

FITTING AND TROUBLESHOOTING SCLERAL LENSES



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DISCLOSURES

Disclosures:

- Paid consultant and lecturer for X Cel Specialty Contacts
- Paid consultant for SynergEyes
- Remote Education Chairman for Scleral Lens Education Society

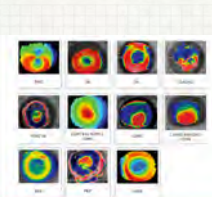
SCLERAL LENS ADVANTAGES

- Comfort
- Vision
- Centration
- Stability
- Health
- Moisture
- Easy to fit



WHO'S A GOOD CANDIDATE

- Any irregular cornea
- Regular cornea looking for maximized VA
- Astigmats
- Post-refractive HOA, glare
- DES



FITTING

OXYGEN DEMANDS UNDER A SCLERAL LENS

Cont Lens, 2009, 37(1), 1-10
Predicting estimates of oxygen transmissibility for scleral lenses.
Wolcott, J., Lee, J., Brown, C., Brown, C., Brown, C., Brown, C.

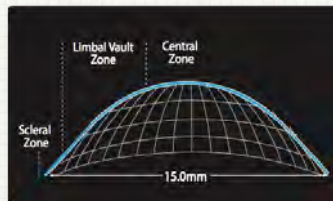
- CENTRAL CORNEA:
 - Holden-Mertz min. Dk/t : 24
- LIMBUS
 - Harvitt-Bonanno min Dk/t : 35
 - Known Dk of tear layer: 80
- Recommendations to reduce hypoxia-related edema:
 - Scleral central thickness under 250 microns
 - Central corneal vault under 200 microns
 - Lens Dk greater than 150
 - Limbal clearance kept to minimum

SHAPING THE TEAR FILM



Courtesy of the Scleral Lens Education Society

THE THREE ZONES

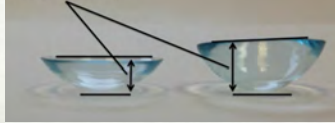


CENTRAL ZONE/OPTICAL ZONE

- Control by changing sag
- Diameter and BC
- Ideal 200 microns or less
- Settles throughout day



Sagittal depth



INSERTION

- Must fill with PRESERVATIVE FREE SALINE

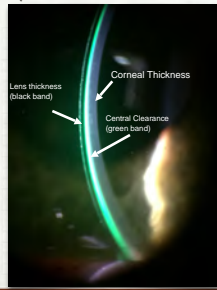
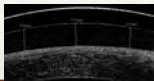


- Add NaFI strip for fitting
- Avoid air bubbles



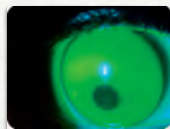
CENTRAL ZONE/OPTICAL ZONE

- Use lens thickness as gauge
- typically start with a 1:1 ratio
- Will settle fairly quickly
- Start with smallest Diam possible
- Increase when BC becomes excessive

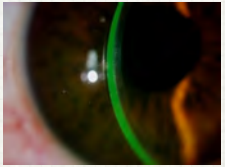


CENTRAL ZONE PEARLS

- Evaluate the entire central area
- Use topo to identify areas of elevation
- Find these "thin" zones under the lens

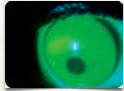


QUIZ:

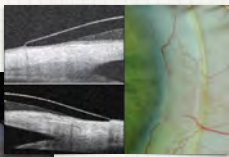
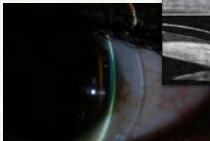


MID-PERIPHERAL/LIMBAL ZONE

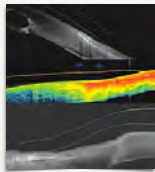
- Much improved with newer designs
- Gatekeeper of tear film "fogging" debris
- HIGHER O₂ DEMANDS THAN CENTRAL CORNEA
 - often with increased lens thickness
- Excessive limbal clearance:
 - Fogging
 - Conjunctival chasis
 - HYPOXIA (reduced WT)



LIMBAL ZONE



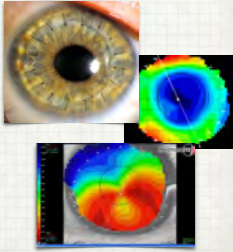
LIMBAL ZONE



Clinical Measurements to Improve Contact Lens Fitting
© 2011, Vision Care

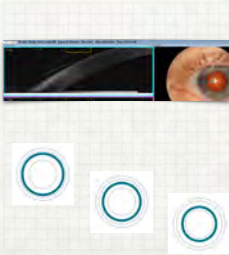
MID-PERIPHERAL OBSTACLES

- Oblate corneas
 - post refractive
 - post transplant
- Peripheral elevations
 - Pellucid Marginal Degeneration
 - Salzmann's Nodules



MID-PERIPHERAL OBSTACLES

- REVERSE GEOMETRY DESIGNS
 - Allows us to vault mid-peripheral or para-limbal elevations
 - often without changing central or haptic fit
 - new designs allow you to move elevation
 - paracentral
 - mid-peripheral
 - para-limbal



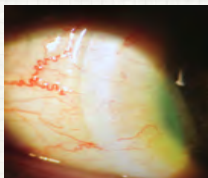
LANDING/HAPTIC/SCLERAL ZONE

- MUCH improved in new designs
- Regulates tear exchange
- Design is dependent on diameter...
 - Toric haptic typically required beyond 15mm



HAPTIC ZONE

- An edge that's too tight:
 - Blanching
 - Impingement
 - Good initial Comfort
 - Reduced WT with possible edema
- Spin test
- NaFl over lens



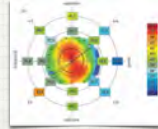
HAPTIC ZONE

- An edge that's too loose
- Instant awareness
- can lead to TF fogging
- can cause seal-off
- heel-toe effect



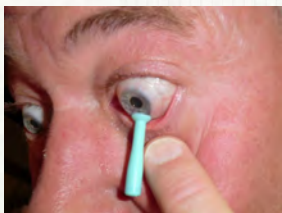
SCLERAL TORICITY

- A Guide to Scleral Lens Fitting (2nd Ed.)
- Begins to become significant beyond 15mm chord length
 - Due to EOM insertions
 - May require toric haptic beyond 15mm lens diam
 - most common is steep and flat 90deg apart
 - some include quad specific



CARE AND HANDLING

REMOVAL



DISINFECTION



TROUBLESHOOTING

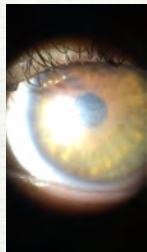
"IT'S UNCOMFORTABLE"

- Comfort issues
- On insertion:
 - Corneal touch
 - Edge lift
- Worsens throughout day:
 - Tight edge
 - Excessive vault
 - Excessive settling (touch)



"MY VISION IS BLURRY"

- Air bubble
- Residual cyl
- Flexure
- Surface wetting
- Tear layer clouding
- Corneal edema



AIR BUBBLE

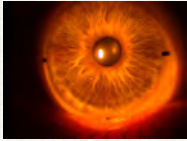
- Large bubbles quickly identified
- Small peripheral bubbles can cause issues
 - New wearers
 - Discomfort every day? Same eye every time?
 - Have pt wear lenses in on a "bad day"
- Review I&R
- Fill lens completely
- "push" all the way onto eye



Photo: Greg DeNayer, OD

RESIDUAL CYLINDER

- Lenticular
 - Crystalline Lens
 - Toric IOL
 - Tilted IOL
- Posterior Corneal
- High Regular Cyl
- Great FST options available



FLEXURE

- Okay in small amounts
 - Pumps tears
- Over .75D excessive
 - over K's
 - Astigmatic Symptoms
- Increase CT if needed
 - careful of O2 demands



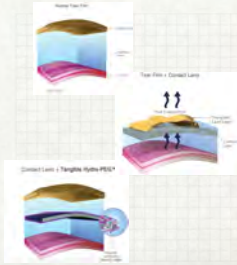
SURFACE WETTING

- Many issues
 - OSD
 - Poor material compatibility
 - Poor compliance
- Solutions:
 - Change materials
 - Change care regimen
 - Rub
 - Condition lens
 - On eye Tx with conditioner
 - On eye DMV squeegee
 - Hydra-PEG



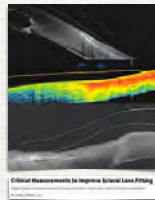
HYDRA-PEG

- Lens coating
- Super hydrophilic
 - 90% H₂O
- Supposed to last 1 year
- Can be re-applied
- Artificial mucin layer
- Solutions approved:
 - ClearCare
 - Unique pH
 - Simplus



TEAR LAYER CLOUDING

- Made up of mucin and lipid
 - Not consistent
- Limbal region!!!
 - often see excessive clearance
 - Vacuum effect
- Tighten haptic to limit exchange?
- Haptic too tight, holding in mucin?



CORNEAL EDEMA

- Tight Lens Syndrome
- Hypoxia
 - excessive central clearance
 - excessive limbal clearance
- Dysfunctional endothelium



QUESTIONS?