



A Case Series of Unilateral Keratoconus versus Subclinical Keratoconus

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Background

Keratoconus is a well-known bilateral and asymmetrical corneal ectasia with many associated risk factors including eye rubbing, genetic predisposition, collagen disorders, and atopic conditions. With modern technology and the use of tomography, clinicians can diagnose keratoconus at a much earlier stage, including subclinical forms and cases in which only one eye may be affected. Because of its highly associated bilateral presentation, unilateral keratoconus has been depicted to be very rare, or in some literature, non-existent. This case series will review the monitoring of progression for two different patients with keratoconus in one eye and minimal to no signs of ectasia in the other using advanced tomography.

Case Presentation

Patient #1 – 36-year-old –male presents with blurry vision, OD>OS. Patient reports excessive rubbing of right eye.

No other visual complaints.

Entering VA's (sc): OD 20/400 PH 20/100 OS20/60 PH 20/25+2

Slit lamp: OD: (+) central thinning, Fleischer's Ring, central scar OS: (+) trace SPK, (-) thinning

Patient #1

| | |
|--------------------------|--|
| K Values | OD 53.2/60.7@0.7 OS 41.3/44.3@88.1 |
| K Max | OD 74.0D OS 44.6 D |
| Pachy Apex | OD 498 μ m OS 524 μ m |
| ABCD KCN Staging | |
| ARC (3 mm) | OD: Stage 2 OS: Stage 0 |
| PRC (6.5 mm) | OD: Stage 2 OS: Stage 0 |
| Thinnest Pachy Index "D" | OD: Stage 1 OS: Stage 0 OD: 6.60 OS: 0.67 |

Table 1: KCN pertinent values for patient #1

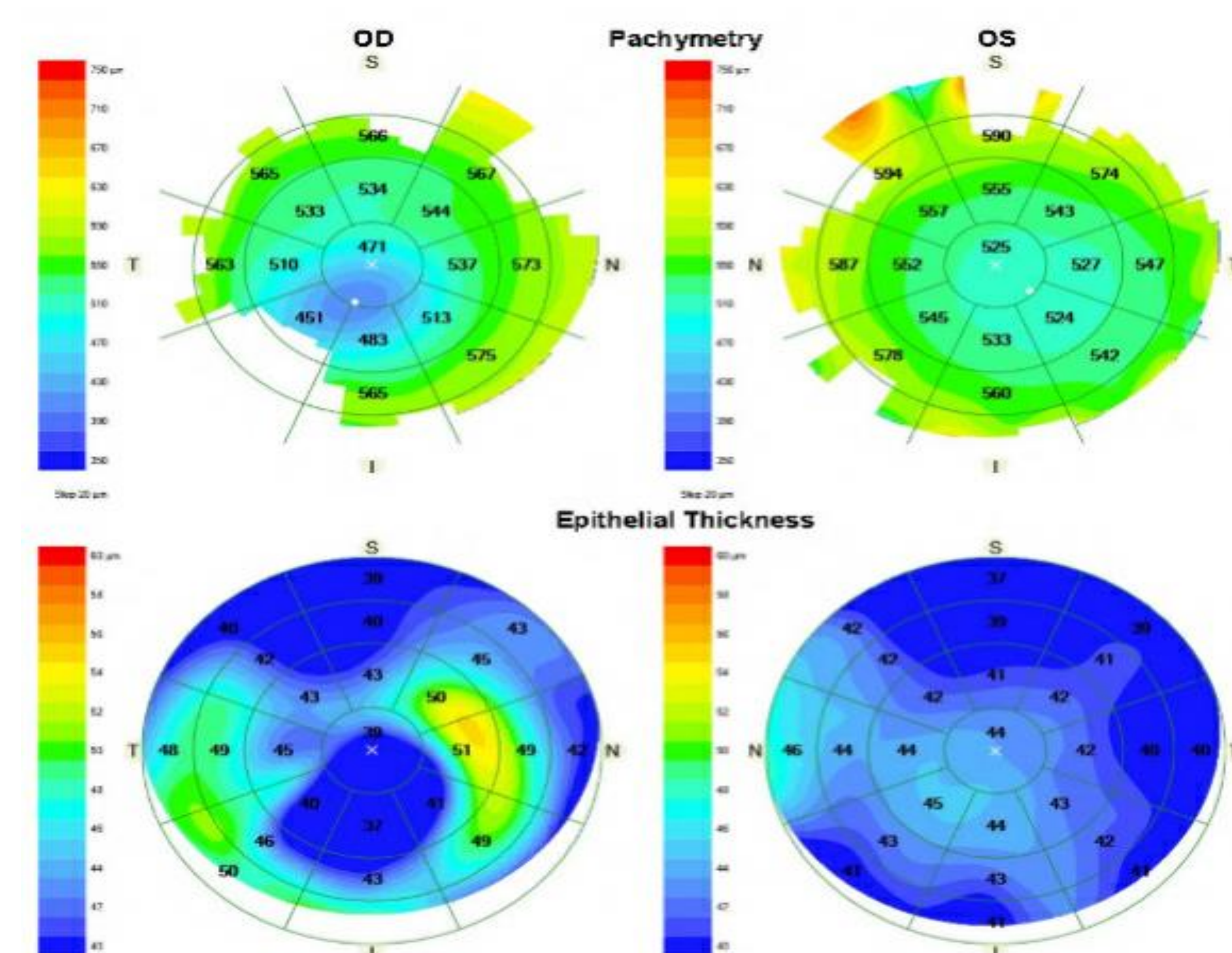


Image 1: Epithelial analysis for patient #1

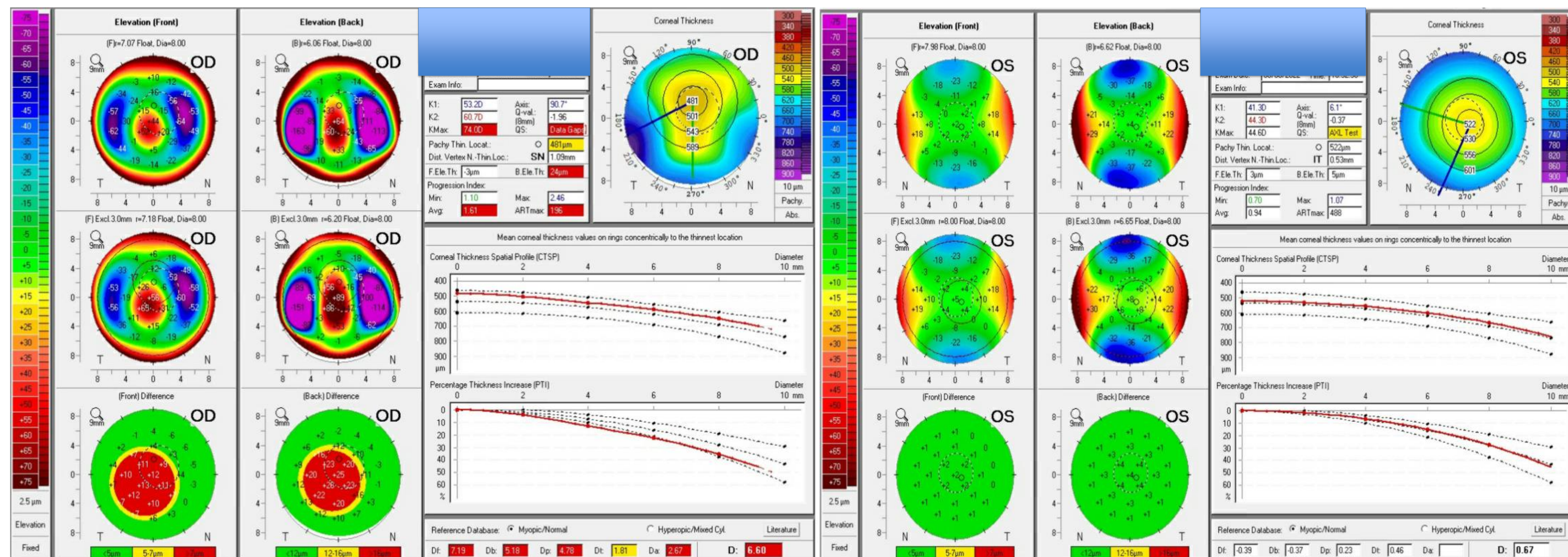


Image 3: Belin/Ambrosio Display for patient #1 (6/2022 OD left, OS right)

Case Presentation

Patient #2 – 33-year-old –female presents with blurry vision, OS>OD.

Entering VA's (sc): OD 20/125 PH 20/70 OS20/200 PH 20/70

Slit lamp: OD: mild inferior neo, (-) thinning OS: (+) apical thinning, Fleischer's ring, (-) scar

Patient #2

| | |
|--------------------------|--|
| K Values | OD 43.8/44.3@92.2 OS 43.3/44.2@40.4 |
| K Max | OD 45.0D OS 54.0D |
| Pachy Apex | OD 532 μ m OS 498 μ m |
| ABCD KCN Staging | |
| ARC (3 mm) | OD: Stage 0 OS: Stage 2 |
| PRC (6.5 mm) | OD: Stage 0 OS: Stage 4 |
| Thinnest Pachy Index "D" | OD: Stage 0 OS: Stage 1 OD: 1.48 OS: 8.19 |

Table 2: KCN pertinent values for patient #2

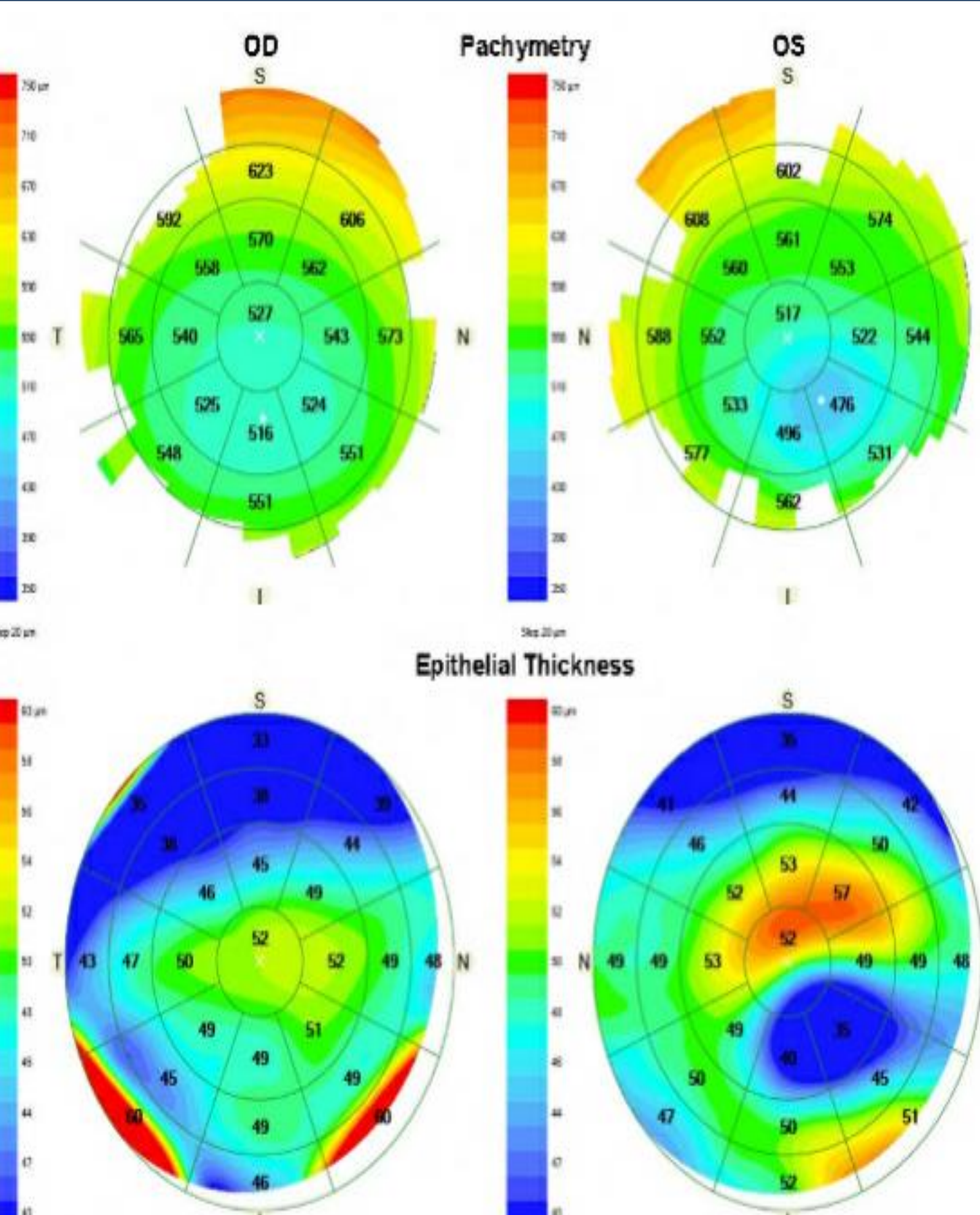


Image 2: Epithelial analysis for patient #2

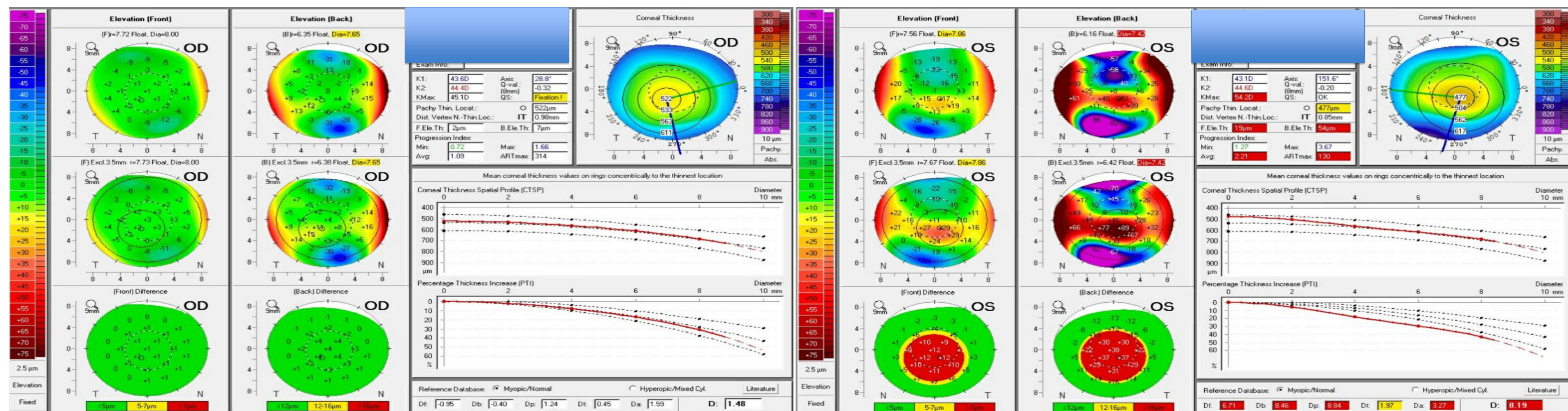


Image 4: Belin/Ambrosio Display for patient #2 (12/2021 OD left, OS right)

Conclusion

The global consensus has determined that “true unilateral keratoconus does not exist”, but “secondary unilateral induced ectasia may be caused by a pure mechanical process or “second hit”. The discussion also includes that in cases in which only one eye is being affected, the second eye will eventually develop ectasia. The use of tomography and other corneal scans, including epithelial mapping, allows close monitoring for progression or development of ectasia. In the cases presented here, both patients have been monitored for corneal changes throughout their lens fit and repeated scans will continue to be obtained throughout their fittings.

Image 5: Belin/Ambrosio Display for patient #2 (10/2022 OD left, OS right)