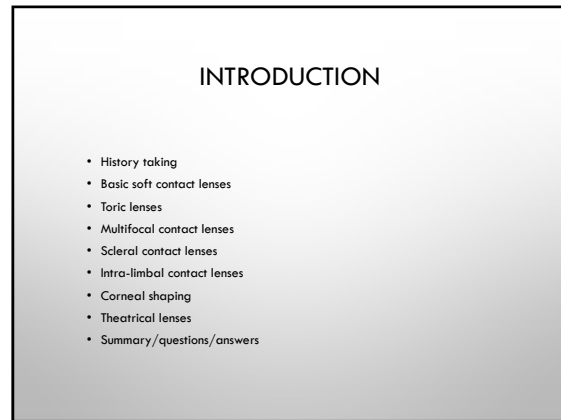
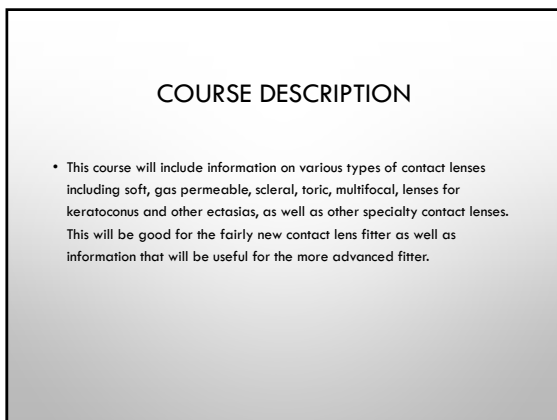


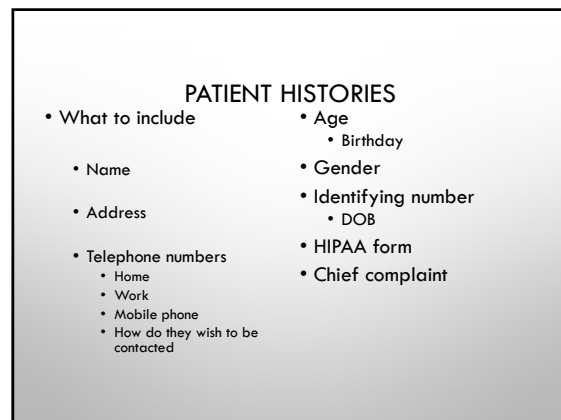
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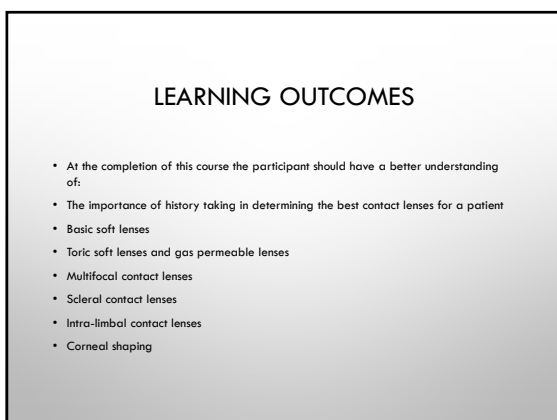
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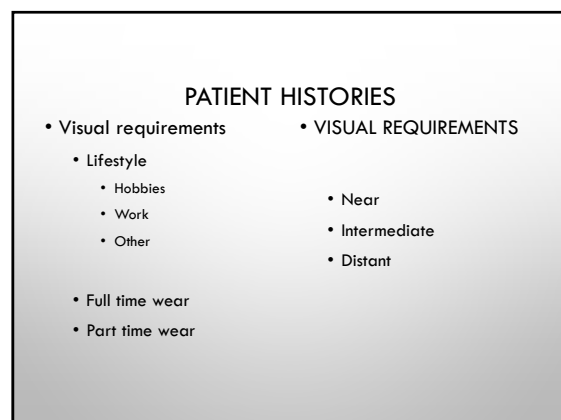
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5



3



6

PATIENT HISTORIES

<ul style="list-style-type: none"> • Ocular history - patient • Visual • Medications • Allergies • Diseases • Injuries • Surgeries 	<ul style="list-style-type: none"> • Ocular history - relatives • Visual • Medications • Allergies • Diseases • Injuries • Surgeries
---	---


7

VISUAL ASSESSMENT

<ul style="list-style-type: none"> • Corrected and uncorrected V/A • Slit lamp evaluation • Tear but • K readings • Refraction • IOP 	<ul style="list-style-type: none"> • Any abnormalities - must be recorded • Patient's blood pressure and pulse rate for future use, if necessary • Visual field • Refer patient back to doctor
--	--

10

PATIENT HISTORIES



<ul style="list-style-type: none"> • Medical history - patient • Heart • Diabetes • Thyroid • Blood pressure • Pregnancy • Cancer • Any other disease - headaches 	<ul style="list-style-type: none"> • Medical history - relatives • Heart • Diabetes • Thyroid • Blood pressure • Pregnancy • Cancer • Any other disease - headaches
---	---

8

WHAT IS BEST FOR THE PATIENT

- Basic soft
- Custom soft
- Gas permeable
- Torics (what type)
- Multifocals (what type)
- Hybrid
- Scleral
- Theatrical

11

PERSONAL ASSESSMENT

<ul style="list-style-type: none"> • What to include • Hair • Eyes • Skin • Nails • General appearances • General hygiene • Abnormalities of eyes, skin or nails 	<ul style="list-style-type: none"> • Other things to include • Tautness of lids • Size and position of eyes <ul style="list-style-type: none"> • Three sided white • Aperture size • Lid deformities or diseases • Blink rate • Tear break up time (TBUT)
--	--

9

WHAT IS BEST FOR THE PATIENT

- Assessment
- Rx
- Keratometry/topography
- Lifestyle
- Visual needs
- Pathology

12

KERATOMETRY

- With the Rule Astigmatism
- Against the Rule Astigmatism
- Oblique Astigmatism

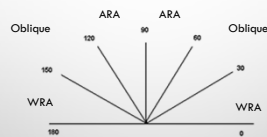
13

AGAINST THE RULE ASTIGMATISM

- RX
- - 2.00 - 2.00 X 90
- K
- 44.00@90/46.00@180

16

CORNEAL ASTIGMATISM



14

OBLIQUE ASTIGMATISM

- RX
- - 2.00 - 2.00 X 135
- K
- 44.00@135/46.00@45

17

WITH THE RULE ASTIGMATISM

- RX
- - 2.00 - 2.00 X 180
- K
- 44.00@180/46.00@090

15

SPHERICAL EQUIVALENT

- -2.00 - 1.00 X 180

18

SPHERICAL EQUIVALENT

- $-2.00 - 1.00 \times 180$
- $\frac{1}{2}$ of the cylinder power
 - Added to the sphere power

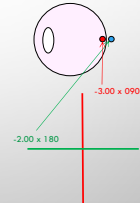
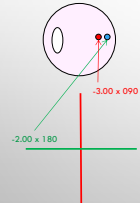
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SPHERICAL EQUIVALENT

■ -2.50 sph

$$-2.00 - 1.00 \times 180$$

$$-2.00 - 1.00 \times 180$$



22

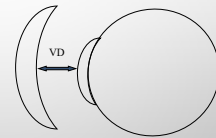
SPHERICAL EQUIVALENT

- $-2.00 - 1.00 \times 180$
- $\frac{1}{2}$ of the cylinder power
 - Added to the sphere power
- Becomes the spherical equivalent
- -2.50 sph

20

VERTEX DISTANCE

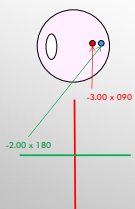
- When to compensate?
- Spectacles - over ± 7.00
- Contact lenses - over ± 4.00



23

SPHERICAL EQUIVALENT

$$-2.00 - 1.00 \times 180$$



21

RADIUS VS. DIOPTERS

- Radius = curvature
- Diopters = power
- Conversion factor: 337.5

24

RADIUS VS. DIOPTERS

- Example – K-reading of 45.00 D
 - Using conversion factor, radius of curvature =
 $337.5 \div 45.00 \text{ D} = 7.50 \text{ mm}$
- If using a higher index material, D increases for same radius of curvature

25

ACCOMMODATION

- Myopes need extra plus power at near to overcome lack of convergence
- Loss of base out prism
- Hyperopes benefit

28

BASIC SOFT CONTACT LENSES

26

FITTING SOFT CONTACT LENSES

- Patient information
 - Keratometry powers
 - Curvature
 - Horizontal visible iris diameter (HVID)
 - Manifest rx

29

FITTING SOFT CONTACT LENSES

- Contraindications
 - Heavy depositors
 - Dry eyes
 - Irregular corneas
 - Gaseous or contaminated environments

27

FITTING SOFT CONTACT LENSES

- Contact lens parameters
 - Base curve
 - Diameter
 - Power

30

DETERMINING BASE CURVE

- Flat
- Medium
- Steep

31

EVALUATING THE FIT

- Insert lens
- Let settle
- Allow to equilibrate
- Evaluate
 - Criteria
 - Coverage
 - Movement
 - 3-point touch
 - VA
 - Comfort

34

DETERMINING DIAMETER

- HVID
- Minimum lens diameter

32

PROPER LENS FIT



35

DETERMINING POWER

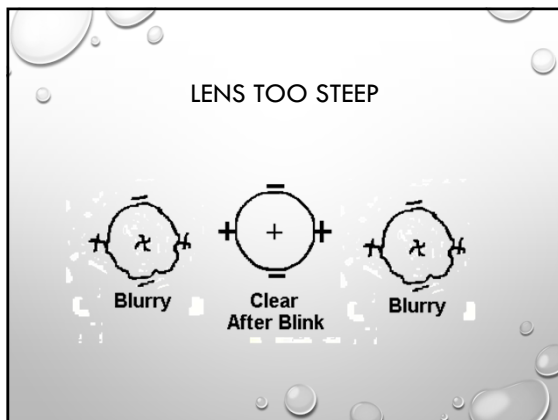
- Determine the manifest rx
- Vertex each meridian as necessary
- Sphere power, order the vertex'd power
- Compound power, discuss toric options or fit with spherical equivalent

33

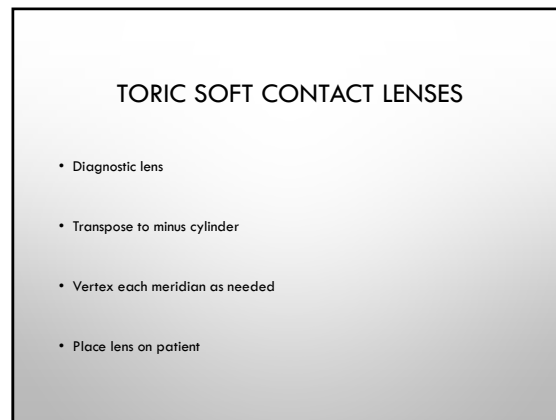
LENS TOO FLAT



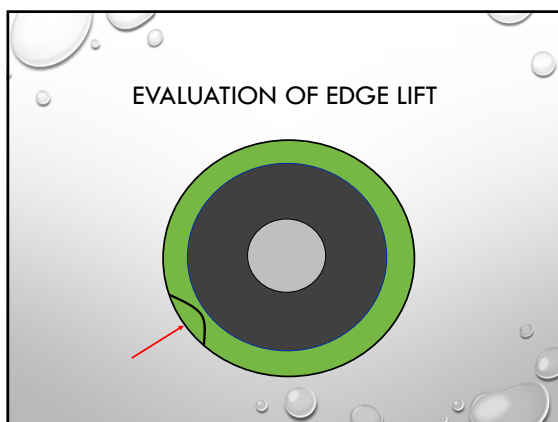
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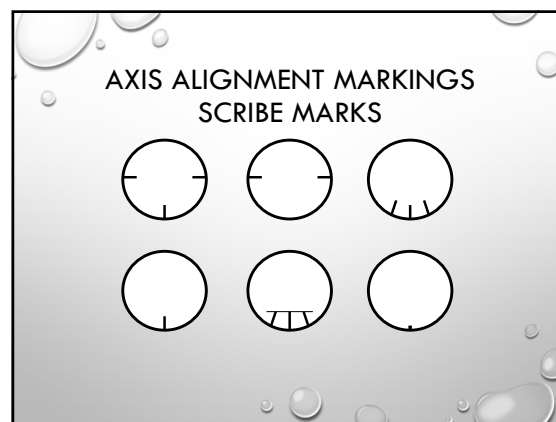
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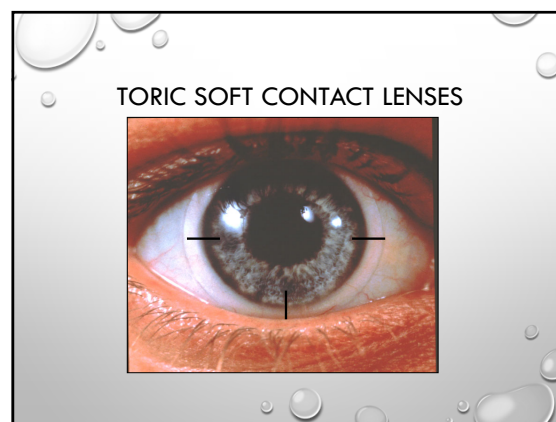
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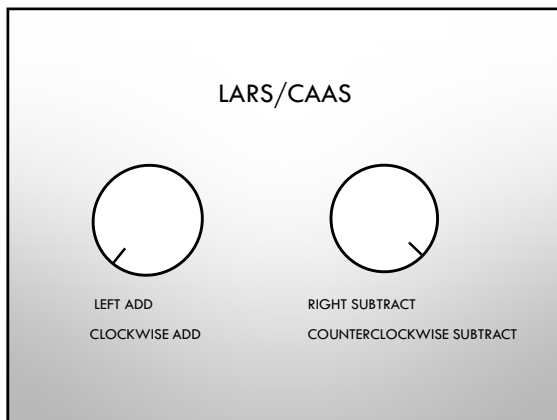
41



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42



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TORIC GAS PERMEABLE CONTACT LENSES

- **Bitoric GP lenses**
 - When the corneal cylinder is $\geq 2.50D$
 - Although if limbus-limbus toricity is exhibited via topography, individuals with as little as 2D of toricity could benefit
 - Used when refractive cylinder matches or nearly matches corneal toricity
 - Bitoric designs have toric back-surface base curve radii and toric front-surface powers to optimize both the lens-to-cornea fitting relationship and the quality of vision

46



44

TORIC GAS PERMEABLE CONTACT LENSES

- **Back-surface (only) toric lens**
 - Back-surface designs indications similar to bitoric designs
 - (i.e., High corneal astigmatism), and the back surface is identical to that of bitoric designs. However, back toric use is limited, as all back toric designs induce a residual astigmatism equal to anywhere from one-third to one-half of the back-surface toricity of the lens (amount depends upon the refractive index of the material).
 - To design a back toric lens, divide the spectacle cylinder by 1.5 and use the end result as the difference between the flat and steep base curve.
 - An indication for back toric lenses is when the refractive cylinder is 33-50 percent greater than the corneal toricity. In this case, the induced cylinder will correct for the residual astigmatism.

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TORIC GAS PERMEABLE CONTACT LENSES

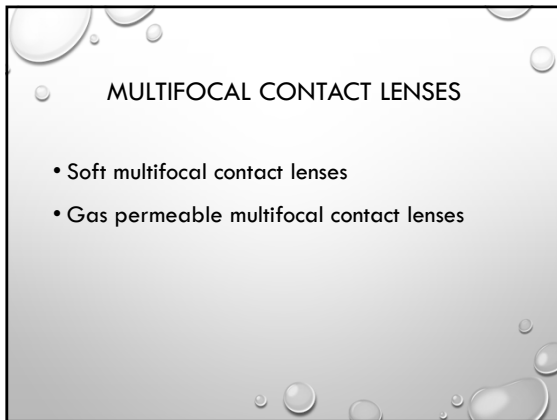
- **When to fit**
 - When corneal and/or residual astigmatism is present
 - Fit or vision of spherical GP is compromised
 - Or vision of a soft lens is compromised

45

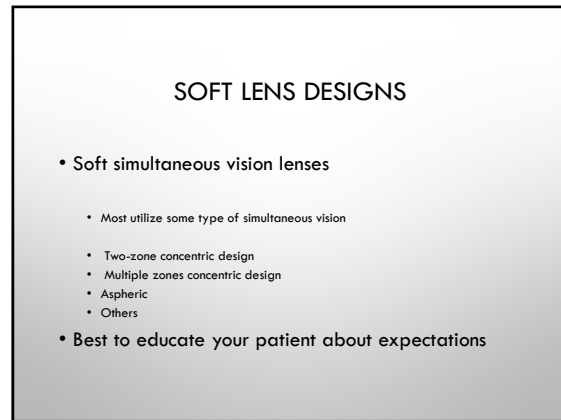
TORIC GAS PERMEABLE CONTACT LENSES

- **Front Toric Design**
 - Spherical/almost spherical cornea but has refractive cylinder
 - Ordered with sphere, cylinder and axis
 - Generally today, soft toric contact lenses are used more widely, now.
 - Front Toric Designs are usually only used for soft toric lens failures.
 - Limitation is the need for prism ballast to stabilize which will increase inferior decentration.
 - Vision can fluctuate due to blink-induced rotation

48



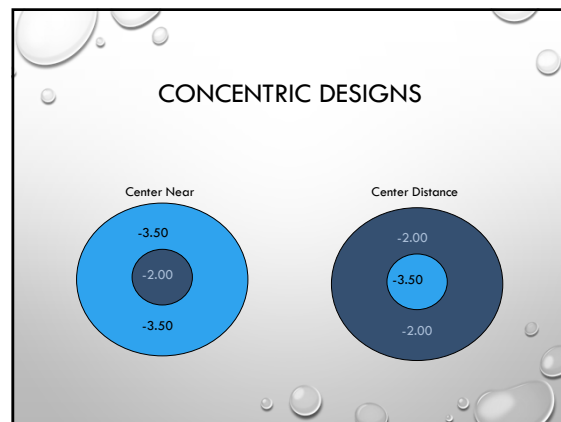
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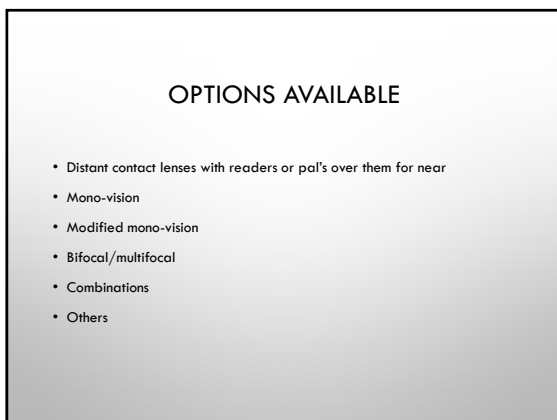
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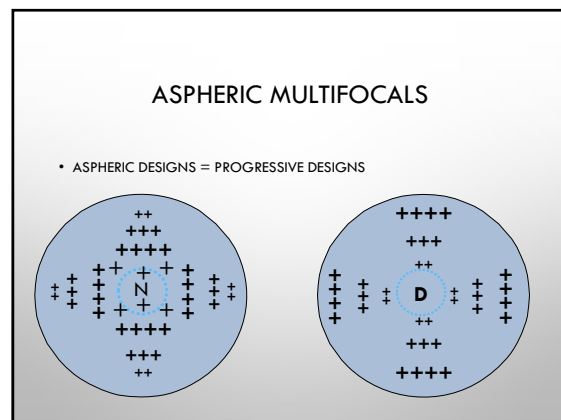
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53



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TIPS

- Allow lens to equilibrate on each eye (first look at 10 minutes)
 - (May take up to 30 - 45 minutes for new wearers)
- Lenses should center well and provide adequate movement
- Vision evaluation should always be done in normal room illumination
- All testing should be out-of-the-phoropter. Hand-held ophthalmic lenses are best
- Check distance acuity binocularly. Over-refract if necessary in 0.25D steps to best visual
- Acuity with both eyes open
- Check near acuity binocularly, with distance over-refraction still in place

55

IMPORTANT INFORMATION TO INCLUDE

- Spectacle refraction
- K readings or topographies
- Add power
- Pupil size
- Horizontal visible iris diameter (HVID)

58

GAS PERMEABLE MULTIFOCAL CONTACT LENSES

56

IMPORTANT INFORMATION TO HAVE

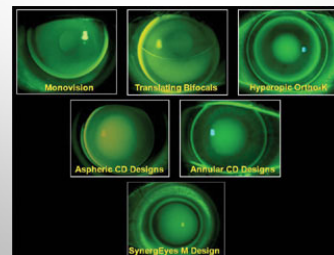
- Pupil size
- Corneal diameter
- Fissure size
- Tear film assessment
- Lower lid tonicity
- Lid-to-limbus position (superior and inferior)
- Lid-to-pupil relationship
- Eye dominant
- Positioning of the current GP lenses
- Type of current lenses worn (parameters and fit)
- Whether they are a past monovision wearer or other CL type wearer

59

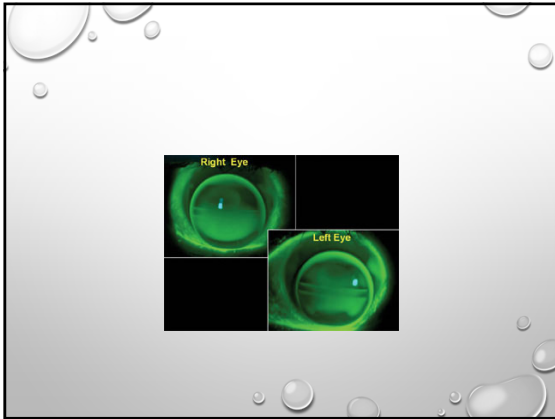
IMPORTANT

- Patients' expectations
- Wearing time expectation
- Visual demands
 - Distant
 - Intermediate
 - Near
- Amount of add power needed

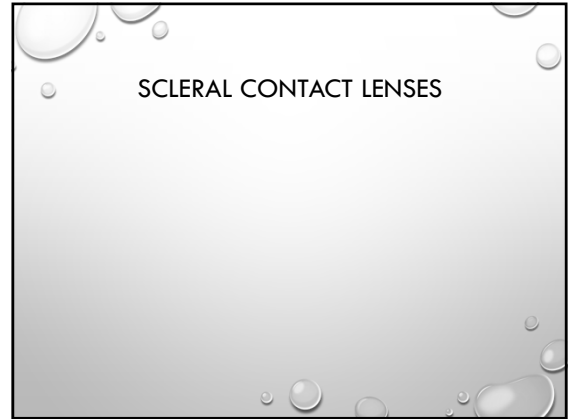
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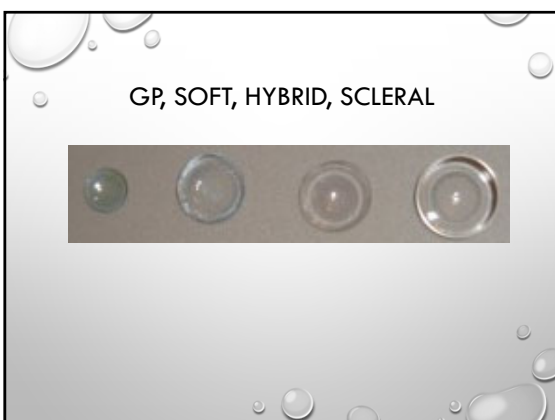
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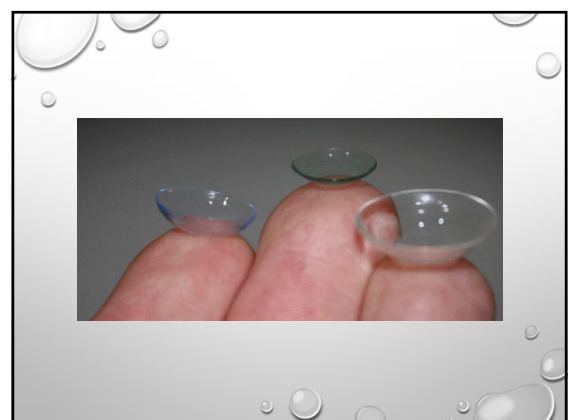
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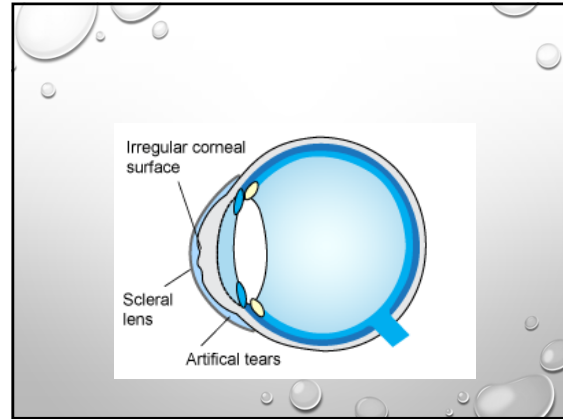
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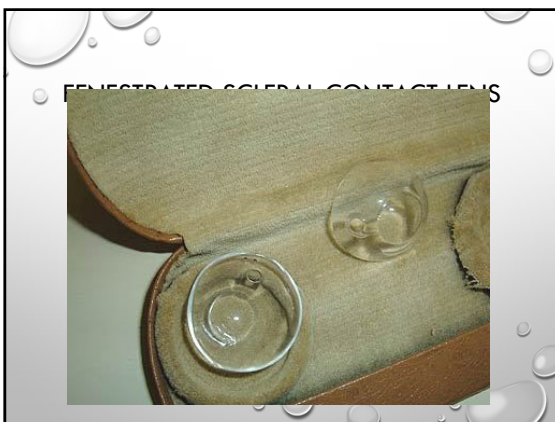
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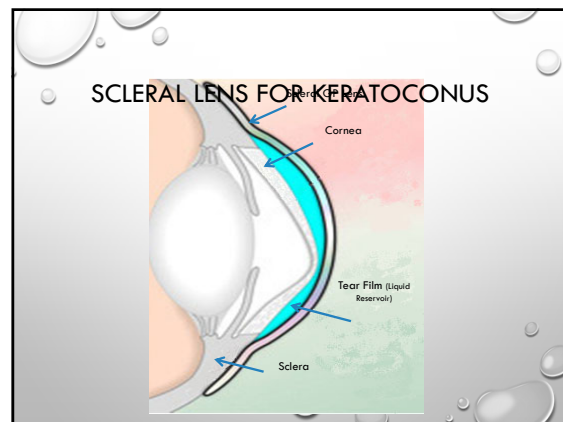
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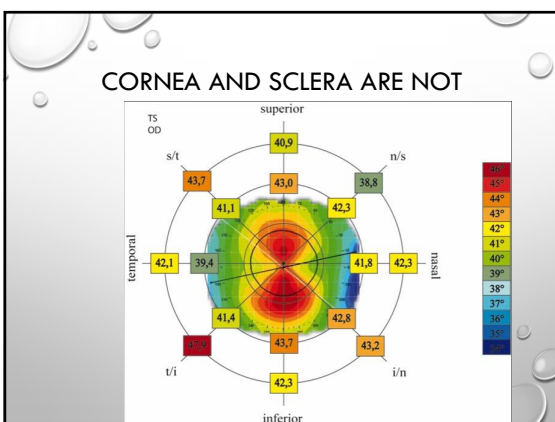
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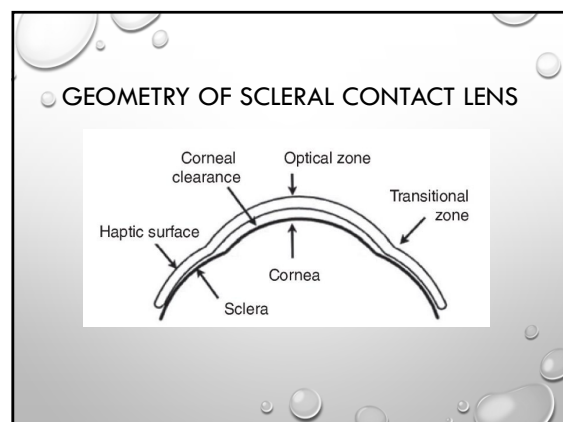
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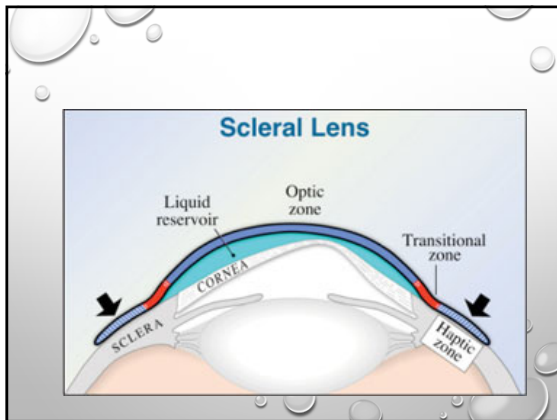
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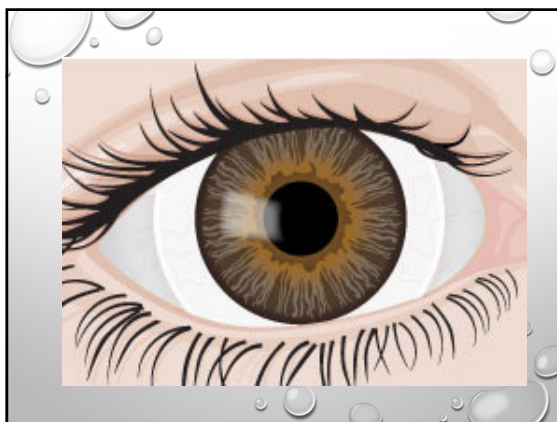
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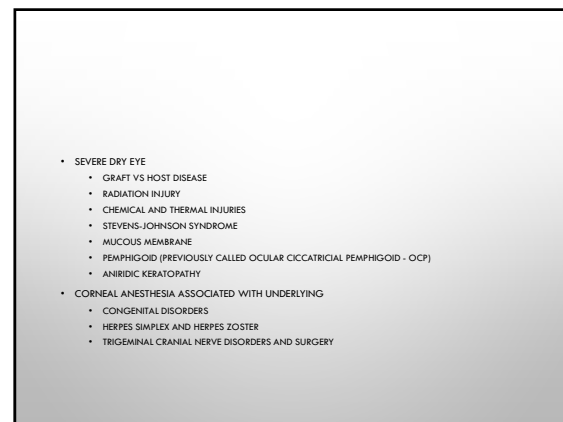
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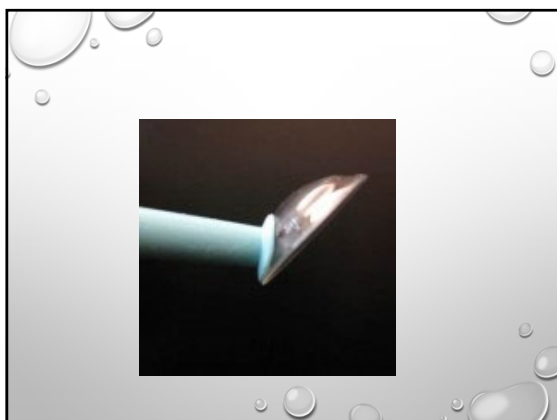
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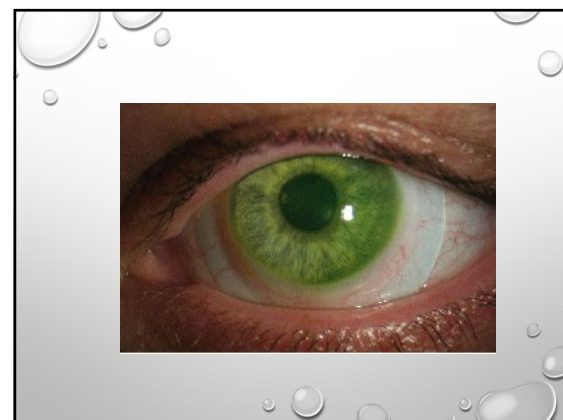
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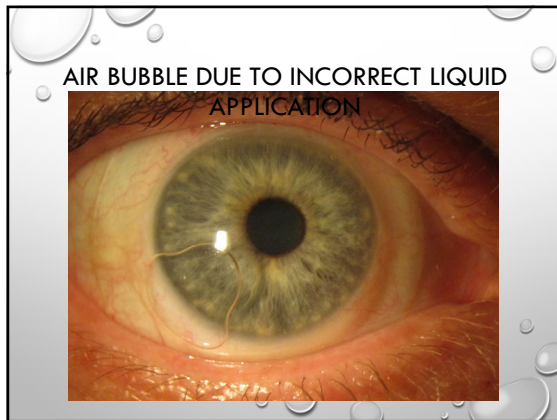
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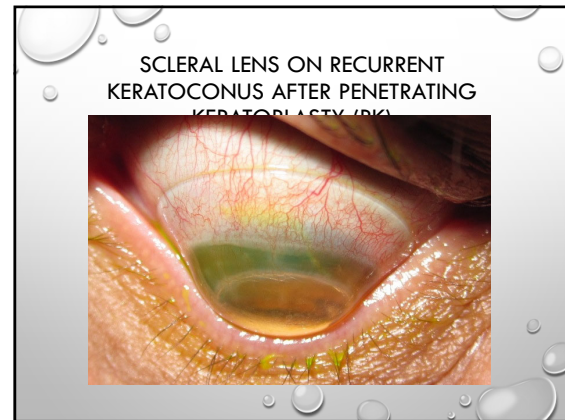
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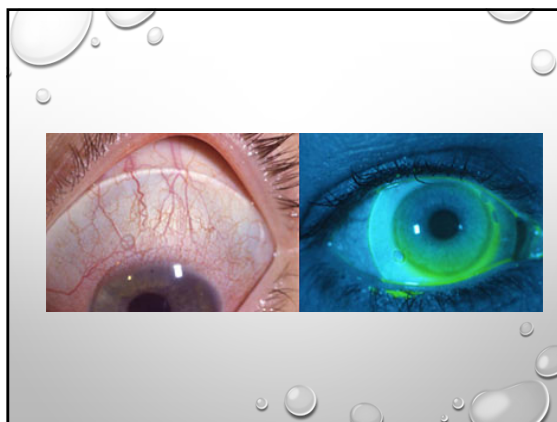
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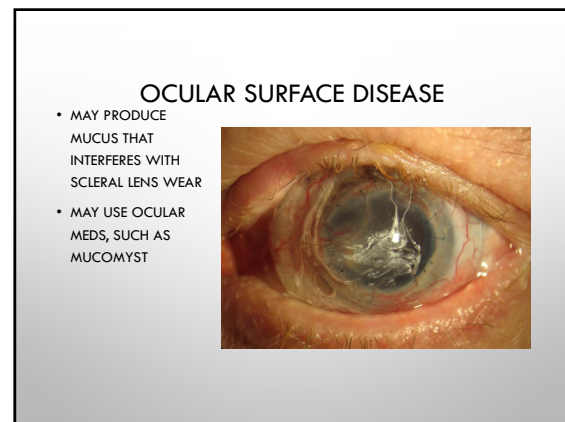
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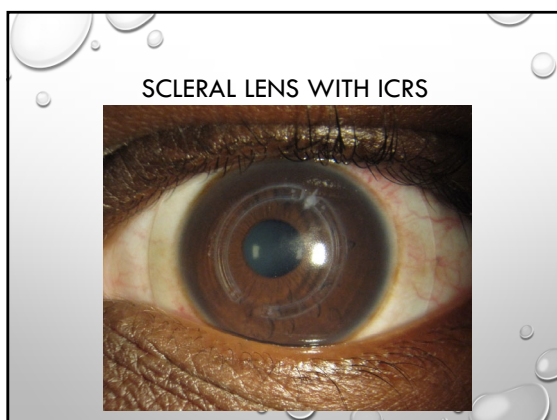
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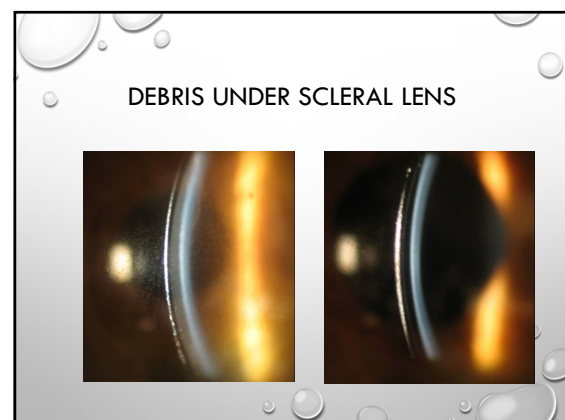
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OPTIONS FOR KERATOCONUS

LARGE DIAMETER GAS PERMEABLE LENSES. SOME CONES MAY REQUIRE LARGE DIAMETER AND INTRALIMBAL LENSES TO PROVIDE BETTER VISION AND IMPROVED COMFORT.

SPECIALLY DESIGNED GAS PERMEABLE LENSES. THESE LENSES ARE DESIGNED IN SUCH A WAY THAT THE INTERIOR CURVES VAULT A PROTRUDING AREA OF THE CORNEA. THERE ARE DIFFERENT CONE DESIGNS TO CHOOSE FROM, DEPENDING ON THE PATIENT'S CONDITION.

HYBRID CONTACT LENSES. SOME PEOPLE WOULD STILL PREFER TO USE SOFT CONTACT LENSES BECAUSE THEY ARE MORE COMFORTABLE TO WEAR. THEY CAN GET THAT WITH THESE CONTACT LENSES. THESE ARE GAS PERMEABLE CENTER CONTACT LENSES THAT HAVE A SOFT LENS SKIRT ATTACHED TO THE OUTSIDE. THEY ARE COMFORTABLE TO WEAR WHILE PROVIDING THE OPTICS OF GAS PERMEABLE LENSES.

85

ULTRAHEALTH

Clear Vision & Comfort

Healthy & Refreshing
Advanced design and materials enables a healthy flow of tears and increased oxygen to the eye.

Hassle-Free Wear
Soft portion of the lens keeps the debris out and the lens in.

Sun Protection
Lens protects your eyes with a UVA & UVB blocker.

Crystal Clear Vision
Rigid center provides clear, crisp vision.

All-Day Comfort
Soft part of lens provides all-day comfort.

Easy to Handle
Same size as a soft lens.

88

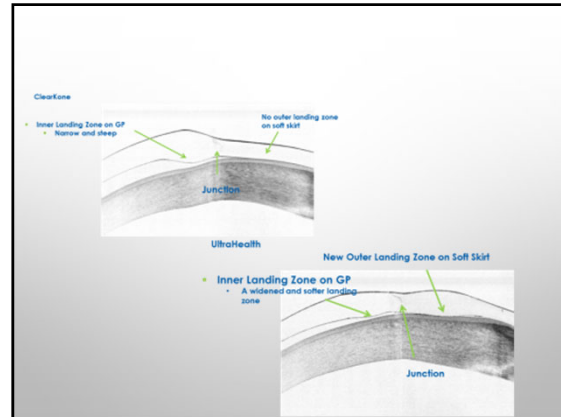
OPTIONS FOR KERATOCONUS

SEMI-SCLERAL CONTACT LENSES. THEY ARE ABOUT THE SAME SIZE AS SOFT CONTACT LENSES BUT THEY ARE MADE OF HYPER OXYGEN PERMEABLE MATERIALS. THEY FIT BEYOND THE CORNEA AND THEY EXTEND TO THE WHITE PART OF THE EYE.

WAVE CUSTOM DESIGNED CONTACT LENSES. THESE CONTACT LENSES ARE TOPOGRAPHY BASED DESIGNED. THE CORNEAL MAP WILL BE LOADED INTO A CAD LENS DESIGNING SOFTWARE. THE SOFTWARE WILL BE USED TO DESIGN CONTACT LENSES THAT ARE SPECIFICALLY MADE FOR KERATOCONUS.

PIGGYBACK CONTACT LENS SYSTEM. SOFT LENSES WILL BE PLACED ON THE PATIENTS EYES. AFTERWARDS, SPECIALLY FIT GAS PERMEABLE CONTACT LENSES WILL BE PLACED ON TOP OF THE SOFT CONTACT LENSES.

86



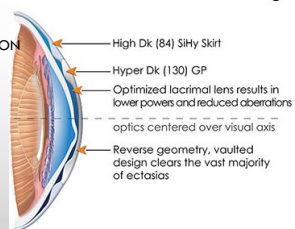
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CLEARKONE HYBRID BY SYNERGEYES

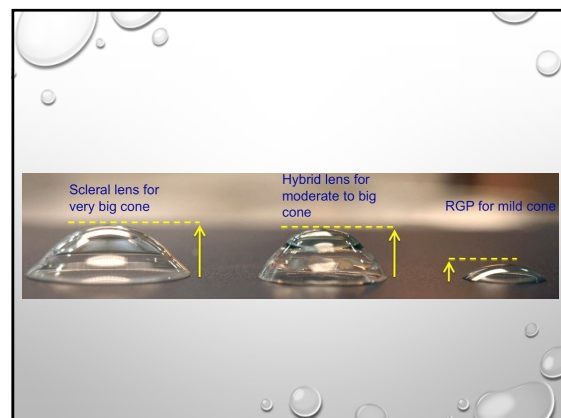
RECOMMENDED FOR:

- KERATOCONUS
- PELLUCID MARGINAL DEGENERATION
- RK
- PRK
- LASIK
- INDUCED ECTASIAS
- MOST IRREGULAR CORNEAS

UltraHealth™ Vaulted Lens Design



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INTRA-LIMBAL CONTACT LENSES

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REFIT WITH INTRA-LIMBAL LENS

94

INTRA-LIMBAL LENSES

- LARGER DIAMETERS
 - GENERALLY 11.2MM (10.4, 10.8, 11.6 OR 12.0MM. OZS ARE 1.8 LESS THAN DIAMETERS)
- WORKS BEST ON PELLUCID MARGINAL DEGENERATION, POST GRAFTS, LOW CONES, GLOBUS CONES AND OVAL CONES

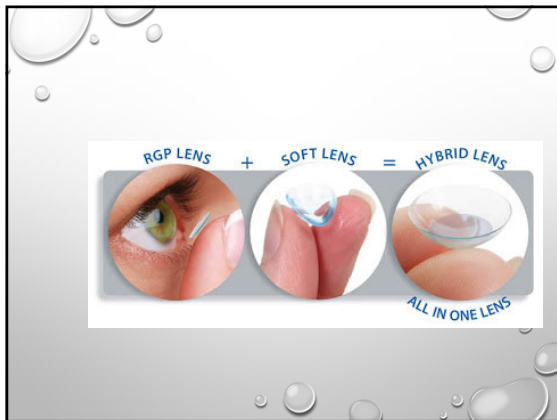
92

3-9 STAINING WITH STANDARD GP LENS

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HYBRID LENSES

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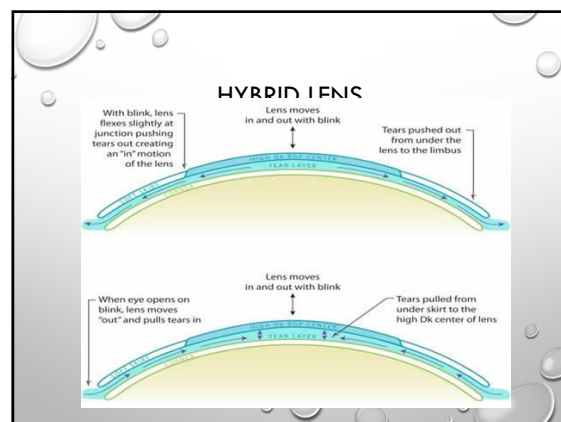
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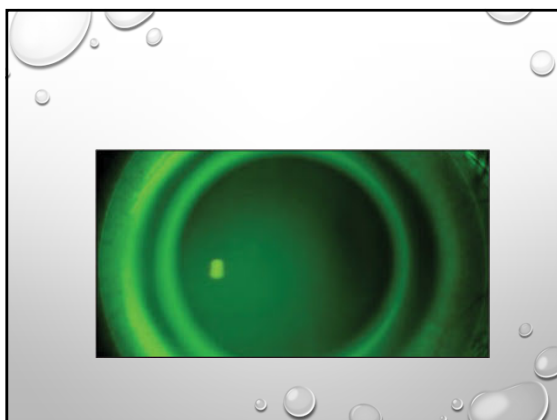
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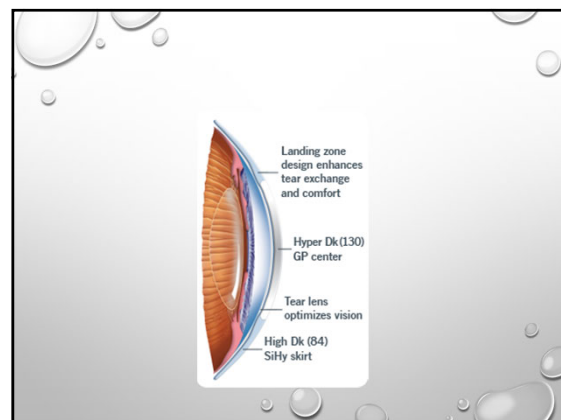
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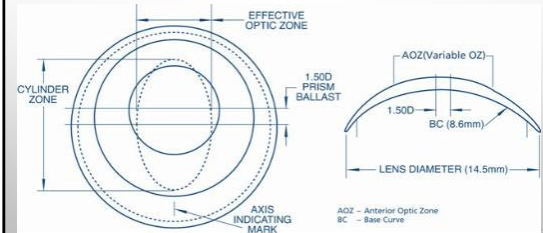
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INTRA-LIMBAL LENSES

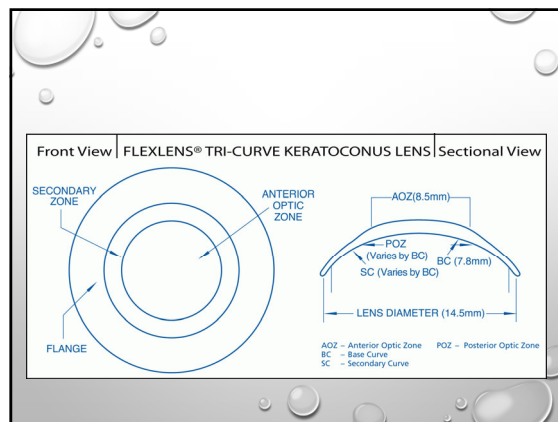
- VAULTS LARGER VARIETIES OF ECTASIAS

103

FLEXLENS TORIC SOFT LENS

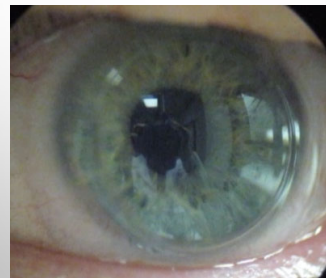


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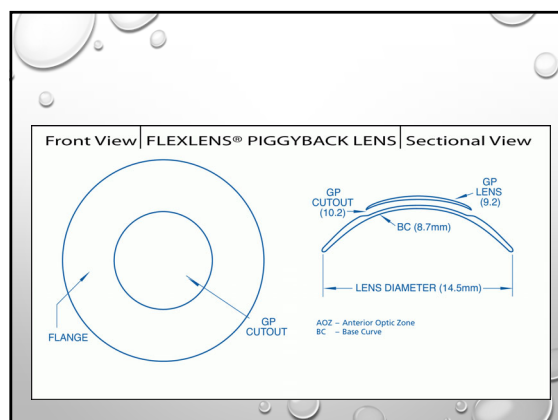


104

PILLOW LENS



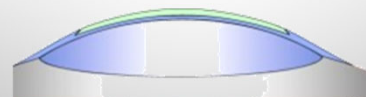
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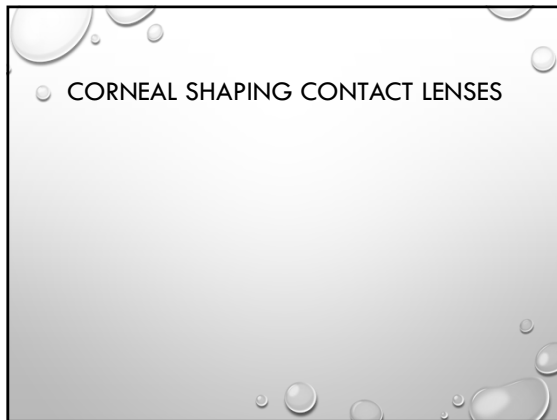
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PILLOW LENS

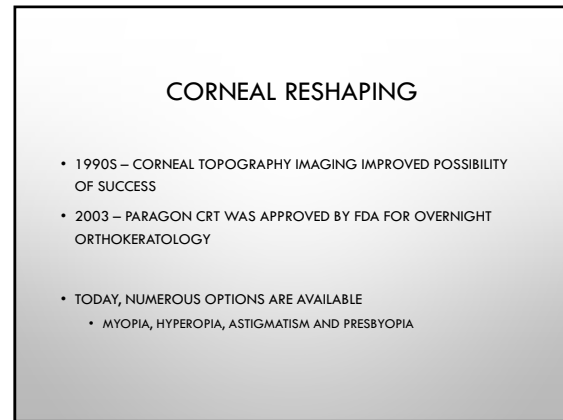
- VARIATION OF PIGGY-BACK LENS



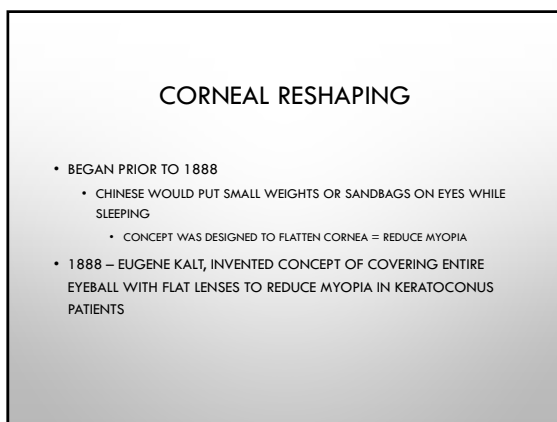
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109



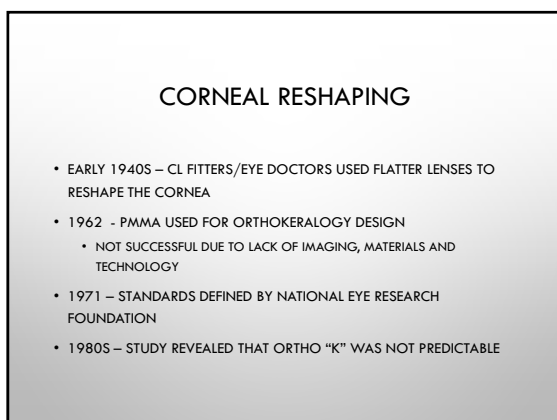
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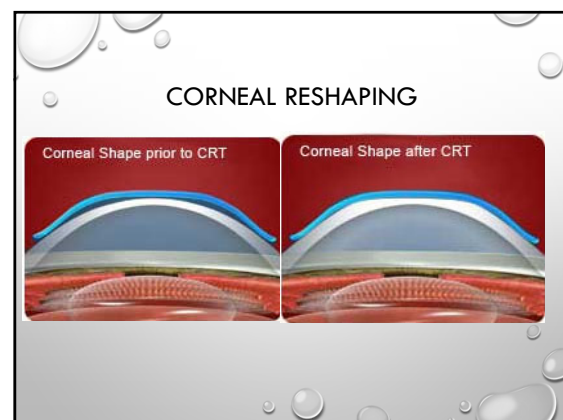
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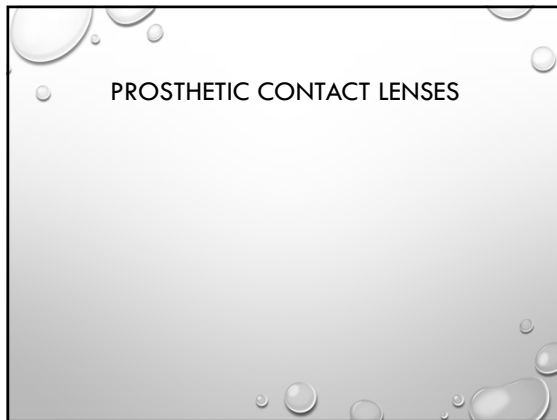
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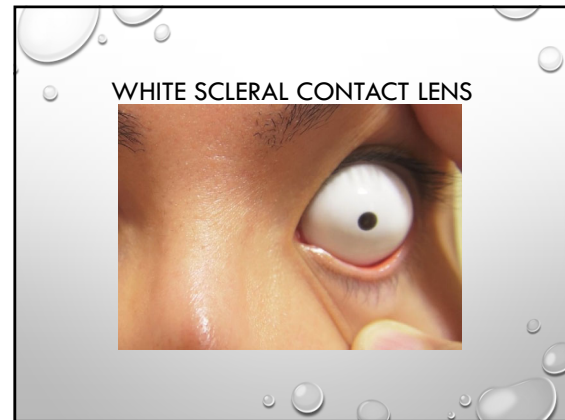
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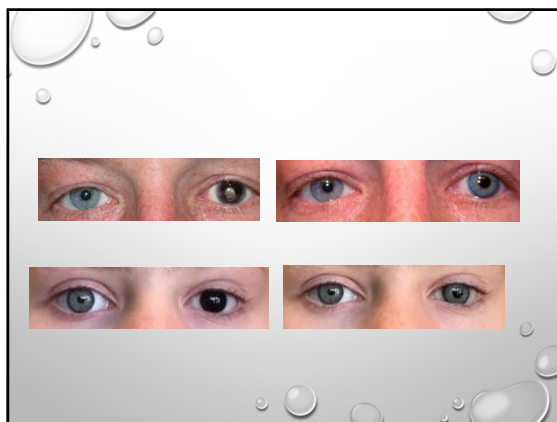
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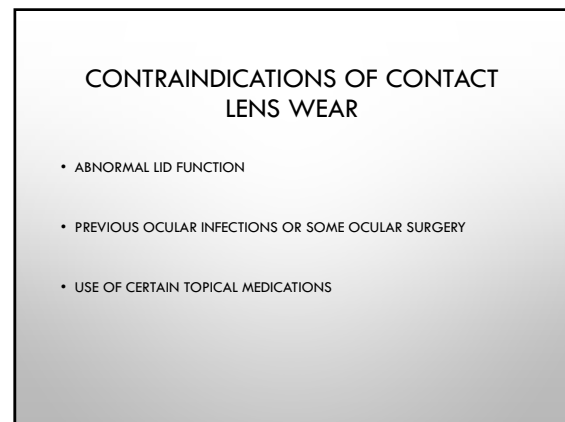
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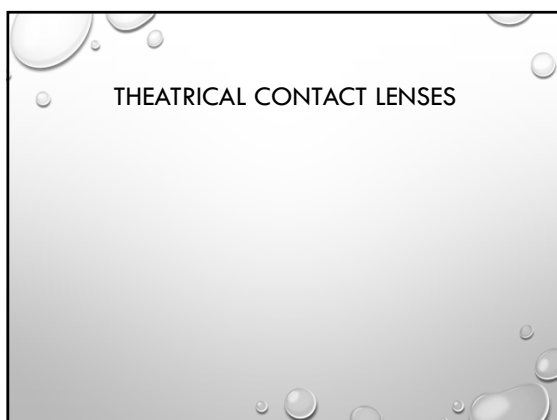
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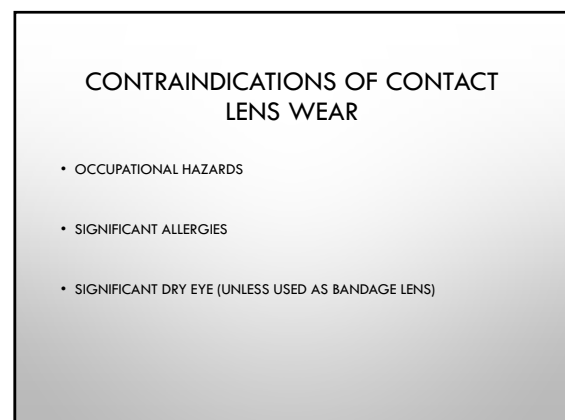
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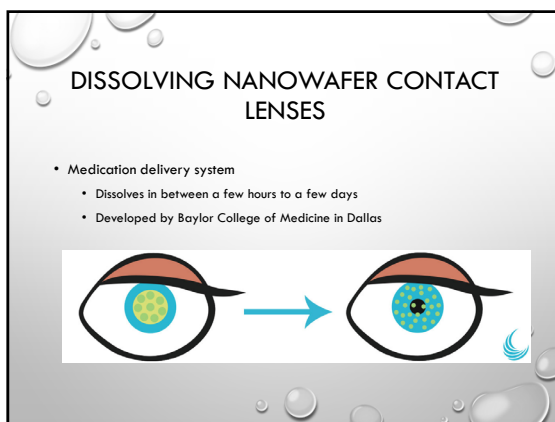
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124



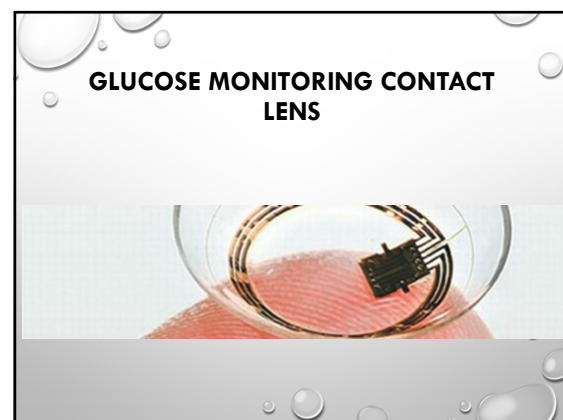
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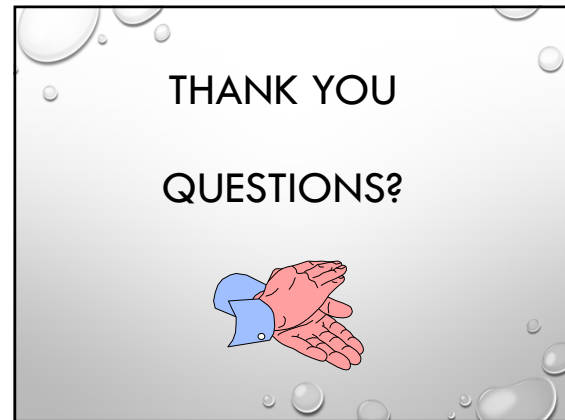
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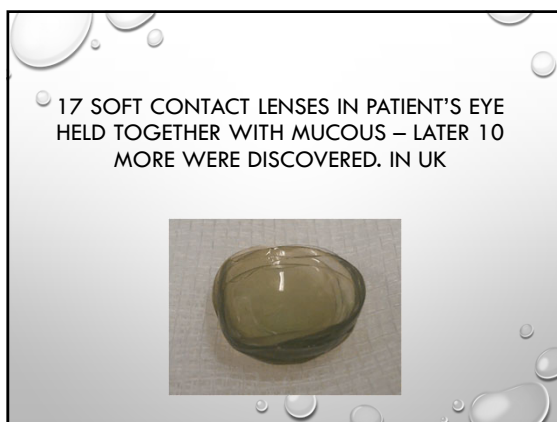
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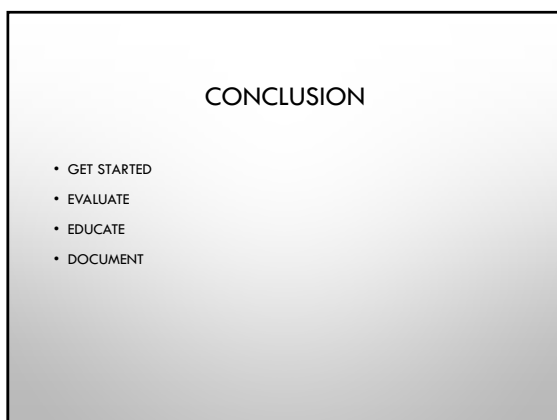
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