

Correcting Astigmatism With Rigid Gas Permeable Lenses

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Abstract

This course describes in detail the different rigid lens designs used to manage toroidal corneas and to correct residual astigmatism. This course also presents strategies for design selection, lens parameter selection, lens verification, and patient evaluation.

Learning Objectives

1. To understand when it is appropriate to use spherical, aspherical, and toric base curves and peripheral curves on toric corneas.
2. To understand the power and the limits of using the corneal topographer to design posterior lens surfaces.
3. To understand when it is appropriate to use front toric, back toric, spherical power effect toric, cylindrical power effect toric, and crossed cylinder power effect toric designs.
4. To understand how to order and to verify rigid lenses for astigmatism.

Outline

I. The Corneal Surface

- A. Central Toricity
- B. Peripheral Toricity

II. Using The Corneal Topographer To Design R.G.P. Lenses

- A. The Axial View
- B. The Contact Lens Design Modules

III. The Posterior Lens Surface: A Geometry Problem

- A. Base Curve Selection
 1. Spherical Iso-Curve
 2. Aspecial Iso-Curve
 3. Toric Curve
 4. Alignment
 - a. With-The-Rule Corneas
 - b. Against-The-Rule Corneas
 - c. Oblique Corneas
 5. The Future—Spline Curves

- B. Peripheral Curve Selection
 - 1. Spherical Curves
 - 2. Aspherical Curves
 - 3. Toric Curves

IV. The Anterior Lens Surface: An Optics Problem

- A. The Front Toric Lens
- B. The Base (Back) Toric Lens
 - ◆ The Rules of Base Toric Optics
- C. The Spherical Power Effect (S.P.E.) Lens
- D. The Cylinder Power Effect (C.P.E.) Lens
- E. The Crossed Cylinder Effect (C.C.E.) Lens
 - 1. S.P.E. Trial Lens
 - 2. Base Toric Trial lens

V. Ordering Lenses

- A. The Parameters to Order
- B. The Materials to Use
- C. Use an Orientation Mark
- D. Calculating and Reading the Power In Air
- E. Verify the Other Lens Parameters

VI. The Dispensing Visit

- A. Verify the Lenses First, Then Call the Patient
- B. Dispense and Equilibrate—The Longer, The Better
- C. Take Visual Acuties
- D. Do a Sphero-Cylinder Over Refraction
- E. Use the Burton Lamp
- F. Do Over-Keratometry
- G. Look at the Fluorescein Pattern Last
- H. Dispense With Careful Instructions About Wearing Schedules, Cleaning, Care and Handling, and Follow Up Schedules

VII. Patient Follow Up Evaluation

- A. Establish Patient Tolerance and Wearing Time
- B. Repeat the Steps of the Dispensing Visit
- C. Remove the Lenses and Take Post-Keratometry
- D. Evaluate the Ocular Surface

VIII. Trouble Shooting

- A. Get the Back Surface Correct First
- B. Check and Control Lens Rotation
- C. Compensate for Residual Correction

IX. Conclusion

- A. Be Aggressive About Aligning the Back Surface
- B. Be Confident About Correcting Residual Astigmatism
- C. Profit From Your Expertise