# Lattice Corneal Dystrophy Makes It's Mark Across Three Generations

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## Purpose

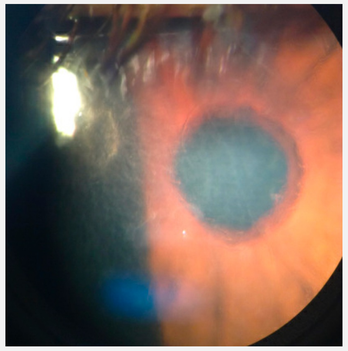
Lattice corneal dystrophy (LCD) is an inherited corneal condition, which is caused by depositions of amyloid in the corneal stroma resulting in linear opacities.[1] These "lattice-like" opacities affect the central cornea causing a progressive loss of vision.[1] There are two types of LCD.[2] Type 1 LCD is autosomal dominant and results from mutations in the transforming human growth factor beta-induced gene (TGFBI).[2] There are several variants of Type I LCD.[2] Type II LCD is the primary systemic disease with ophthalmic manifestations.[2] This presentation will discuss LCD that affects three generations within one family.

## Case Reports

A 50-year-old male was referred by Bascom Palmer Eye Institute to Nova Southeastern University's The Eye Care Institute (NSU TECI) for a scleral lens evaluation. He had a longstanding history of a corneal dystrophy with symptoms of severe dryness and multiple episodes of recurrent corneal erosions (RCE). He reported multiple family members with the same corneal dystrophy including his father who required a corneal transplant. His sister and his son also have the same condition. Best corrected visual acuity via manifest refraction was 20/30 OD and 20/40 OS. Biomicroscopy revealed scattered lattice lines in the corneal stroma OD and OS.. His peripheral corneas remained clear. Scleral gas permeable lenses improved his vision to 20/20 OD and 20/30 OS.

A 43-year-old female presented to NSU's TECI for a specialty contact lens examination. Her brother is a current patient. She also has a longstanding history of a corneal dystrophy with reduced vision and multiple episodes of RCE. She reported that her father, her brother and nephew all have the same condition. Best corrected visual acuity via manifest refraction was 20/70 OD and 20/125 OS. Biomicroscopy revealed scattered central lattice lines in the corneal stroma OD and OS while her peripheral corneas remained clear. Scleral gas permeable contact lenses improved her vision to 20/40 in each eye.

A 27-year-old male presented to NSU's TECI for an emergency evaluation of redness and pain in his right eye which occurred that morning upon wakening. He reported that his father, paternal grandfather and aunt all have a corneal dystrophy. Best corrected visual acuities with glasses was 20/70 OD and 20/30 OS. Biomicroscopy revealed 3+ bulbar conjunctival injection, a 3-mm corneal defect which stained with NAFL, and diffuse stromal lattice lines OD, and similar diffuse stromal lattice lines in the cornea OS.



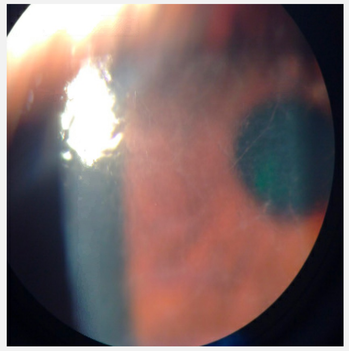
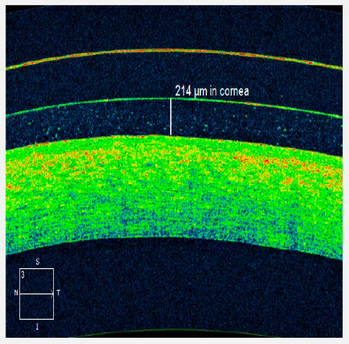


**Figure 1 & 2: Anterior segment photos: 50 –year-old male with Lattice Corneal Dystrophy (LCD) OD and OS**



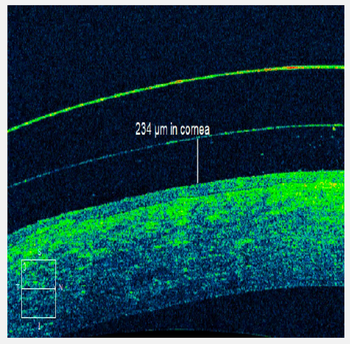
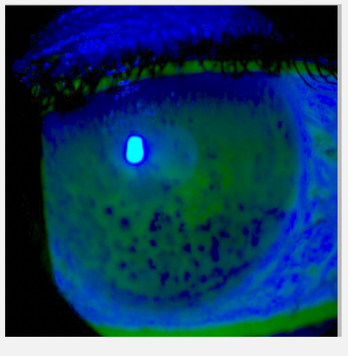




**Figure 3 & 4: Anterior Segment Ocular Coherence Tomography (OCT) of the above patient wearing scleral gas permeable contact lenses for improved ocular comfort and vision OD and OS.**



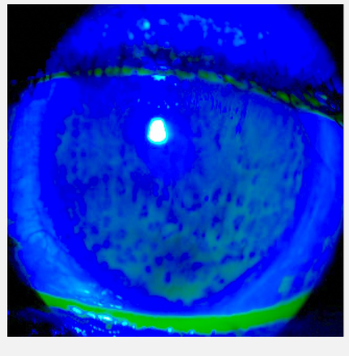
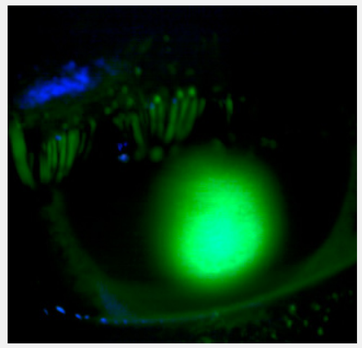


**Figure 5 & 6: Anterior segment photos of a 43-year-old female with Lattice Corneal Dystrophy (LCD). Sodium Fluoresceine viewed with cobalt blue light reveals a highly irregular surface with significant areas of negative staining.**



**Figures 7 & 8: Anterior segment photos of a 27-year-old male with Lattice Corneal Dystrophy (LCD) and Recurrent Corneal Erosion OD.**

## Discussion

Lattice Corneal Dystrophy (LCD) is characterized by deposition of amyloid which can cause progressive vision loss.[1] LCD typically presents within the first decade of life with central superficial "fleck-like" opacities.[2] As the condition progresses, linear "lattice-like" lines appear within the deeper stromal layers of the central cornea.[2] These lines spread but leave the far peripheral cornea clear.[2] Multiple variants of LCD exist.[2] With all variants, LCD is at high risk for developing Recurrent Corneal Erosion (RCE).[3] LCD has a strong autosomal dominant inheritance pattern.[2] This case presentation demonstrates how LCD can affect multiple generations within one family.

## Conclusion

Confirming which type of corneal dystrophy is present after clinical evaluation may be challenging, especially in mild and asymmetric presentations. Requesting other family members to present for an evaluation may be useful in these scenarios since some clinical findings may vary among family. In addition to clinical observation and serial photography, the use of anterior segment OCT may also be helpful. Gas permeable lenses may improve visual distortion due to induced corneal astigmatism and delay the need for a corneal transplant.

## References

1. Klintworth, GK. Corneal Dystrophies. Orphanet J Rare Dis. 2009 Feb 23; 4: 7
2. Weiss, J. et al. IC3D Classification of Corneal Dystrophies – Edition 2. Cornea. Volume 34, Number 2, February 2015: 117 – 159
3. Moshirfar, M. et al. Lattice Corneal Dystrophy. StatPearls – NCBI Bookshelf. 2021