

# Scleral Lens for Enhancing Vision in a Patient with Granular Dystrophy

Ghazal Naseri, OD


## Introduction

Granular dystrophy type 2 (GD), also known as Avellino corneal dystrophy is an autosomal dominant disease. In this condition granular and lattice deposits are both present. Corneal dystrophies prevalence in the United States is about 0.13% and GD constitutes less than 1 % of those. However, as the condition progresses and as the deposits become denser, it has a great impact on patients' vision. (Fig 1 and 2.)

There are multiple treatment options for these patients. Phototherapeutic keratoplasty (PTK) is the first option for superficial deposits. Lamellar keratoplasty and penetrating keratoplasty are next options as the deposits get deeper into corneal layers. There is the possibility of recurrence of the deposits when PTK or LKP are performed.

In this case we are presenting a patient that achieved improved vision by two lines with scleral lenses without any surgical intervention.

## Case History and Exam Findings

 47 year-old African American male with chief complaint of distance blur and cloudy vision with his current scleral lenses after 1-2 hours with no improvement by using a drop of gel non-preserved artificial tear in scleral cup

### Ocular history:

1. Corneal GD diagnosed at 11
2. H/o recurrent corneal erosion OD&OS
3. Ocular allergies OU

### Refraction and BCVA with spectacles:

OD: +1.50-2.25x010                      **20/60-**  
 OS: +2.00-2.50x140                      **20/70-**

### Anterior segment contributing finding:

OU: multiple pan corneal white breadcrumb like opacities

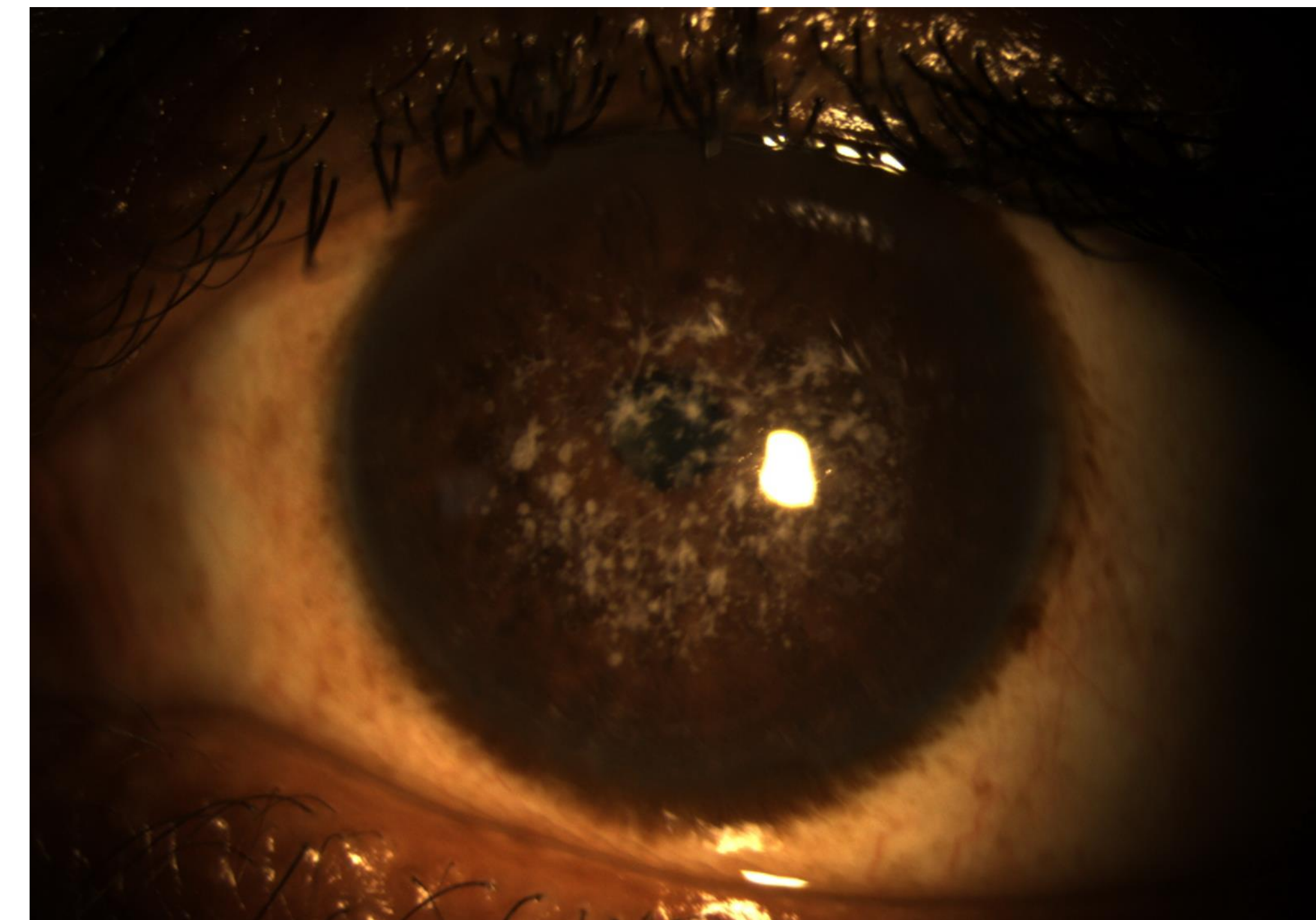


Figure 1. Left Eye 2016

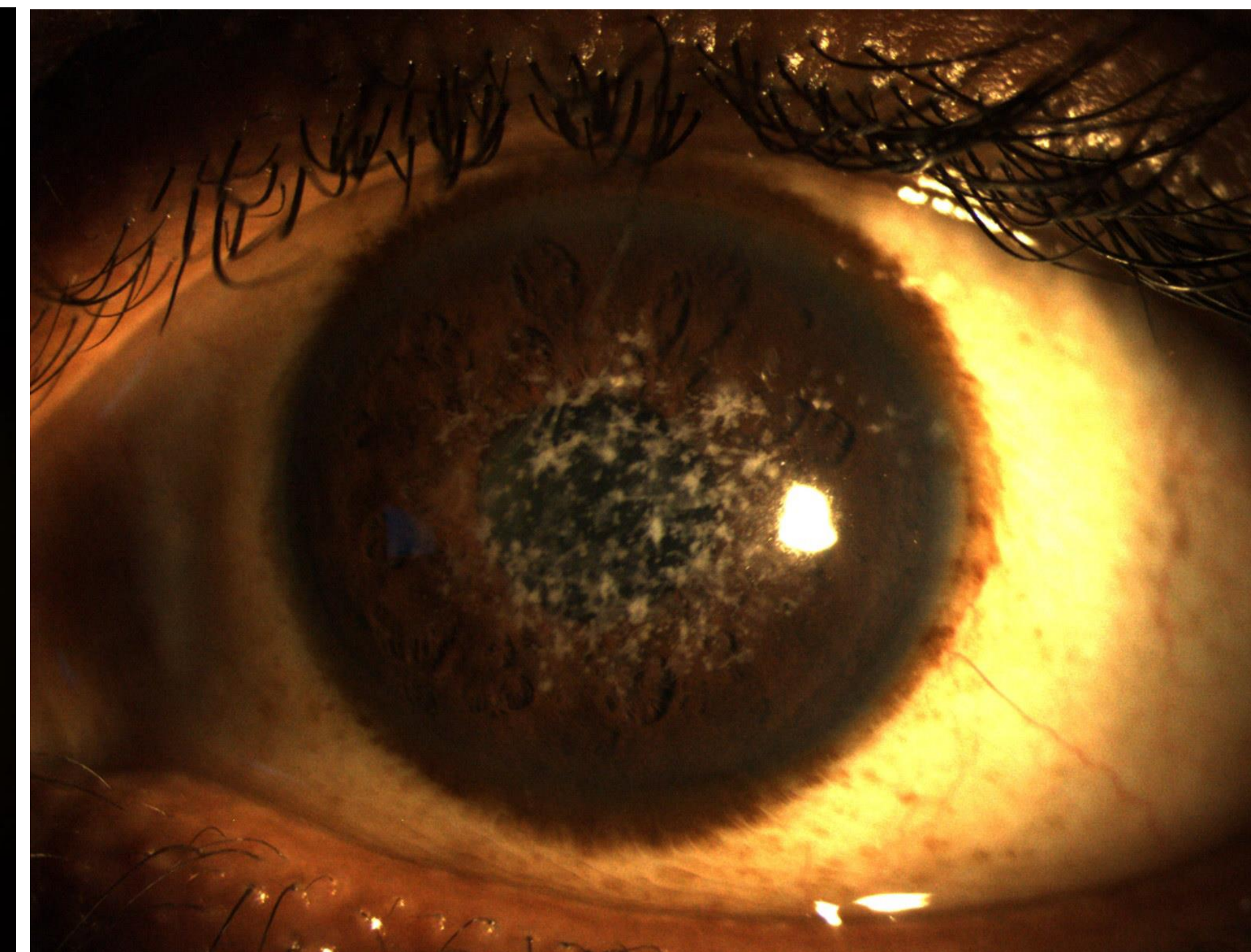


Figure 2. Left Eye 2019; progression in granular deposits

## Management

### Initial Scleral Lenses

**16.0 Europa® Tyro-97**

(Visionary Optics, Front Royal, VA, USA)

OD: 0.00 / BC 7.67 / Dia 16.0                      **20/50**

OS: +1.00 / BC 7.67 / Dia 16.0                      **20/50-**

### Fit of initial Lenses:

OD: CC 0.5:1 (200 um, inf wedge) / LC 360 / inf decentration / mild edge lift sup >inf / mild MOB / NaFl uptake without touch

OS: CC 0.75:1 (300 um, inf wedge) / LC 360 / inf decentration / mild edge lift sup / mild MOB / NaFl uptake without touch

### Final Scleral Lenses

**16.0 Europa® Tyro-97**

(Visionary Optics, Front Royal, VA, USA)

OD: +0.25 / BC 7.85 / Dia 16.0                      **20/40**

OS: +1.00 / BC 7.85 / Dia 16.0                      **20/50-**

### Fit of Final Lenses:

OD: CC 0.5:1 (155 um), inf wedge / LC 360, thin SN clears with downgaze / tr inf decentration

OS: CC 0.5:1 (135 um), inf wedge / LC 360, thin SN clears with downgaze / tr fine vessel blanching horizontal / inf decentration

## Discussion

Even though this patient was initially very pleased with achieved vision with his scleral lenses, the rapid clouding of lenses made it difficult for him to wear the lenses on a day to day basis.

We adjusted the fit by decreasing the overall sag by flattening the BC and steepening the peripheral curves 3 and 4 to address the fast uptake.

Patient reported significant delay in fogging of lenses. He specifically preferred the eye with the lower apical clearance and we were able to safely decrease the Sag in the right eye to mimic the left eye fit.

Another option to consider for cases like this is to make quadrant specific adjustments when fluorescein uptake is asymmetrical and the fit warrants changes in only a smaller section of the lens to reach an ideal fit.

Scleral lenses can be a great option in modifying vision and quality of life in patients with Granular dystrophy. In cases where surgery is not an option or not preferred by the patient. It is possible to postpone surgical intervention and maximize visual outcome and functionality. Considering some fine adjustments will also increase comfort and longevity of acceptable comfort and vision with scleral lenses.

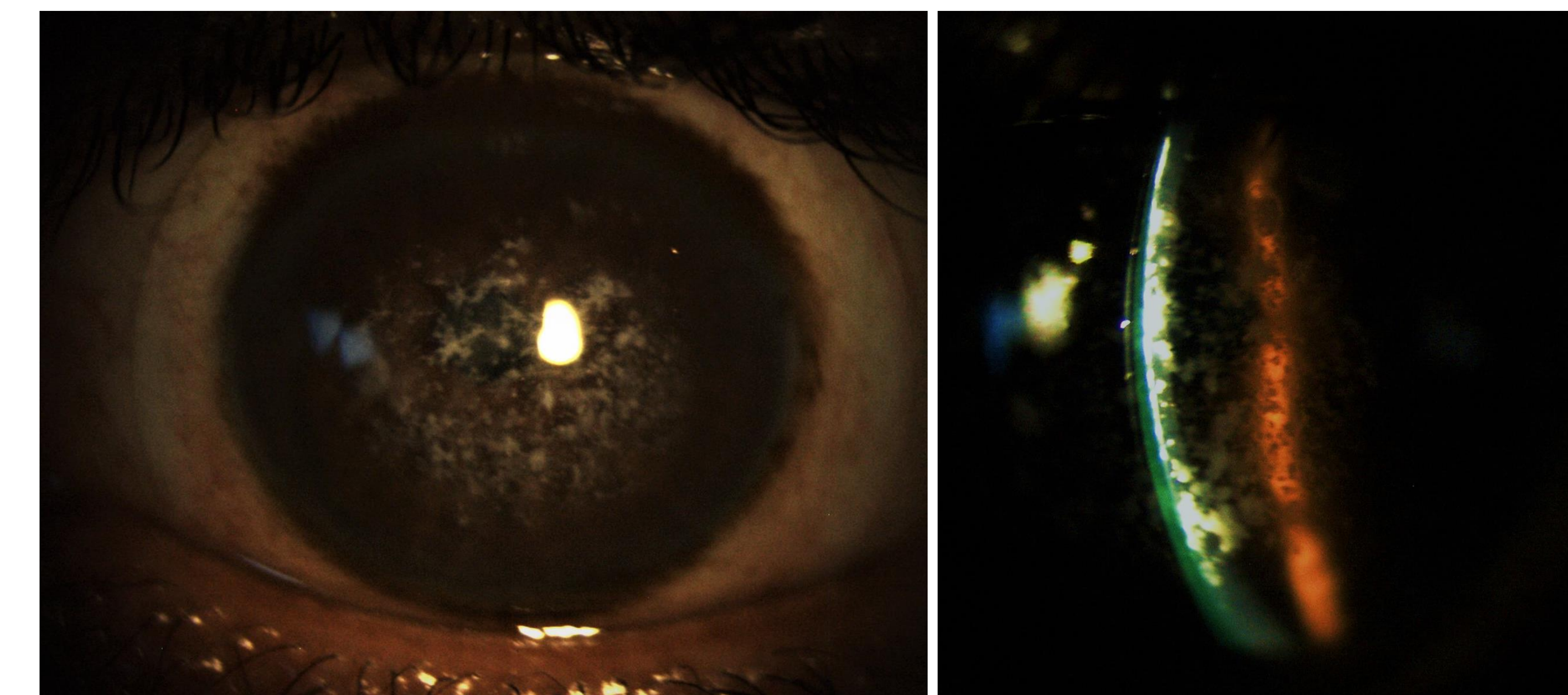


Figure 3. Left Eye with scleral lenses

Figure 4. Central clearance of 135 μm

## Clinical Pearls

- Consider Scleral lenses to improve vision in patient with hereditary corneal dystrophies.
- Despite initial improvement in vision; consider minor adjustments to prolong comfort and quality of vision.
- To reduce or delay fogging:
  - Reduce central vault to an extent that is safe for corneal health
  - Consider fluorescein uptake pattern to adjust peripheral curves

## Acknowledgement

Special thanks to Christina Wilmer, OD, FAAO, Celia Gong, OD, FAAO, and Stefanie Chan, OD, FAAO,.

**References** : Available Upon Request