

Scleral Lenses: When Nothing Else Works

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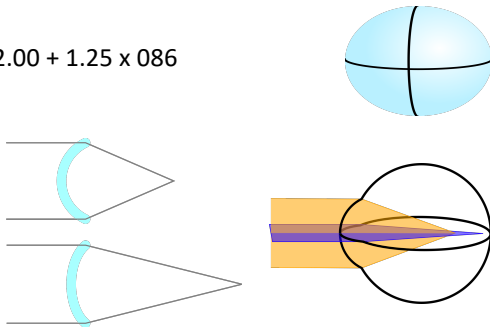
Case 1

- 43 year old male with no significant medical or ocular history presenting for annual vision eye exam
- Uncorrected visual acuity: 20/50 in right eye, 20/40 in left eye
- Manifest refraction:
 - $-2.00 + 1.25 \times 086$
 - $-1.75 + 0.75 \times 078$
 - Add: $+1.00$
- Best corrected visual acuity 20/20 far, J1 near

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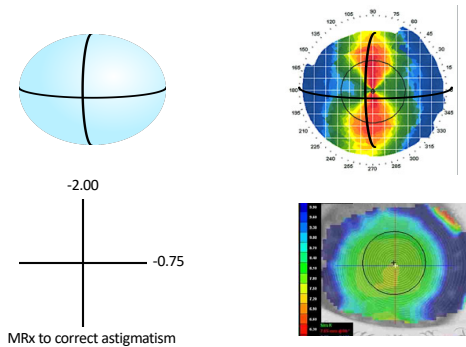
Regular astigmatism

$-2.00 + 1.25 \times 086$



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Regular astigmatism



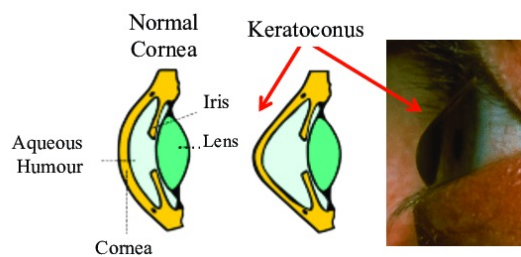
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Case 2

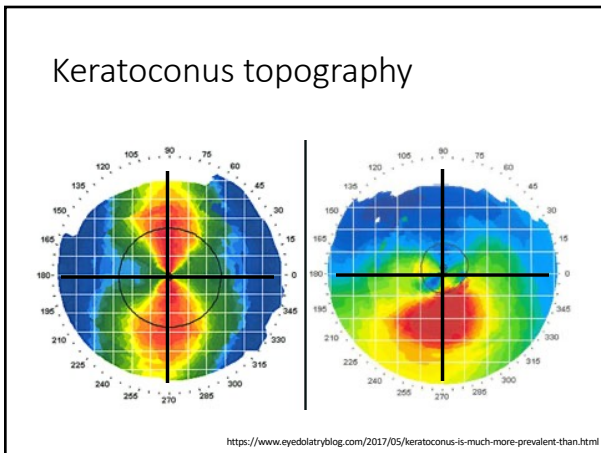
- 43 yo male with history of keratoconus presenting for annual vision exam
- Uncorrected visual acuity 20/70, 20/60
- Manifest refraction:
 - $-2.00 + 1.25 \times 086$
 - $-1.75 + 0.75 \times 078$
 - Add: $+1.00$
- Visual acuity with manifest refraction: 20/40, 20/30

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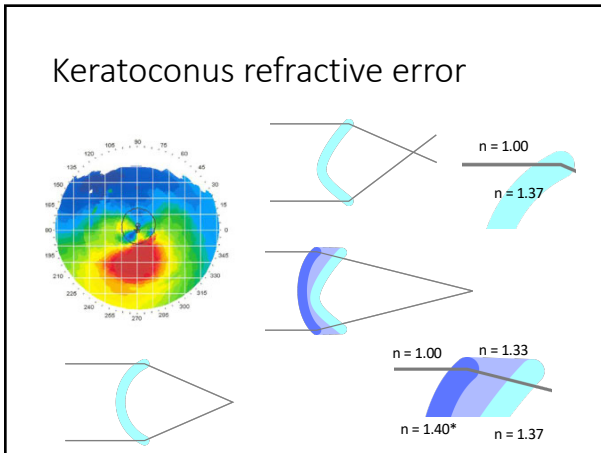
Keratoconus



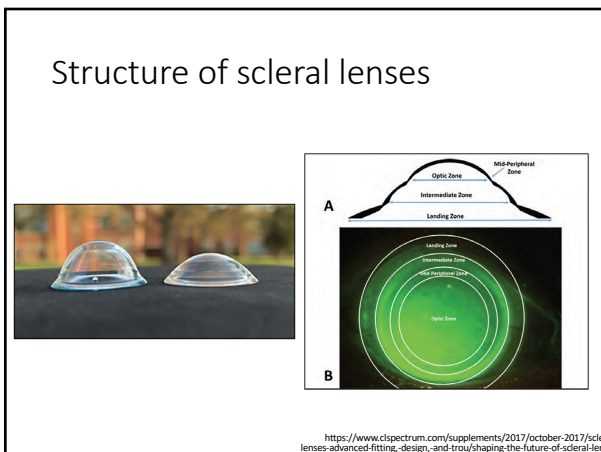
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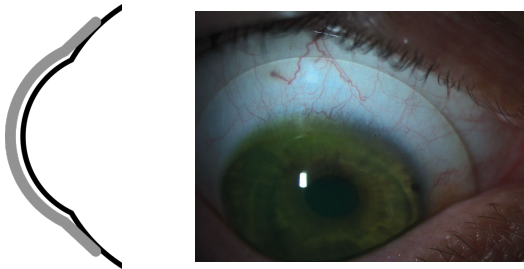


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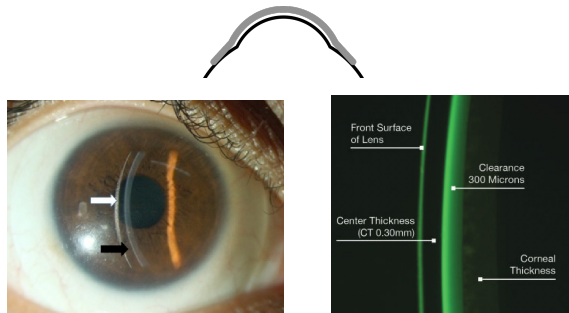
Position of scleral lenses



<https://www.reviewofcontactlenses.com/article/getting-started-with-scleral-lenses>

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Position of scleral lenses



<https://www.semanticscholar.org/paper/Scleral-lens-for-keratoconus%3A-a-technology-update-Rathi-Mandathara/42deb0ba548450dce18bb20c4765b0fabbb1cfae/figure/0> https://www.tftoptics.com/documents/DigiFormFittingGuide_000.pdf

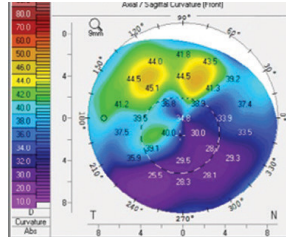
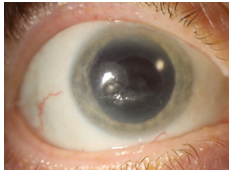
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Case 3

- 43 yo female with large paracentral corneal scar from remote history of perforating corneal injury who presents for annual vision exam
- Uncorrected visual acuity 20/70, 20/20
- Manifest refraction:
 - -2.00 + 1.25 x 086
 - -0.25 + 0.25 x 004
 - Add: +1.00
- Visual acuity with manifest refraction: 20/40, 20/20

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Corneal Scarring



<https://www.reviewofcontactlenses.com/article/no-pain-no-gain>

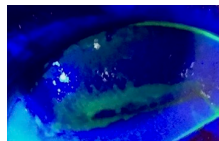
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Table 1. Causes of Corneal Irregular Astigmatism		
Category	Causes/examples	
Thinning	Non-inflammatory: corneal	Keratoconus, posterior keratoconus
	Non-inflammatory: peripheral	Pellucid marginal degeneration, Terrien's marginal degeneration, keratoglobus, dellen
	Iatrogenic	LASIK, PRK, pterygium removal
	Inflammatory: peripheral	Rheumatic thinning/ulcer, Mooren's ulcer, shield ulcer
	Infectious	Microbial keratitis, herpetic ulcer
Non-thinning	Deposits	Band keratopathy, vortex keratopathy
	Degenerative	Corneal edema
	Dystrophy: epithelial	Basement membrane dystrophy
	Dystrophy: stromal	Lattice dystrophy
	Mechanical	Rigid gas permeable lens warpage
	Mechanical: adnexal	Ptoisis
	Iatrogenic: corneal incisions	Cataract incision wound, radial keratotomy
	Iatrogenic: other surgical procedures	Trabeculectomy, glaucoma shunt procedure, pterygium removal
	Traumatic	Penetrating injury, foreign body
	Neoplastic: corneal	Pterygium
	Neoplastic: adnexal	Chalazion, tumor

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Case 4

- 60 yo male with history of Bell's palsy who presents with significant eye pain, redness, and foreign body sensation



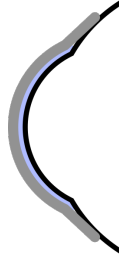
<https://webeye.ophth.uiowa.edu/eyeforum/cases/215-facial-nerve.htm> - image

https://eyewiki.aao.org/w/images/1/4/41/Fluorescein_EK.jpg - fluo

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Exposure keratopathy

- Scleral lenses provide barrier
- Protect epithelium while it is healing
- Promote hydration



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Case 5

- 70 yo female who presents with foreign body sensation, eye pain, blurry vision



<https://opto.ca/health-library/trichiasis> – trichiasis image

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Complications of scleral lenses

- Decreased oxygen permeability to cornea
 - Fuch's dystrophy is a contraindication
- Corneal abrasions with insertion / removal
- Discomfort with extended wear
- **Mid-day fogging**
- Chemical injury from cleaning solution
- Cost



<https://www.cliopectrum.com/supplements/2017/october-2017/scleral-lenses-advanced-fitting-design-and-trou/scleral-contact-lens-complications-midday-fogging>

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Summary

- Two broad categories of indications for scleral lens use:
 - Irregular astigmatism: replaces abnormal ocular surface
 - Protection of ocular surface: physical barrier
- Most common complication of scleral lenses include mid-day fogging.
- Other complications include corneal abrasions, chemical injuries. Infections are rare.
- Proper fit is important to safe scleral lens use
