

Keratoconus

Clue: Topographic Irregularities

Asymmetry on topography

Keratoconus is a disease of corneal asymmetry. An example of asymmetry that may indicate keratoconus is when the I-S ratio is >1.5 D. The I-S ratio is the inferior-superior dioptric asymmetry value—the numerical differences between the average Ks in the inferior hemisphere and the superior hemisphere. Asymmetry between eyes (K_{max} or average $K \geq 1.00$ D) is an important clue.

Skewed radial axis (SRAX) or irregular astigmatism on topography

Keratoconus is a disease causing the development of non-orthogonal (irregular) astigmatism over time. Any SRAX >10 degrees, and/or subsequent increases in SRAX over time, may indicate corneal ectasia.

Increase in steepest K or K_{max}

Keratometry should not significantly change over time in healthy patients. Increases in curvature >1.00 D may indicate biomechanical weakness (ectasia) and should be further investigated using tomography or topography, and then monitored for further progression.

“Corneal asymmetry (I-S ratio >1.5 D), irregularity (SRAX >10 degrees) or increase in K readings (≥ 1.00 D) over time require further evaluation with corneal tomography to rule out keratoconus. Additionally, K_{max} or steepest K >47.00 D and unexplained BCVA worse than 20/20 require further investigation with corneal tomography. Keratoconus is a disease of asymmetry, so always compare findings with the other eye.”

—Dr Tullo, iDetective

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