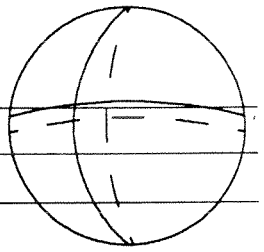
EXAM PREPARATION

FOR CONTACT LENS DISPENSERS

Part

5

Advanced Techniques



EXAM PREPARATION

FOR CONTACT LENS DISPENSERS

5: Advanced Techniques

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Introduction

The material presented in part 5, *Advanced Techniques,* covers contact lenses which are fit for the correction of presbyopia, astigmatism, aphakia, and keratoconus. These indeed are advanced techniques and require the skill and experience of the seasoned contact lens fitter. While the study of this section by itself will not produce an expert fitter, it will provide an introduction to and a survey of the various lens designs and fitting procedures which are employed. A broad and general knowledge of these subjects is necessary in order to succeed on the NCLE Certifying Exam.

The section begins with the study of presbyopia by presenting the various options available to the presbyopic contact lens wearer. Among these are spectacle lenses for near vision to be worn over the distance vision contact lenses, monovision, concentric style multifocal contact lenses, and segment style contact lenses.

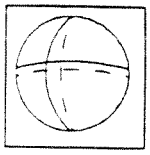
The discussion of contact lenses for the correction of astigmatism includes the fitting of front toric, back toric, and bitortic lens designs. Lens stabilization techniques designed to inhibit lens rotation in cylindrical and segment multifocal lenses will be discussed. These include prism balast, truncation, double slab-off and posterior toric surfaces.

The section on contact lenses for the correction of aphakia will survey the various lens materials and shapes that can be used to help the cataract patient. These will include conventional lenticular, minus carrier lenticular (myoflange), and single cut lenses. Emphasis will be placed on the special problems encountered by the elderly aphakic contact lens wearer.

Part 5 will continue with a discussion of keratoconus, a degenerative hereditary condition of the cornea. The various stages of the disease will be defined and contact lens fitting methods and philosiphies designed to help improve visual acuity will be surveyed.

A twenty-eight question practice exam will conclude Part 5.

5: Advanced Techniques



Presbyopia

Presbyopes may be the single largest group of patients who have not been receiving the full benefits of contact lens wear. This may be at least partially attributed limited number of multifocal designs traditionally available for soft lenses. Also, positioning the reading addition in the proper position in relation to the pupil for both distance and near vision has been a source of difficulty. Much research has been done in an effort to improve soft lens multifocal designs.

What follows are some of the methods commonly used for providing the presbyope with contact lenses. Many of these approaches are used for the fitting of both rigid and soft lenses.

I **Provide reading glasses to be worn over the contact lenses.** While this option generally provides the best vision of all for reading, it is often rejected by the patient who complains about having to wear any glasses at all in addition to the contacts.

The taped discussion for Part 5, Advanced Techniques, may be found on Tape 6, side 2. Follow along in the workbook while listening to obtain a general survey of the subjects covered. Then, go back over the material and study it in more detail.

II **Provide two pair of contact lenses, one pair for reading only and one pair for distance.** For the most part this is largely a theoretical alternative and obviously not a practical one. It would require the patient to change lenses whenever switching the gaze from distance to reading for any period of time.

III **Monovision** is a popular and suprisingly successful alternative for the presbyope wishing to wear contact lenses. It involves placing a lens with the distance vision correction in the dominant eye and a lens with the near vision correction in the other eye. Most patients will adjust to them within a relatively short period of time even though there will always be one eye with blurred vision. Occassionally a bifocal lens is placed in the nondominant eye to aid with distance vision. It is generally recommended to trial frame the patient first with the distance prescription in one eye and the near prescription in the other thereby providing the patient with at least some idea of what to expect.

The popularity of this fitting method can largely be attributed to its relative simplicity and low cost compared to the use of actual bifocal contact lenses.

Presbyopia

Bifocal contact lenses may be divided into two broad categories of design. These include the *Concentric or Target Bifocal* and the *Segment Bifocal.*

The Concentric, Target, or Annular Bifocal. The three terms mean essentially the same thing and are often used interchangeably.

In this design the distance prescription is located in the central portion of the lens while the surrounding optical portion contains the near vision prescription. While the gaze is directed straight ahead, the patient looks through the central distance portion of the lens. When gazing downward to read, the lens naturally raises upward permitting the patient to look through near vision periphery.

One form of the concentric bifocal lens contains two distinct powers, one for distance and one near vision. The added plus power for near vision may be achieved either by grinding different curves, or by fusing a portion with a higher index of refraction along the periphery of the main or carrier portion of the lens.

Another form of concentric bifocal may contain a progressive addition where the front surface of the lens is aspherical in shape rather than spherical. It results in a gradual or progressive change of power as the lens periphery is approached.

The simultaneous bifocal may also be considered to be a variety of the concentric design. Here, the reading and distance portion come into the pupillary area at the same time. It results in the patient looking through the distance and near portion of the lens simultaneously presenting two images at once. The image selection is made by the wearer at a subliminal level. To ensure the distance portion remains properly positoned in front of the pupil, the lens must be fit relatively tight.

Figure A illustrates a back surface design of a concentric spherical bifocal contact lens. The two distinct powers of the lens are indicated by the abrupt junction of the two posterior curves.

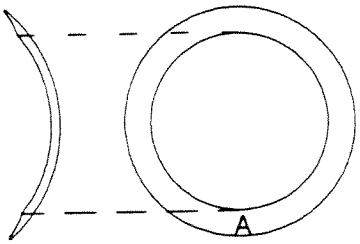
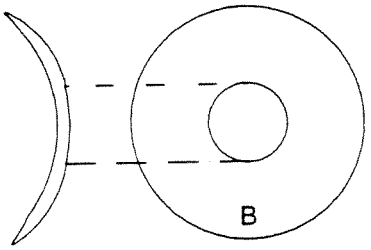


Figure B illustrates a front surface design of a concentric aspherical bifocal contact lens. The front surface gradually steepens peripherally resulting in the needed plus power.



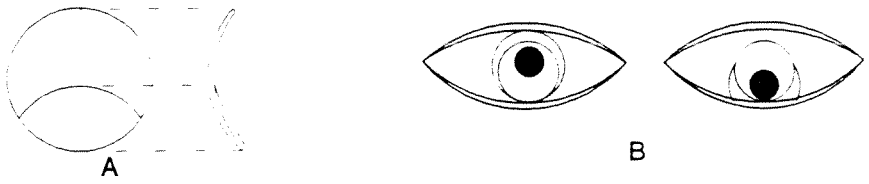
Presbyopia

The Segment Bifocal is similar in design to a spectacle bifocal lens. As the patient directs the gaze downward the bifocal segment is pushed up for reading. The segment bifocal can sometimes provide better vision for reading than does the concentric design, however it is a thicker lens and will rest on the lower lid giving a greater sensation of lid awareness.

Because of its design, the segment bifocal needs to be stabilized in a vertically oriented position. This is generally achieved through the use of a prism ballast often combined with truncation. The various stabilization techniques will be covered in more detail later on in this section when we discuss toric lenses.

The reading segment is most often crescent shaped and may be either fused on the back of the lens or ground on the front. If it is a fused segment lens, it is also known as a "camp" lens.

The reading portion may also be a circle or flat top.



Figures A & B above illustrate a fused crescent shaped "camp" bifocal which is pushed up as the gaze is directed downward.

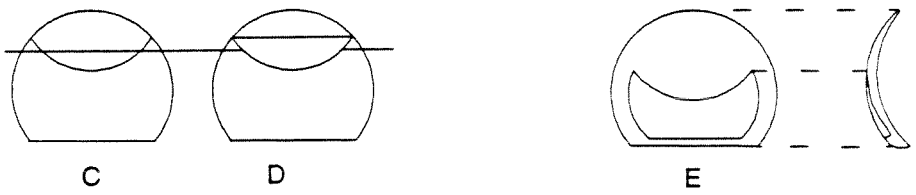


Figure C above illustrates a monocentric bifocal lens.The optics are calculated so that no image jump occurs along the segment line. It is a one-piece design which is truncated at the bottom. If a bifocal lens is not monocentric, a line seen through the lens will be displaced as in example D. Figure E illustrates a crescent shaped fused segment sometimes referred to as a "black" lens.

The Tangent Streak Bifocal is a fused segment bifocal with a very large reading segment. It is prism ballasted, custom made, and available with variable segment heights and a variable optic zone.

Presbyopia

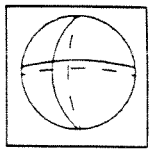
Patient Selection For Bifocal Contact Lenses

More Likely to Succeed

1. Those who were successful single vision wearers.
2. Those who are highly motivated and who have a highly motivated fitter.
3. Those who have an occupational need for bifocal contact lenses.

Bifocal Soft Lenses Patient Selection

1. Reading addition should be between +1.00 and +1.75 D.
2. The spherical equivalent addition should be between -4.00and +2.00 D with no more than one diopter of cylinderin the refraction.
3. The patient should understand that visual acuity under all circumstances may not be as good as it would be with spectacles. Small print in dim lighting conditions may still require reading glasses.



Astigmatism

***Toric** contact lenses may be indicated when residual astigmatism results in vision which is compromised.* Residual astigmatism may result from a toric posterior corneal surface, a toric crystalline lens, or a partially dislocated crystalline lens.

Toric lenses may also be required when moderate to high corneal astigmatism results in either mechanical irritation or centration problems with spherical hard lenses.

Astigmatic contact lenses may be classified into the following categories and these are applicable to both hard and soft lenses.

A) Toric peripheral curves with spherical base curves
   1. Spherical front surface
   2. Cylindrical front surface

B) Anterior toric, with spherical back surface

C) Posterior toric base curves
   1. Posterior toric only
   2. Bitoric

Toric peripheral curve lenses with spherical base curves: These are rarely dispensed in this country, and when they are only as hard lenses. They are used in cases of low to medium corneal astigmatism when spherical lenses result in inadequate stability. The peripheral curves are shaped to conform to the shape of the cornea contributing to added stability. Trial lenses are required for successful fitting.

Anterior toric with spherical back surfaces: These are available in both hard and soft lenses. They are typically fit when there is a significant amount, generally more than 0.75 D, of uncorrected residual astigmatism. The correcting cylinder is put on the front surface of the lens while the diameter and posterior curves remain the same.

Posterior base curve toric lens: These are available in both hard and soft lens materials, although they are used predominately with hard lenses. They are indicated when a spherical lens does not provide a stable fit and are when there is at least 1.50 diopters of corneal astigmatism. They can also be indicated when irritation is experienced due to inadequate clearance of a spherical lens on a corneal cylinder.

A *bitoric lens* design is needed when the back toric surface results in enough residual astigmatism so that a front surface correcting cylinder is needed. At least 1.50 diopters of corneal astigmatism should be present.

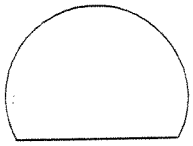
Astigmatism

Stabilization Techniques for Toric Contact Lenses.

Many of the techniques used for stabilizing toric contact lenses are also used for the stabilization of segment style multifocal lenses. In either case, for obvious reasons, lens rotation on the eye needs to be minimized.

Prism Ballast: This is one of the most common stabilizing techniques. A prism of between 1.00 to 1.50 D is ground base down into the lens. However, greater amounts of prism may be needed for patients with particularly tight lids, flat corneas, or oblique axis astigmatism. The lens will tend to rotate so that the base of the prism is oriented inferiorly. The added thickness of the lens along the prism base can reduce oxygen permeability through that portion of the lens resulting in possible hypoxic disturbances in the inferior zone of the cornea.

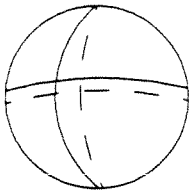
Truncation: When a lens is truncated, a portion of it is sectioned off. It is usually 0.50 to 1.5 mm on the lower edge of the lens. The amount sectioned off will depend on the size of the lens; larger lenses require greater amounts than smaller lenses. Occasionally the upper edge is sectioned off as well resulting in a double truncated lens.



The truncation will serve to stabilize a lens when the lower flat edge comes to lie adjacent to the lower eyelid margin. Truncation is often combined with prism ballast.

When a lens is truncated its diameter is effectively reduced which results in a looser fit. To compensate for this the base curves of truncated lenses are generally made somewhat steeper.

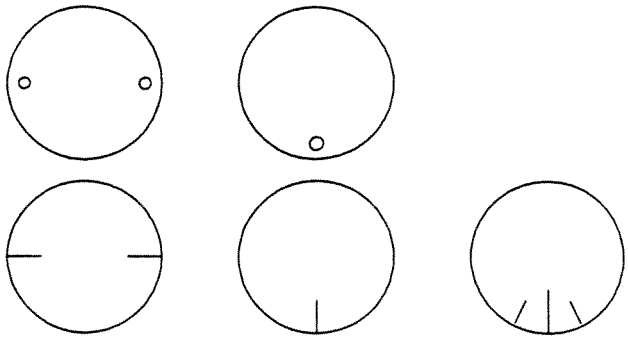
Double Slab-off lenses: This technique creates a lens which is thicker along its central body which lies along the palpebral fissure and thinner along the inferior and superior edges which come to lie under the upper and lower lids. This technique is comfortable since there is no lid impact along the inferior surface. However it does not offer as much lens stability as the truncated or posterior toric techniques. Double slab-off lenses are often combined with a prism ballast to help prevent rotation.



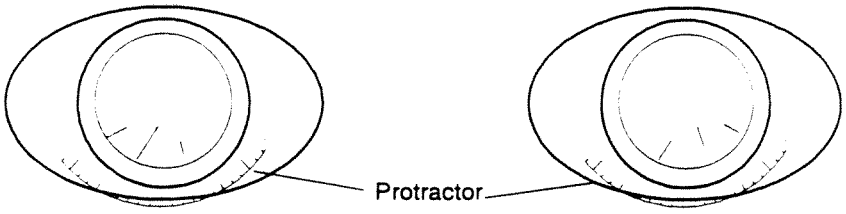
Posterior Toric Lenses: A back toric surface can be used as a lens stabilizing technique. When the shape of the posterior contact lens surface closely parallels that of the cornea lens rotation can be minimized.

Aspheric Lens Surface: An aspheric surface can aid in lens-axis stabilization by adding drag to the motion of the lens. It is generally used in combination with truncation or prism ballast since it is only minimally effective by itself.

Astigmatism



Engraved Reference Markings
On
Soft Toric Lenses



LARS: Left add, right subtract

Because it is necessary to inhibit lens rotation, toric lenses will typically come with reference markings so the fitter can determine how the lens is oriented on the cornea. These markings may be circles or lines located at the six-o-clock or three and nine-o-clock meridians.

The expression LARS stands for left add, right subtract. If the lens is rotated to the fitter's left, the appropriate number of degrees is added to the prescribed axis. If it is rotated to the right the appropriate number of degrees is subtracted.

Lens rotation can be measured using a slit lamp equipped with a protractor. The use of trial lenses is especially important when fitting toric contact lenses.

Aphakia

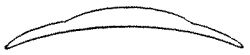
Patient Selection:

Certain guidelines apply for the selection of potential aphakic contact lens patients. They must be able to handle the lens either on a daily or a weekly basis and possess the ability to properly care for the lenses. Like any contact lens candidate there needs to be sufficient tear film as well as an absence of any serious corneal disease. In addition, there should be available to the patient some sort of assistance in times of distress.

Types of Rigid Aphakic Lenses:

There are basically two types of rigid aphakic contact lenses. These include the *minus carrier lenticular lens* and the *single-cut lens.*

The conventional lenticular lens is rarely used since it tends to ride low when the upper lid collides with the steep curve of the anterior optic zone pushing it downward. This same occurance can also cause lid irritation.



Conventional Lenticular

The minus carrier lens, on the other hand, is well supported by the upper lid and can be held in positon about 1 mm above the corneal center. It is also much thinner than the conventional lenticular lens further reducing the tendency for it to drop over the limbus.

Minus Carrier Lenticular

The optic zone of the minus carrier lenticular lens generally is relitavely small, about 7.0 mm in diameter. The smaller zone results in both reduced center thickness and lighter weight.

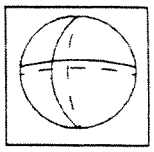
Single Cut Lens in Place

The single cut rigid aphakic contact lens is sometimes prescribed when one or more of the following conditions are met: small palpebral apertures, relatively steep corneas (over 45.00 D), or when other lens designs tend to ride low.

Since these lenses are smaller than a lenticular design, the edges can be made thinner, making them more comfortable. Although smaller, the size of the optic zone of the single cut lens is quite comprable to that of the lenticular. One advantage to the single cut lens design is the absence of a sharp juncture between the two curves on the front surface thus eliminating the annoying lid bump.A disadvantage to the single cut lens is the difficulty encountered in removing this small steep lens from the cornea, especially for the elderly.

Minus Carrier Lens in Place

Single Cut Lens



Aphakia

Aphakic Soft Lenses:

Aphakic contact lenses are the thickest lenses used. In the case of the high myope of say -12.00 D, the thinnest portion of the lens lies over the visual axis. A +12.00 D aphake, however, finds the thickest portion of the lens over the corneal cap and visual axis. Any corneal edema resulting from the use of soft lenses for aphakia, therefore, is found over the most critical part of that structure. Even when highly gas permeable lenses are used, the permeability at aphakic levels of lens thickness may still be relatively low. An aphakic soft lens can cause a 4% to 8% increase in corneal thickness.

Aphakic soft lenses can be expected to last from about six months to one year. Their life expectancy can be shortened by any of the following:

Protein or other deposits which may interfere with clarity of vision .

Tearing or splitting of the lens caused by a fingernail or perhaps poor placement in its case.

Loss due to the difficulty of the aphakic patient in seeing or feeling the lens, especially when it is stored in a liquid medium.

Aphakic Contact Lenses-General Difficulties

Any contact lens, rigid or soft, must be handled. This can be a problem for the elderly patient with arthritis, a head or finger tremor, or poor central visual acuity resulting from macular degeneration. Further, elderly patients often experience difficulty coping with lens insertions and maintaining adequate supplies of the necessary solutions. Those who live alone may fear one day being unable to remove their lenses. Bilateral aphakes can't see to find their lenses unless they use a special accessory device.

For these and other reasons contact lenses for the correction of aphakia are being used with diminished frequency. Due to improved surgical techniques and materials, intraocular lens implants are becoming the treatment of choice for the great majority of cataract patients.

Keratoconus

Keratoconus is a degenerative hereditary condition of the cornea . It results in a progressive thinning of the central or paracentral area of the cornea and is accompanied by *irregular astigmatism*. In more advanced cases the cornea can form a bulge or a "cone" which is often located near or just below its center. In other cases a diffuse thinning of the cornea can result in a "sagging cone" otherwise known as *Keratoglobus*.

Advanced keratoconus may be divided into two principal clinical categories: *the round or nipple-shaped cone* and the *oval or sagging cone*. The round cone is the most common type and typically lies in the lower nasal quadrant. The sagging cone is usually longer and steeper than the round cone. It sags in the inferotemporal quadrant with an average reading of 68 D. The round cone is rarely greater than 65 D and it responds more favorably to contact lens fitting.

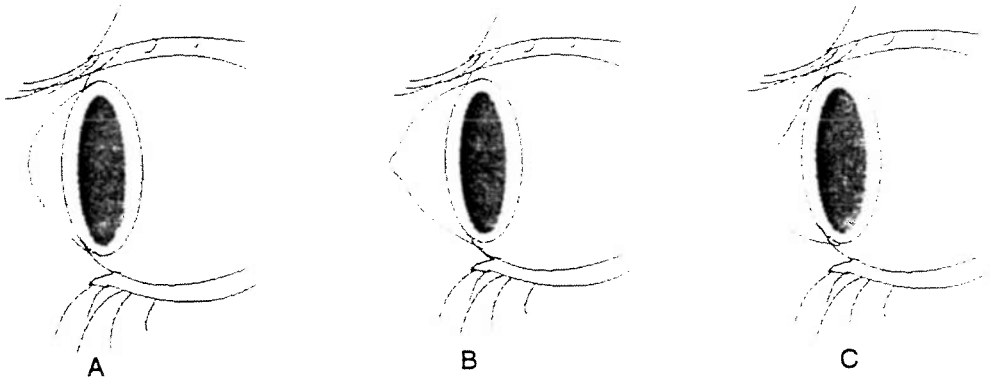


Figure A illustrates a is diffusely thinned cornea with generalized bulging and no defined cone. At B is the nipple cone. C represents the sagging cone

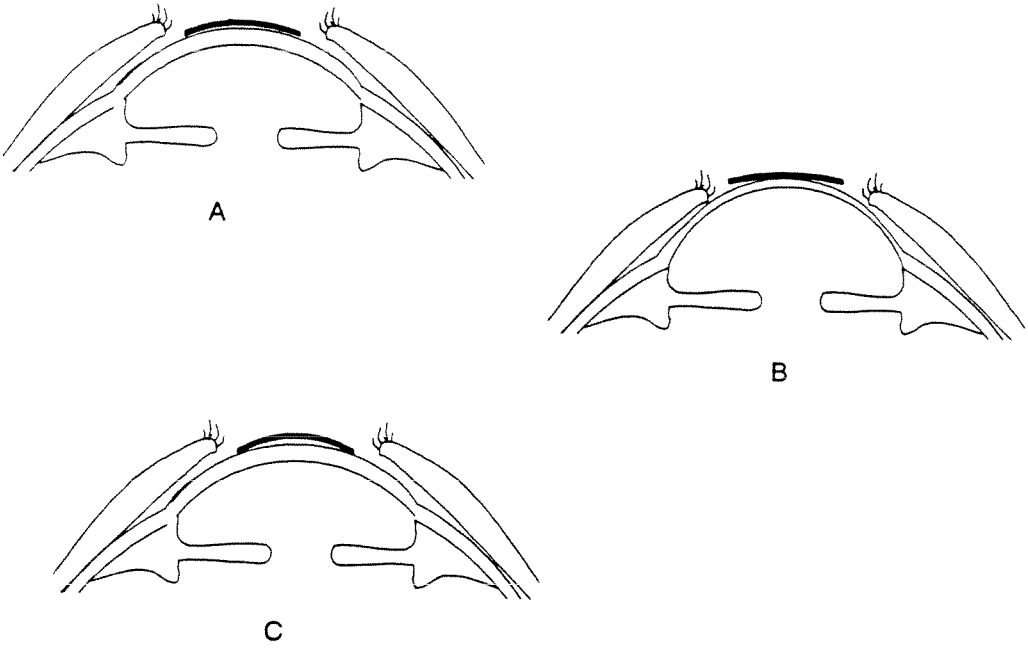
The severity of keratoconus may be classified according to the following table:

The dioptric powers indicated are found at the apex of the cone.				
	Mild	Moderate	Advanced	Severe
K reading:	< 45.00 D	> 45.00 D	> 52.00 D	> 60.00 D

Keratoconus

Treatment With Contact Lenses

Keratoconus may be successfully treated with contact lenses. The purpose of the lens is to cover the irregular astigmatism created by the distorted anterior surface of the cornea. The tear layer found betweeen back surface of the contact lens and the front surface of the cornea serves to fill in the corneal irregularities thereby providing a smooth optical surface. Rigid lenses are far more effective at accomplishing this purpose than are soft lenses. Contact lenses do not retard the progression of the disease nor do they porvide a cure, although the patient may experience long periods of natural remission. Successful fitting requires a combination of patience, diplomacy, and a great deal of skill. Spectacles are only helpful in early, mild cases.



A, Three-point fit -apical touch to the cone plus peripheral touch. Ideal for keratconus because of the distribution of weight of the lens, B, Flat fit-apical touch but poor centration because of rocking on the corneal cap and edge stand-off.
C, Steep fit-two--point touch with an air bubble between the lens and the cone. The apical cone is cleared.

Keratoconus

The keratoconis patient may be fit using one of the following approaches:

1. Small, steep, single cut PMMA or gas permeable lenses
2. Soper two-curved vaulted lenses
3. Thin lenses
4. Soft Lenses
5. Piggyback soft and rigid lenses

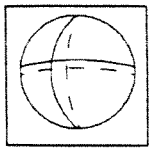
Single Cut Lenses: In the ideal fit, these lenses will touch the apical cone lightly and come to rest on the peripheral cornea in an area where there is little or no thinning. Lenses fit excessively flat may cause corneal abrasions. Lenses fit too steep to cause even minimal apecal clearance will result in the pooling of tears around the periphery of the cone. The pooling of tears can result in discomfort, hazing and bubble formation.

Soper Keratoconus Diagnostic Fitting Set: These lenses are designed with a steep base curve to accomodate the steep central cone area with a much flatter peripheral curve to rest on the surrounding cornea. It is essential to use a trial set containing base curves of 48.00 D to 60.00 D when fitting these lenses. The lens diameters range from 7.5 to 9.5 mm. A good fitting lens would show the following: apical clearance with circulation of tears between the apex of the cornea and the back of the lens, good centration, and some movement of the lens with blinking.

Thin Lens: These are sometimes referred to as Dura-T-Lenses. The key element in their design is that they are made thinner with a center thickness of about 0.08 mm. The reduced mass also reduces the lens weight by about 30% and assists in centration and patient tolerance.

Soft (Hydrophyllic) Lenses: They are useful for the keratoconus patient who cannot tolerate a rigid lens. They are fit with a relatively flat base curve 8.1 to 8.4 mm and a fairly large diameter 13 to 14 mm in order to provide lens stability. While soft lenses don't normally mask astigmatism, they have been shown to reduce a significant amount so that overcorrection with spectacle lenses becomes effective.

Piggyback Lenses: These are used when the patient cannot tolerate rigid contact lenses and when the use of auxiliary spectacles needs to be avoided. A soft lens of about 14 mm in diameter is placed on the cornea. A rigid lens is placed over it which may ride freely or be placed in a depression in the soft lens designed to hold the rigid lens in place. The diameter of the rigid lens usually ranges from 8.5 to 9.5 mm.



Keratoconus

Extending the Range of the Keratometer

The range of the keratometer may be extended in the steeper range by placing a +1.25 D lens over the aperture. It may be extended in the flatter range by placing a -1.00 D lens over the aperture.

Practice Test

The practice test for Part 5, Advanced Fitting Techniques, will be reviewed on Tape 7, side 1. Before taking the practice test, be sure to understand the material covered as thoroughly as possible.

___1. Contact lenses for the correction of aphakia have certain advantages over spectacle lenses. These include:

a. less peripheral aberration
b. less magnification
c. increased visual field
d. all of the above

___2. A conical-shaped cornea can best be fit with contact lenses through the use of:

a. trial lenses
b. keratometer readings
c. eye impressions
d. topogometer readings

___3. Prism ballast lenses can be useful for:

a. helping to reduce lens rotation
b. for cylindrical lenses
c. for some bifocals
d. all of the above

___4. Bitoric lenses are prescribed:

a. only when there is a small amount of corneal astigmatism and no residual astigmatism
b. when there is no corneal astigmatism
c. only for bifocal contact lenses
d. when there is at least 1.50 D of corneal astigmatism accompanied by a significant amount of residual astigmatism

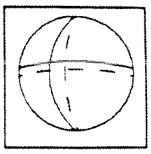
___5. In which of the following cases would a front toric lens most likely be prescribed?

a. K: 41.00 @ 00/41.25 @ 95
Rx: -1.25 - 0.25 x 95

b. K: 41.25 @ 175/42.50 @ 85
Rx: -2.75 - 1.00 x 005

c. K: 43.25 @ 165/43.37 @ 75
Rx: -4.00 -0.75 x 165

d. K: 42.00 @ 180/42.00 @ 90
Rx: -1.25 - 3.75 x 180



Practice Test

___6. K: 41.50 @ 90 / 42.75 @ 180
This "K" reading indicates:

a. astigmatism with the rule
b. astigmatism against the rule
c. oblique astigmatism
d. residual astigmatism only

___7. Rx: -4.50 + 2.50 x 95
K: 44.75 @ 90 / 45.00 @ 180

This Rx/K reading combination would most likely indicate the fitting of which of the following?

a. spherical contact lens
b. bitoric contact lenses
c. front toric contact lenses
d. monovision

___8. Early stages of keratoconus may be detected through the use of the_____.

a. slit lamp
b. radiuscope
c. keratometer
d. retinoscope

___9. The hyperflange lens design is useful in fitting which of the following?

a. high minus lenses
b. low minus lenses
c. high plus lenses
d. low plus lenses

___10. A patient who has been diagnosed as having keratoconus may present which of the following during a slit lamp examination?

1. thinning of the corneal apex
2. thinning of the pupil
3. thickening of the sclera

a. 1 only
b. 2 only
c. 1 and 2 only
d. 1, 2, and 3

Practice Test

___11. A contact lens is ordered with the following specifications:
K: 42.50 @ 180 / 43.50 @ 90
Rx: -11.25 - 0.75 x 180

Which of the following designs should be considered for this lens?

1. myoflange
2. prism
3. hyperflange

a. 3 only
b. 2 only
c. 1 only
d. 1, 2, and 3

___12. When fitting the keratoconus patient, which of the following lens styles could be considered?

1. aspheric
2. Soper
3. tangent streak
4. front toric with prism

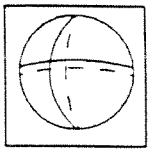
a. 1 and 2
b. 2 and 3
c. 3 and 4
d. 1, 2, and 4

___13. Certain styles of bifocal contact lenses may rotate without vision impairment. One example of these would be:

a. executive
b. fused crescent
c. tangent streak
d. annular

___14. When fitting a keratoconus patient, the lens should:

a. ride low
b. ride high
c. flatten the apex
d. align the apex



Practice Test

___15. Myoflange lenses for high plus prescriptions have the following advantages:

1. reduced center thickness
2. increased optical zone
3. reduced weight

a. 1 only
b. 1 and 3
c. 2 and 3
d. 1, 2, 3, and 4

___16. How well a soft toric lens performs on the cornea depends on several factors. These would include:

1. tightness of the lid
2. shape of the cornea
3. where the lids are positioned
4. lid shape

a. 1 only
b. 1 and 3
c. 2 and 3
d. 1, 2, 3, and 4

___17. A spherical rigid gas permeable lens fit on a cornea with a significant amount of with the rule astigmatism will show touch:

a. along the vertical meridian
b. along the horizontal meridian
c. along the oblique meridian
d. along the residual meridian

___18. It is possible to extend the range of a keratometer to 61.00 diopters through the use of an auxiliary trial lens with a power of:

a. -1.25
b. +1.25
c. -1.00
d. +1.00

Practice Test

___19. Single cut aphakic contact lenses can be well suited for patients with:

a. small apertures and flat corneas
b. large apertures and flat corneas
c. small apertures and flat corneas
d. small apertures and steep corneas

___20. K: 40.25 x 180 / 41.00 x 90
Rx: +12.50
A good lens design for this aphakic patient who also shows large palpebral fissures and flaccid lower lids would be:

a. back toric
b. myoflange lenticular
c. hyperflange lenticular
d. single cut

___21. When the power of a bifocal lens gradually changes from the central area of the lens to the periphery it is called:

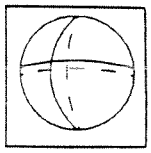
a. an aspherical lens
b. a tangent streak lens
c. a crescent lens
d. a monocentric lens

___22. It is possible to inhibit the rotation of a rigid bifocal contact lens by:

a. truncating the lens
b. using a prism ballast
c. a double slab off technique
d. all of the above

___23. Corneal sensitivity is generally reduced:

a. after cataract surgery
b. in cases of advanced presbyopia
c. in young children
d. when adapting to rigid contact lenses



Practice Test

___24. In managing the keratoconus patient, which piece of information is of little value?

a. shape of the cone
b. diameter of the cone
c. size of the cone
d. keratometry axis

___25. Residual astigmatism can be corrected through the use of:

a. spherical soft lenses
b. spherical rigid lenses
c. toric lenses
d. small diameter lenses

___26. Presbyopia may be corrected through the use of single vision contact lenses by placing the distance vision Rx in the dominant eye and near vision Rx in the nondominant eye. This technique is known as:

a. monovision
b. bivision
c. concentric lens fit
d. truncation

___27. When therapeutic soft lenses are prescribed, they are sometimes fit so ther is minimal movement. A lens to be fit in this manner would be indicated by:

a. keratoconus
b. striate keratopathy
c. bilateral aphakia
d. recurrent epithelial erosion

___28. Rx: -7.00 -2.75 x 170
K: 43.00 / 43.00

When using a trial lens and slit lamp to evaluate the fit of a soft toric lens, you notice the reference marking is positioned at seven-o-clock. What is the cylinder axis of the lens to be ordered?

a. 170
b. 180
c. 010
d. 020