FITTING AND TROUBLESHOOTING SCLERAL LENSES

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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
THE THREE ZONES

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

CENTRAL ZONE/OPTICAL ZONE
OXYGEN DEMANDS UNDER A SCLERAL LENS

- 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

INSERTION

- Must fill with PRESERVATIVE FREE SALINE
- Nebulizing Solution
- Lacripure (Menicon)
- ScleralFil (B&L)
- PuriLens
- Add NaFl 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 chassis
  - **HYPOXIA (reduced WT)**
LIMBAL ZONE

Critical Measurements to improve Scleral Lens Fitting

Gathering and analysis of patient data can help optimize the scleral lens fitting outcomes.
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

- 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

- Typically done with DMV removal plunger
  - Wet tip
  - gently grip lens at 6 o'clock
  - close to lens edge
  - control top lid with finger
- Non-plunger method
  - stabilize superior lens
  - push bottom lid in and up under inferior lens edge
  - ScleralLens.org
DISINFECTION

- Any GP approved cleaner and conditioner
- Boston
  - Original, Advanced, Simplus
- Unique pH
- Lobob Optimum
- Others
- Many prefer peroxide (clearcare)
- Rub?

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 DeNaeyer, 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 hydraphillic
- 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?