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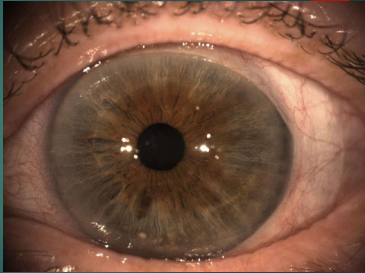
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- ▶ Millions of people throughout the world are suffering vision loss due to complex corneal conditions and disease
- ▶ Scleral lenses have the potential to change the lives of most of this underserved patient population



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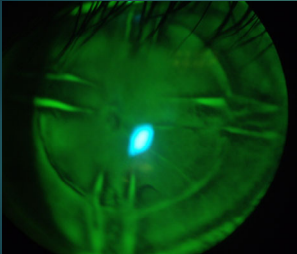
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No Financial Disclosures

(Source: Eye Surgery)

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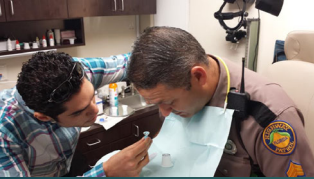
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### Why Scleral Lenses?

- ▶ Vision
- ▶ Protection
- ▶ Therapeutic



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### Scleral lenses

- ▶ Scleral lenses can address vision loss due to many ocular conditions including:
  - ▶ Keratoconus and pellucid marginal degeneration
  - ▶ Post-refractive surgical complications
  - ▶ Chronic dry eyes due to surgery, systemic disease, and medications
  - ▶ Corneal neuropathy
  - ▶ Corneal ectasia
  - ▶ Ocular trauma chemical and burn injuries and eyelid abnormalities
  - ▶ Corneal transplant complications
  - ▶ Corneal dystrophies such as Stevens Johnson Syndrome
  - ▶ High refractive errors



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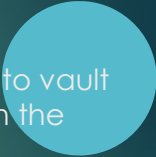
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### Scleral lenses are designed to vault over the cornea and rest on the sclera



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## Considerations

- ▶ Considerations for an optimal scleral lens fit:
  - ▶ 1. overall scleral lens diameter
  - ▶ 2. corneal and limbal clearance
  - ▶ 3. landing zone alignment
  - ▶ 4. scleral lens edge design
  - ▶ 5. asymmetric back surface design



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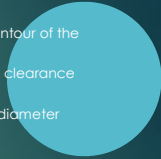
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## Overall Scleral Lens Diameter

- ▶ Scleral lens diameter is determined by the shape and contour of the cornea
- ▶ A larger diameter scleral lens will be needed when more clearance is required
- ▶ Larger optical zone diameters may also require a larger diameter scleral lens



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## Corneal Clearance

- ▶ Corneal clearance is measured in microns
- ▶ We typically want between 150 and 300 microns of clearance
- ▶ When managing ocular surface disease, the clearance may need to be increased
- ▶ After several hours of wear, the clearance can drop or sink 100 or more microns
- ▶ When fitting a scleral lens for the first time, it is important to have the patient return after a couple hours to see how the lens has settled



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### Landing Zone Fit/Alignment

- ▶ The goal is for the scleral lens to vault over the limbus and align with the adjacent conjunctiva
- ▶ The landing zone is related to the corneal clearance
  - ▶ A landing zone that is too steep can lift the lens off the cornea
  - ▶ If the scleral lens is touching the cornea, the landing zone can lift off the ocular surface
- ▶ A longer, thinner landing zone distributes the weight of the scleral lens over a wider area and can make the scleral lens more stable and comfortable

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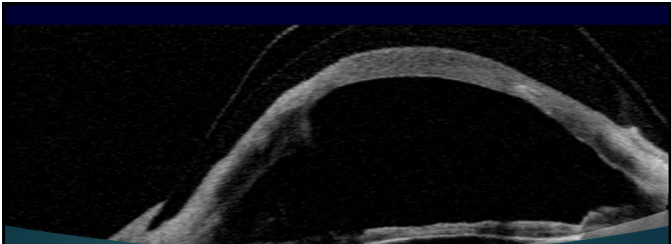
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Bad landing zone

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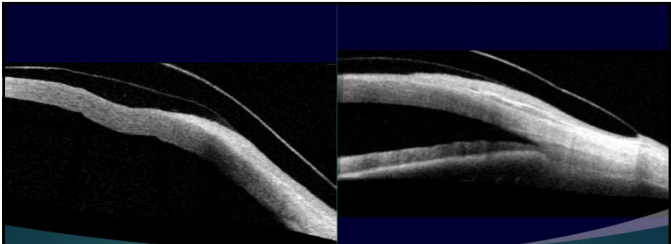
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Good landing zone

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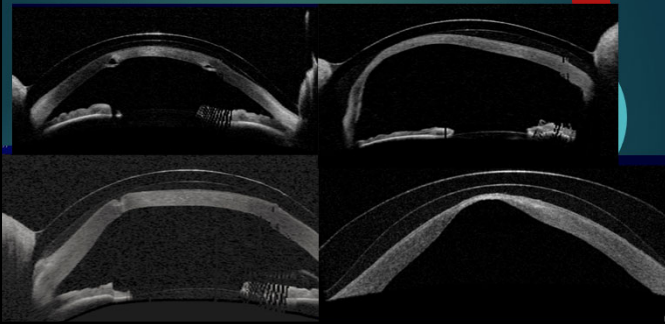
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## Lens Designs and Assessments



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## What we are trying to avoid



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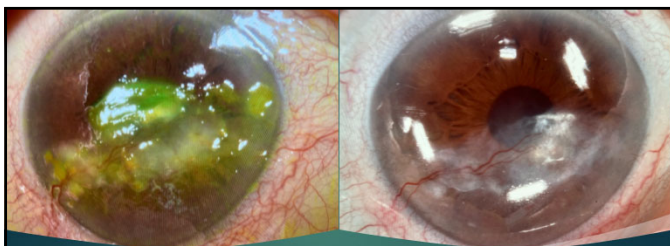
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## Neurotrophic Keratitis

A well designed and fit scleral lens can act as a therapeutic device by allowing damaged corneal tissue to heal.

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Ocular Trauma and Exposure Keratopathy

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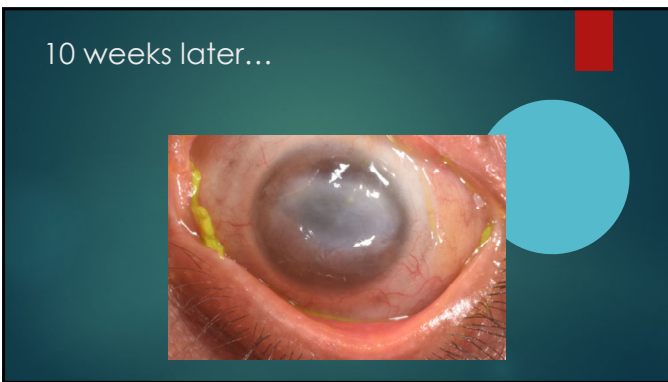
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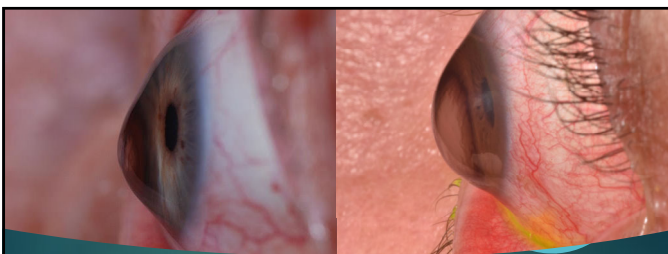
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Keratoconus

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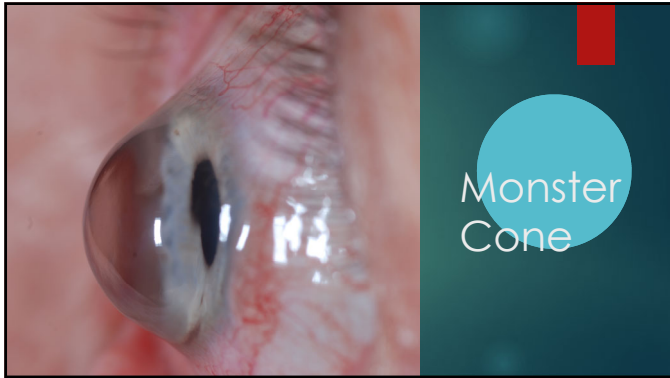
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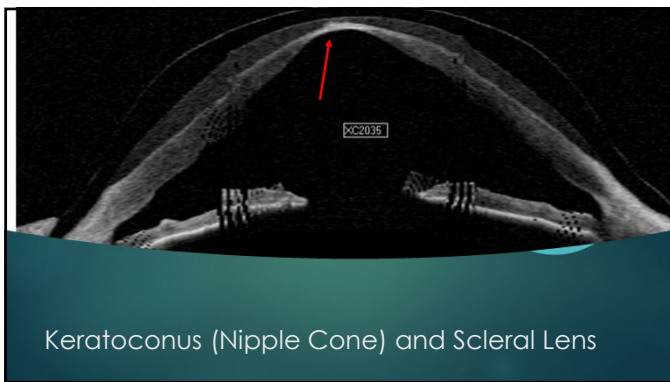
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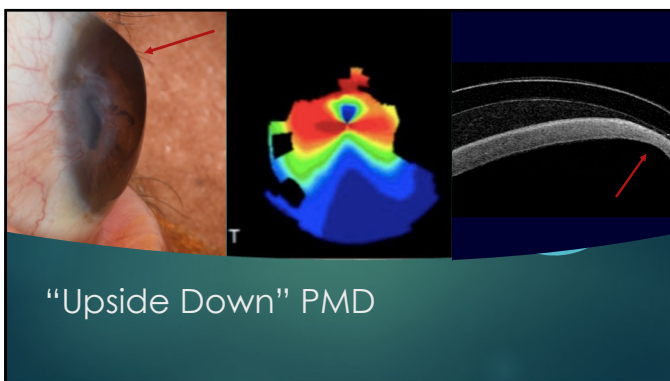
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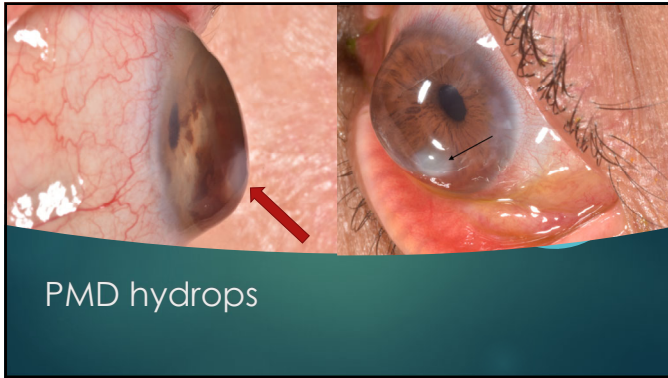
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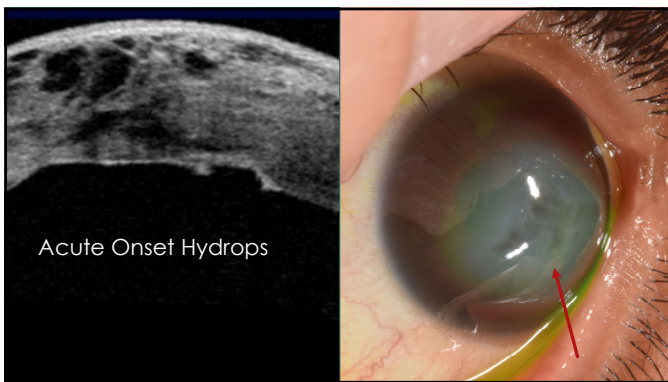
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### Asymmetrical Back Surface Design

- ▶ More often than not, the anterior ocular surface is asymmetrical in shape
- ▶ It is common in these situations to have a scleral lens compressing one area of the conjunctiva while edge lift off is taking place in another area
- ▶ Quadrant specific or toric scleral lens designs may successfully address most of these issues

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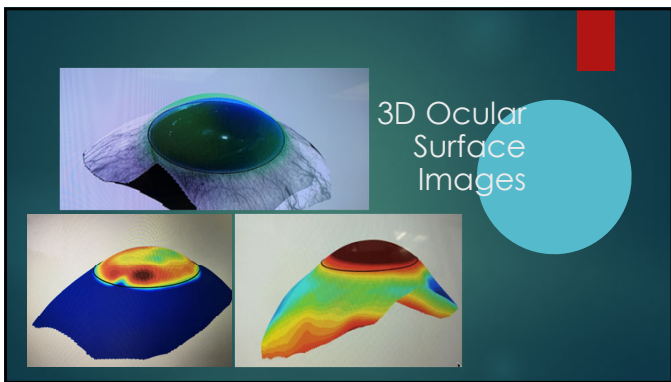
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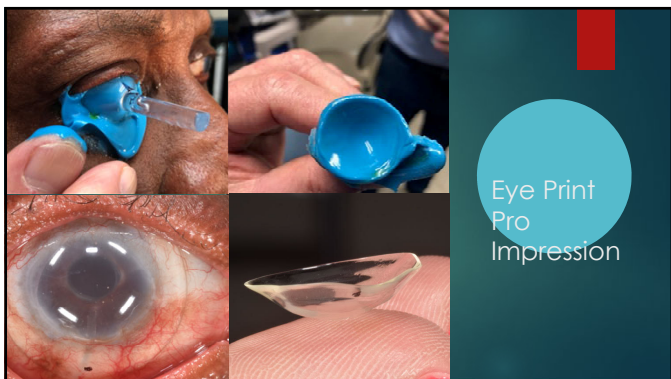
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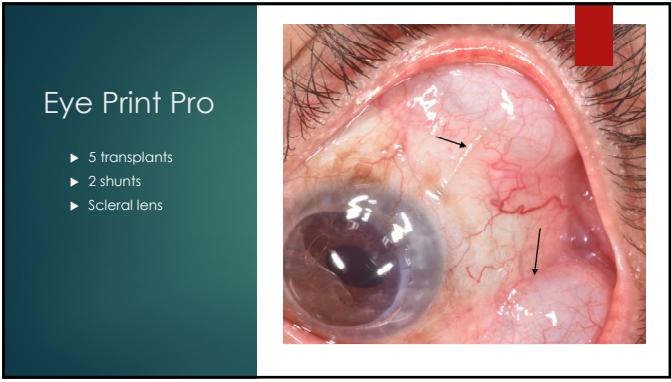
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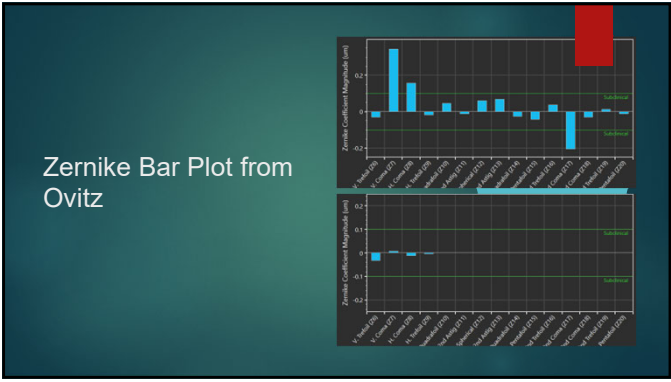
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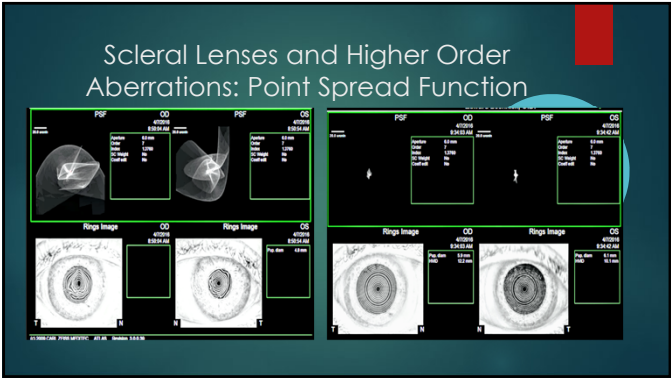
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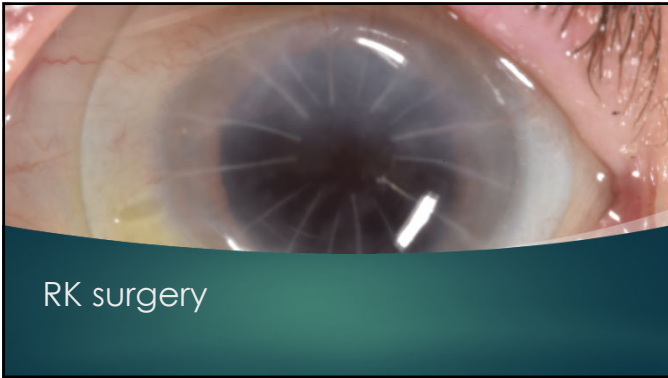
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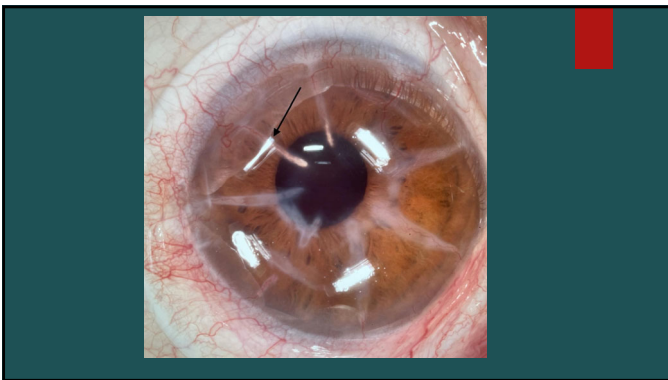
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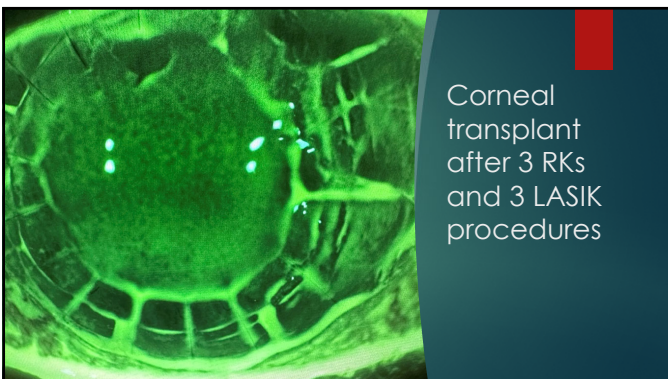
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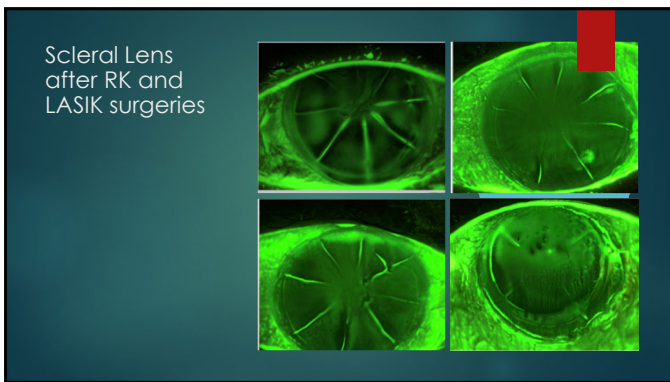
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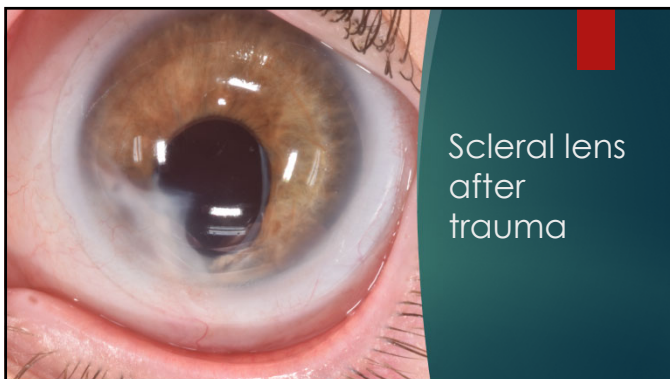
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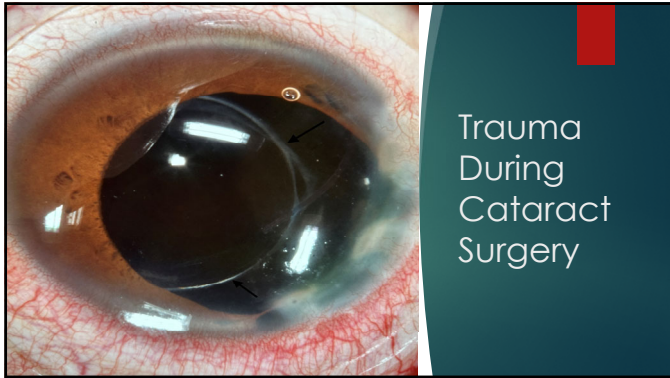
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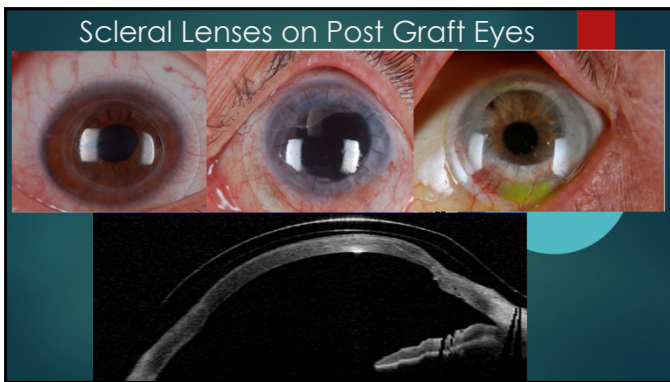
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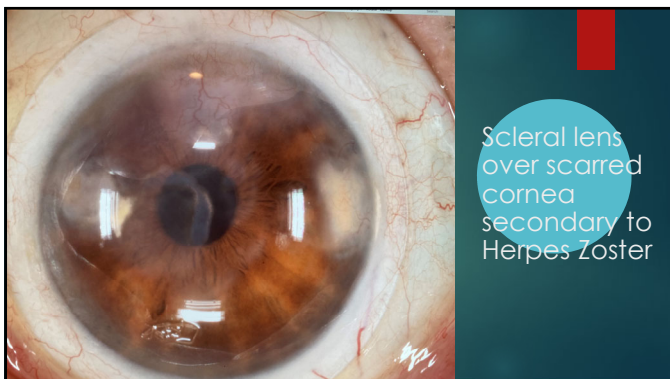
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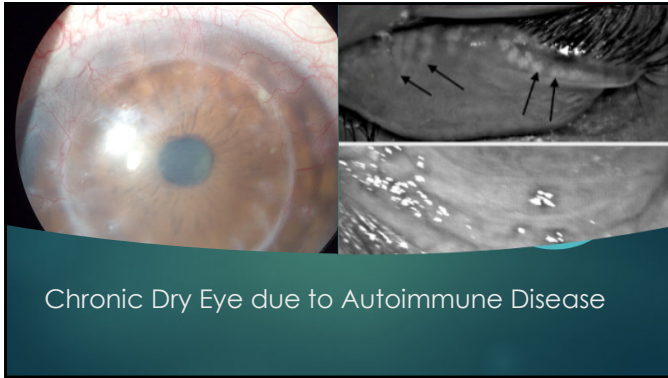
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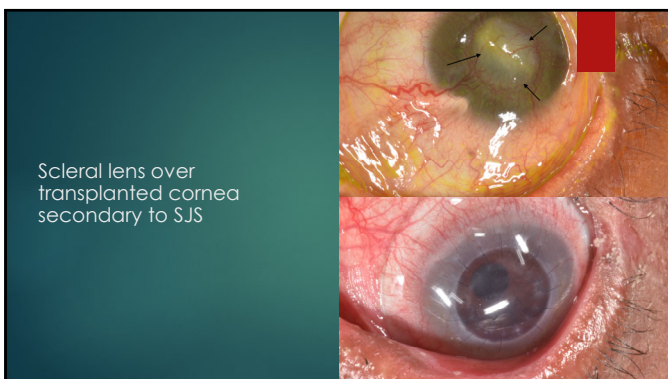
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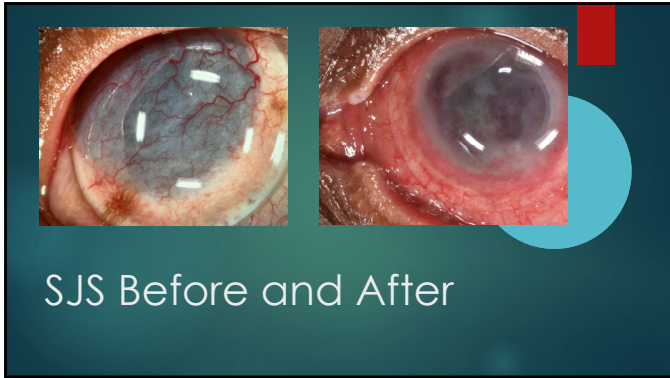
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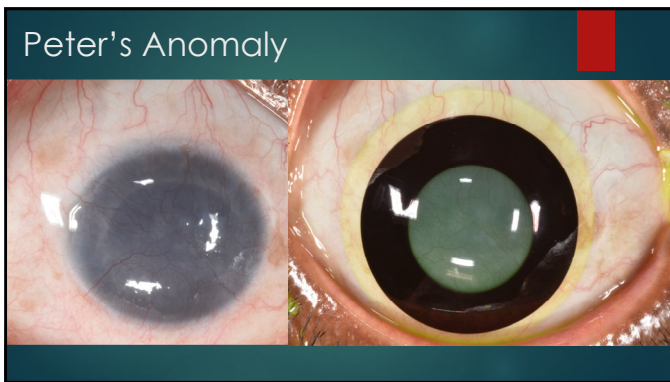
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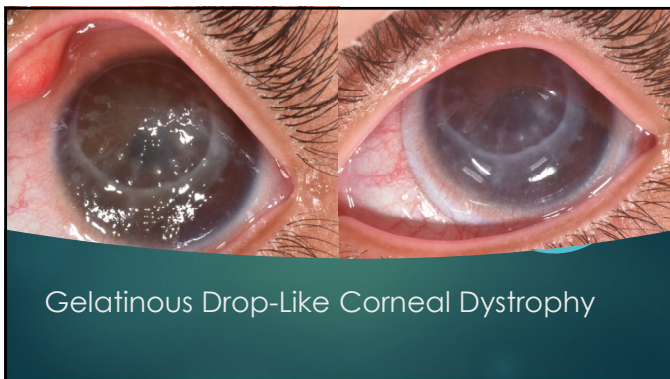
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