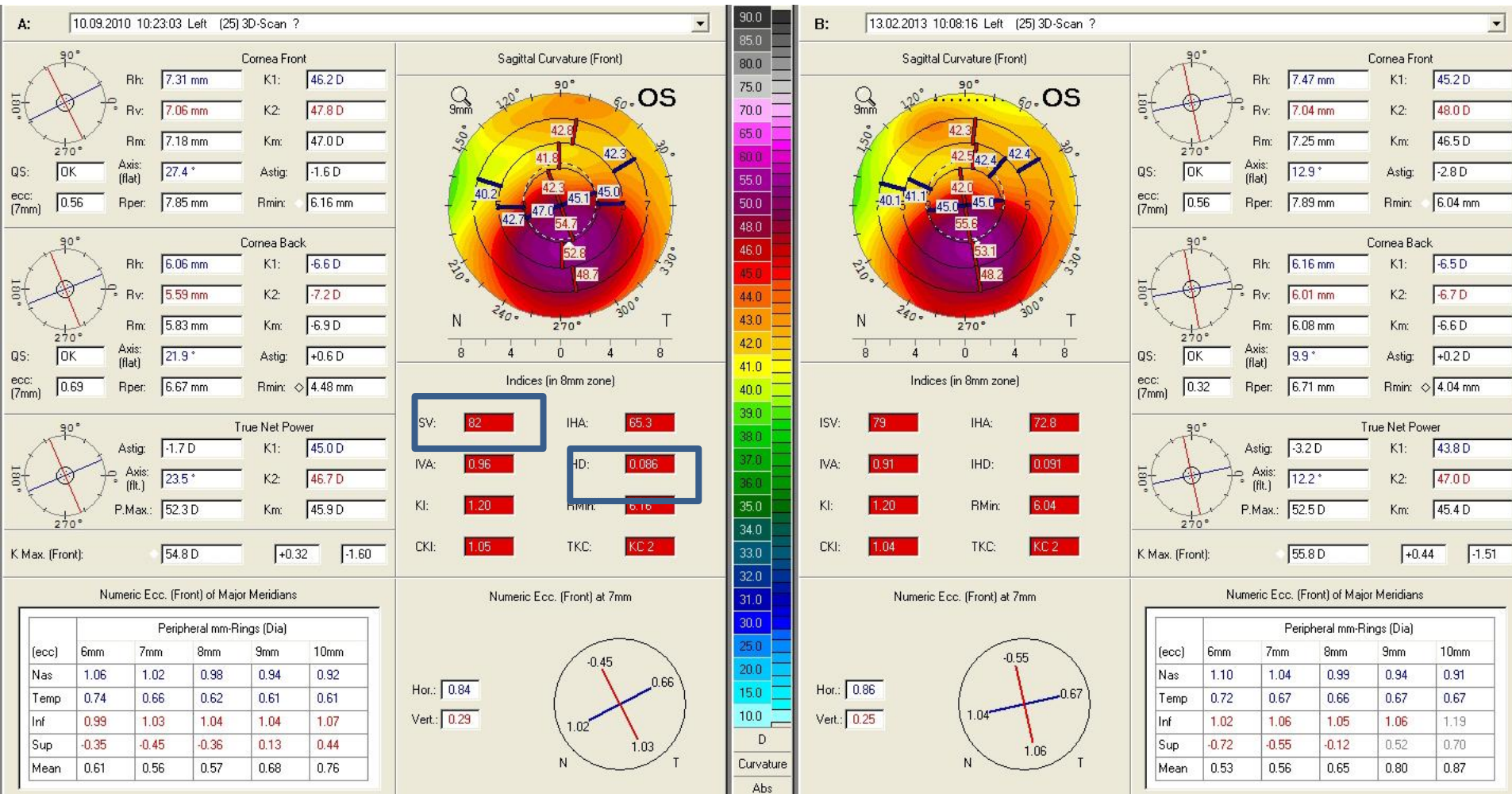- Topographic Variability (St. deviation of 17 sectors)

Thickness variability 9.80 ± 0.41 μm.

Thickness Range (Max – Min)
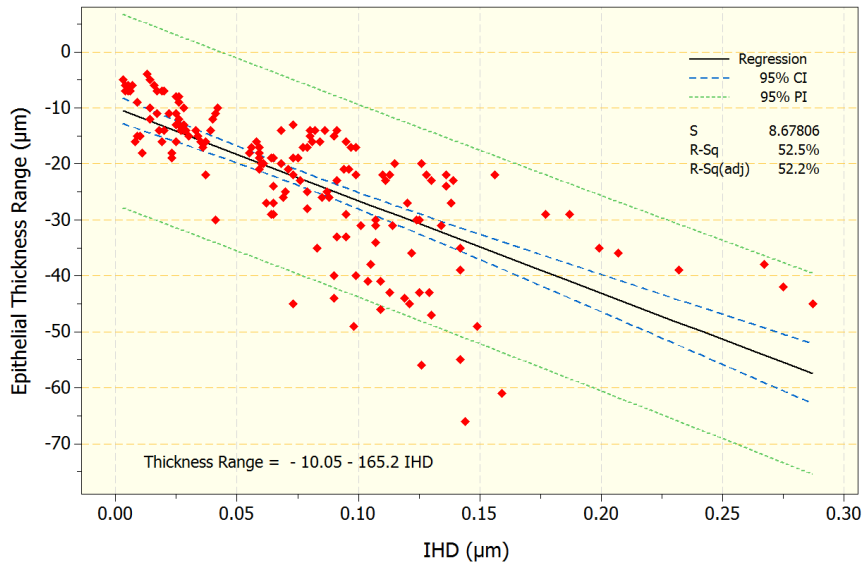
Thickness variability , 1.53 ± 0.21 μm.

Keratoconus Severity
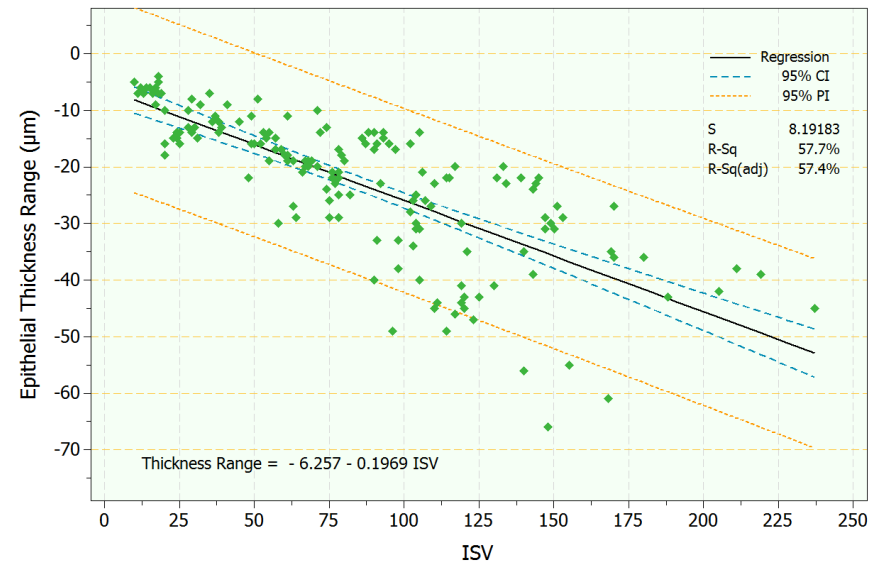

A. John Kanellopoulos and George Asimellis, *Revisiting keratoconus diagnosis and progression classification based on evaluation of corneal asymmetry indices, derived from Scheimpflug imaging in keratoconic and suspect cases.* Clinical Ophthalmology. 2013;7:1539-48
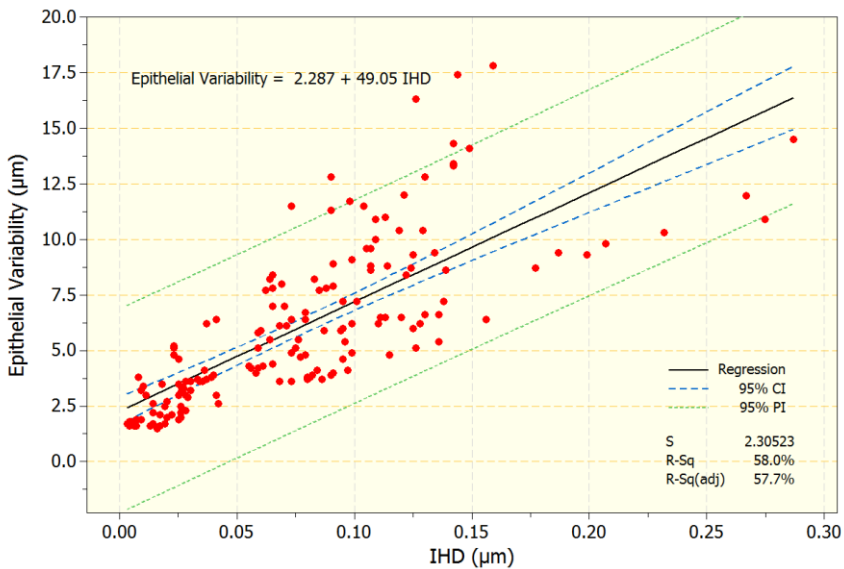
Correlation with KCN Severity
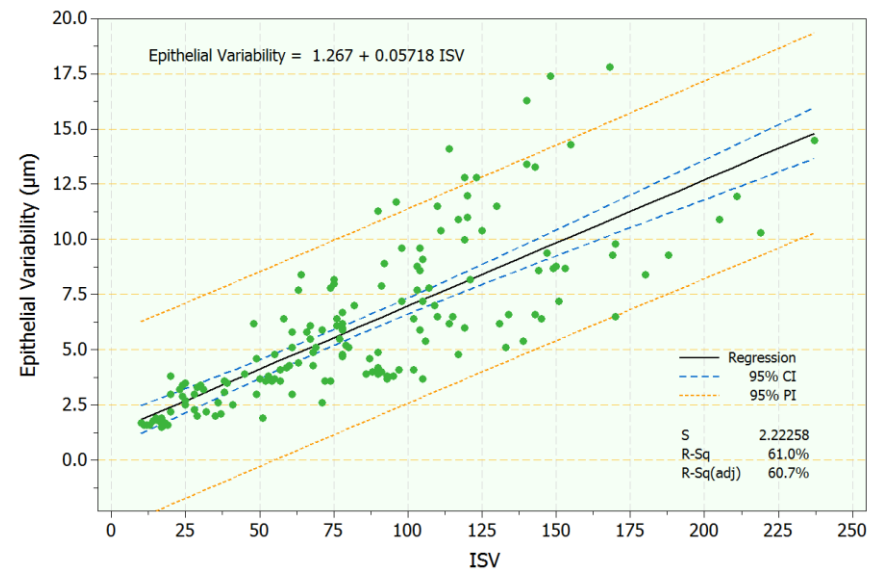

Correlation with IHD

- Correlation with ISV

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Correlation with KCN Severity

Correlation with IHD

- Correlation with ISV

Conclusions

❑ AS-OCT offers ease of use and high predictability of epithelial thickness measurement in keratoconus.

❑Overall epithelial thickness in keratoconic eyes, compared to normal was noted, particularly in lower stages of keratoconus.

❑ Increased topographic thickness variability and range correlated remarkably with keratoconus severity, obtained by established Scheimpflug imaging-derived anterior-surface irregularity indices.