Establishing a Solid Foundation: RGP Designs and Fitting

NCLE Level II - 2 hours

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Financial Disclosure Statement

Andrew Bruce . . .

- Has received honorariums from: VSP Optics
  Mitsui Chemicals
  Kaiser Permanente Vision Essentials
- Serves as a technical education advisor on CLSA Board of Directors
- Served on the Dispensing Optician Examination Committee for the Washington State Department of Health
- All relevant relationships have been mitigated
- Has NO financial interest in any product presented in this course

Outline/Objectives

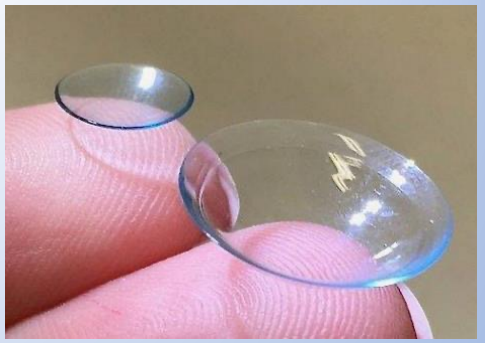
- Introduce the fundamentals of rigid contact lenses, and explore associated parameters and material characteristics
- Compare rigid fitting philosophies, and discuss the role of the keratometer or corneal topographer
- Discuss interpretation of K's for lens design selection
- Provide an overview of slit lamp biomicroscopy
- Present lens verification procedures
- Examine fluorescein patterns and present ways to improve the lens-cornea fitting relationship.

Introduction

Evolution of Rigid Contact Lenses

- 1800s: First glass scleral designs
- 1934: PMMA replaced glass
- 1948: First corneal lens design
- 1978: First GP material for contacts – CAB.

Corneal vs. Scleral Designs



- 1st gen. scleral lenses: 18-20mm in diameter
- Corneal designs smaller than corneal diameter
- 9.2mm is widely recognized as the diameter of choice for a corneal lens.

Hybrid Designs

- Economical - can run on gas or electric!!!
- Rigid central area provides correction
- Soft carrier/skirt provides stability
- Improved comfort over traditional corneal lens
- Can result in corneal neovascularization beneath thick transition zone.

PMMA

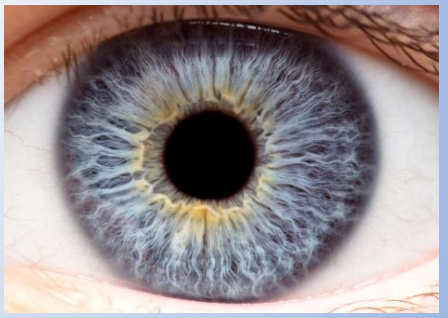
Advantages

Allows modification
Rarely cracks or crazes
Tintable
Can be cleaned/disinfected
Relatively easy to manufacture

Disadvantages

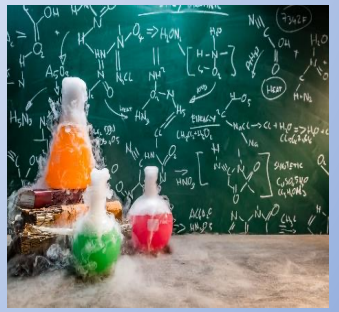
Impermeable to oxygen and other gases
Poses a corneal health risk.

Rigid Gas Permeable Lens Materials



- RGP materials are permeable to oxygen and other gases
- RGPs reduce the potential corneal health risks associated with PMMA
- Currently, many RGP materials available, some with very high permeability (Dk).

RGP Monomers/Polymers



- Components making up rigid lens materials
- Monomers are combined, to form polymers that provide the most desirable properties
- Polymer chemists designate the percentages of each monomer in the finished material.

Silicone and Fluorine

- Both frequently used as monomers to facilitate and increase gas permeability
- Precise combinations of silicone and flourine used in Fluorosilicone Acrylate (FSA).

Basic Terminology

Download “CL Terminology Handout: Expo West 2022” from *links* at . . .

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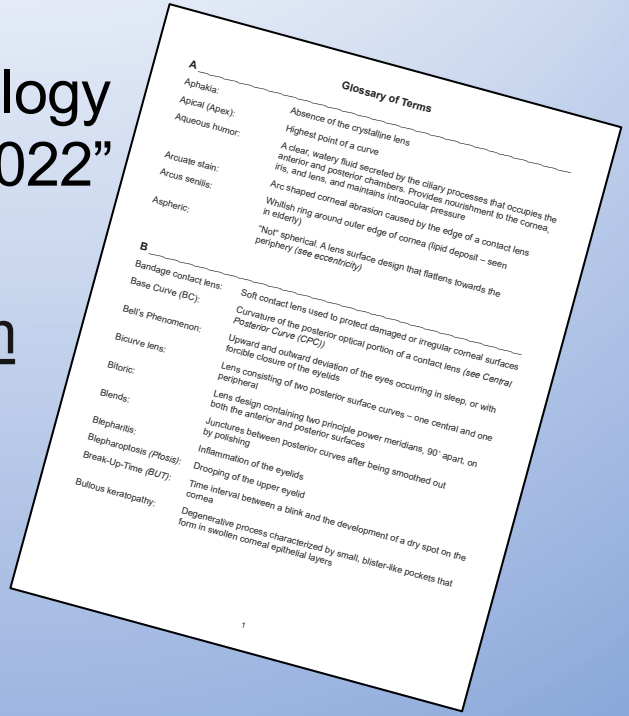

A

Glossary of Terms

Aphakia: Absence of the crystalline lens

Apical (Apex): Highest point of a curve

Aqueous humor: A clear, watery fluid secreted by the ciliary processes that occupies the anterior and posterior chambers. Provides nourishment to the cornea, iris, and lens, and maintains intraocular pressure

Arcuate stain: Arc shaped corneal abrasion caused by the edge of a contact lens

Arcus senilis: Whitish ring around outer edge of cornea (lipid deposit – seen in elderly)

Aspheric: “Not” spherical. A lens surface design that flattens towards the periphery *(see eccentricity)*

B

Bandage contact lens: Soft contact lens used to protect damaged or irregular corneal surfaces

Base Curve (BC): Curvature of the posterior optical portion of a contact lens *(see Central Posterior Curve (CPC))*

Bell’s Phenomenon: Upward and outward deviation of the eyes occurring in sleep, or with forcible closure of the eyelids

Bicurve lens: Lens consisting of two posterior surface curves – one central and one peripheral

Biltoric: Lens design containing two principle power meridians, 90˚ apart, on both the anterior and posterior surfaces

Blends: Junctures between posterior curves after being smoothed out by polishing

Blepharitis: Inflammation of the eyelids

Blepharoplosis *(Ptosis)*: Drooping of the upper eyelid

Break-Up-Time *(BUT)*: Time interval between a blink and the development of a dry spot on the cornea

Bullous keratopathy: Degenerative process characterized by small, blister-like pockets that form in swollen corneal epithelial layers

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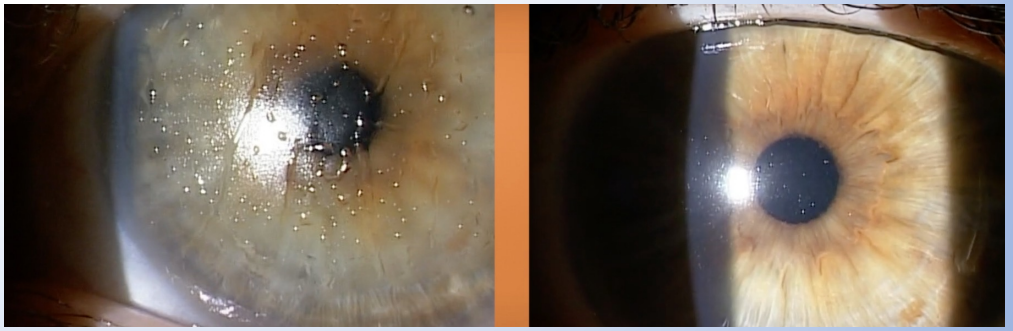
Surface Wettability

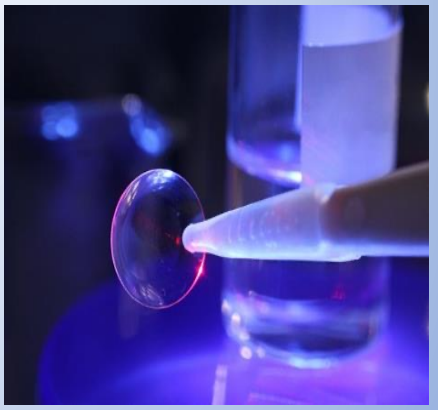
- Indicates how well tears spread across lens
- Determined by a material's wetting angle
- With contacts, low wetting angle preferred
- Dry eye patients, especially, benefit from materials with good wettability properties.

Surface Treatments



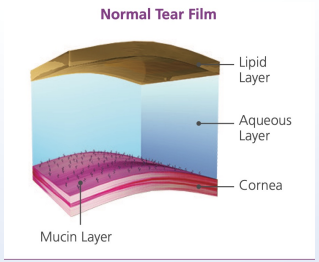
- Tear film deficiencies can cause anterior surface of contact lens to dry out, cloud over
- Lens surface can also accumulate deposits
- Lens material influences wettability and affinity for deposit accumulation
- Surface treatments can help and avoid compromised acuities and comfort.

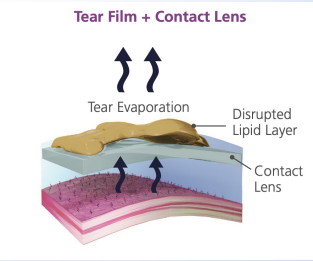
Plasma Treatment

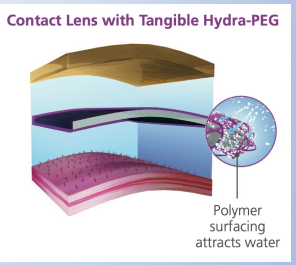


- Lens bombarded with high-energy radio waves in oxygen rich environment for 60 seconds
- Surface molecules rearranged, surface becomes ionized
- Increases surface affinity to attract liquids
- Increases wettability and comfort, reduces fogging.

Tangible Hydra-PEG







- A 90% water polyethylene glycol (PEG) based polymer, permanently bonded to the contact lens surface
- The optically-clear coating encapsulates the contact lens with a mucin-like hydrophilic shell, separates it from ocular surface/tear film
- Further enhances wettability which improves tear breakup time, increases lubricity, reduces protein and lipid deposition.

Optical Fundamentals of Rigid Lenses

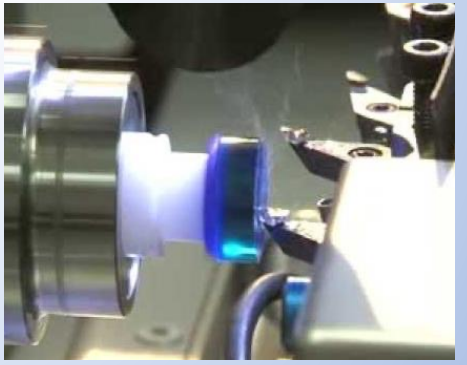
Why Fit a Rigid Lens?

- Excellent optics
- Rigid properties mask corneal irregularities, provide a new primary refractive surface
- Lens refractive properties are combined with those provided by the lacrimal lens
- Allow more precise management of an astigmatic cornea, neutralize corneal toricity
- Available in totally customizable parameters, a variety of materials, great precision.

Rigid Lens Parameters and Material Considerations

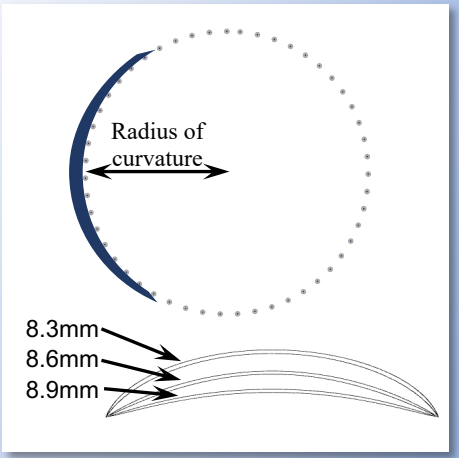
K Readings	Dk/t
Base Curve	Color
Secondary Curves	Center Thickness
Intermediate Curves	Edge Design
Peripheral Curves	Deposit Resistance
DIA	Wetting Angle
Material	SAG

Rigid Lens Designs



Rigid Design	Calculated Residual Astigmatism	Corneal Toricity
Spherical	< 0.75	< 2.50
Front Surface Toric	> 1.00	< 1.00
Back Surface Toric	> 0.75 @ axis of k-toricity	> 1.50
SPE Bitoric	< 0.75	> 1.50
CPE Bitoric	> 0.75	> 1.50

Base Curve



- Posterior surface radius of curvature
- Based on corneal K's in diopters
- Fitting protocol: On K, FTK, STK
- Fitting philosophy influences BC selection.

Corneal Curvature Conversion

Surface Power Formula

$$D = n-1 / r$$

D = Corneal curvature in diopters
n = Refractive index of the tear film (1.3375)
r = Radius of curvature of cornea in mm
1= Refractive index of air

Ex: Convert K's of 44.50D to radius of curvature, in mm

Rearranging, $r = n-1 / D$

$r = (1.3375–1) / 44.50$

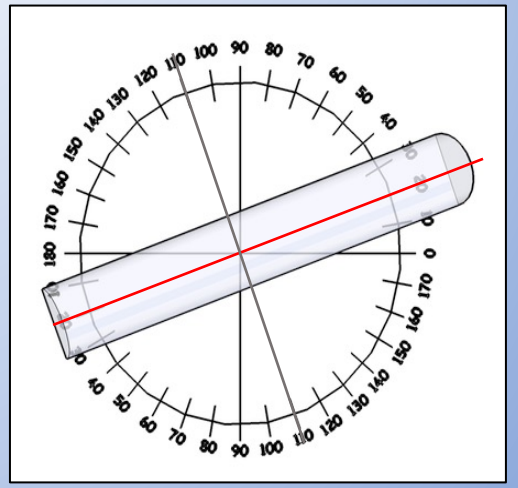
$r = 0.00758$ meters $= 7.58$mm

To Simplify

- Radius of curvature in mm = 337.5 / curvature in diopters
- Curvature in diopters = 337.5 / Radius of curvature in mm.

Types of Astigmatism

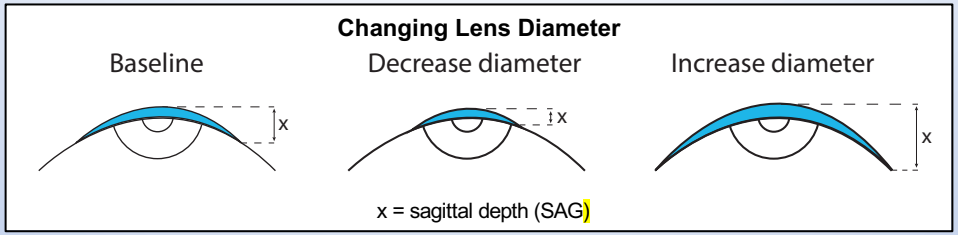
- Regular
- Irregular
- **WTR:** 001˚ to 030˚ & 150˚ to 180˚
- **ATR:** 060˚ to 120˚
- **Oblique:** 030˚ to 060˚ & 120˚ to 150˚



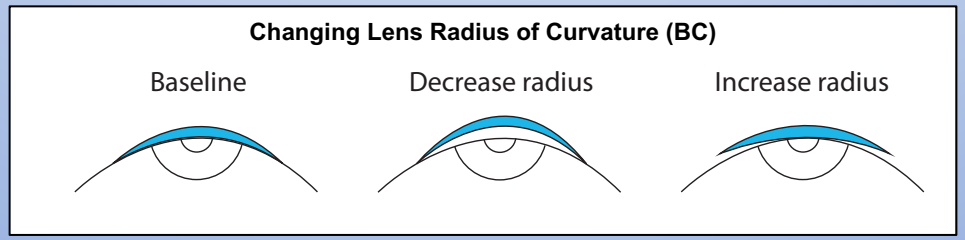
Lens Overall Diameter (OAD / DIA)

- OAD determined by HVID, lens type and design, and fitting philosophy
- OAD influences OZD, and vice versa.

Effects of Changing BC/OAD



- Influences sagittal depth (SAG)
- Increasing diameter tightens the fit
- Decreasing diameter loosens the fit



- Increasing radius of curvature loosens the fit
- Decreasing radius of curvature tightens the fit.

BC-DIA Relationships

Every 0.2mm diameter change requires 0.125D (0.023mm) change in base curve to maintain lens-cornea relationship

Corneal Cylinder	DIA: 8.5mm	DIA: 9.0mm	DIA: 9.5mm
PL to 0.50D	0.25D STK	On K	0.25D FTK
0.75 to 1.25D	0.50D STK	0.25D STK	On K
1.50 to 2.00D	0.75D STK	0.50D STK	0.25D STK
2.25 to 2.75D	1.00D STK	0.75D STK	0.50D STK
3.00 to 3.50D	1.25D STK	1.00D STK	0.75D STK

Mannis, MJ et al. Contact lenses in Ophthalmic Practice

RGP Fitting

Importance of The Blink!

- Rigid lens has no water content
- Relies on blinking for ongoing spread of tears across lens surface
- Blinking also creates tear exchange behind lens to flush out debris, provide fresh tears
- Maintains healthy, hydrated cornea and lens.

Tear Break-Up Test

- Measures stability of tear film
- Important pre-fit assessment
  to determine suitability for lens wear
- Sodium Fluoride (NaFl) instilled, under diffuse illumination with cobalt filter, time for dark areas to form is recorded
- **Results:** < 10 seconds = borderline < 5 seconds = abnormal.

Rigid Lens Fitting Approaches

- **Empirical:** Data based
  - Keratometry
  - Topography
- **Diagnostic:** Based on diagnostic lenses.

Rigid Lens Fitting Philosophies

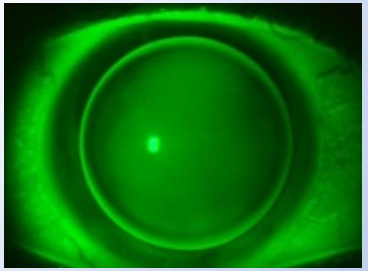
Apical clearance

- Designed to center on cornea, interpalpebral position
- Steep BC can result in flexure, unstable vision

Corneal alignment / Upper Lid Attachment

- Preferred approach
- Lens positions over superior cornea, influenced by upper lid
- Provides more stable vision, less flare, easier adaptation, reduced lid awareness, more natural blink rate, and less peripheral desiccation (drying).

Apical Clearance



Base curve: Steeper than flat K

Diameter: 8-9mm

Lens thickness: thinnest possible without flexure.

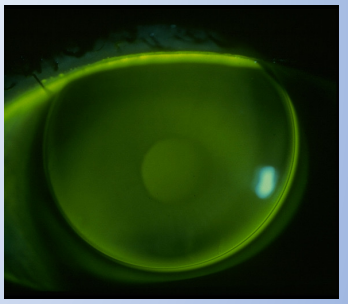
Corneal Cylinder	Base Curve
PL to 0.75D	0.25D STK
0.87 to 1.50D	0.50D STK
1.62 to 2.50D	0.75D STK
2.62 to 3.50D	1.00D STK
> 3.50D	Consider Toric BC

Contact Lens Manucal: CLSA

HVID	Lens Diameter
< 10.5mm	8.0mm
11.0mm – 11.5mm	8.5mm
> 12.0mm	9.0mm

Contact Lens Manucal: CLSA

Corneal Alignment or Lid Attachment



Base curve: 0.50D to 1.50D flatter than FTK

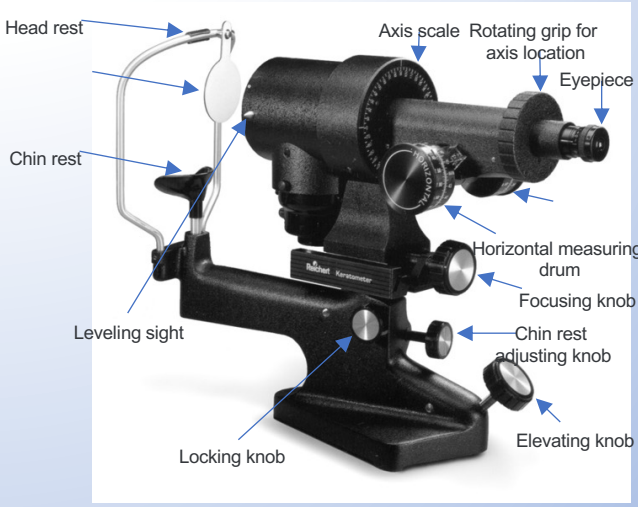
Diameter: 9.2-9.6mm (avg. 9.5mm)

Lens thickness: minimum allowable for material.

Corneal Cylinder	Base Curve
PL to 0.75D	1.00D FTK
0.87 to 1.25D	0.75D FTK
1.37 to 1.75D	0.50D FTK
1.87 to 2.75D	0.25D FTK
2.37 to 2.75D	On K
2.87 to 3.50D	0.25 STK
> 3.50D	Consider Toric BC

HVID	Lens Diameter
< 10.5mm	9.2mm
11.0mm – 11.5mm	9.4mm
> 12.0mm	9.6mm

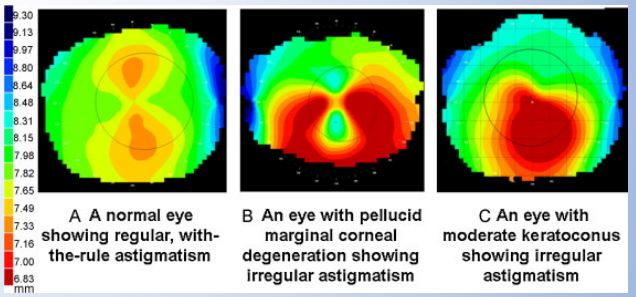
Keratometer



Keratometry

- Used to measure corneal curvature, central 3mm
- Range: 36.00D to 52.00D *(extendable)*
- Provides keratometry values (k's)
- Also used to evaluate tear film and soft lens fit.

Corneal Topographer



- Used to provide corneal “mapping”
- Broader coverage than a standard keratometer
- Provides both visual and numerical data
- Provides detailed analysis of the overall corneal shape
- Very important when working with irregular corneas
- Vital for procedures such as ortho-k/refractive surgery.

Interpreting K's

Standard Notation

45.00 @ FTK / 46.00 @ STK

45.00 / 46.00 @ STK

45.00 @ FTK / 46.00 @ STK

(assumes axes 90 degrees apart)

- K's indicate corneal curvature in primary meridians
- Determines source of astigmatism: corneal/lenticular
- **Example Rx /k's:** -2.00 -2.50 x 090 44.00/46.50 @ 180
  - Refractive astigmatism = 2.50D
  - From k's, corneal astigmatism = 2.50D
  - All refractive astigmatism is corneal.

Base Curve and Diameter Selection

Base Curve Selection

- K's indicate power meridians and source of astigmatism – corneal and/or lenticular
- K's determine best suited lens type/design
- Fitting philosophy determines recommended BC range

Diameter Selection

- Influenced by HVID, lens type/design, fitting philosophy
- General starting point = HVID-2.5mm.

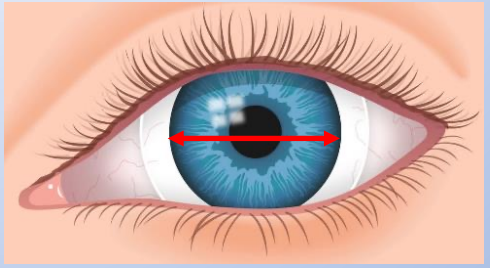
Horizontal Visible Iris Diameter (HVID)

Classification:

Small = 11mm

Medium = 11.5mm

Large = 12mm



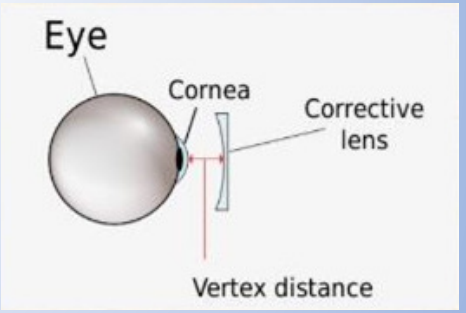
To measure: PD ruler

Scale addition to a slit lamp

Corneal topographer

Soft lens of known diameter.

Vertex Distance and Effective Power



$$\text{Effective Power} = \frac{\text{Original Power}}{1 + (\text{change in VD (m)} \times \text{Original Power})}$$

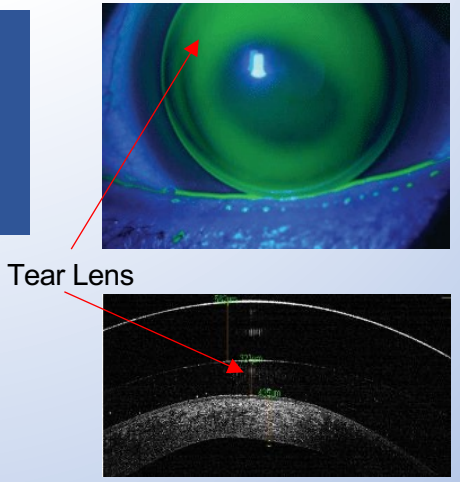
When and why is vertex distance important?

- Increase VD = increase in effective plus power
- Decrease VD = decrease in effective plus power
- Compensation recommended over +/- 4D.

Determining Rigid Lens Powers

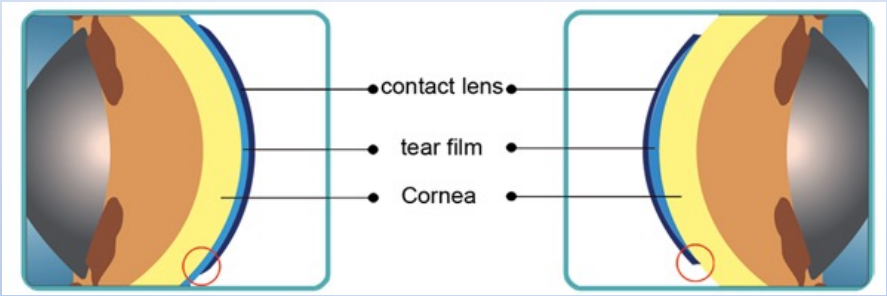
- Transpose to minus cylinder *(if necessary)*
- Compensate for changes in vertex power
- Determine astigmatism and its source
- Select design, based on magnitude/source of astigmatism
- Determine flattest meridian from k's
- Decide on initial BC selection, based on k's/philosophy
- Compensate for tear lens (SAM and FAP).

The Tear Lens



- A rigid contact lens “vaults” the corneal surface
- Creates a space filled with tears - the “tear lens”
- Combination of tear lens and rigid lens provide a crisp, clear refracting surface.

FAP: Flatter Add Plus
SAM: Steeper Add Minus



- Steeper BC = more central space / more tear lens
- Flatter BC = less central space / less tear lens
- Tear lens influences total refractive properties
- BC changes will influence tear lens
- FAP/SAM used to compensate for changes.

Calculation Example

K readings: 44.00 / 45.00 @180
HVID: 11.5mm
Rx: -3.00 -1.00 x 180

- Type of astigmatism?
- Source(s) of refractive astigmatism?
- Determination . . .

For an *apical clearance fit* with 1.00D of corneal astigmatism:

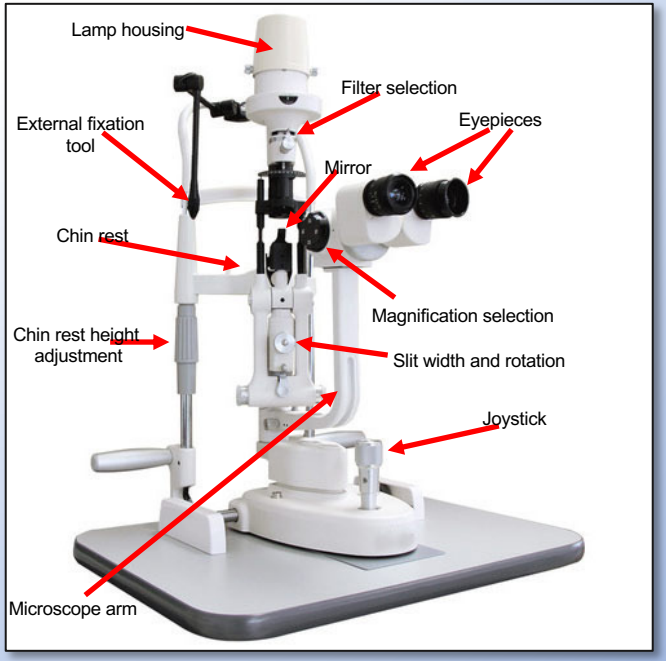
- Fit lens 0.50D STK
- Going steeper adds minus (SAM)

Lens BC and power? 44.50D **(7.58mm) / -3.50D**

Appropriate diameter: 8.5mm *or* 9.5mm? **8.5mm**

Slit Lamp Biomicroscopy

Slit Lamp Biomicroscope



- Permits magnified eye health examination, using various kinds of illumination

- Three main parts:
  - Illumination system (illumination arm)
  - Observation system (viewing arm)
  - Mechanical system (base).

Viewing/Illumination Techniques

Direct: Viewing structures within the focused light
Indirect: Viewing structures not within the focused light

Illumination types vary with . . .

- Positioning
- Size
- Shape
- Focus
- Filtration of the beam.

Illumination Uses

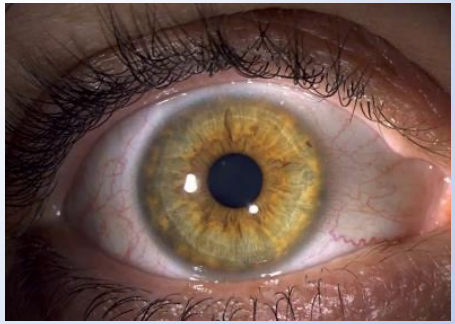
For contact lens fit evaluation:

- Diffuse
- Direct focal

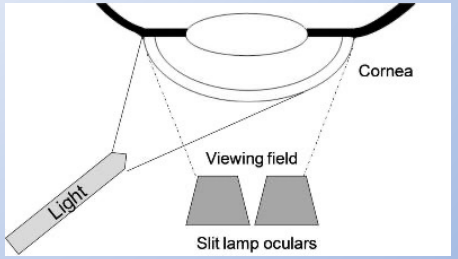
To evaluate contact lens related problems:

- Indirect
- Retro
- Sclerotic scatter.

Diffuse

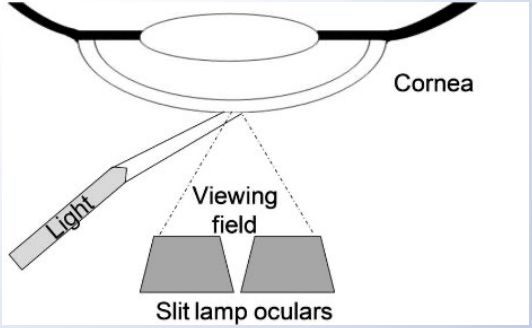


- Broad uniform view
- Recommended 45˚angle between oculars and beam
- Slit width: wide open
- Low magnification
- Low beam intensity.



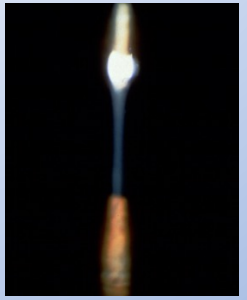
Courtesy of Craig Norman

Direct Focal

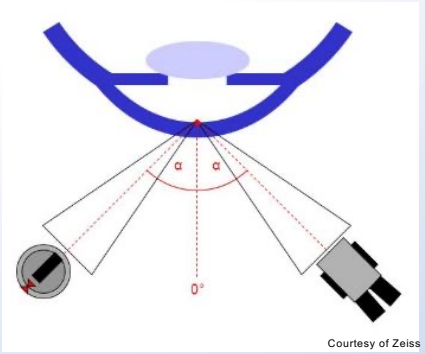


Courtesy of Craig Norman

- Oculars viewing where beam focused
- Type varies with beam size:
  - **Optic section:** small, thin beam
  - **Parallelepiped:** larger/thicker, most common with contacts
- Magnification: med to high
- Beam intensity: med to high.



Specular Reflection



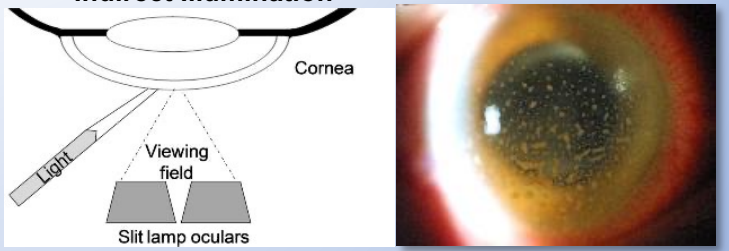
Courtesy of Zeiss

- Type of “Direct Focal”
- Used to evaluate tear film
- Beam and oculars set up so angle i = angle r
- Magnification = med to high
- Slit width: moderate
- Illumination: high.

Indirect and Retro

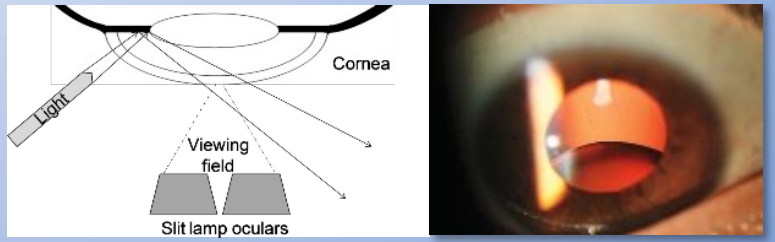
- Most common for clinical use to view foreign bodies, corneal infiltrates, neovascularization, corneal edema, etc.
  - Slit width: 2-3mm
  - Magnification: med to high
  - Illumination: high.

Indirect Illumination



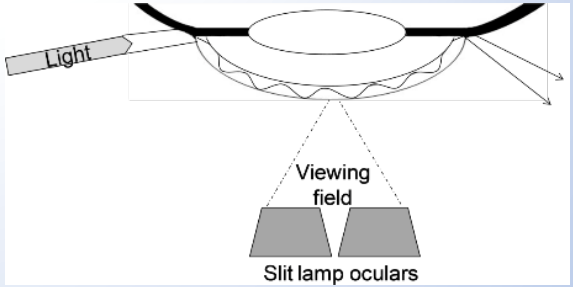
Courtesy of Craig Norman

Retro Illumination



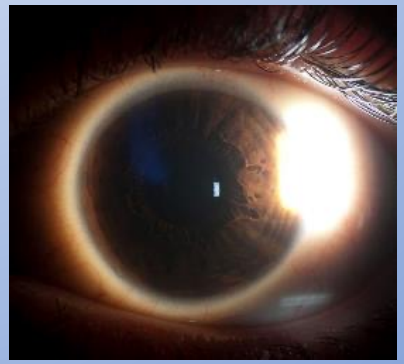
Courtesy of Craig Norman

Sclerotic Scatter



Courtesy of Craig Norman

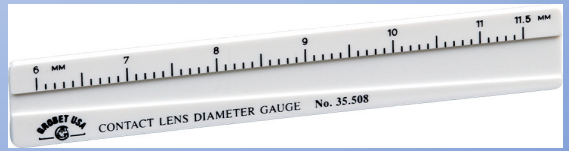
- Form of “indirect”
- Used to detect central corneal edema
- Beam directed at a 90˚angle to limbus, scattered through cornea
- Viewed with naked eye
- Illumination: maximum
- Slit width: narrow.



Verification Procedures

Rigid Lens Verification

- Power
- Base Curve
- DIA
- SV / Multifocal
- Spherical / Toric
- Center Thickness
- Color
- Must comply with ANSI Z80.2.



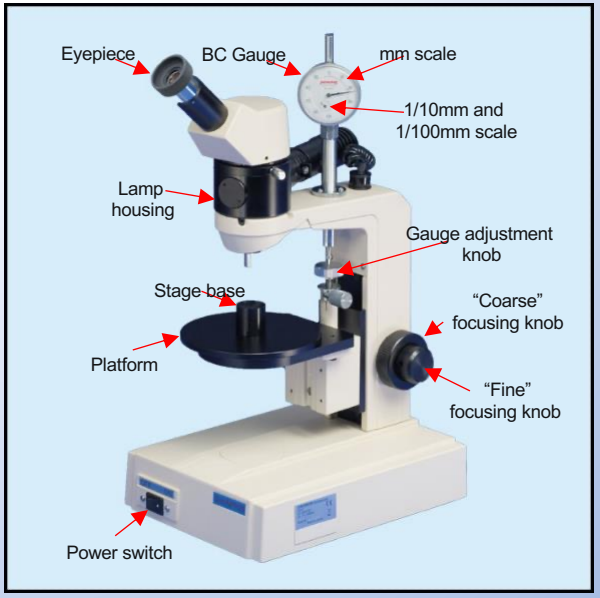
Lensometry

INDUSTRY STANDARD: BACK VERTEX POWER
(CONVEX SIDE UP)

Lens Design	Lensometer Readings	Notation
Spherical	Spherical	Power Drum Reading
Back Surface Toric	2 Different Power Readings 90° apart No Prism	Drum Readings in Both Meridians No Axis
Front Surface Toric	2 Different Power Readings 90° apart Prism Present	Sphere Cylinder Axis (Same as Glasses)
Bitoric	2 Different Power Readings 90° apart No Prism	Drum Readings in Both Meridians No Axis

Radiuscope

Available with an external or internal gauge



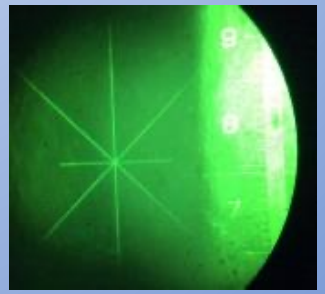
The Drysdale principle:

Measures the distance between lens surface and its center of curvature

- Microscope projects a *real* image of the target (spokes) onto lens concave surface
- Projected target is reflected back, forming an *aerial* image
- Distance between the *real* image and *aerial* image determines lens radius of curvature.

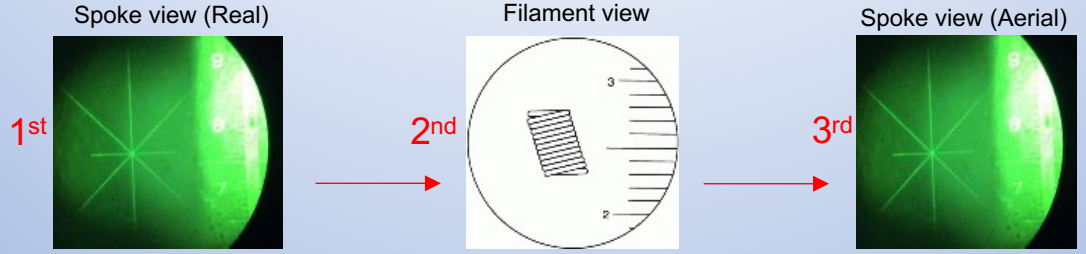
Measuring Base Curve

- Concave side up, float lens on a drop of solution on stage
- Place stage on its base, on the platform
- Turn on power and correctly focus the eyepiece
- Horizontally, position platform so green reflex centered on lens
- Using “coarse” focusing knob, position microscope close to stage to obtain the first focus of the *spokes (real image)*
- Zero out BC gauge using gauge adjusting knob.



Measuring Base Curve (cont.)

- Use “coarse” focusing knob to move microscope away from stage, beyond the filament view, to second focus of spokes *(aerial image)*



- Use “fine” focus knob for precision
- When aerial image is clear, read BC:
  - Outer circle of numbers = mm
  - Small, inset dial = 1/10mm and 1/100mm
  - Example: 7.85mm.

Radiuscope Interpretation

- Single BC with no prism from lensometry = **Spherical**
- Single BC with prism from lensometry = **Front surface toric**
- If NO prism and 2 different meridians, convert BC readings to diopters and compare to lensometry:
  - If BC toricity x 1.5 = Refractive Cylinder: **Back surface toric**
  - If BC toricity = Refractive Cylinder: **SPE Bitoric**
  - If neither apply: **CPE Bitoric.**

Example
Back Surface Toric

- From lensometry: -4.00 / -5.50, no prism
- From radiuscope = 7.67mm / 7.50mm *(convert to diopters)*
- Using D = 337.5/r: BC = 44.00D / 45.00D

FINDINGS

- Refractive toricity = **1.5D** Surface toricity = **1D**

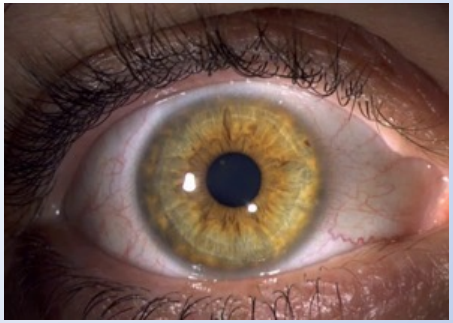
Surface toricity ≠ refractive toricity, so NOT a SPE bitoric

Surface toricity x 1.5 = 1.5 = refractive toricity

Therefore, lens is a back surface toric.

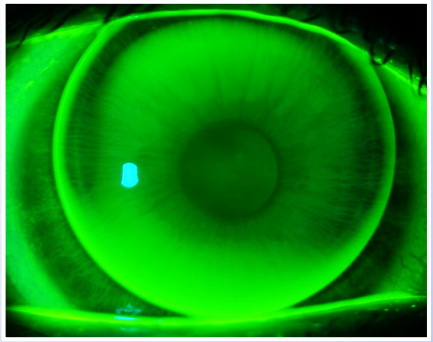
Fitting Evaluation and Follow Up Care

Gross Evaluation



- Allow at least 15 mins for lenses to equilibrate
- Using diffuse illumination, evaluate centration/movement
- Document any misalignment
- Instill Sodium Fluorescein in tears, add cobalt blue filter
- Evaluate fluorescein pattern and fit
- Identifies how closely lens BC aligns corneal curvatures.

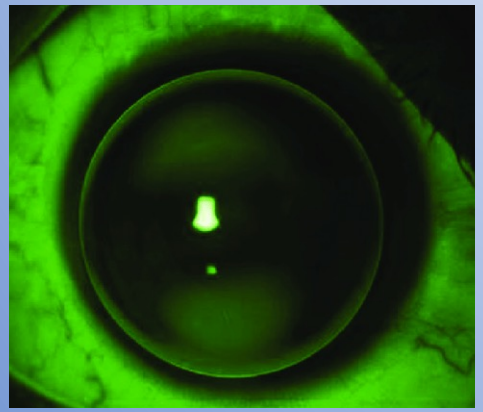
Fluorescein Evaluation



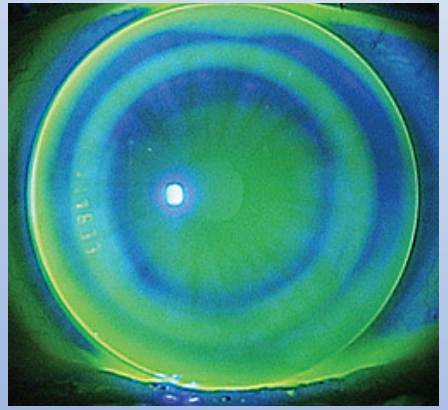
- Cobalt blue filter “excites” fluorescein in tears *(enhance with Wratten #12 yellow)*
- Becomes brilliant fluorescent green where tears present
- Variations in intensity of ”green” indicate how much space is between contact lens and cornea . . .
  - More-green = More space *(more tears)*
  - Less-green = Less space *(fewer tears)*
- *NOTE: even in absence of green glow, pre-corneal tears still present.*

Fitting Related Terminology

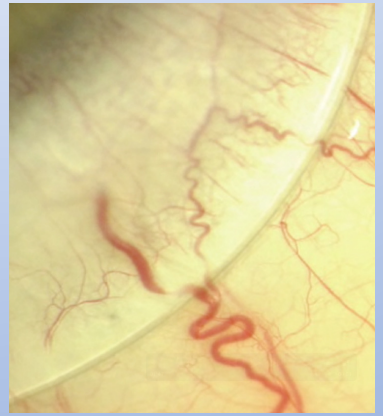
Apical Bearing



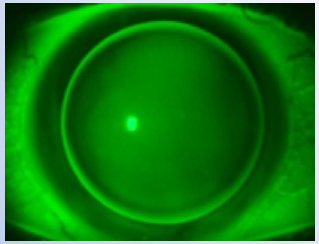
Pooling & Bearing *(ortho k)*



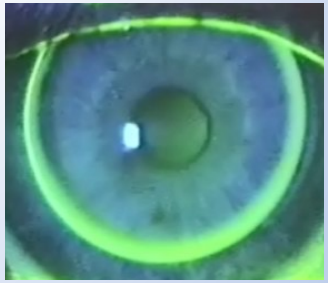
Impinging
(edge of scleral)



Blanching
(close to limbus - scleral)



What To Look For



General

- Uniform tear film, central clearance with touch in mid-periphery, adequate edge lift
- Check for areas of impingement

Apical Clearance Fit

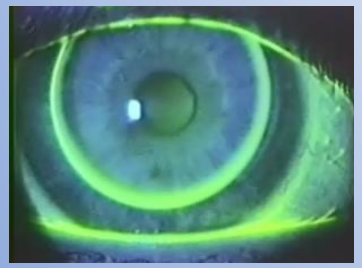
- Good central pooling, slightly less in transitional zone
- More intense fluorescein in periphery

Corneal Alignment/Lid Attachment Fit

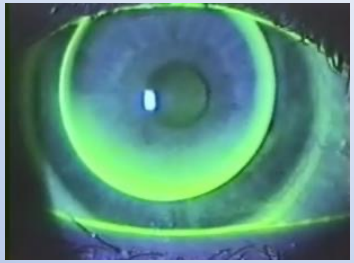
- Minimal central pooling, uniform tear film
- Adequate edge lift.

Fluorescein Patterns

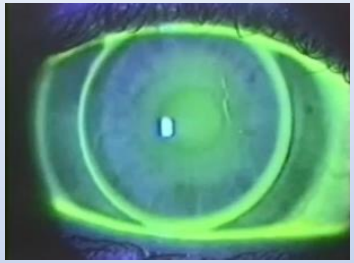
On K



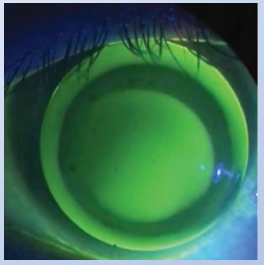
1D flatter than K



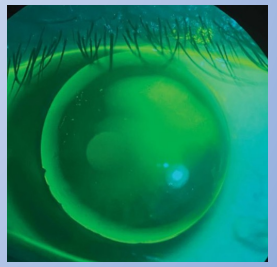
1D steeper than K



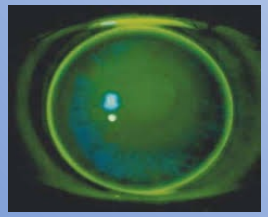
Excessive edge lift



Chipped edge

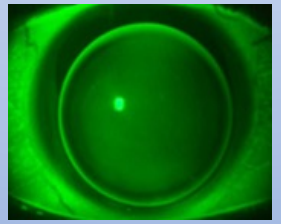


Spherical lens spherical cornea

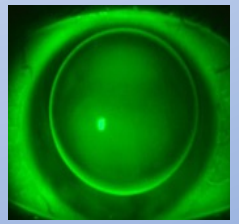


Spherical lens WTR cornea

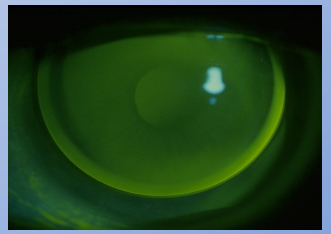
Inferior decentered



Superior decentered



Alignment fit flat PC / edge lift



Lens Centration and Movement

RULE OF THUMB
Lens will center over steepest curve, especially with irregular corneas

Apical Clearance Fit

- Should stabilize, centrally
- Remain relatively central during 4-6 sec blink
- Lens excursions approx. 2mm with blink

Corneal Alignment/Lid Attachment Fit

- Lens moves only with blink, lifts, and re-centers
- No drag or excessive “floating” around.

Correcting For Lens Decentration

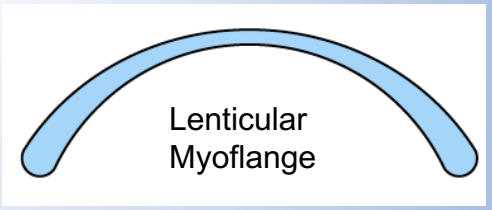
General Lateral Decentration

- Steepen BC
- Increase OAD or OZD
- Steepen peripheral curves
- Consider edge/center thickness
- Consider lens power(weight)

Apical Clearance Fit

- *Superior decentration:* reduce OAD or steepen BC
- *Inferior lens drop:* steepen BC if pattern indicates flat, flatten BC if pattern indicates steep.

Correcting For Lens Decentration (cont.)



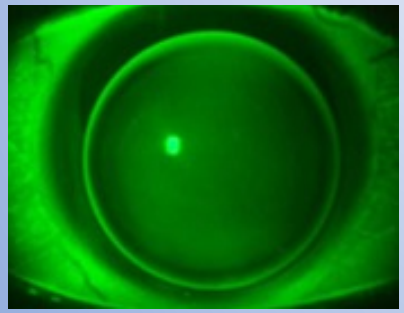
Corneal Alignment/Lid Attachment Fit

- *Superior decentration:* steepen BC, decrease OAD or OZD, flatten peripheral curves
- *Inferior lens drop:* steepen BC if fluorescein indicates flat, flatten BC if indicates steep
- Relies on upper lid interaction with edges . . .
  - Hyperflange lenticular or CN bevel recommended with high minus
  - Myoflange lenticular recommended with high plus.

Lens Fitting Ex.

Alignment / Lid Attachment
Current DIA: 9.5mm

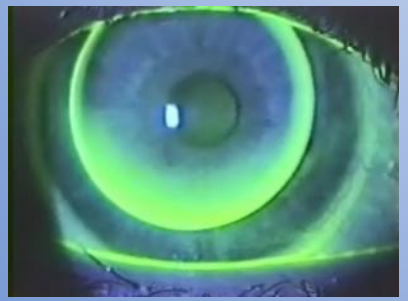
Inferior decentered



Current spherical RGP fit on FTK
K's: 44.00/44.00 @ 180
Rx: -1.50 DS

- Too steep or too flat?
- New lens to order?

Superior decentered



Current spherical RGP fit on FTK
K's: 43.00/43.25 @ 180
Rx: -3.00DS

- Too steep or too flat?
- New lens to order?

Prepare Patient For Success

Provide Detailed Care/Maintenance Instructions

- Brand name solutions for cleaning, disinfection, rinsing
- Routine case replacement
- The “Dos and Don’ts” of contact lens wear

Recommended Follow-Up Protocol

- 1-3 months after finalized
- 6-12 month intervals after successful.

In-Office Modification

Modification pad works on the principle
that its outer edge spins faster than its center

Possible:

- Reduce OAD/OZD
- Generate, modify, blend curves
- Re-shape/polishing edges
- Polish surfaces
- Change powers +/- 050D

NOT Possible:

- Change BC
- Increase OAD/OZD
- Steepen peripheral curves
- Reduce width of peripheral curves
- Change powers > +/- 0.50D.

Adding Minus Power

Adding Plus Power

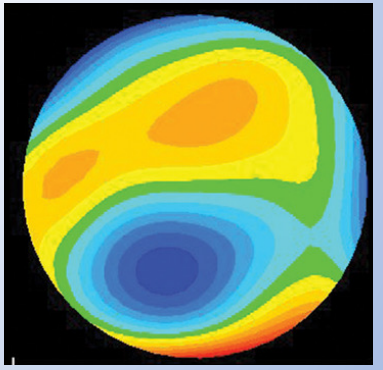
Surface Polishing

What's New and Exciting?

Addressing HOAs

- High order aberrations . . .
  - Specific distortions with the eye's structure
  - Influence precision of visual acuity *(wavefront Lasik)*
- Lower order aberrations (*Seidel)* include . . .
  - Regular astigmatism
  - Spherical and chromatic aberration
  - Distortion (barrel and pincushion).

Free-form Contact Lenses



- Correct for HOAs
  - Currently, only available for scleral lenses
  - Aberrometer over manufacturer's diagnostic lens measures the HOAs
  - Software translates data, free-form lathe fabricates lens design, powers, and neutralizes HOAs
  - What does this mean for the patient?

To Take Away . . .

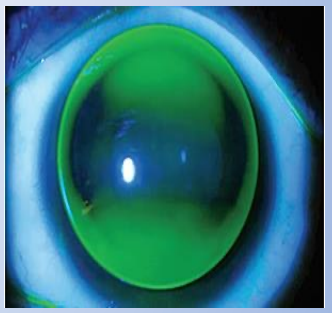
- Despite the popularity of soft lenses, don't forget the benefits RGPs can provide your patients
- Try not to be intimidated by the fitting and follow-up process
- Embrace every chance you get to work with RGPs as an opportunity to expand your skill set and provide your patients with great vision

Resources

GP Lens Institute: www.gpli.info

Valley Contax: www.valleycontax.com

Flash Quiz



- Excessive central pooling, almost non-existent edge lift?
- Horizontal “figure 8” pattern under a spherical GP lens?
- Which test evaluates tear stability?
- Which fitting philosophy indicates an 8-9mm diameter?
- Which is most common slit lamp illumination for contact lens fit evaluation?
- Radiuscope indicates more than one power meridian but lensometery provides *mostly* spherical reading, but blurry?
- Radiuscope and lensometry indicates 2 distinct power meridians. Which toric design NOT a possibility?

Andrew S. Bruce

Thank You!

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