Your best RGP Fit ever - Guaranteed !

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Objectives

To review definitions, conditions and techniques in the use of rigid gas permeable contact lenses.

To introduce the advantages of using modern contact lens materials with different characteristics and attributes.

To provide fitting trick and tips using aspheric, multicurve, toric, asymmetric, quadrant-specific and reverse geometries for difficult corneal conditions.

To discuss new and old ideas of advanced lenses like intra-limbal and extra-limbal (miniscleral) contact lenses.

Timetable

Introduction and Background	5‘
Competition	12‘
Definitions, Conditions, Technics	8‘
Short Break	1‘
Modern Materials	7‘
Basic Fit‘s (spheric, aspheric, multicurve)	8‘
Advanced Fit‘s (sphero-toric, toric)	10‘
Short Break	1‘
Specialty Fit‘s (Keratoconus, Keratoplasty, post-Trauma, post-OP, Aphakia, Ortho-K)	25‘
Presbyopia Fit‘s (Bi-, Multifocal)	8‘
Short Break	1‘
Competition Results	15‘
Conclusion and Discussion	5‘

Introduction and Background

Dipl.Optometrist/Contact Lens Specialist (SHFA)
Master of Science in Clinical Optometry (PCO)
Master of Medical Education (University Bern)

In Privat CL practice since 1989

Professional Head of the CL department at the University Eye Clinic Basel since 2000

Optometrist and Laser technician at the VISTA Eye Clinic Basel (2002)

CL fitting rate : 50% RGP
50% Hydrogel CL

Competition

6 cases of unsuccessfull RGP Fit‘s

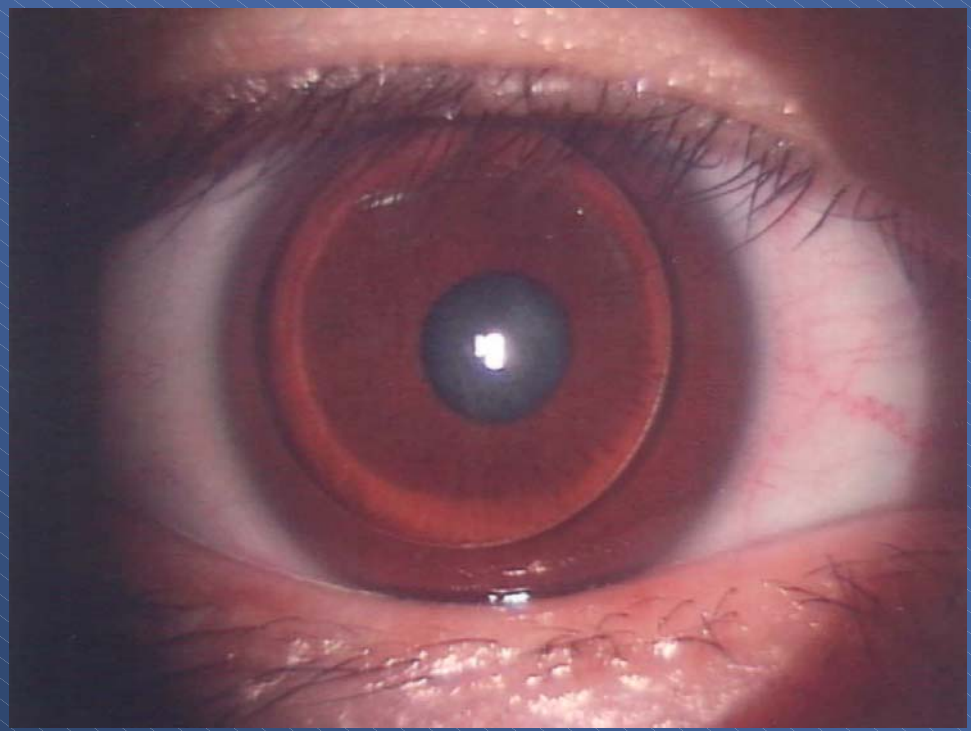
Please make notes :

What is the possible cause of the problem ?

What would you do different ?

What would you try next ?

Case 1



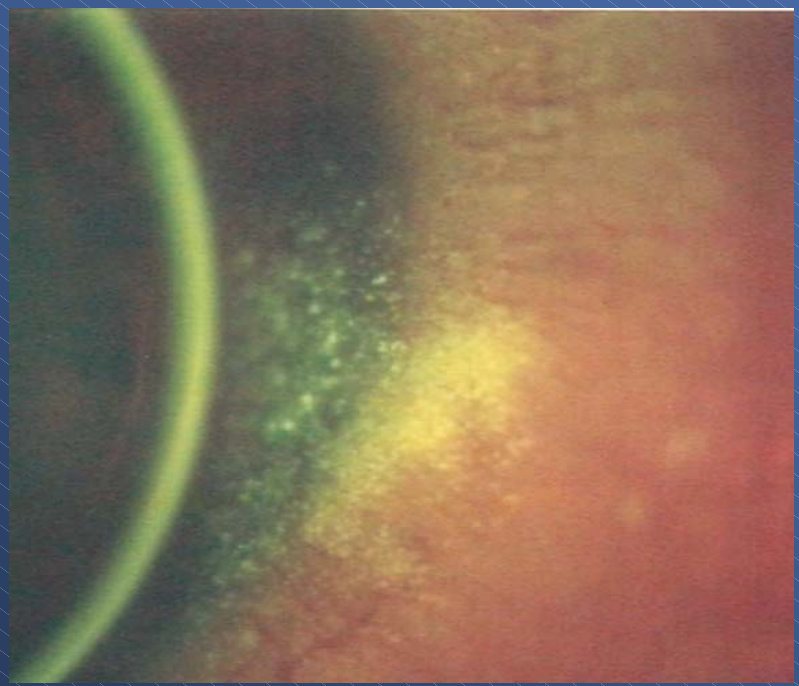
Foreign body sensation :

- 17 y/o Girl
- New RGP fit 3 weeks ago
- Can‘t wear the lenses more than 3 hours per day
- Does not get better
- Wants to quit CL wear

Case 2

3/9 o‘clock Staining :

- 26 y/o man
- Myopia of –15 dpt
- Works in an office
- Always red eyes in the evening



Case 3

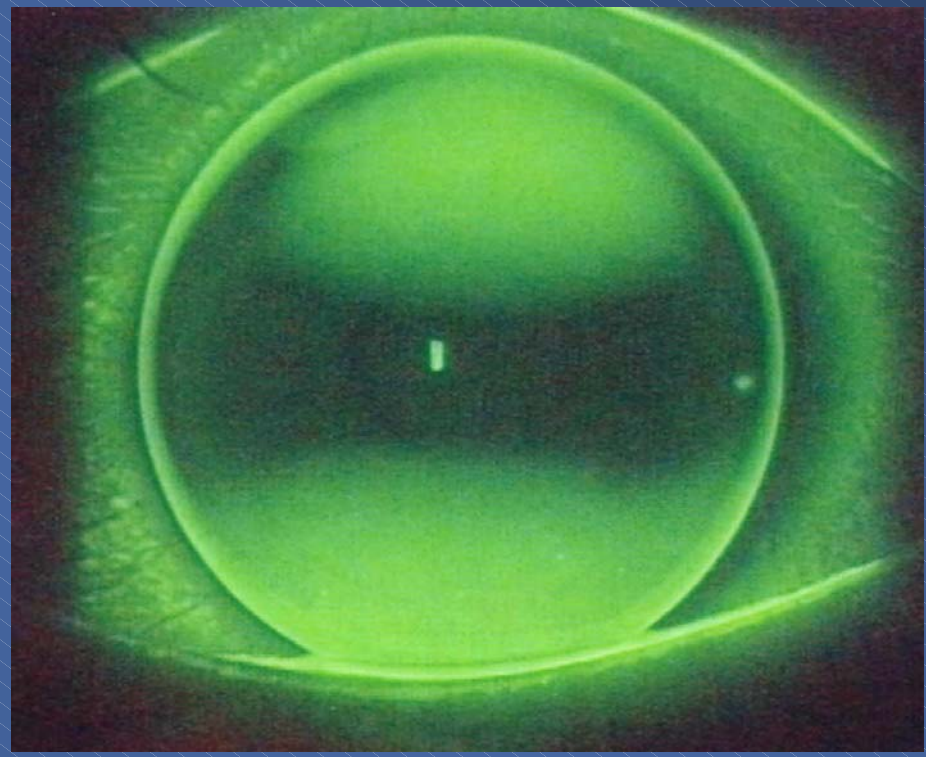
Sticking (tight) lens :

- 12 y/o Girl
- Hyperopia +8 dpt
- Hurts when she takes off her CL‘s

Case 4

Foreign bodies :

- 23 y/o man
- Hobby: mountain biking
- Astigmatic eye
- Handicapped by foreign bodies under the CL‘s
- Has lost lenses in the past



Case 5

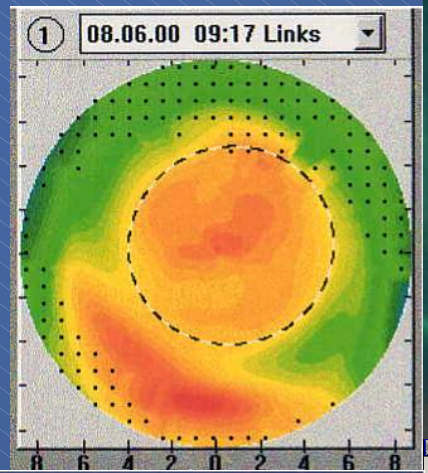
Vision fluctuations :

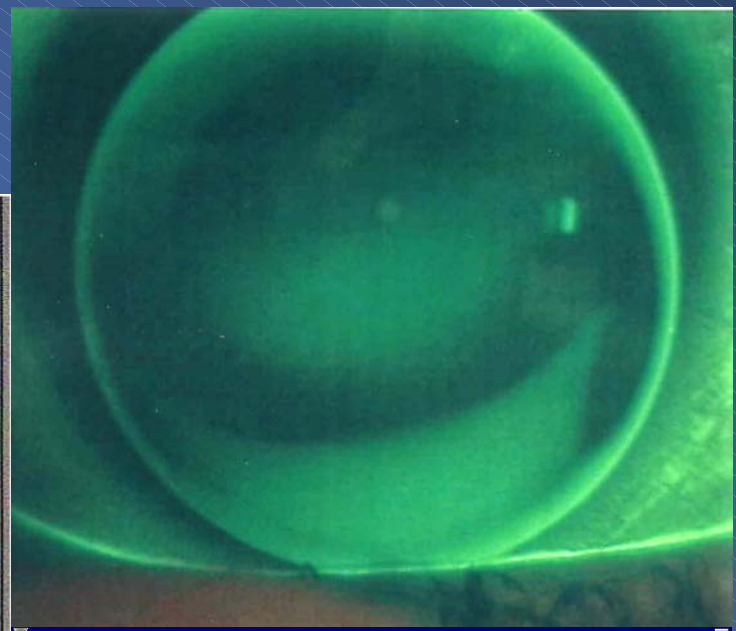
- 52 y/o woman
- Consultant for cosmetic products
- Vision fluctuations starts after a few hours and are getting worse every additional hour
- CL‘s are 2 years old
- Uses All-in-one Solution only

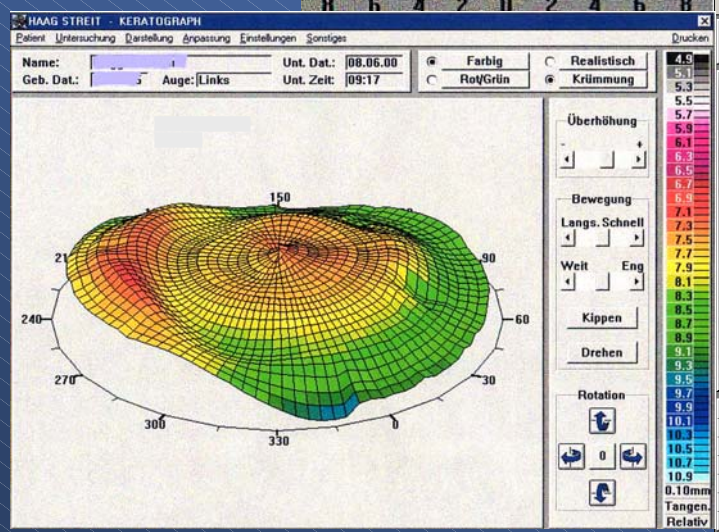
Case 6

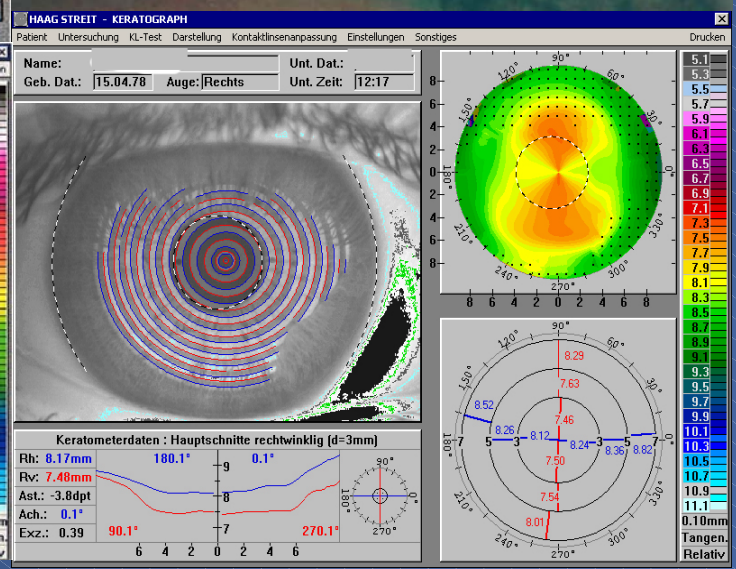
Spectacle Blur :

- 36 y/o man
- Regular Astigmatism -3,8 dpt
- Has been wearing RGP‘s for 5 years
- No problems, except after re-moving CL‘s for wearing eyeglasses









Definition, Conditions, Techniques

Rigid Gas Permeable (RGP)

or

Gas Permeable (GP) Contact Lenses

are optical-refractive, medical devices, fitted to the biological structure of the anterior eye segment, to correct monocular and binocular ametropia.

Definition, Conditions, Techniques

The contact lenses are part of the biological anterior eye segment system and the surrounding environment :

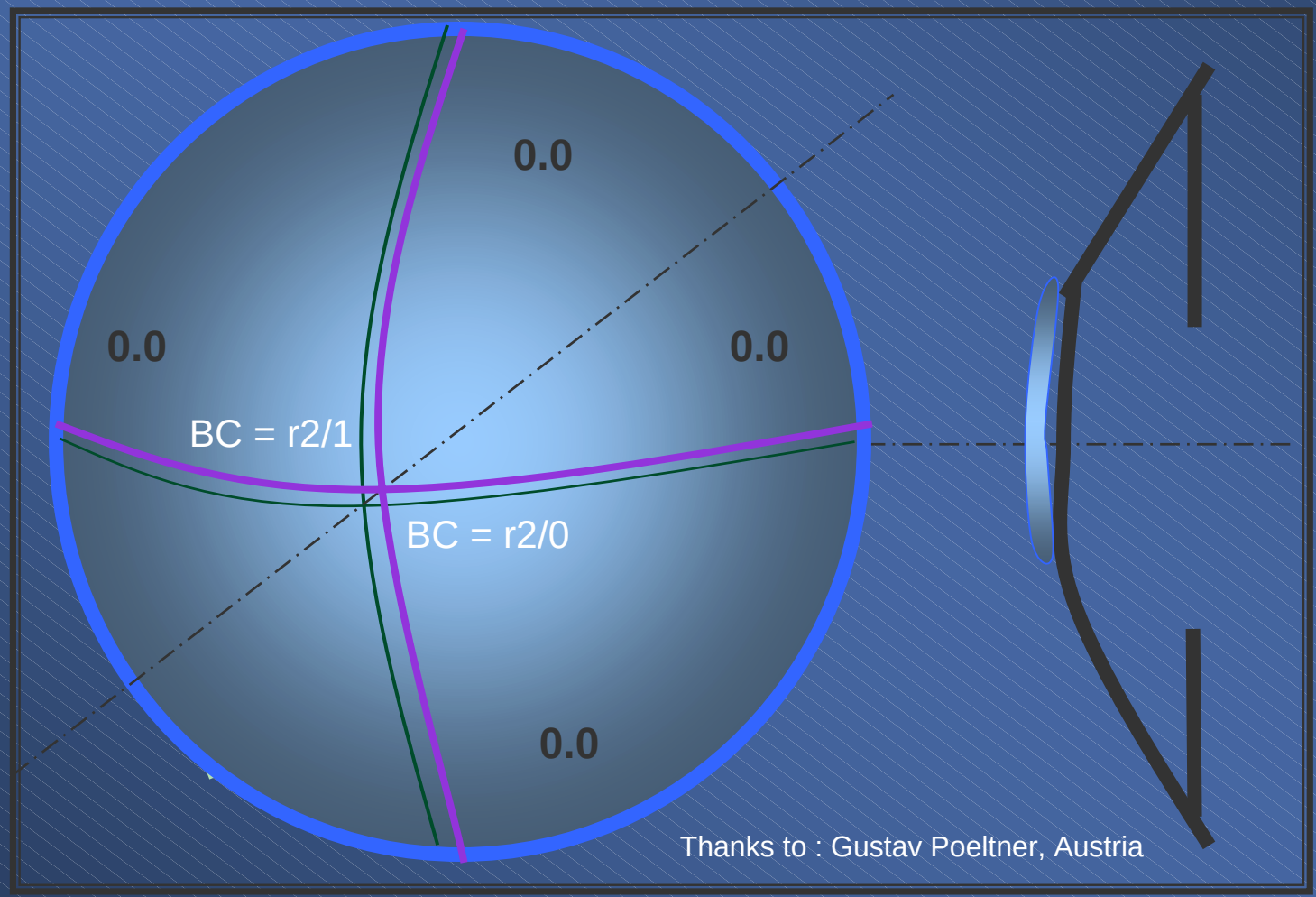
- Lids and tears
- Cornea and conjunctiva
- Eye and general diseases
- Medications
- Air, dust and smoke
- Make-up and hygiene
- and many other factors

Definition, Conditions, Techniques

Contact lenses should be fitted so as to minimally disturb corneal and conjunctival physiology.

Definition, Conditions, Techniques

Contact lenses should be fitted on an alignment standard



UNIVERSITÄTS-AUGENKLINIK BASEL

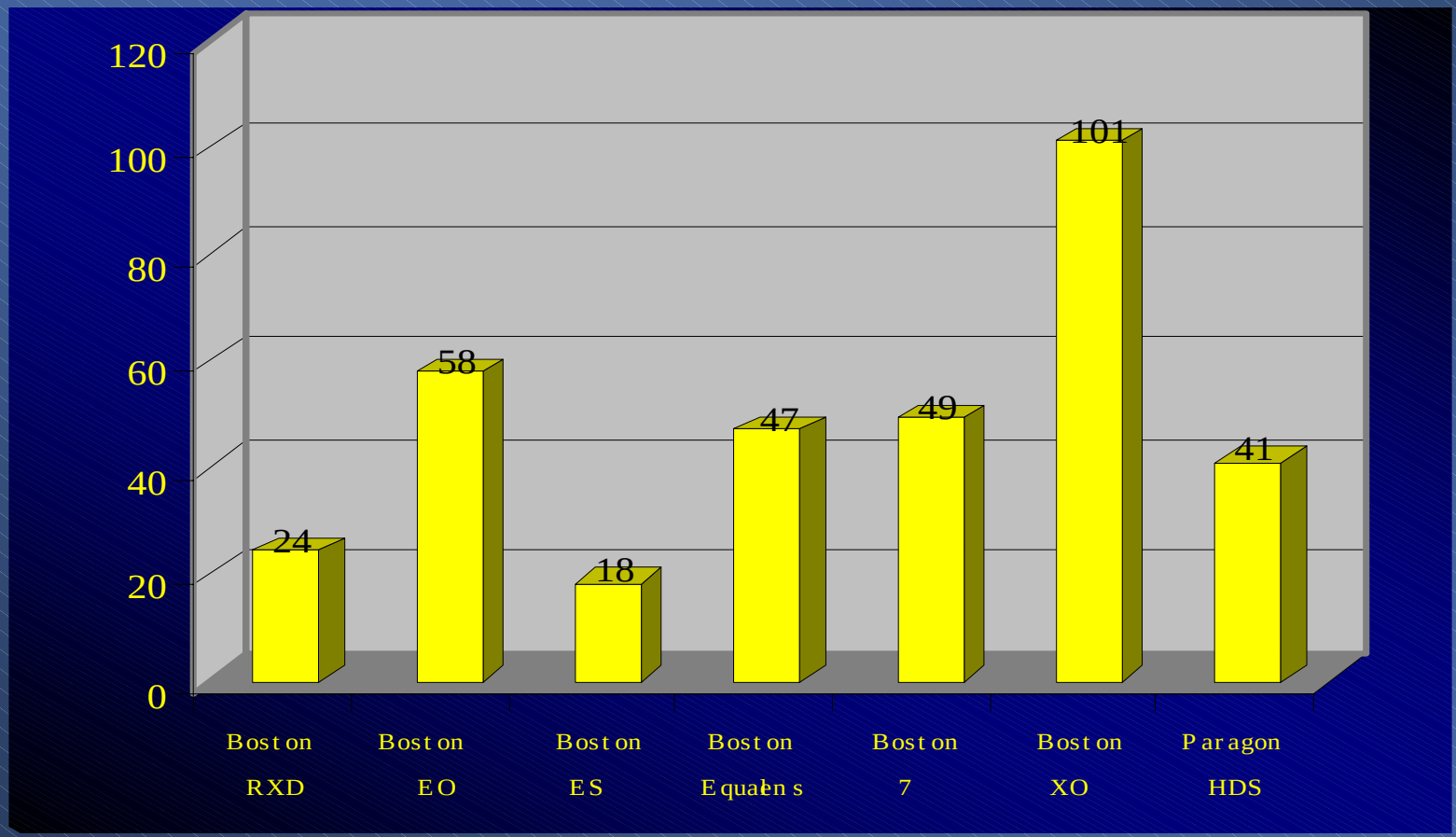
Short Break

ACADEMY2002 SAN DIEGO

Modern Materials

Oxygen Permeability (ISO/Fatt)

for highest possible biocompatibility



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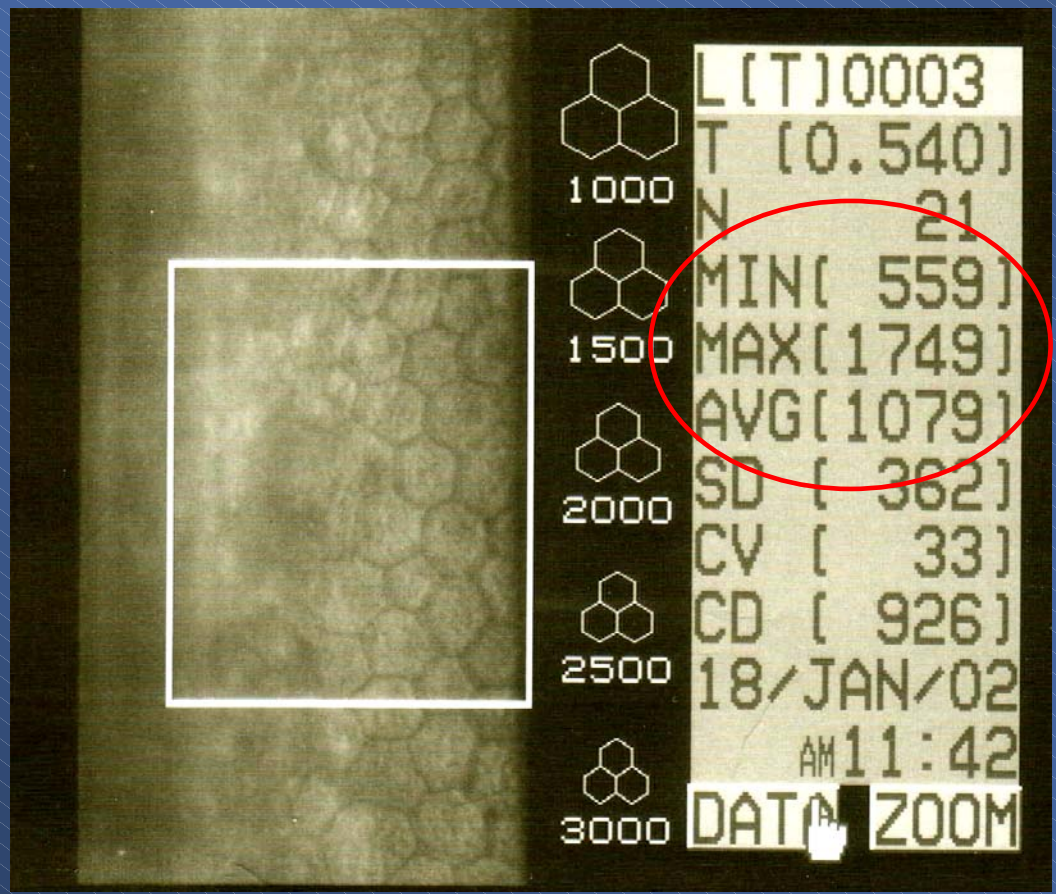
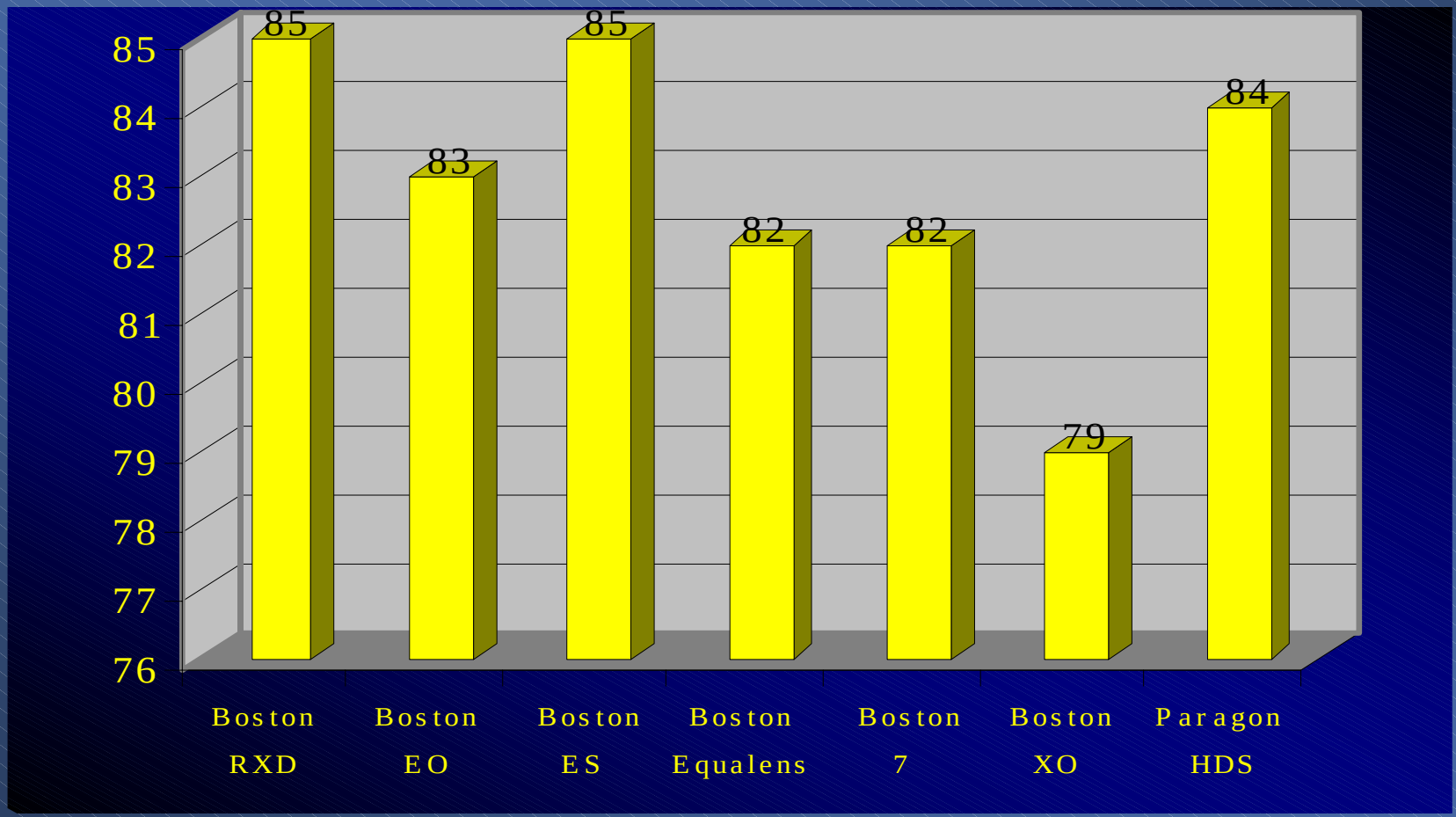


Modern Materials

Stiffness (Shore)

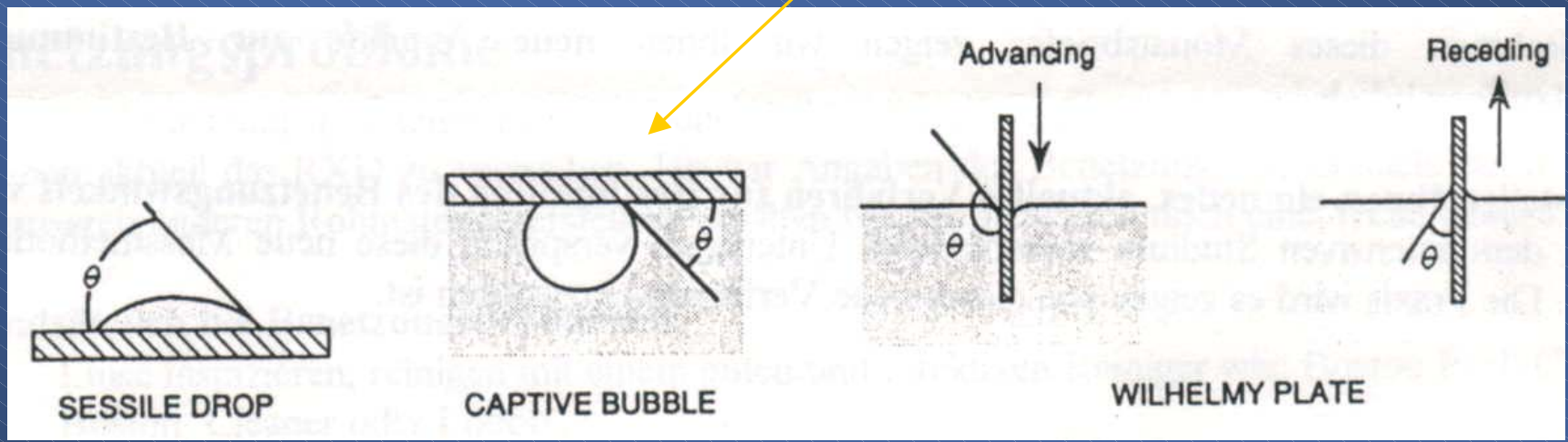


Modern Materials

Scratches

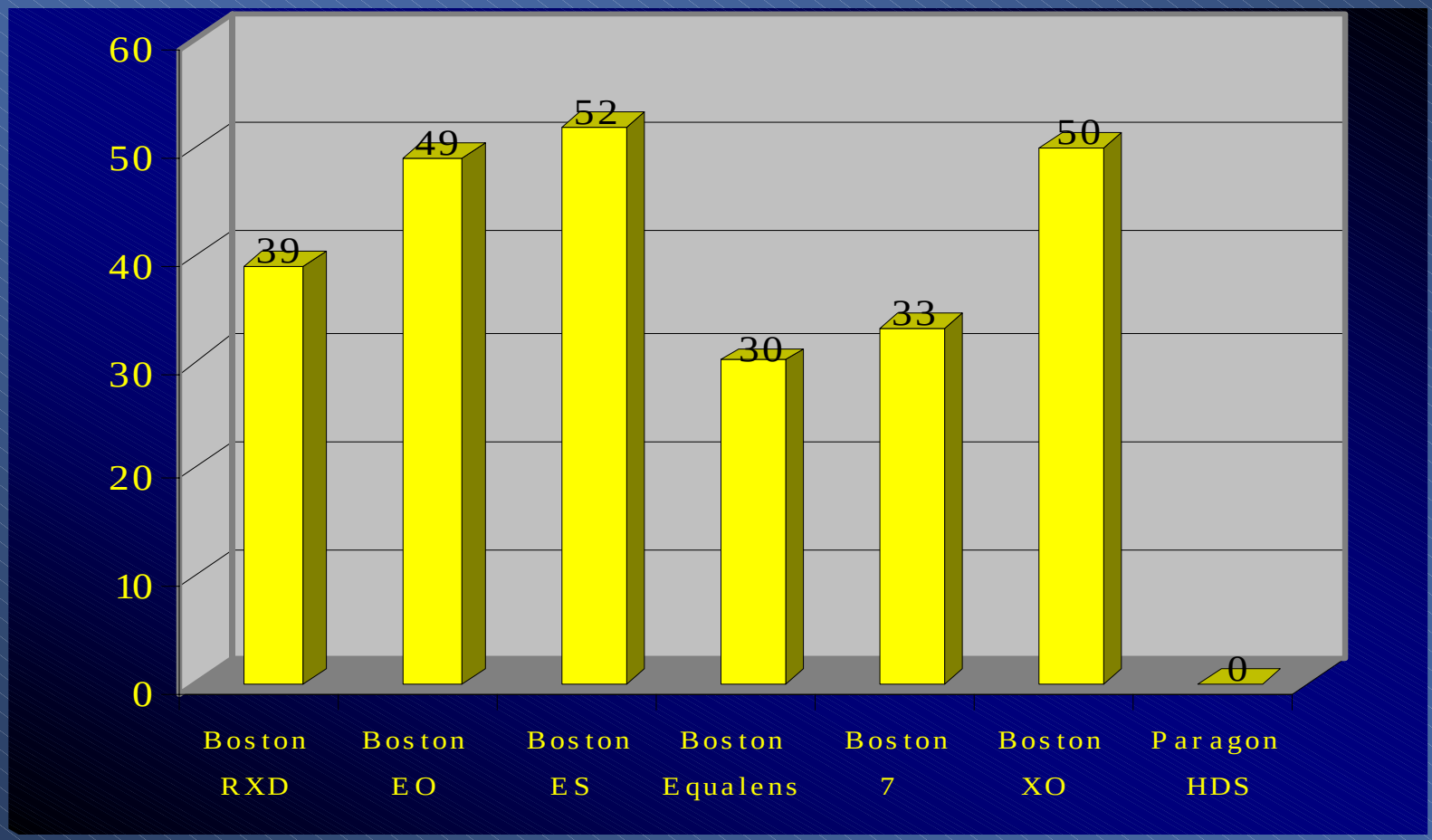
Modern Materials

Wetting angle (Captive bubble methode)



Modern Materials

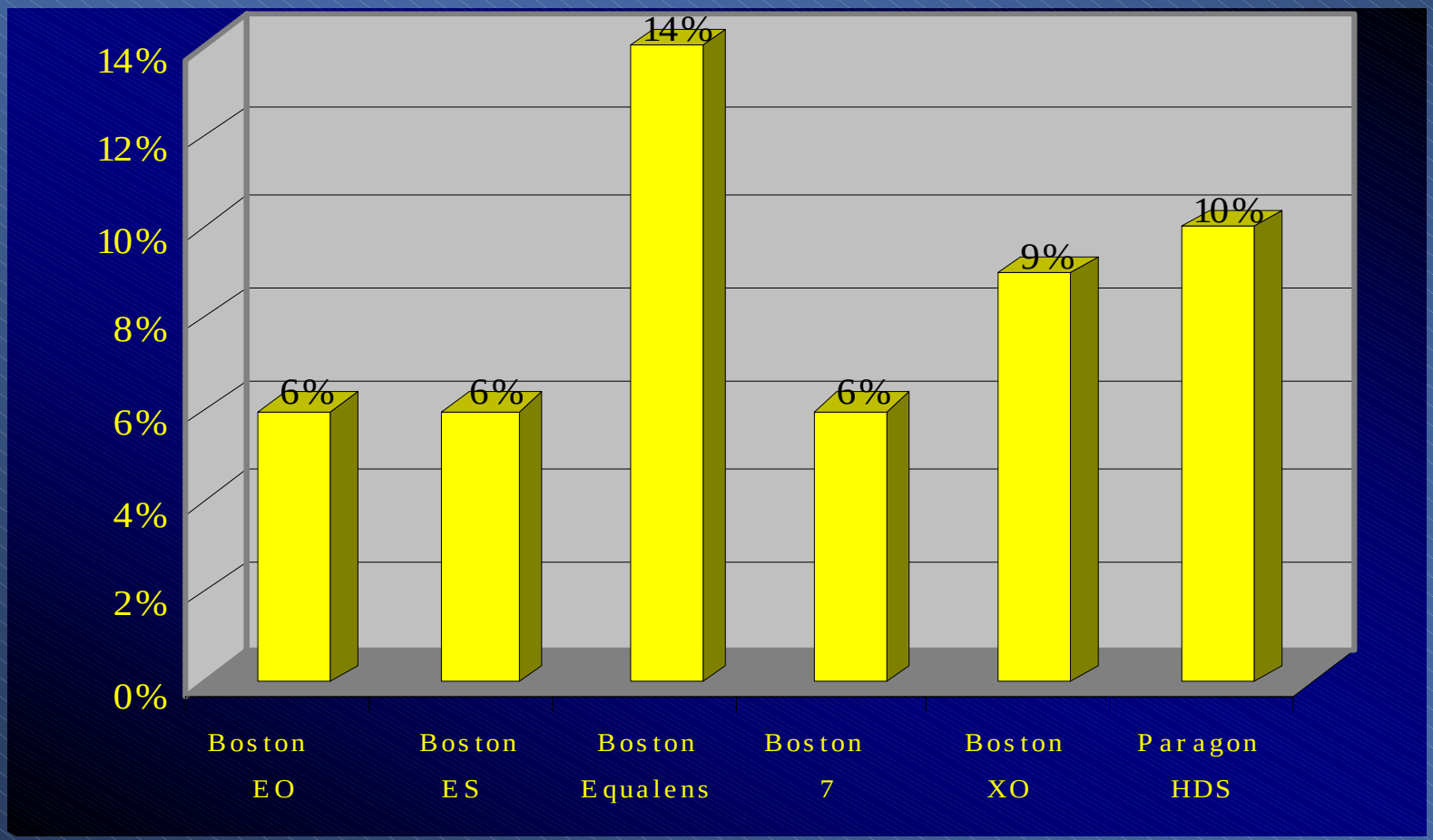
Wetting angle (Captive bubble method)



Modern Materials

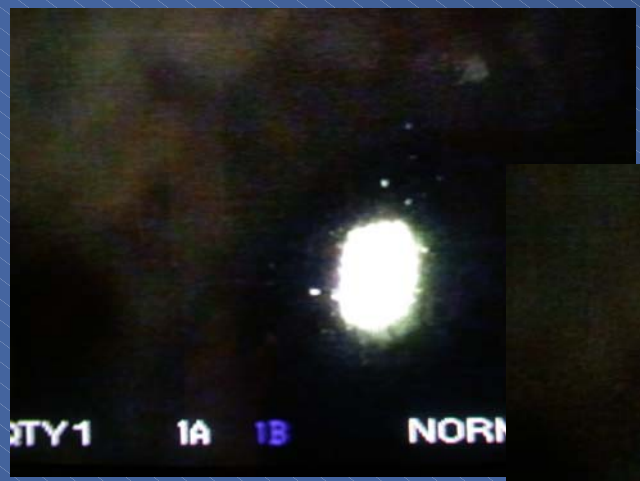
Silicon content (%)

for less oil and protein deposits



Modern Materials

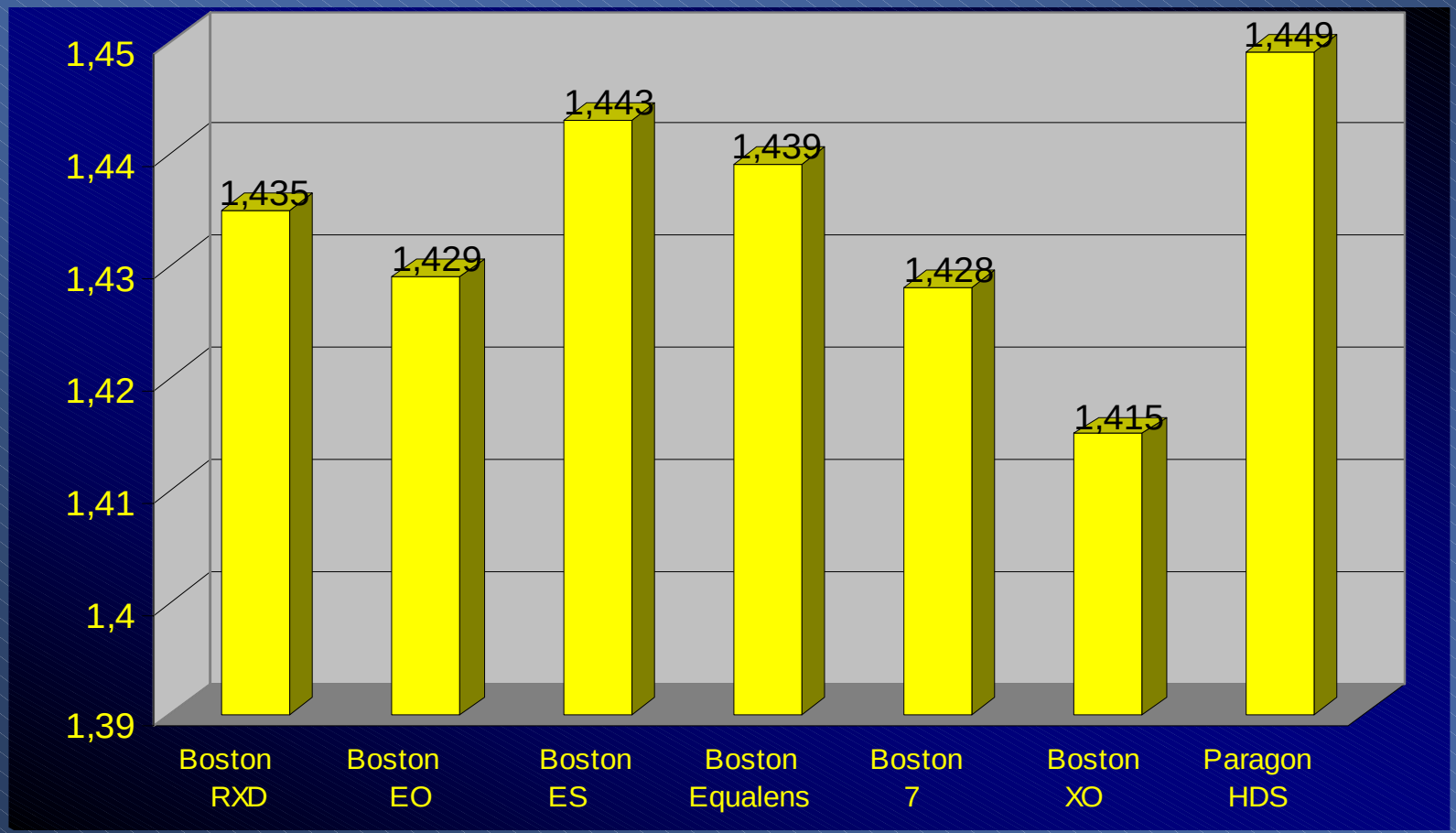
Oil and protein deposits



Modern Materials

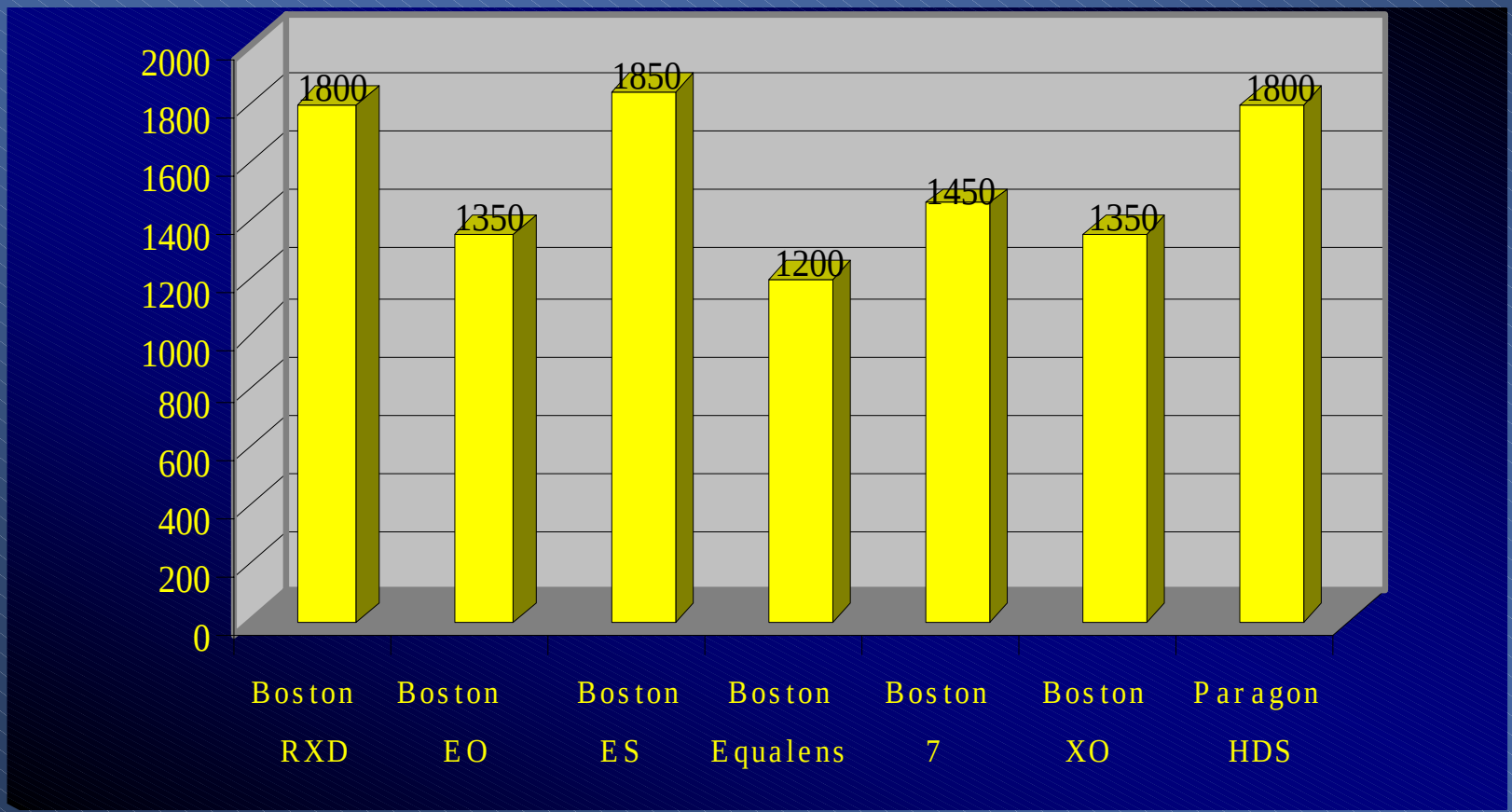
Refractiv Index

for thin designs



Modern Materials

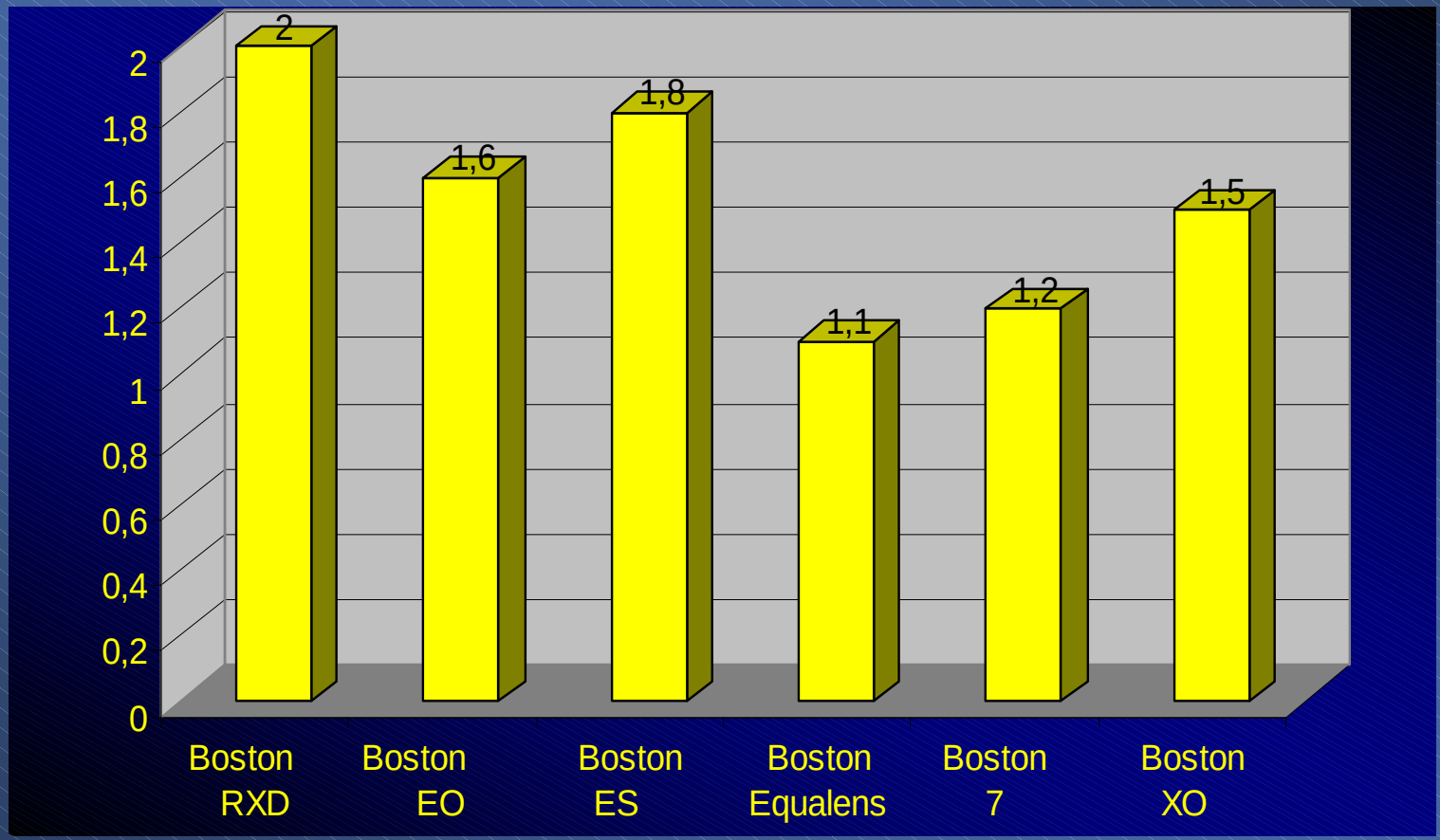
Flexural Modulus,
one factor for on-eye stability



Modern Materials

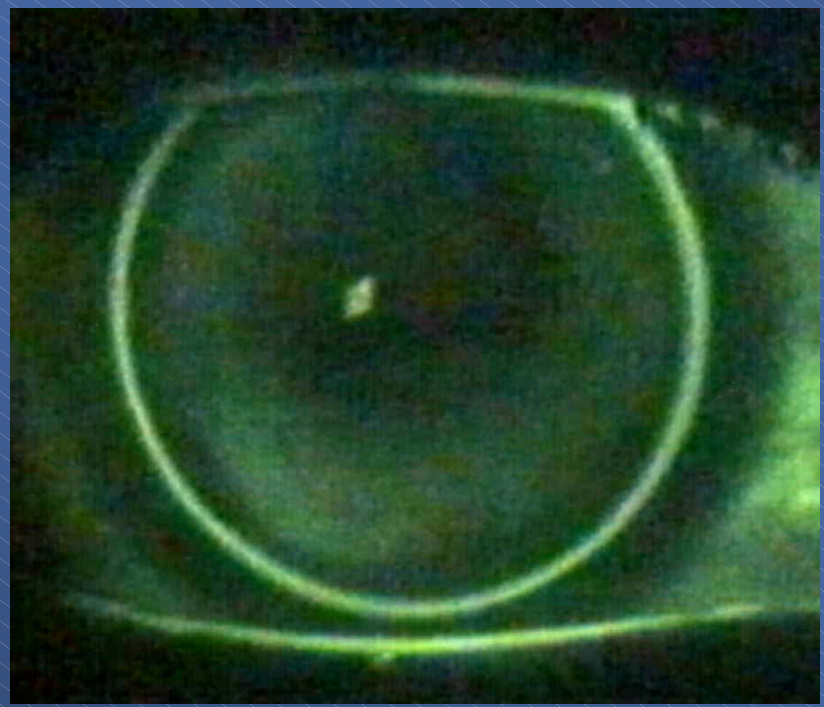
Toughness,

a second factor for long term stability



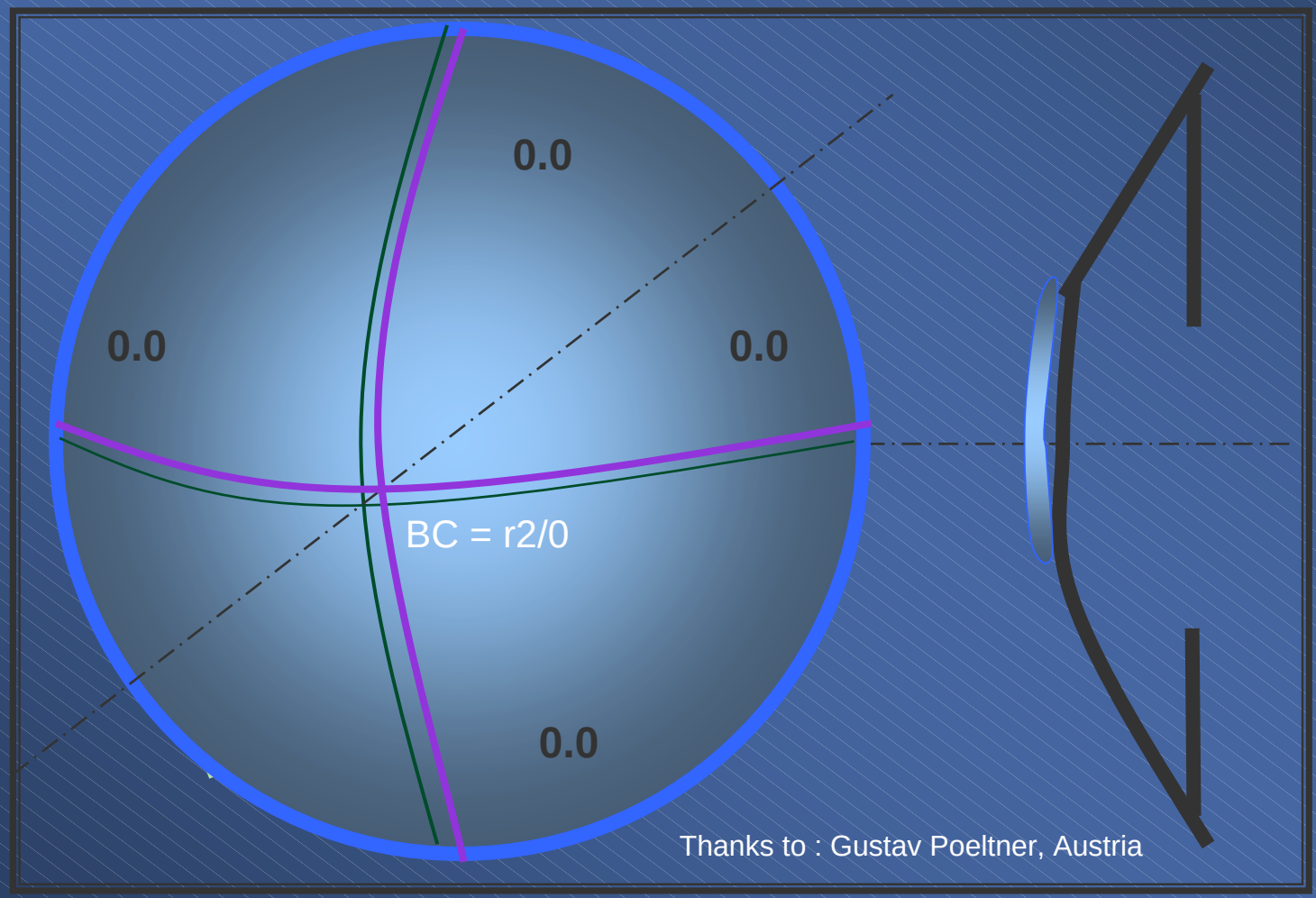
Modern Materials

Deformation after time

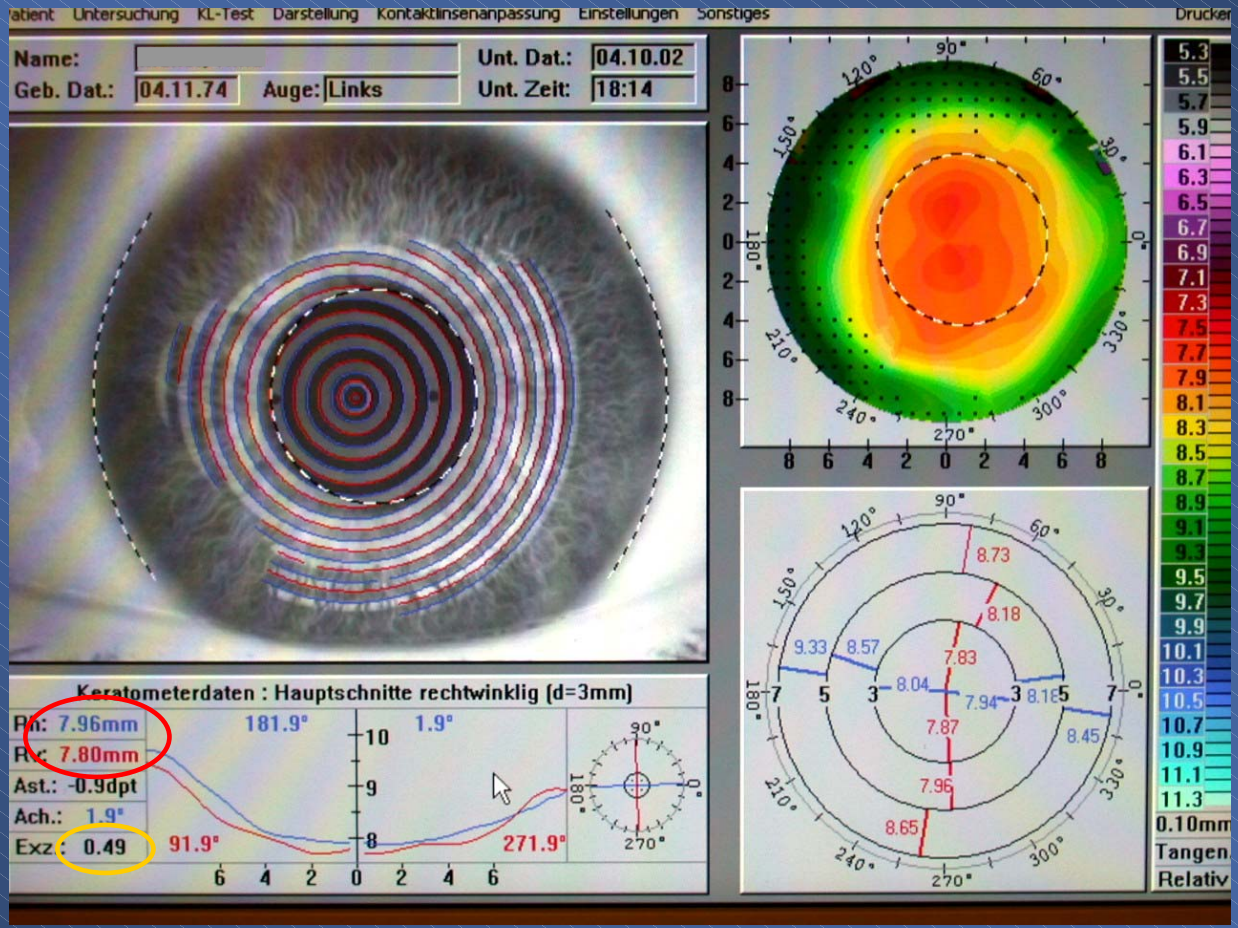


Basic Fits

Alignment Fit



Basic Fits



Alignment Fit = Rotation-symmetric aspheric RGP,

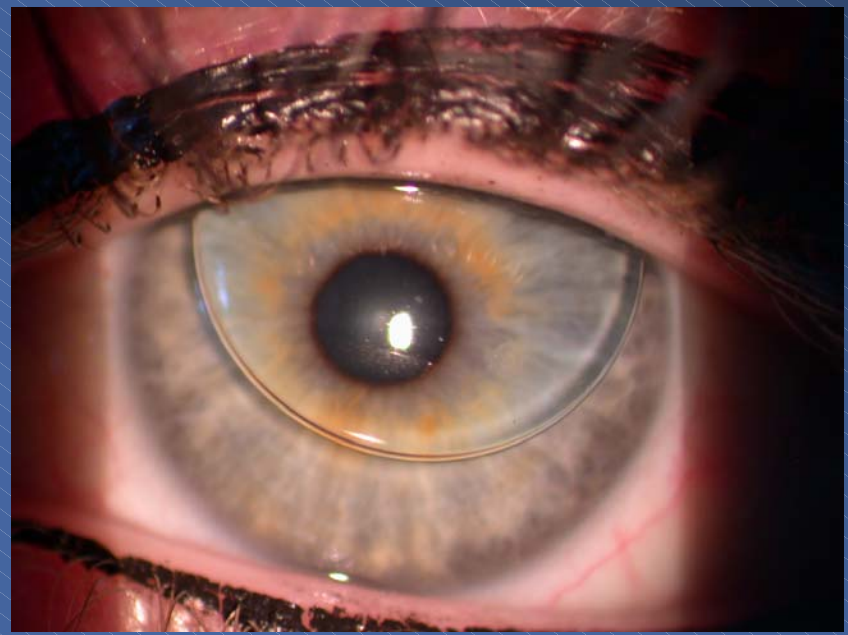
BC 7.95 nE. 0,5

Basic Fits

Complications

„Deep Impact“

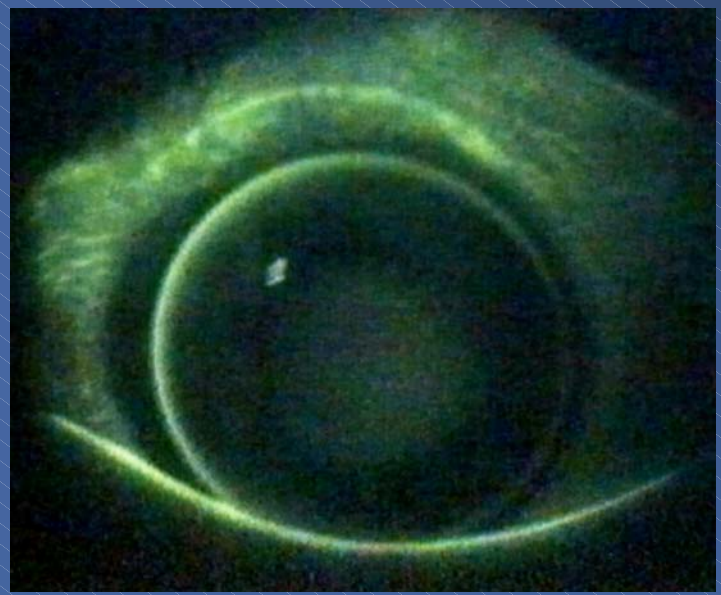
High Rider



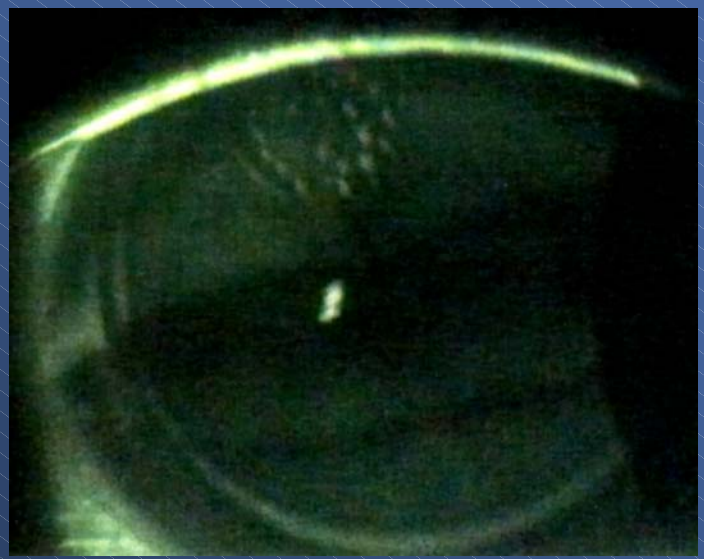
Basic Fits

Complications

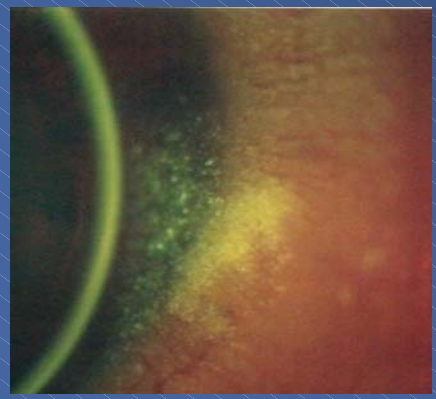
High Rider



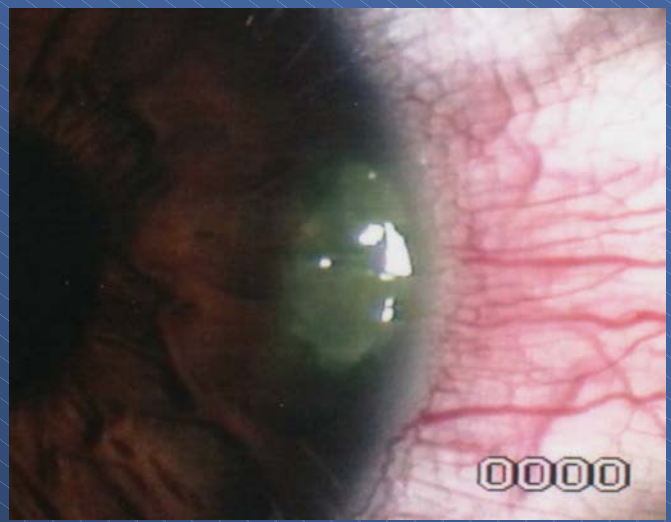
Sticking lens



Basic Fits



Complications



3/9 o‘clock staining

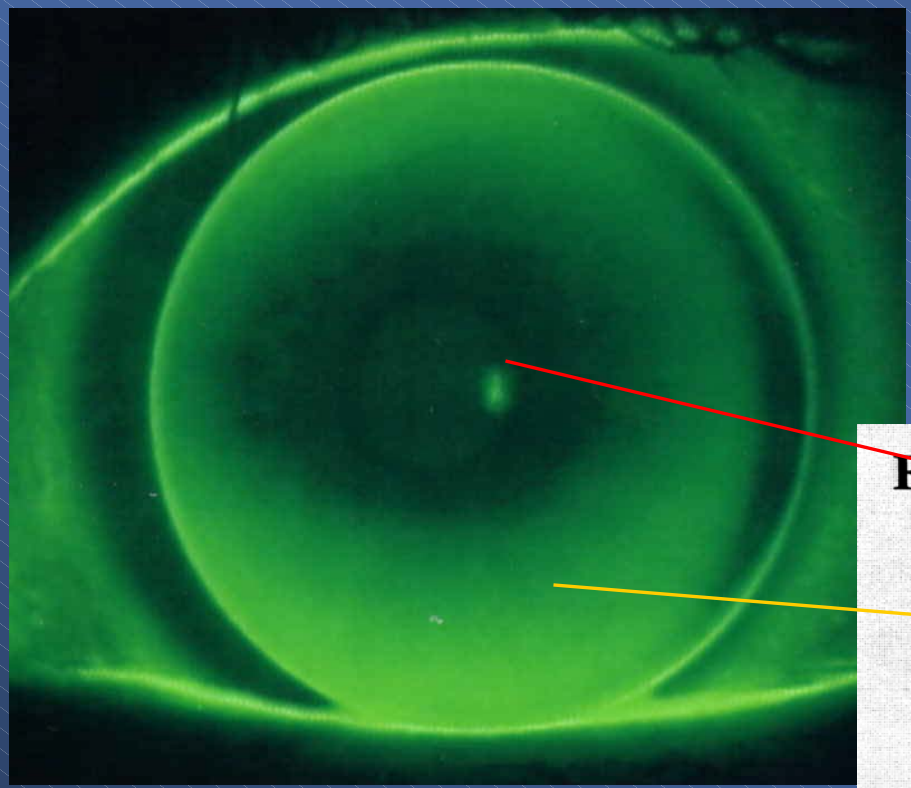
Peripheral scar

Basic Fits

Complications

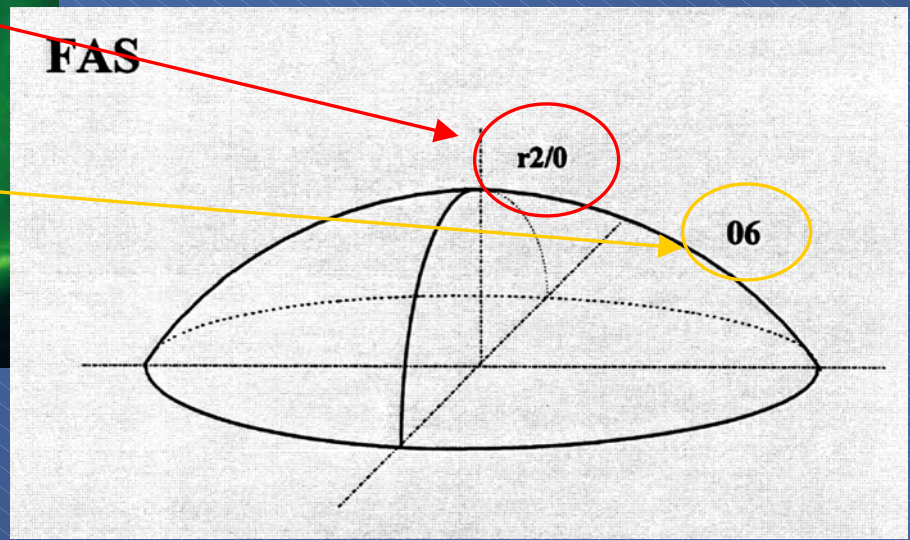
3/9 o‘clock
Staining

Basic Fits

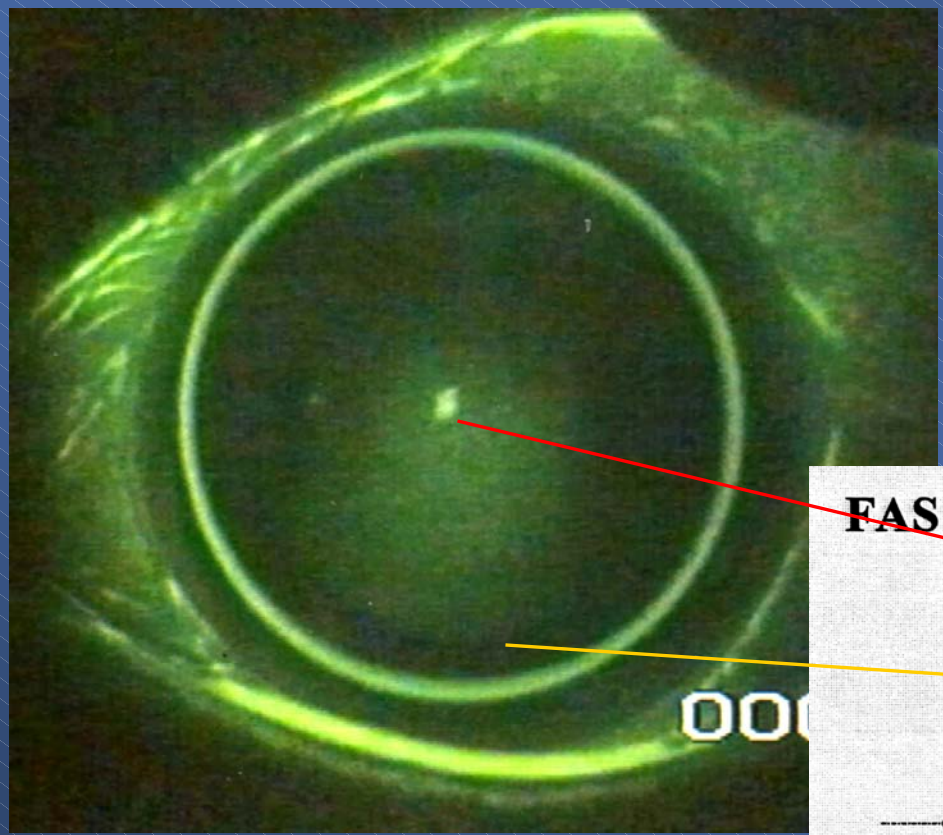


Flat Fit :

- Check BC
- Check nE or 2./3. curve

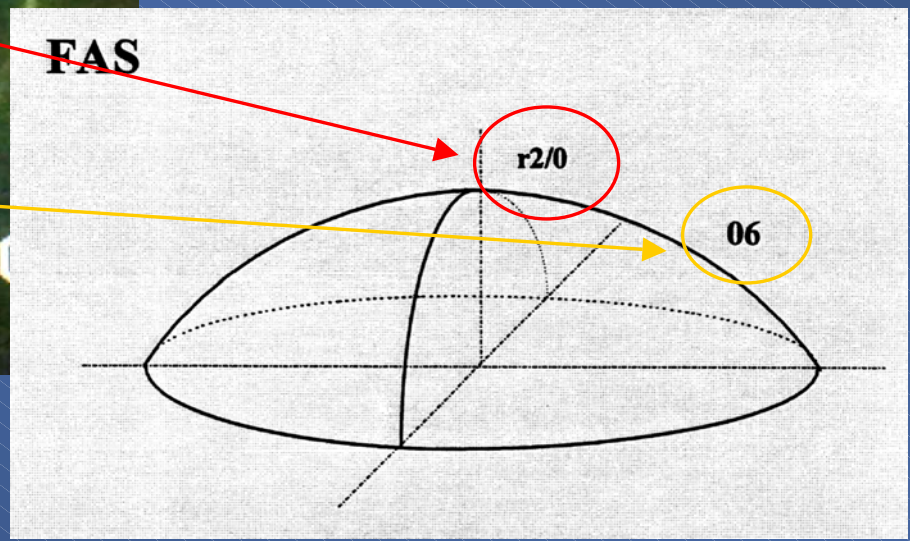


Basic Fits



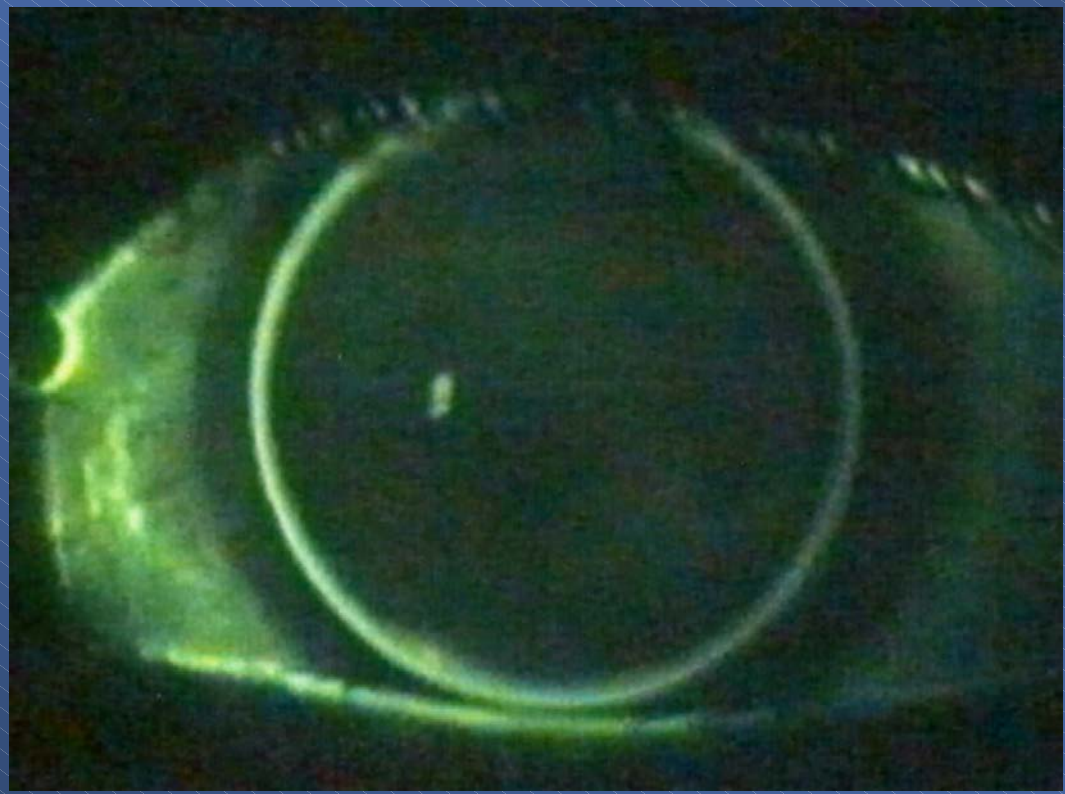
Steep Fit :

- Check BC
- Check nE or 2./3. curve

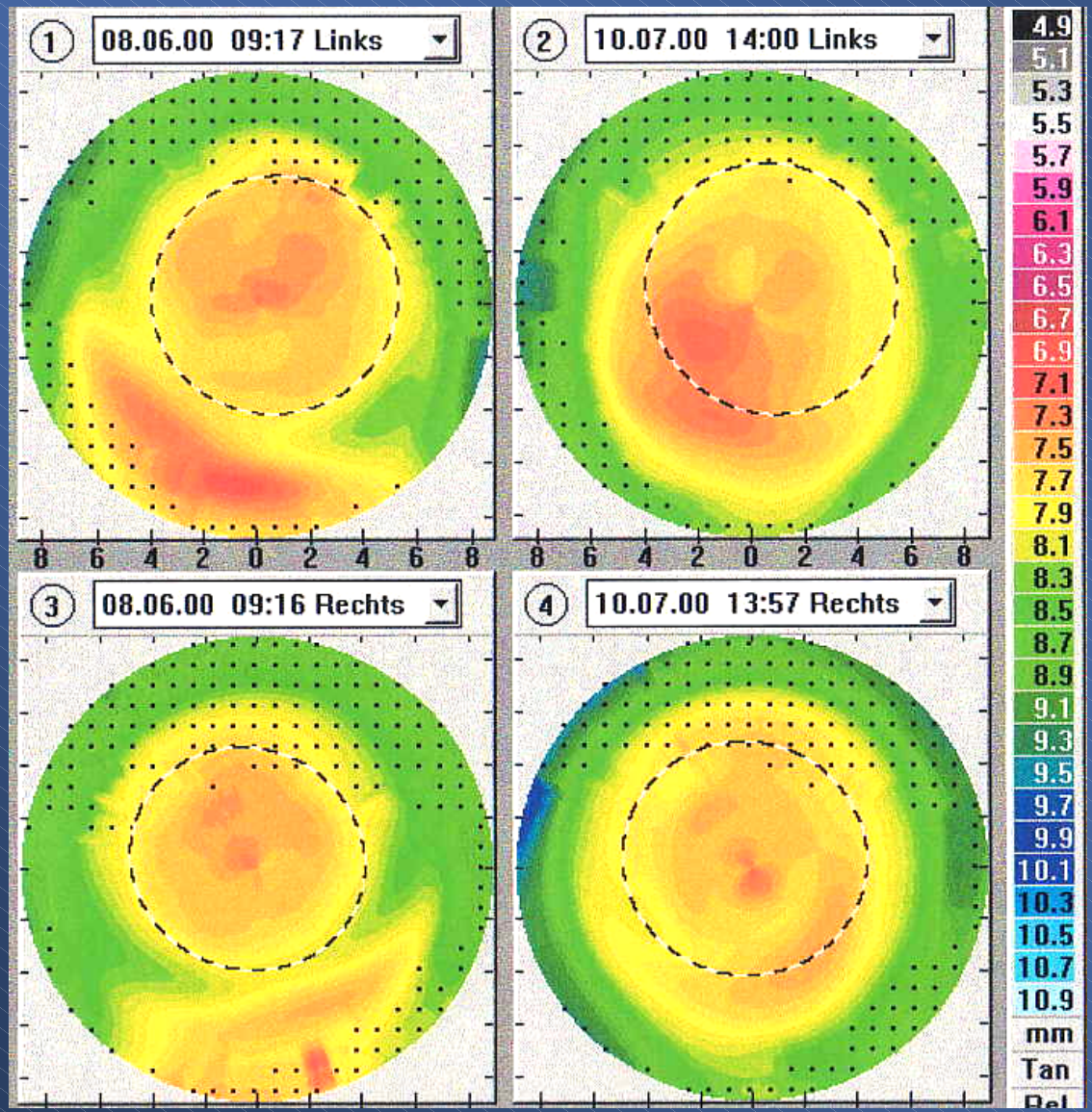


Basic Fits

Alignment Fit



Advanced Fits



Complications :

Corneal warpage

3/9 Staining

Decentration

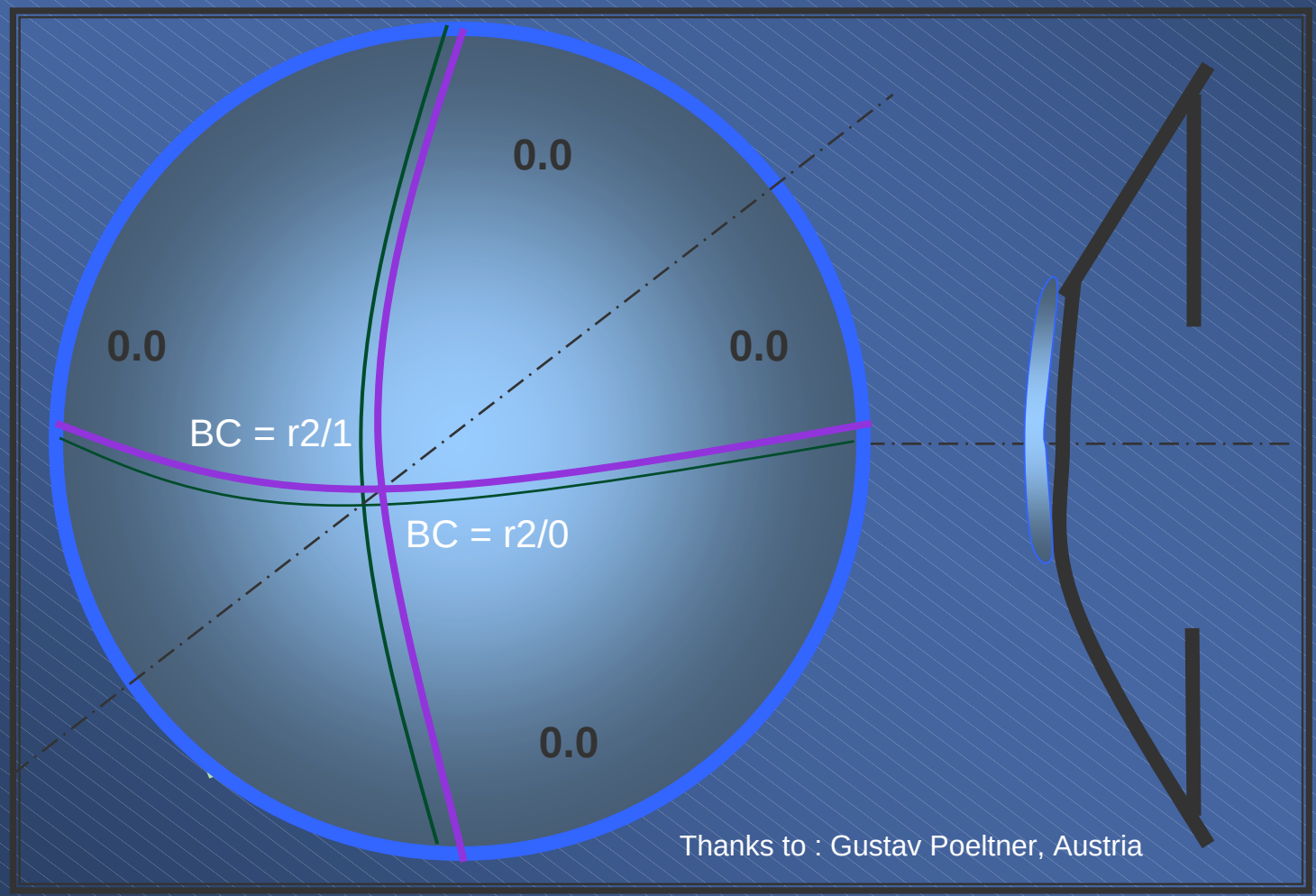
Lost lenses

Foreign bodies

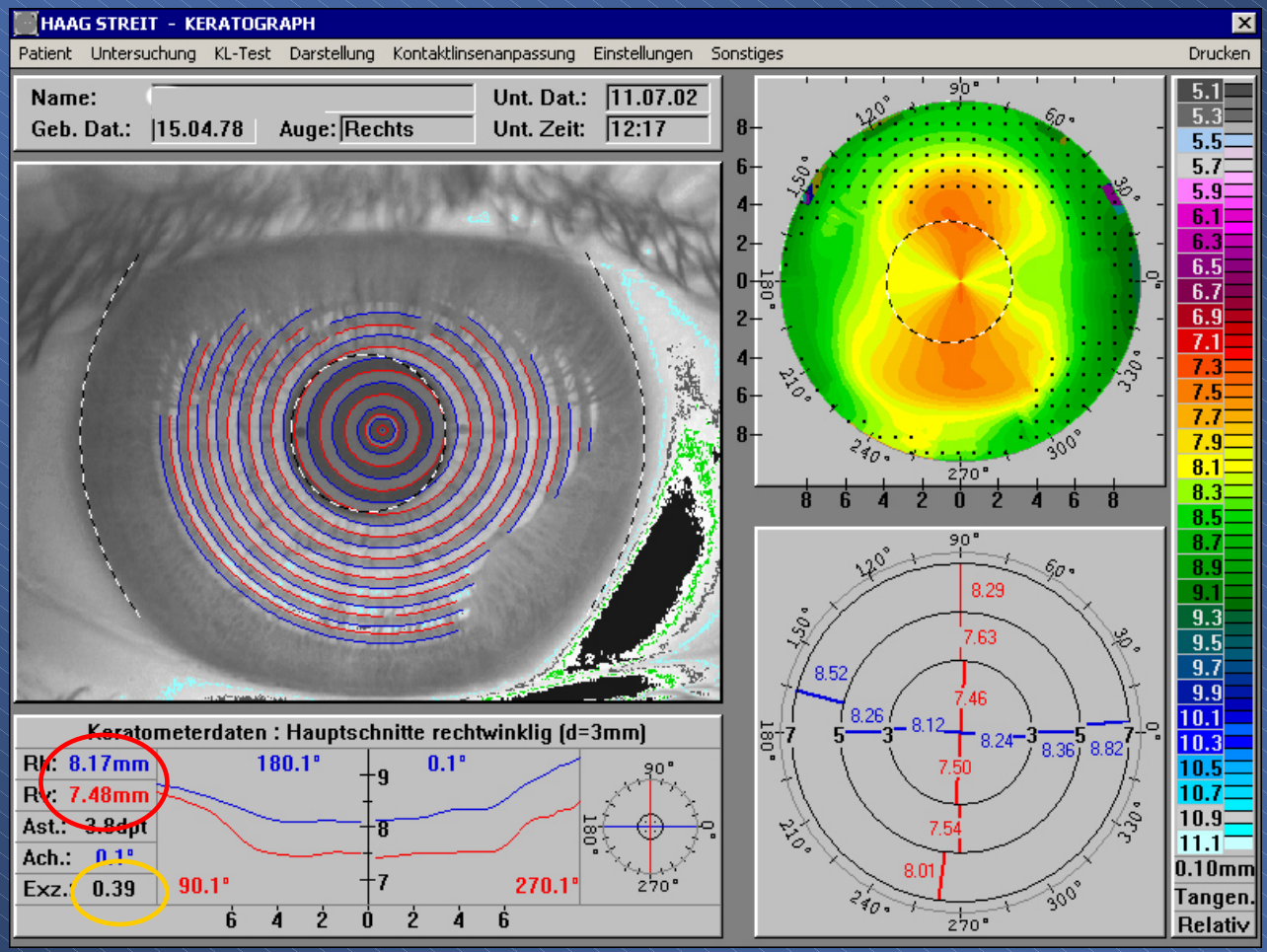
Foreign body sensation

Advanced Fits

Toric Fit



Advanced Fits



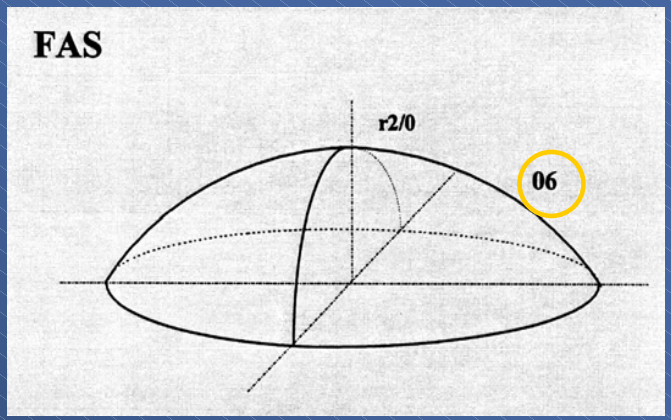
Toric Fit

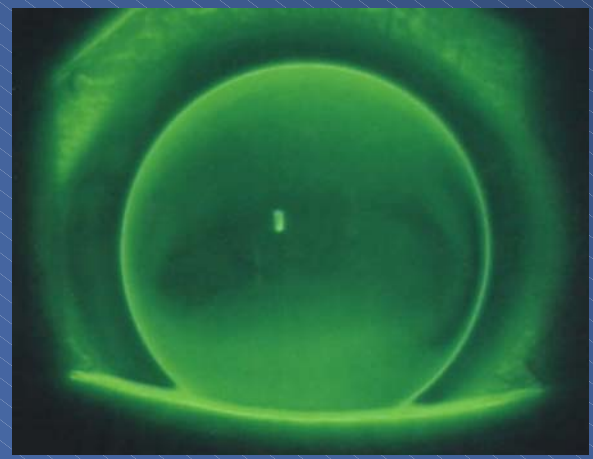
Alignment toric Fit = Toric aspheric RGP, (2/3 rule)

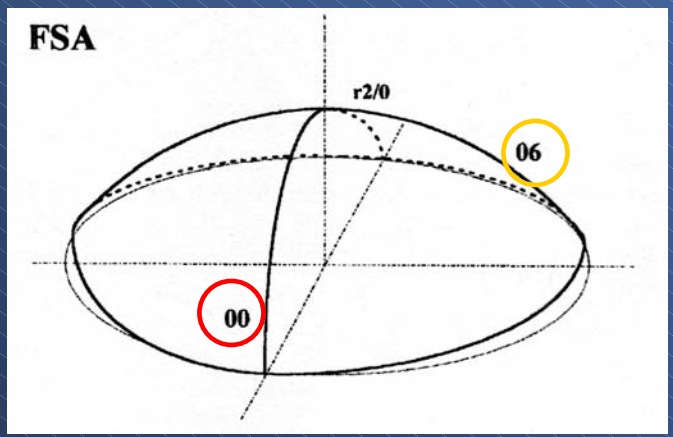
BC 8.15 / 7,70 mm nE. 0,4

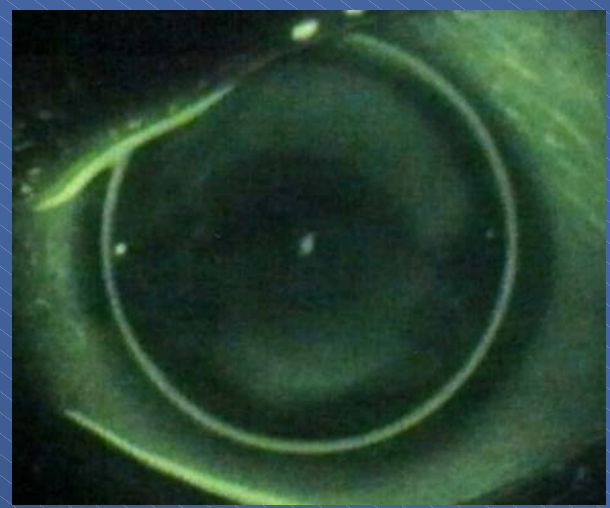
Advanced Fits

Sphero-toric Design (> 1,5 <2,0 cyl)



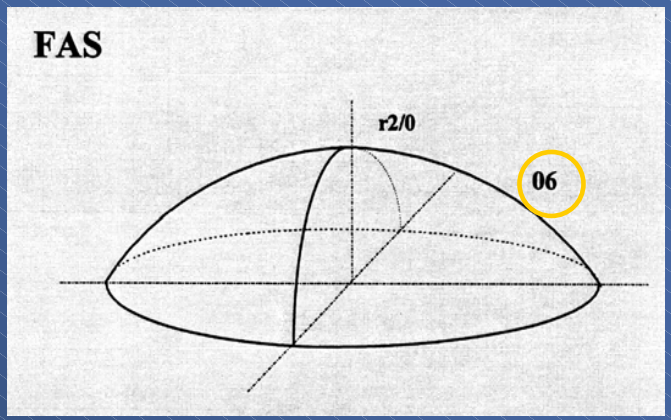


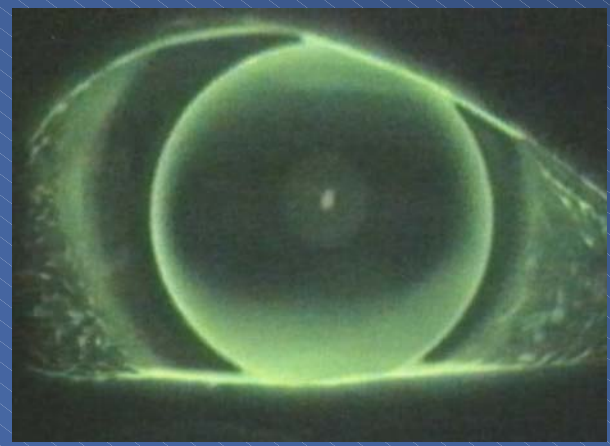


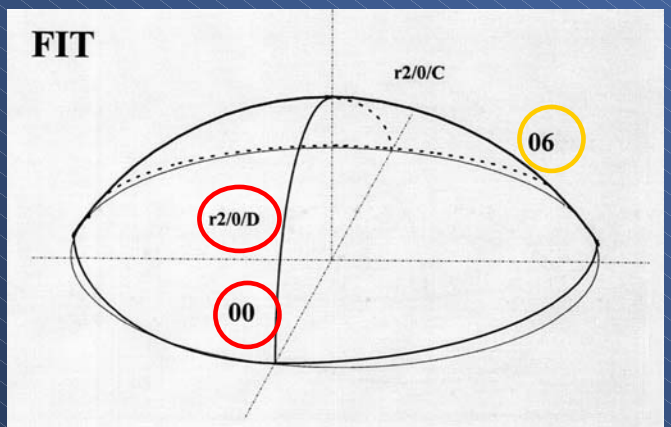


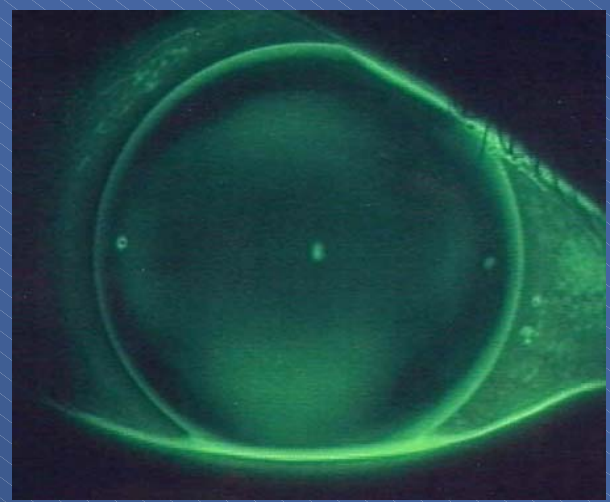
Advanced Fits

Backtoric Design (> 2,0 cyl)







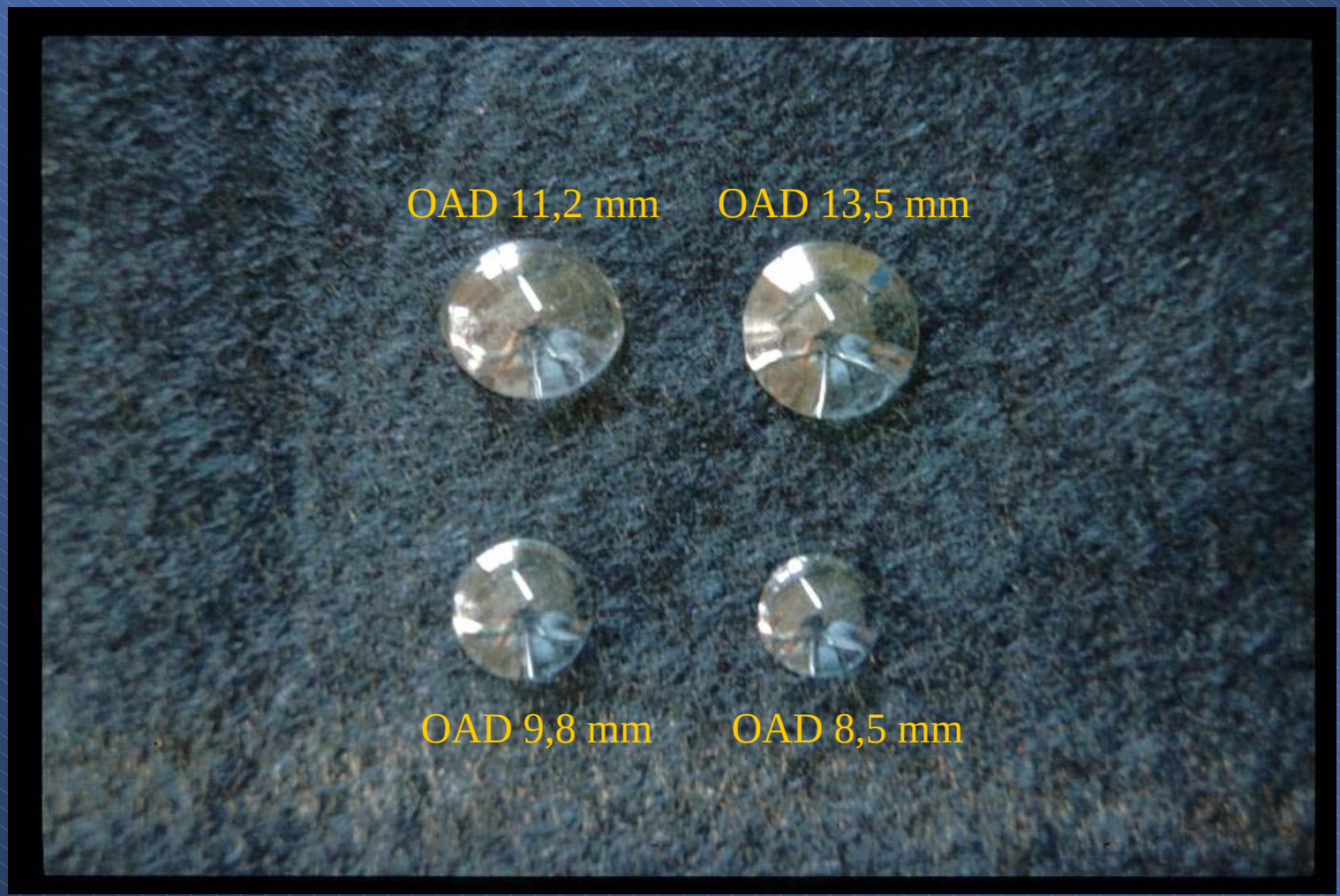


Advanced Fits

Centration and movement (Astigmatismus obliquus)

Advanced Fits

Small and large lenses



Advanced Fits

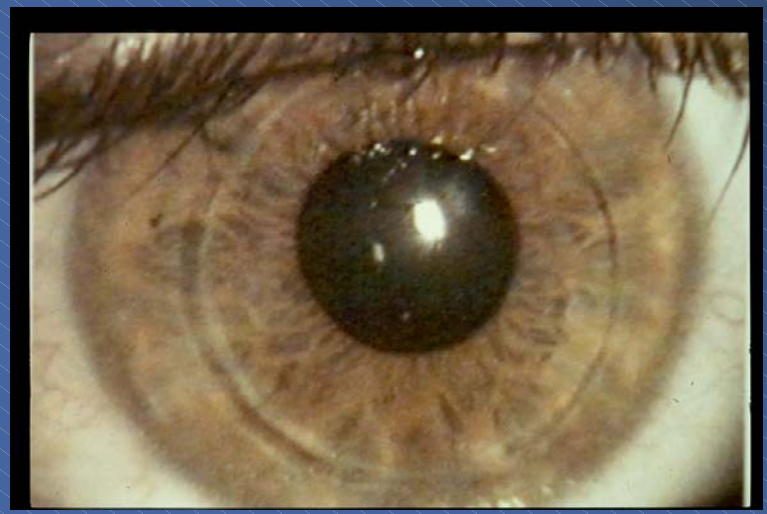
Small lenses :

Tear exchange

Oxygen

Movement

Price (standard lenses)



Large lenses (intra-limbal):

Comfort

Stabilization

Safety

Less dust

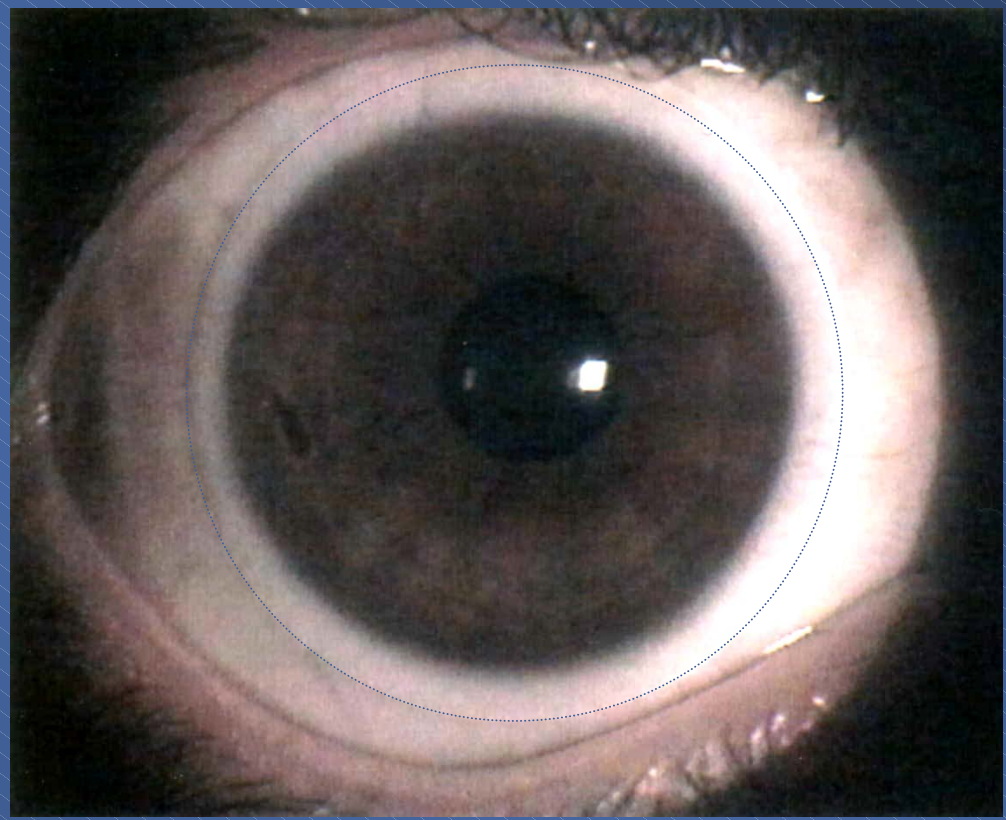
Handling

Advanced Fits

Very large lenses :

(extra-limbal or Miniscleral)

- Comfort
- Stabilization
- Less dust
- Protection



Advanced Fits

Lens size :

Tear exchange

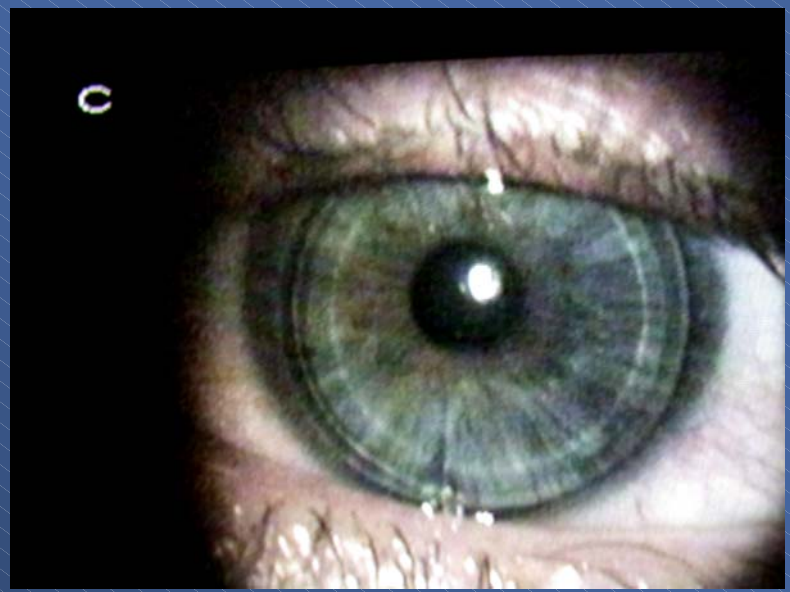
Oxygen

Movement

Advanced Fits

Tricks and Tips :

- Minus Carrier and low specific weight
- Thin design and high refractive index
- Prisma and high specific weight



Advanced Fits

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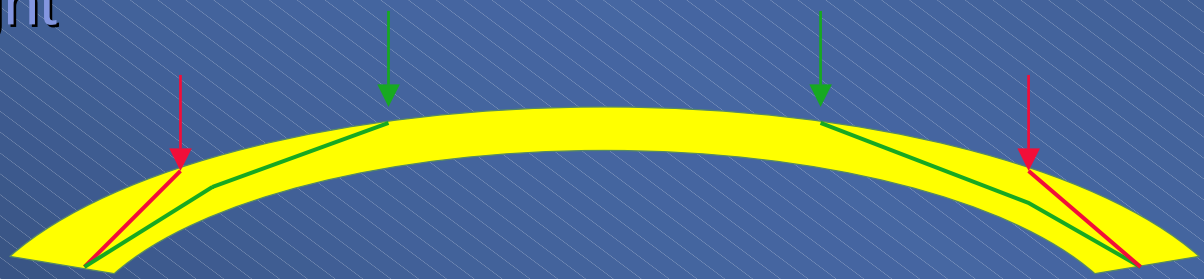

Advanced Fits

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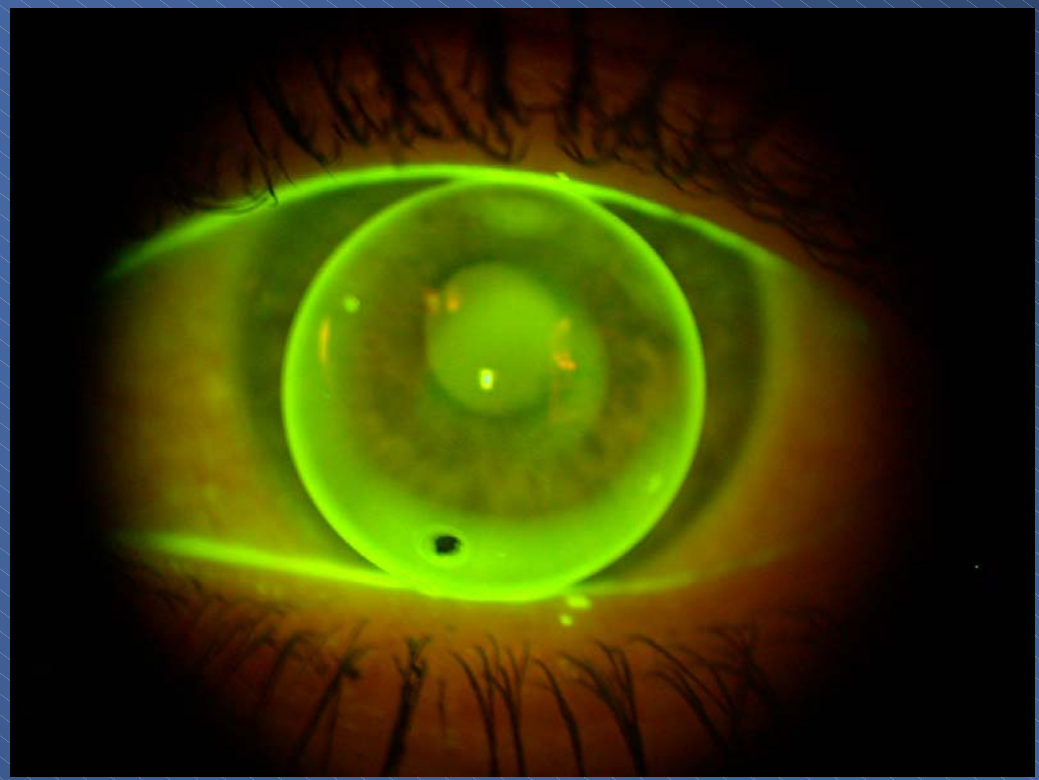

Advanced Fits

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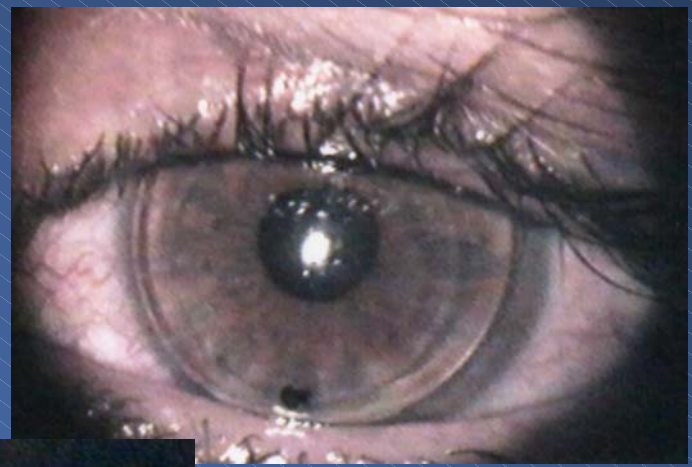
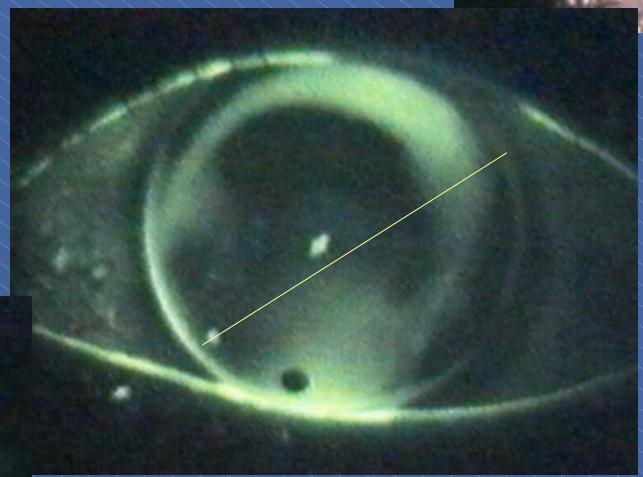
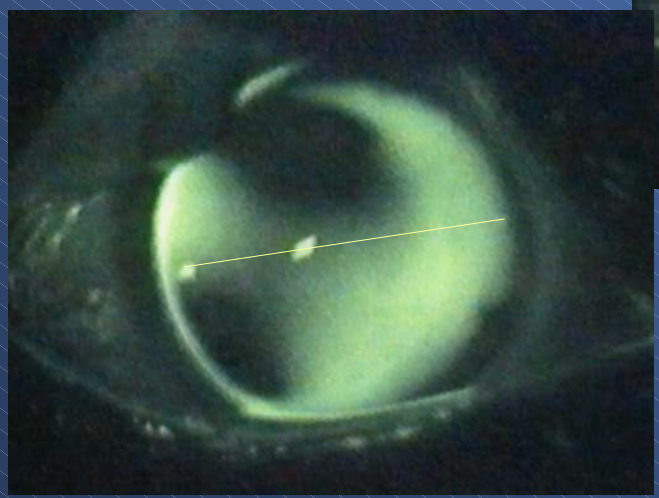
- Thin design and high refractiv index
- Prisma and high specific weight







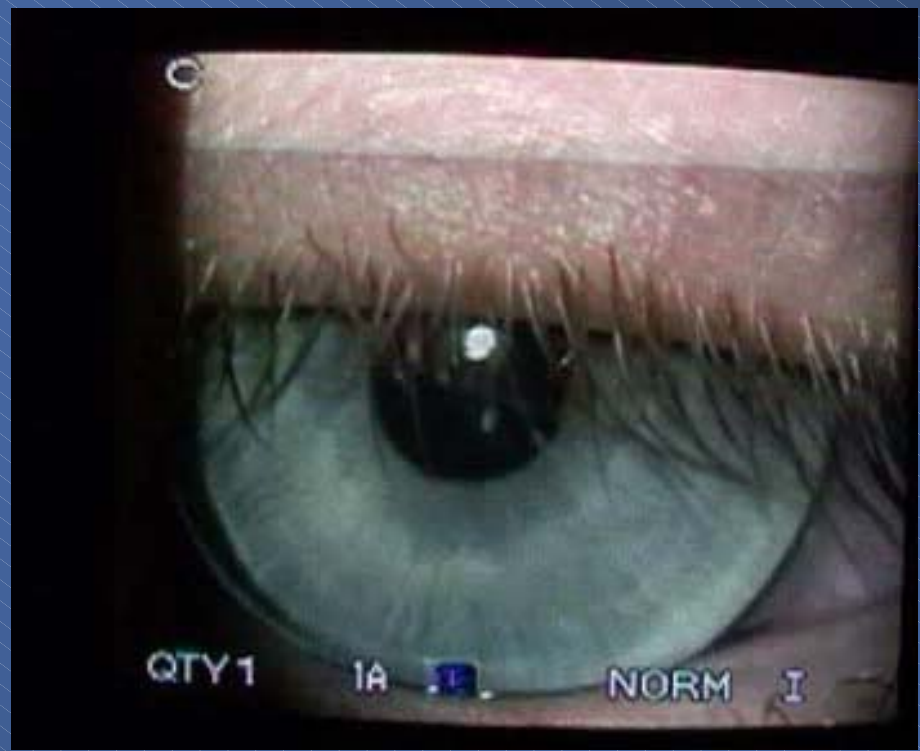
Example :

Backtoric, front-prismatic CL on Keratoplasty

Advanced Fits

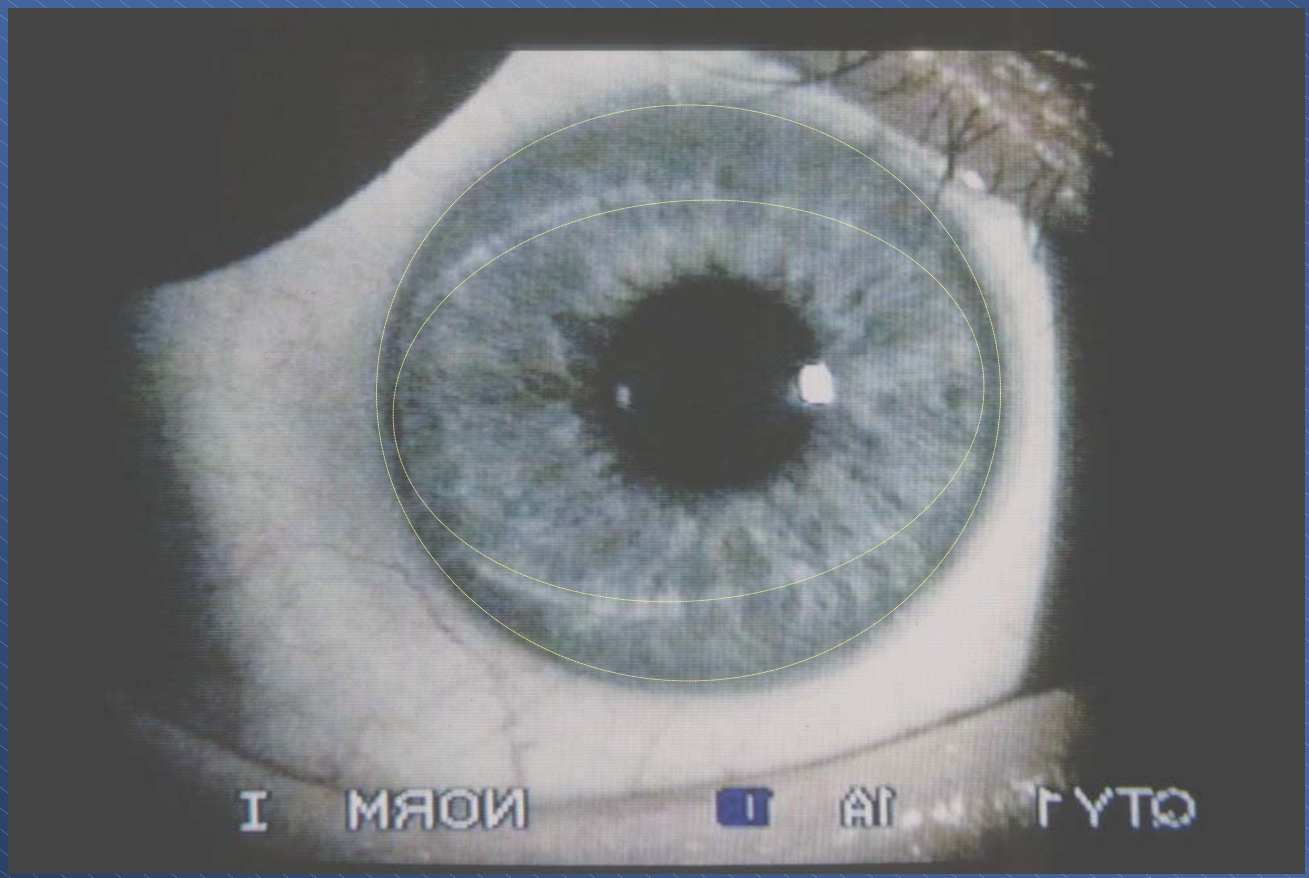
Tricks and Tips :

- Minus Carrier and low specific weight
- Thin design and high refractiv index
- Prisma and high specific weight



Advanced Fits

Oval design with dynamic stabilisation,
to avoid 3/9 o‘clock staining
(Early trials 1989)



UNIVERSITÄTS-
AUGEN KLINIK BASEL

Short Break

ACADEMY 2002
SAN DIEGO

Specialty Fits

Irregular Astigmatism

Keratoconus

Keratoplasty

post-Trauma

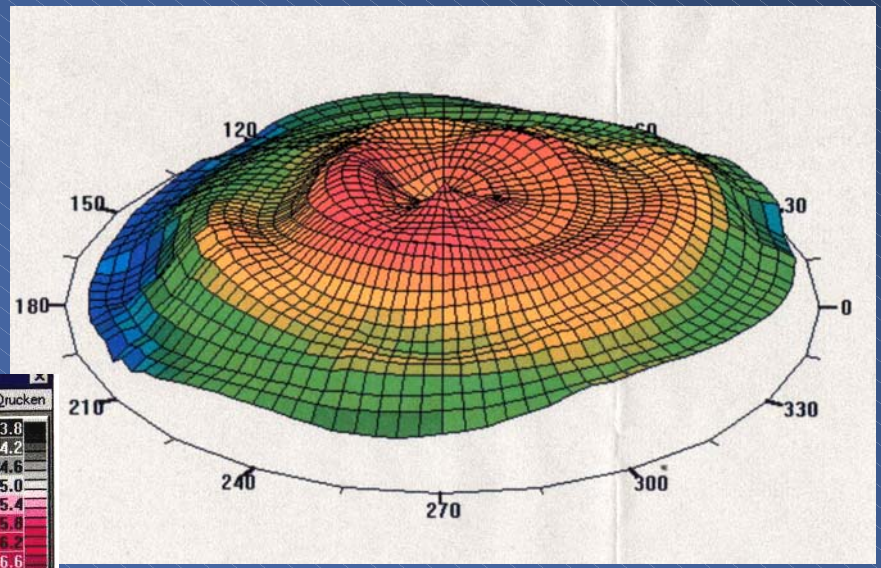
post-refractive surgery

Aphakia (children) and presbyopia

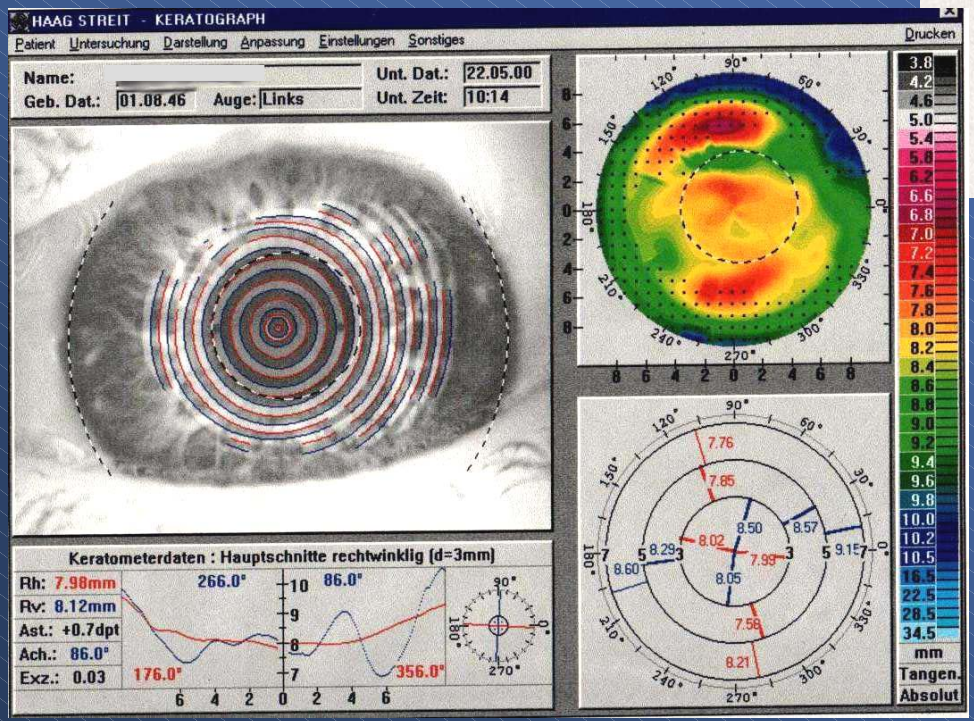
Ortho-K (Example)

Irregular Astigmatism

Corneal Dystrophies

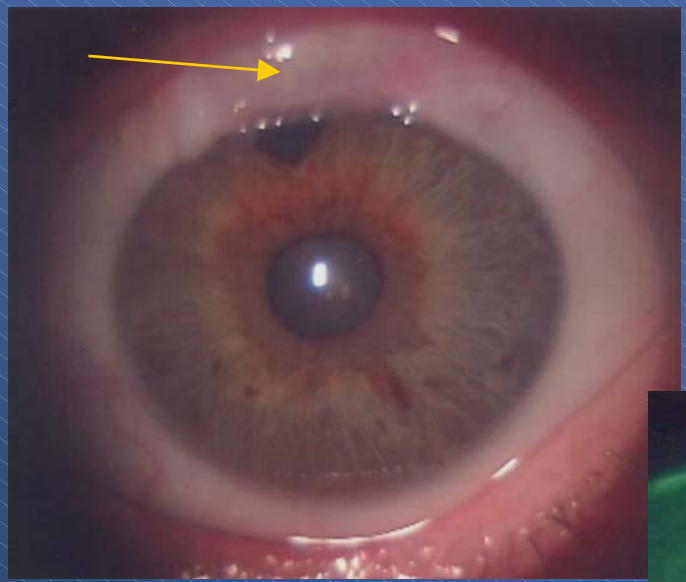


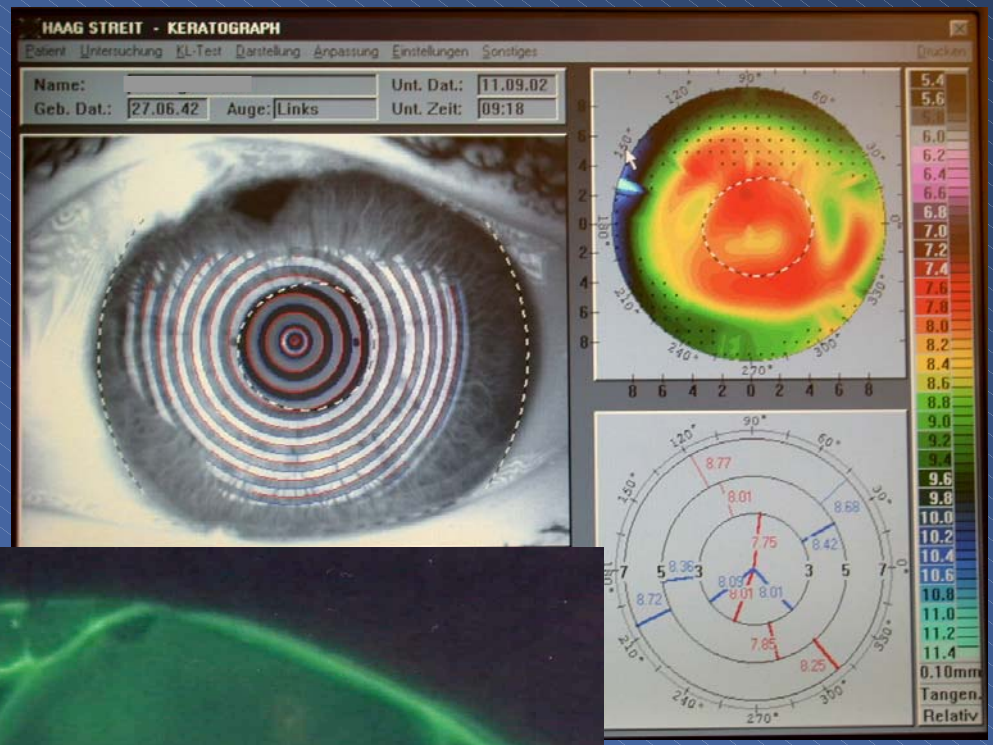
Post-Trabeculectomy

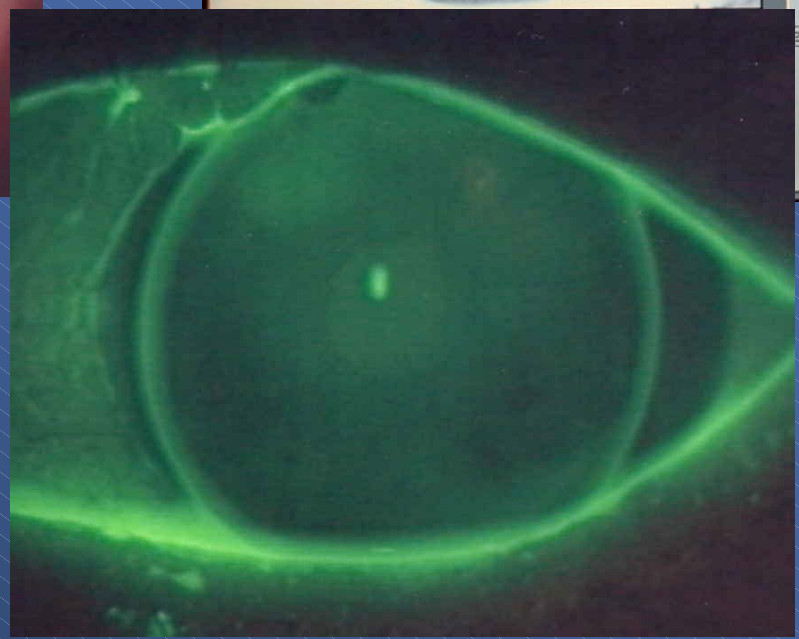


Irregular Astigmatism

Post-Trabeculectomy





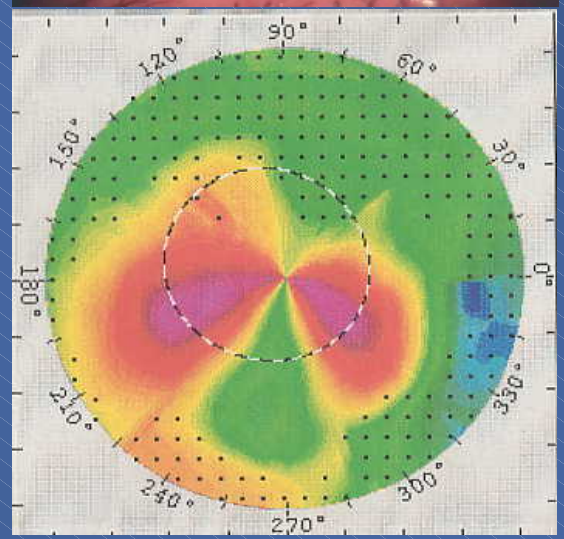


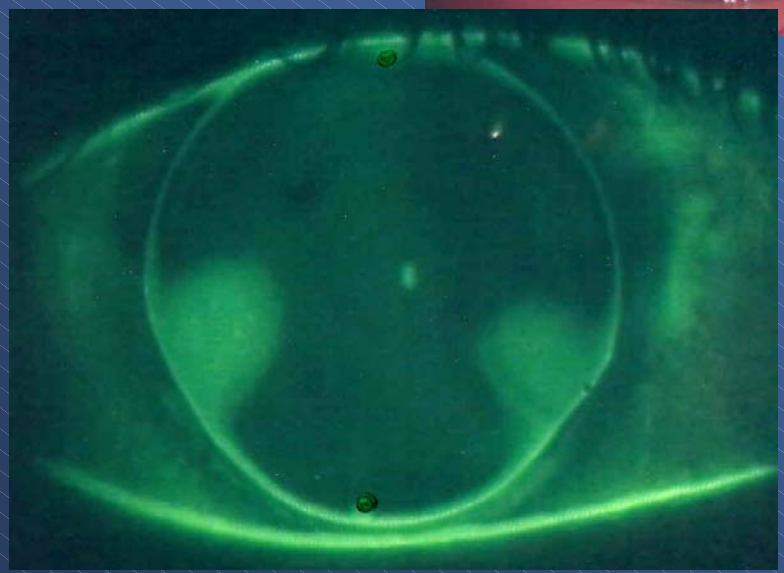
Aspheric CL, nE 0,4
AOD 9,8 mm, Vcc 20/20

Irregular Astigmatism

Pellucid marginal or Terrien Degenerations

Backtoric, prismatic CL
AOD 10,2,
Vcc 20/20



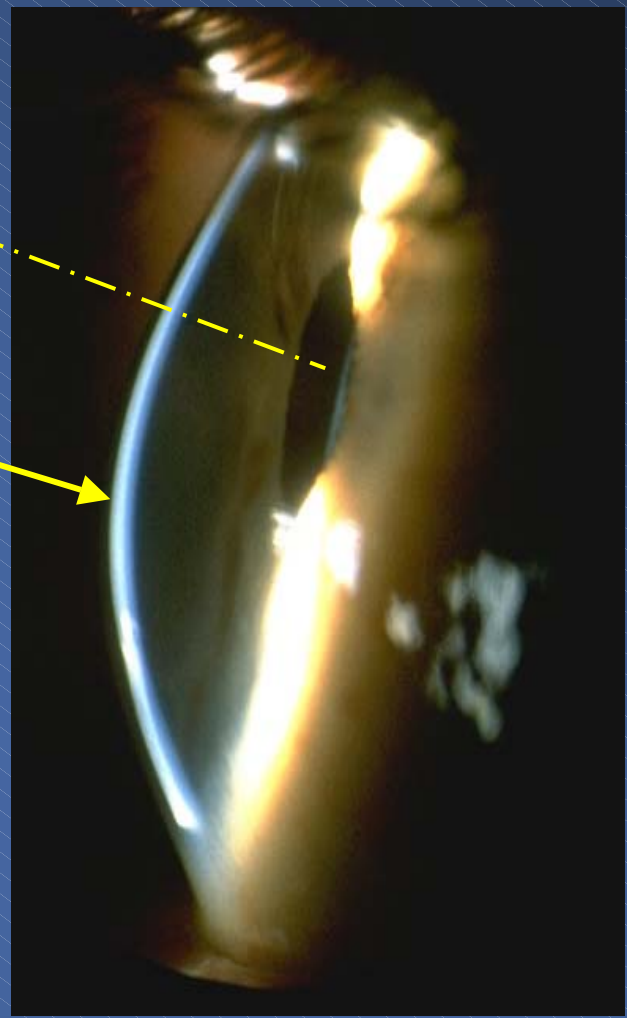


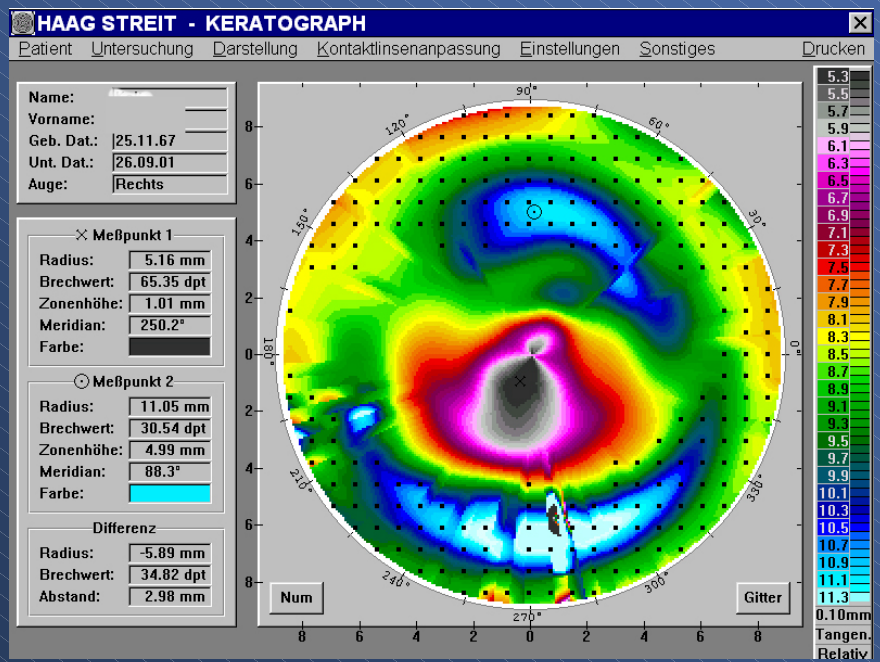
Keratoconus

Scars and folds (Vogt striae)

Optical Axes Center of Pupil

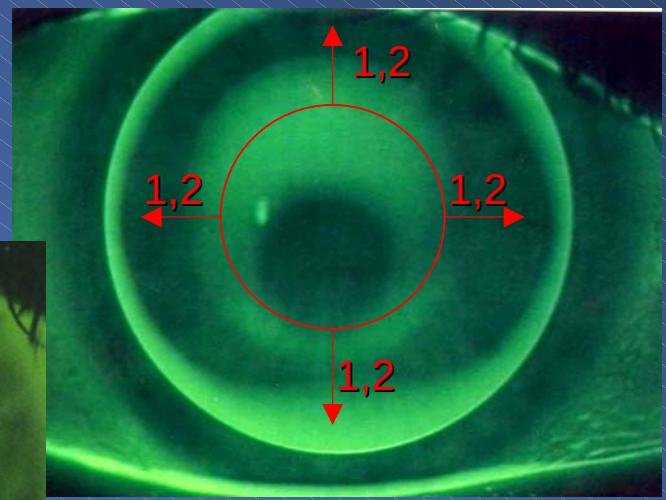
Apex caudal decentered



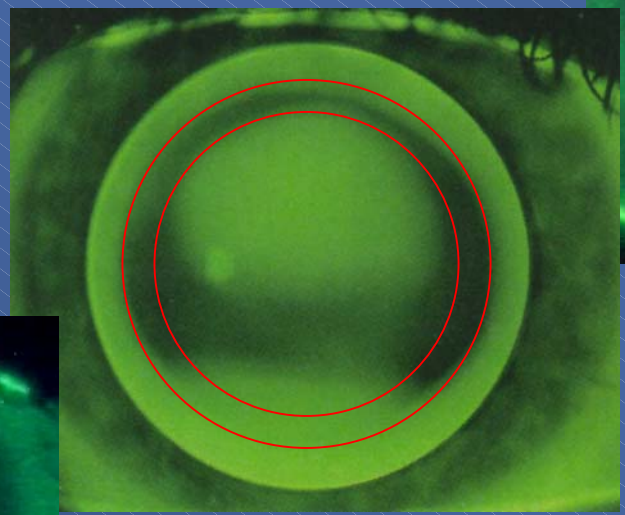


Keratoconus

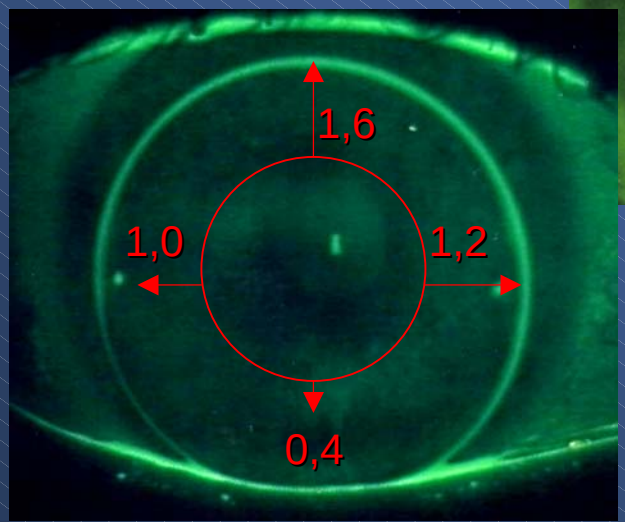
3-point Fit (multicurve or high aspheric design



First apical clearance (multicurve design)



Alignment Fit (Quadrant-specific design)



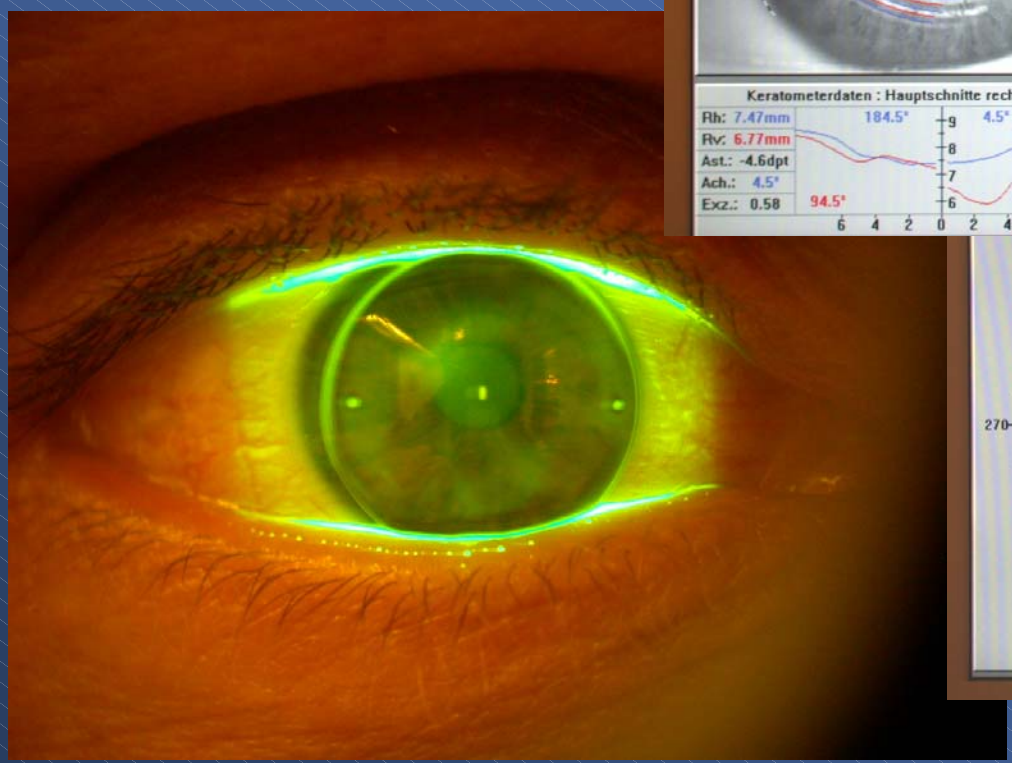
Keratoconus

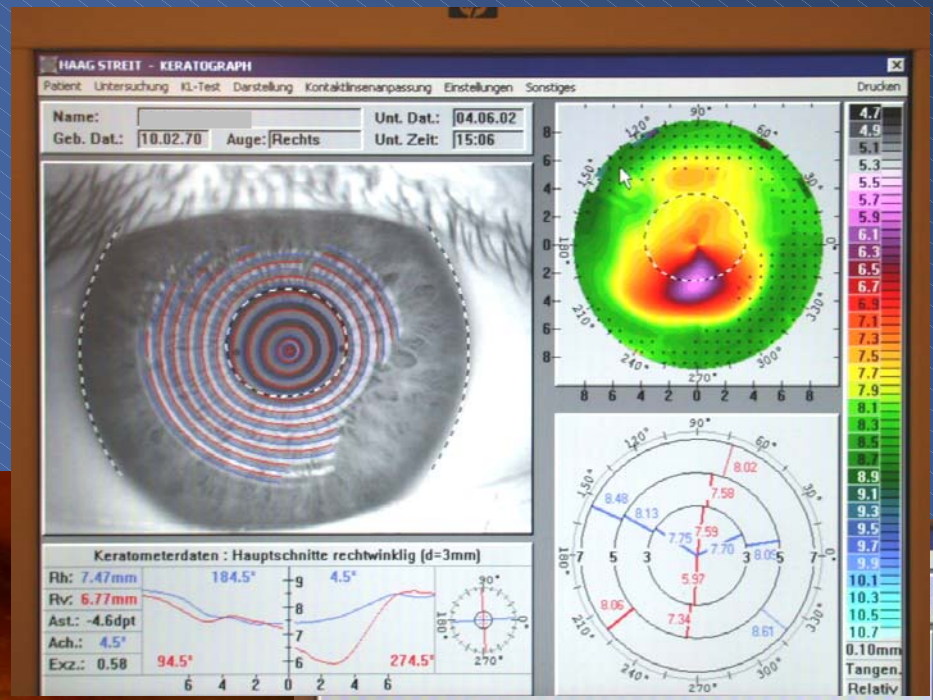
Example OD,

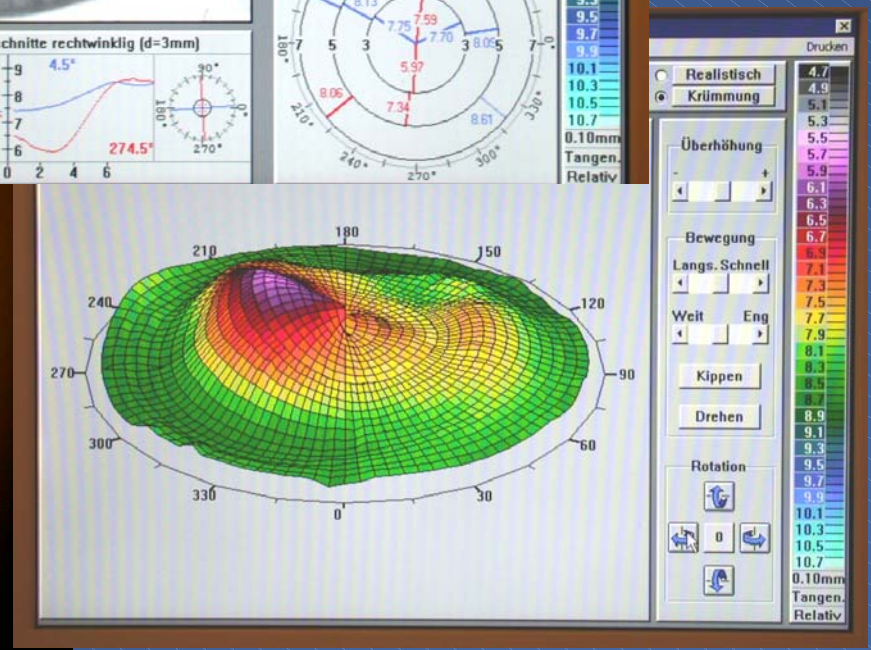
Amsler 1-2,

Radius 6,05 mm,

CL FSK 12/08







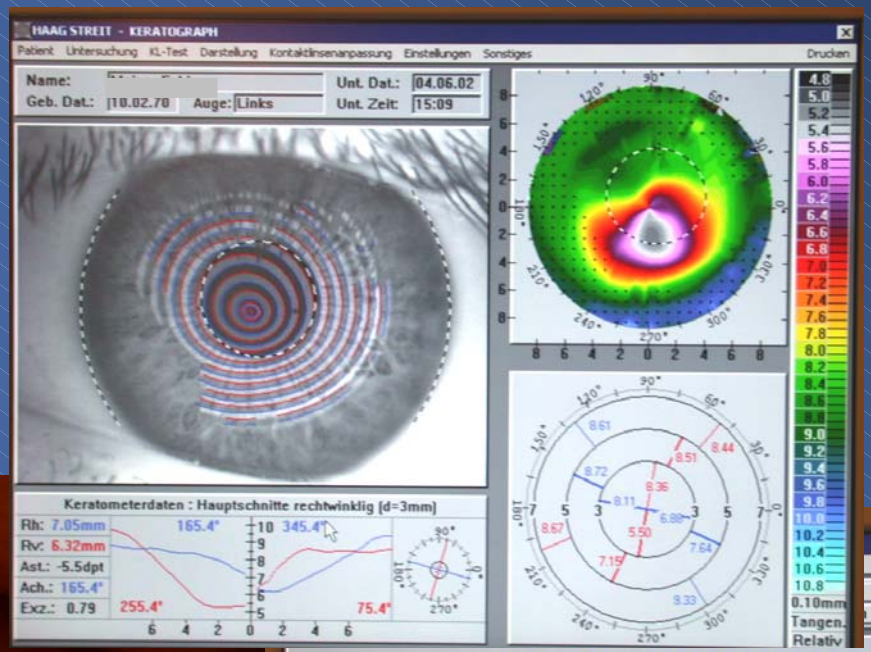
Keratoconus

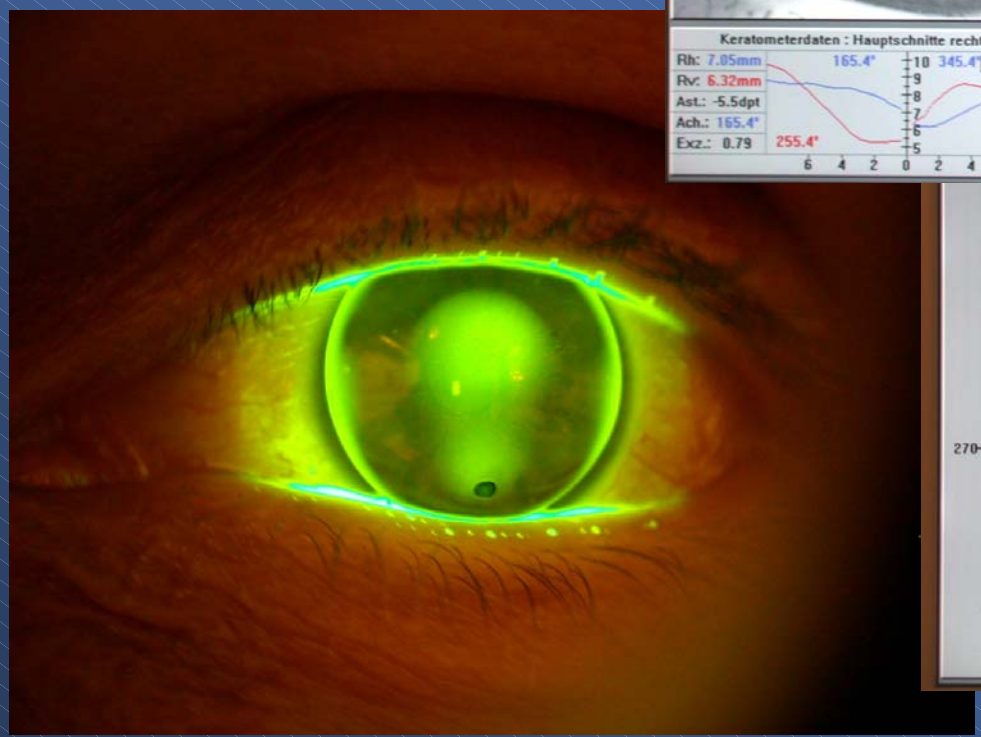
Example OS,

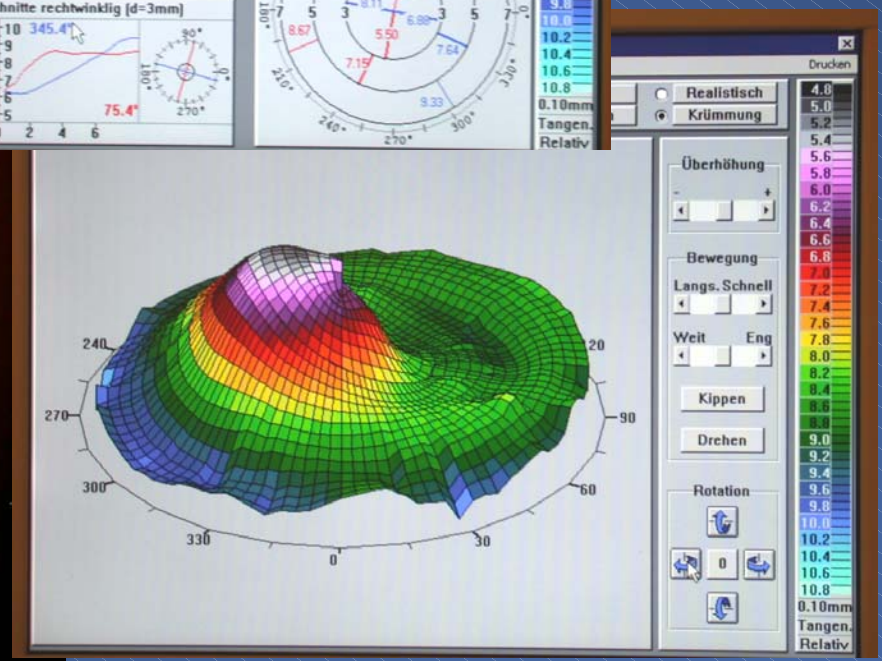
Amsler 3-4,

Radius 5,4 mm

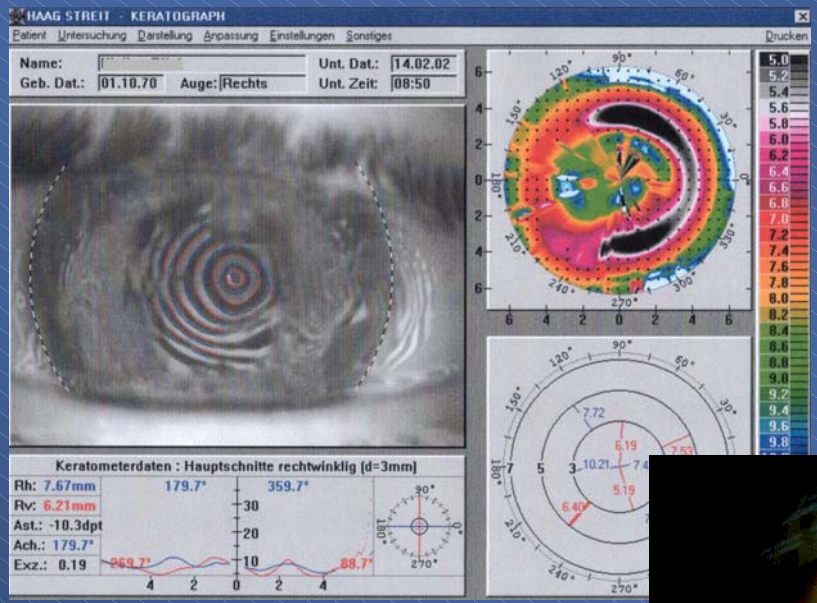
CL FSKQ 15/15/15/00

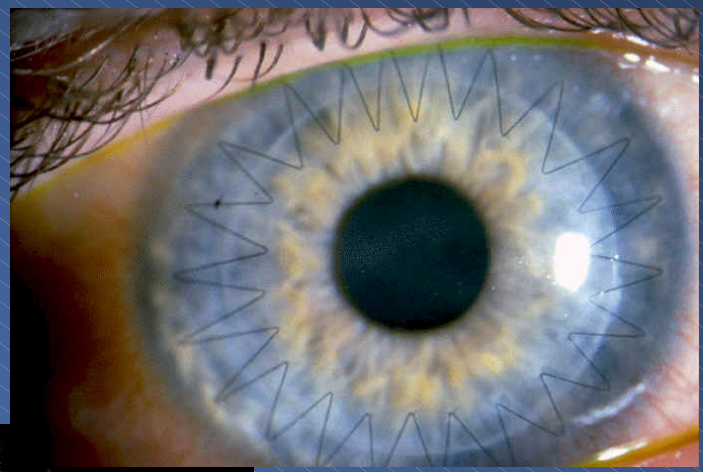


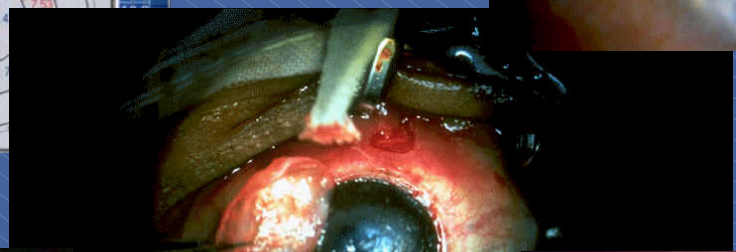


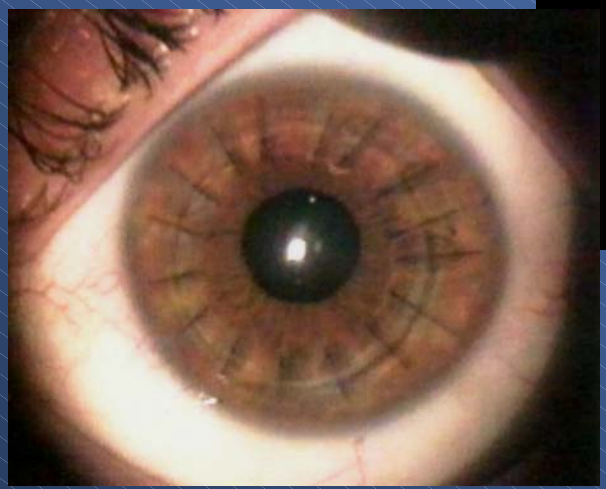


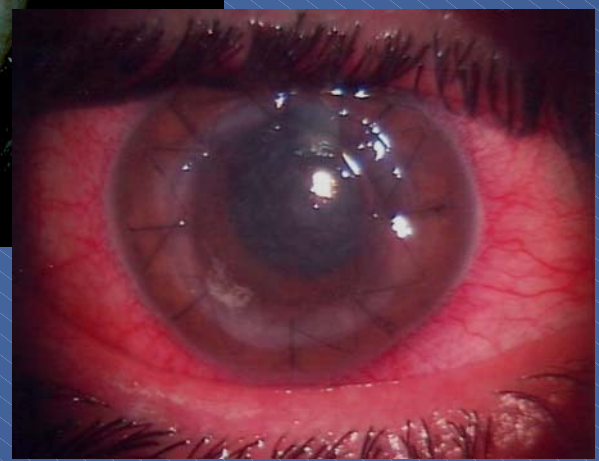
Keratoplasty





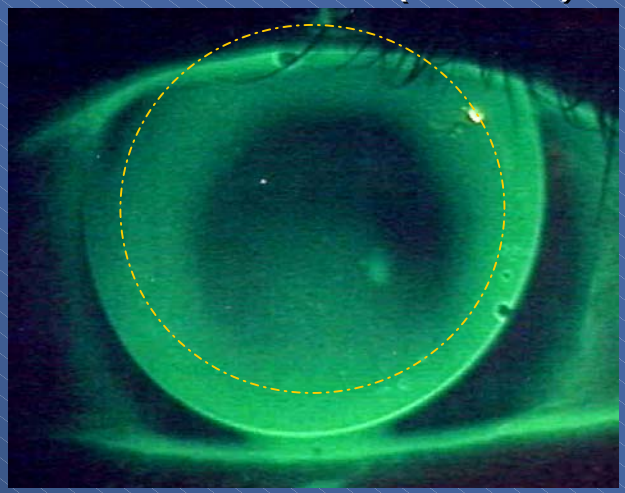




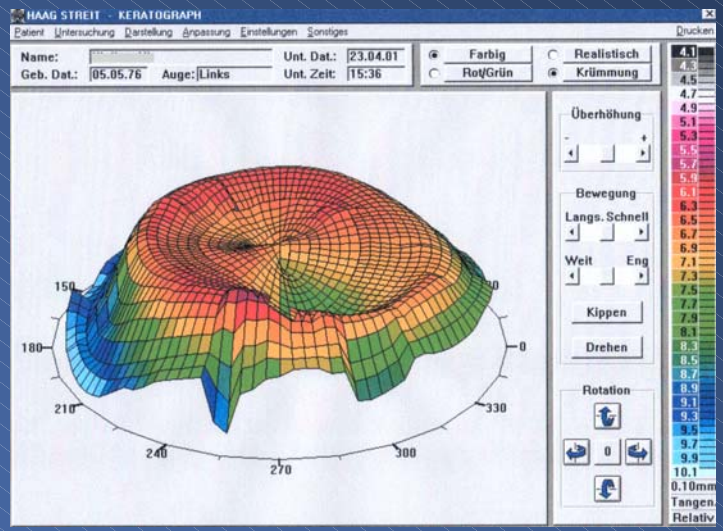


Keratoplasty

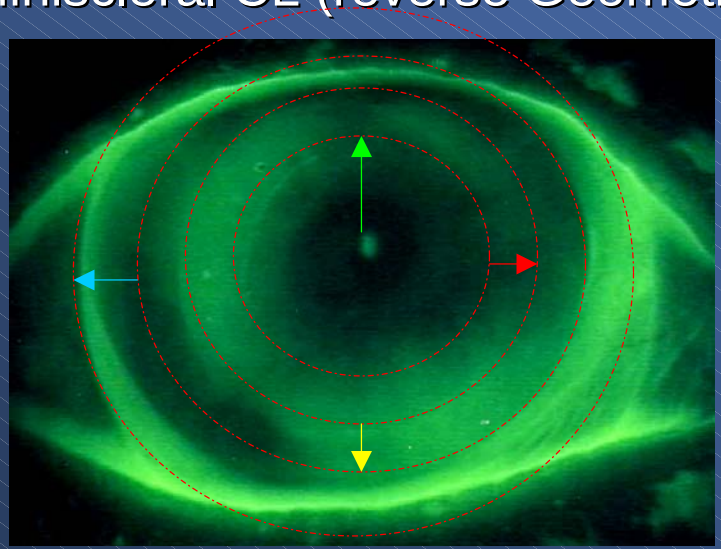
Monocurve CL (nE 0,0)



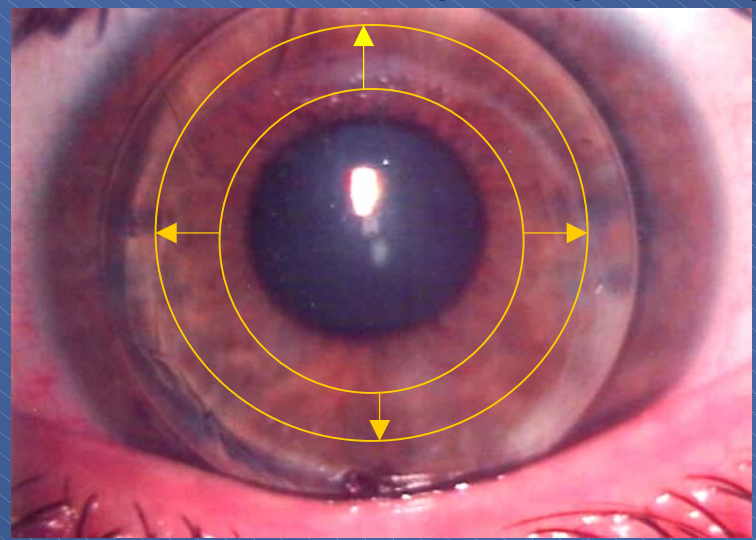
Astigmatic KP, steep edges



Miniscleral CL (reverse Geometry)

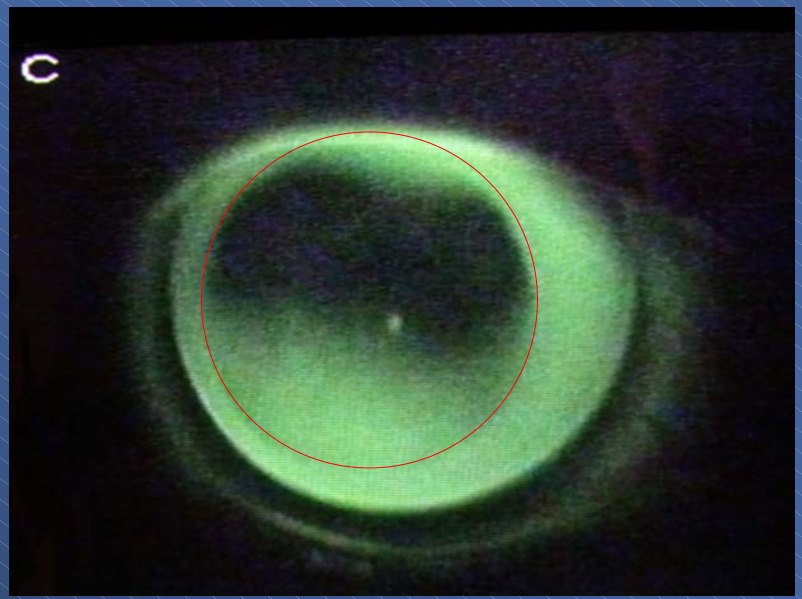


Reverse Geometry CL (nE -0,6)



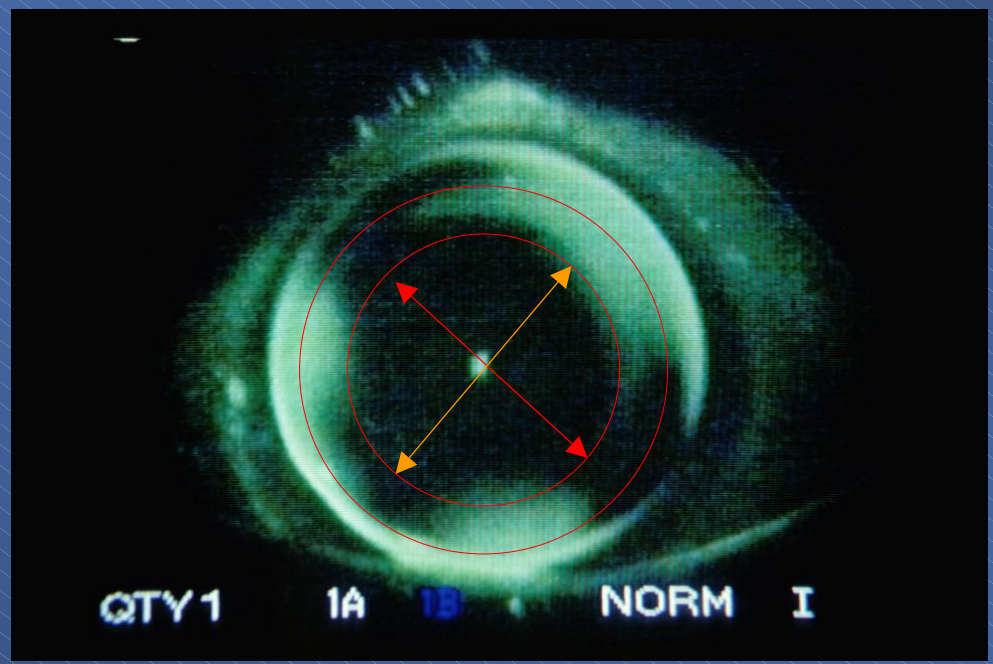
Keratoplasty

Monocurve CL (nE 0,0)



Reverse Backtoric Geometry CL (nE -0,6)

8,40 / 7,60 mm

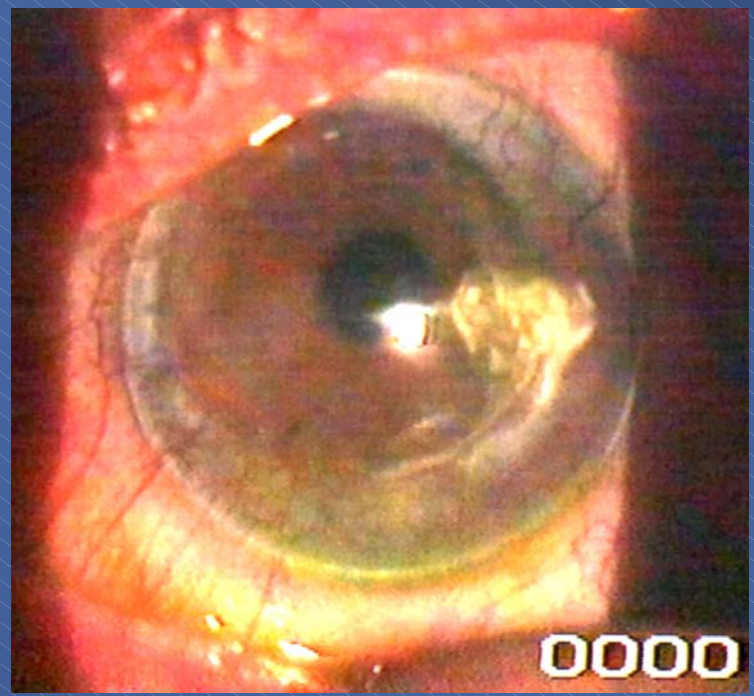


Keratoplasty complications

Keratoplasty repulsion : CL Fit after stabilsation

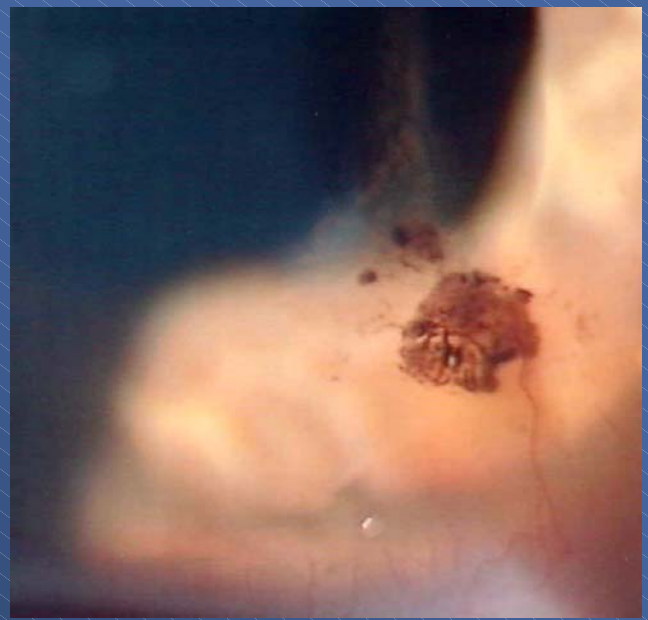
Large RGP OAD 10,8 mm
(intra-limbal)

Miniscleral OAD 13,5 mm
Vcc 20/28 (extra-limbal)

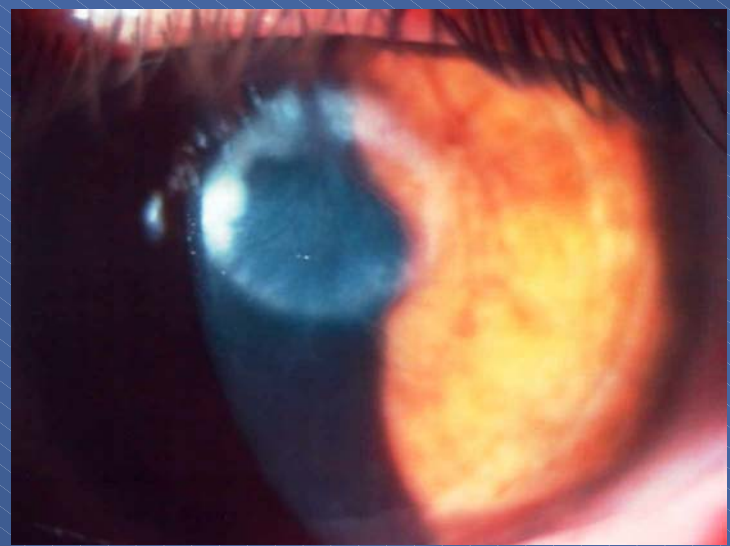


Post–Trauma

Cause of trauma: Cat



Cause of trauma: Infection

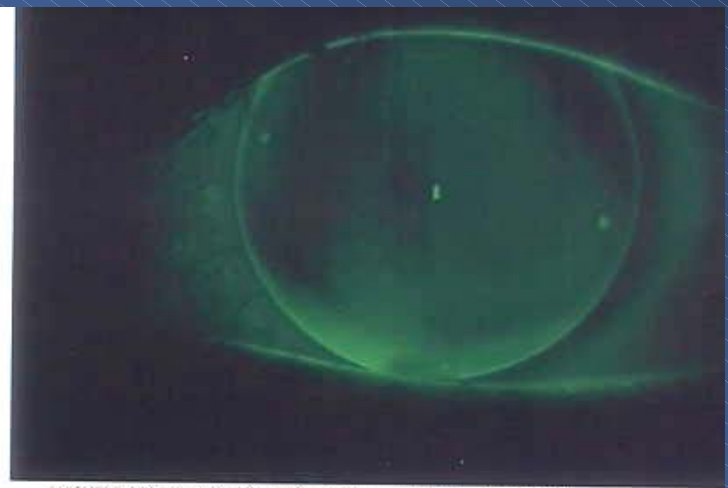


Post–Trauma

Cause of trauma: Knive

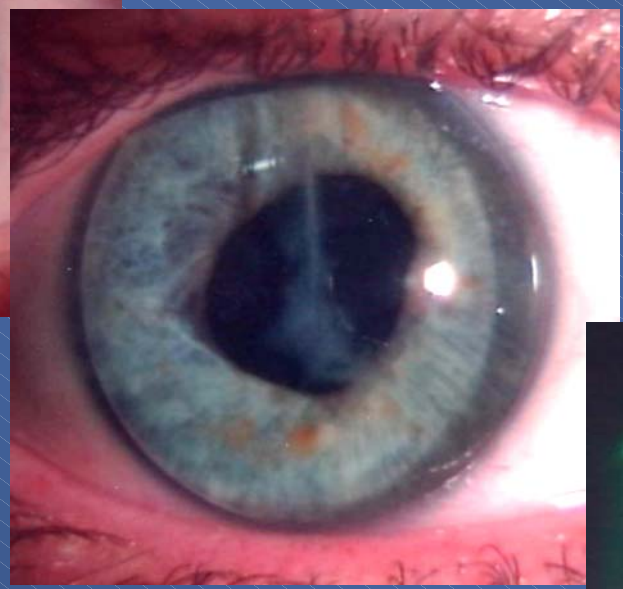
Large sphero-toric CL

Large bi-toric CL

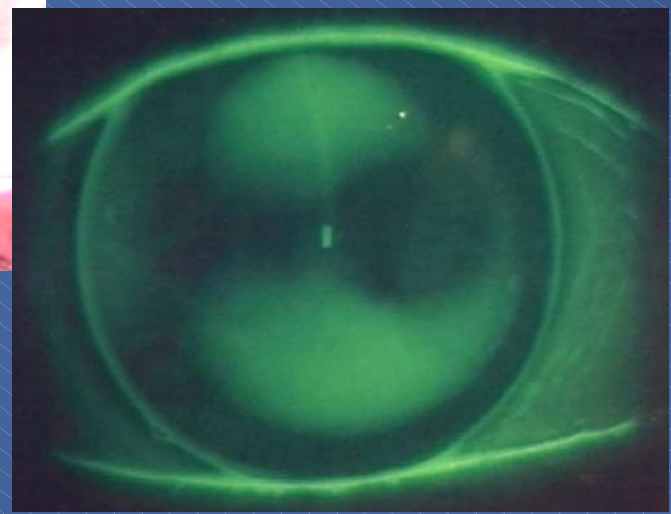


Post–Trauma

Cause of trauma : Scissors

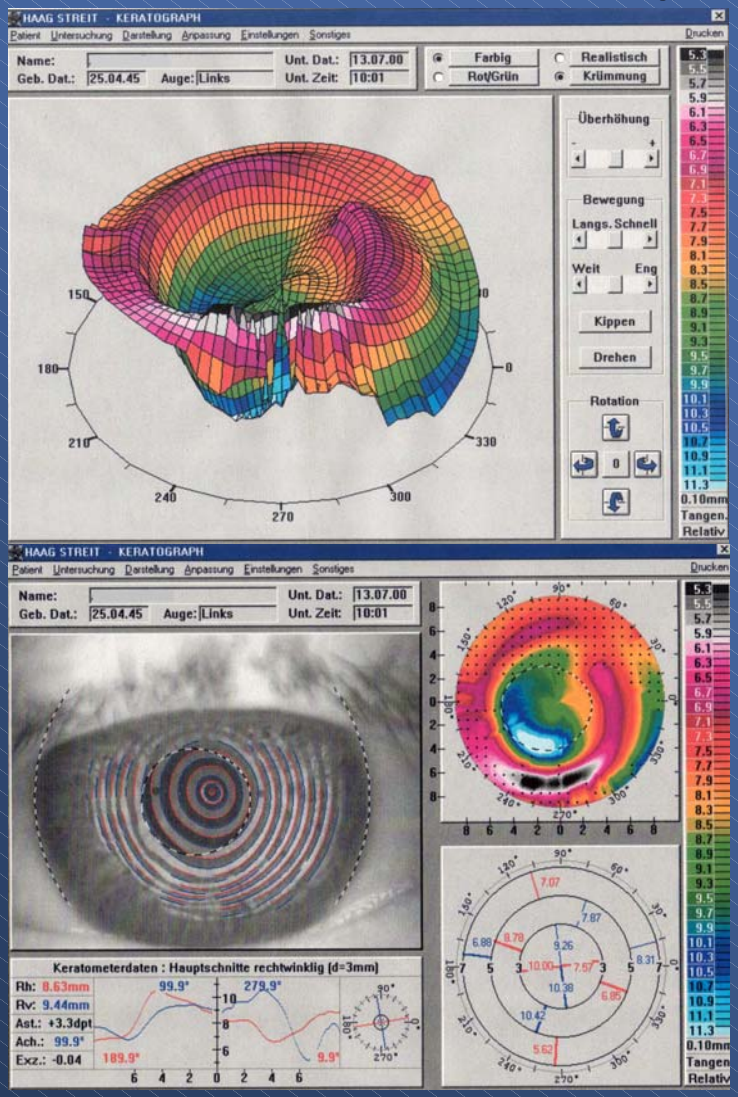


Large sphero-toric CL

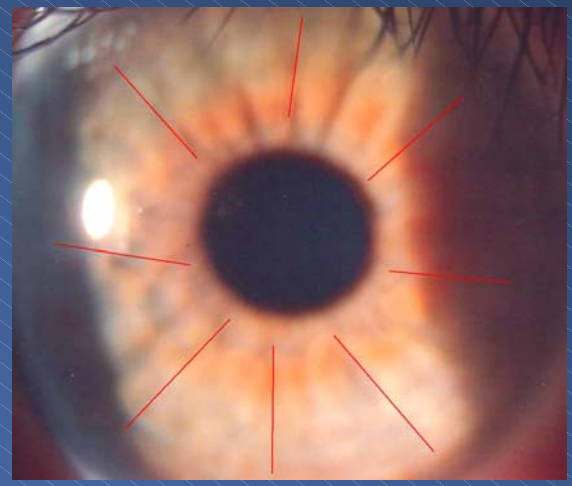


Post-refractive surgery

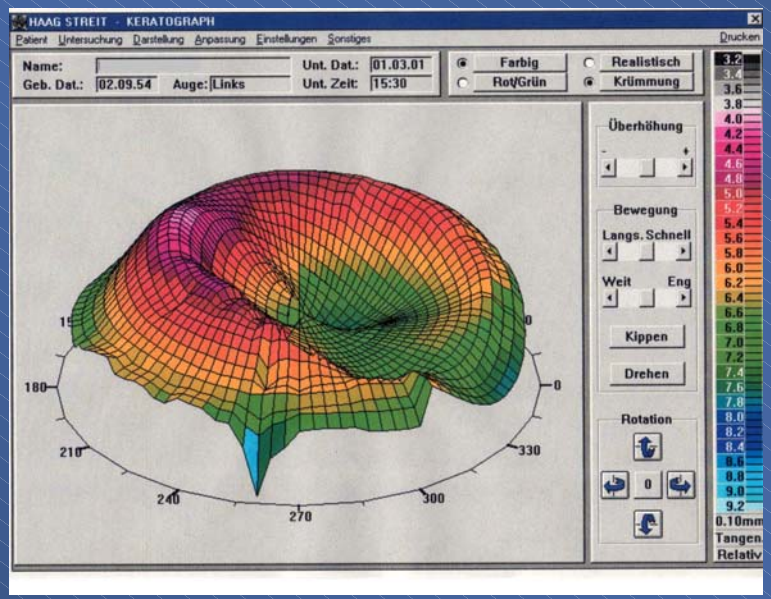
Photo refractive Keratectomy PRK



Radial Keratotomy

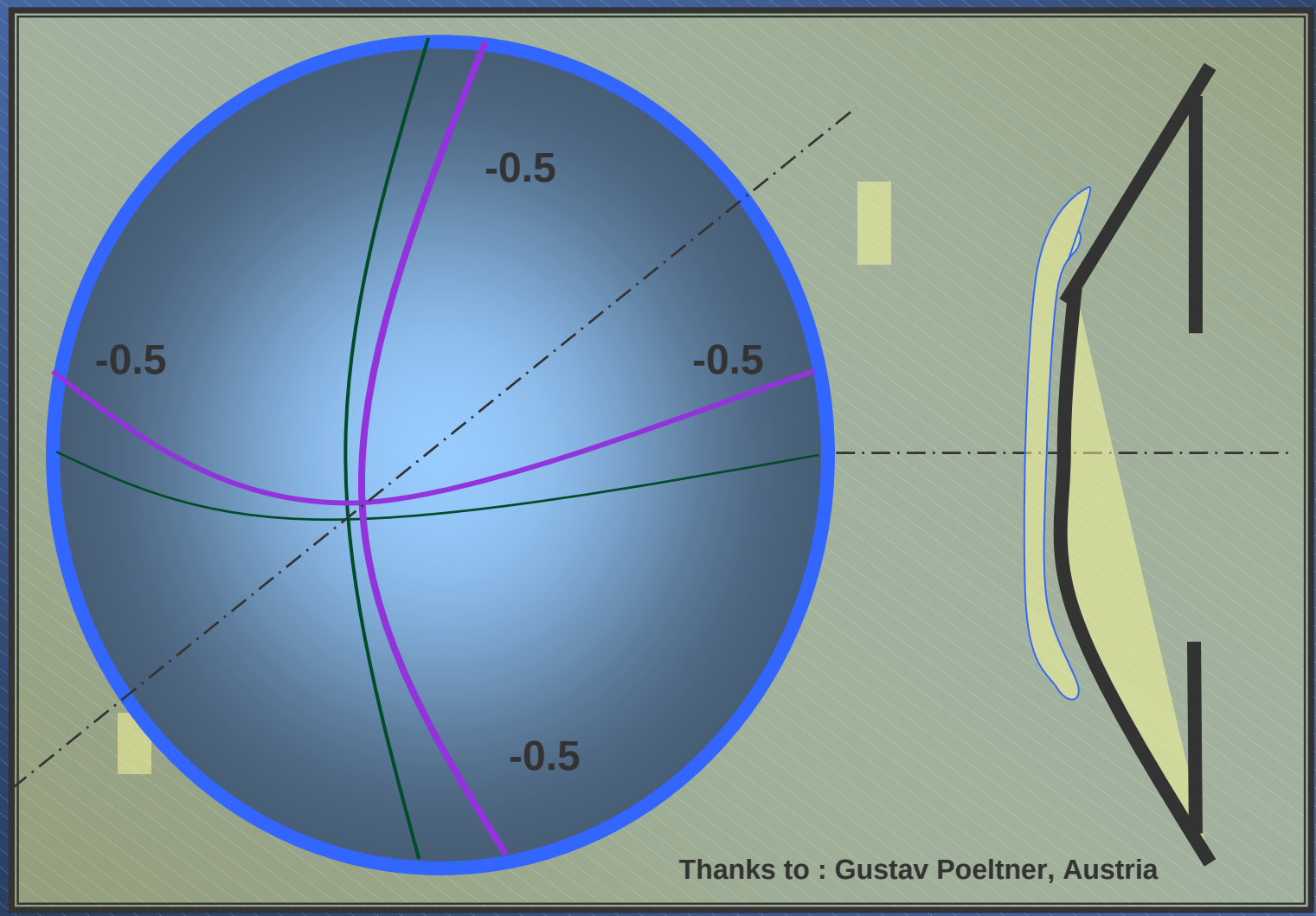


LASIK



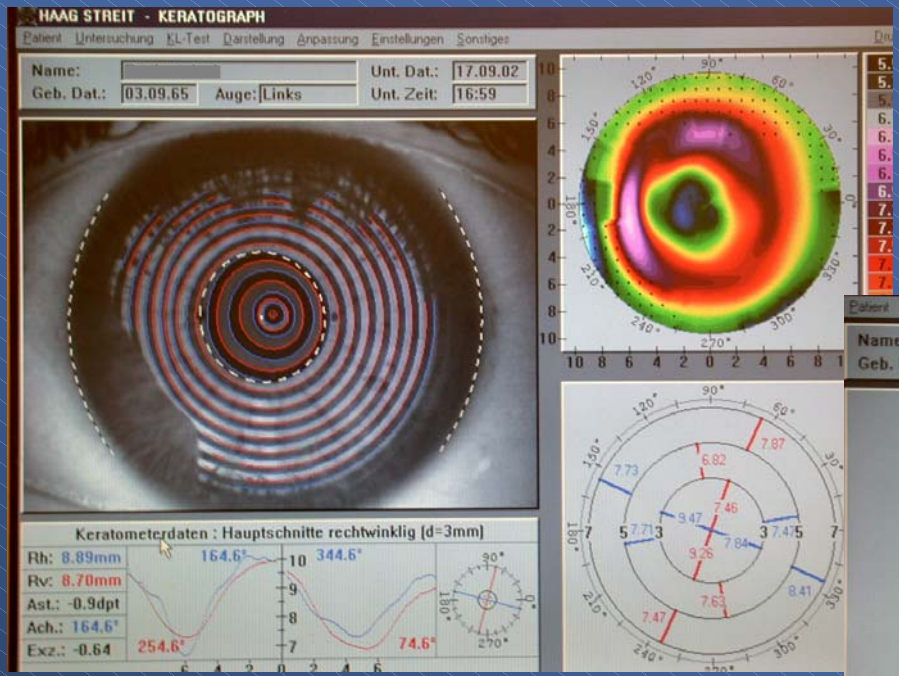
Post-refractive surgery

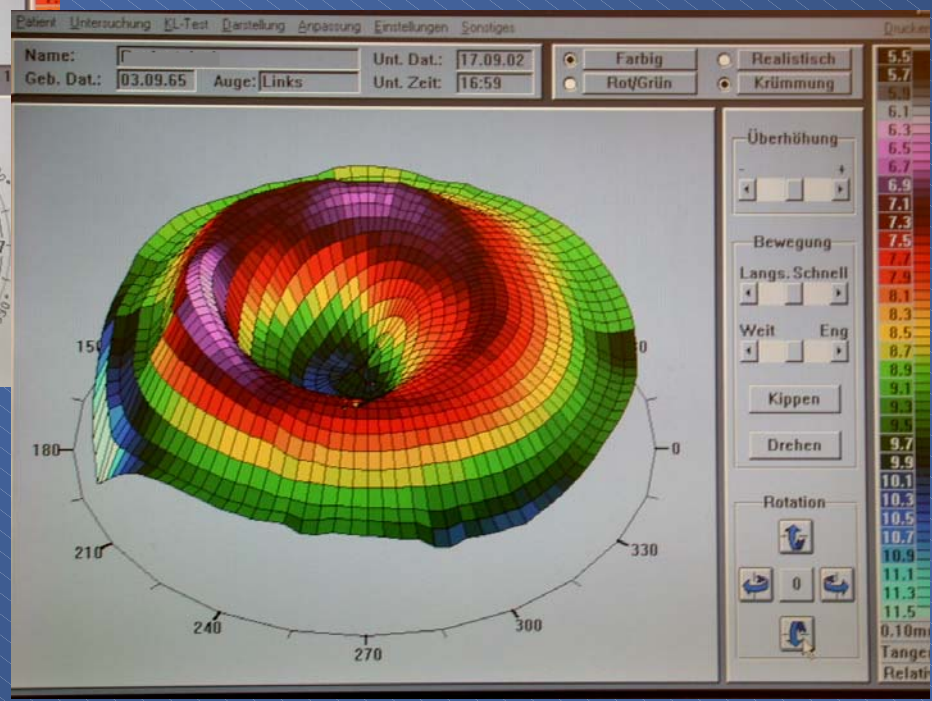
Photo refractive Keratectomy PRK and LASIK



Post-refractive surgery

Photo refractive Keratectomy PRK and LASIK





Post-refractive surgery

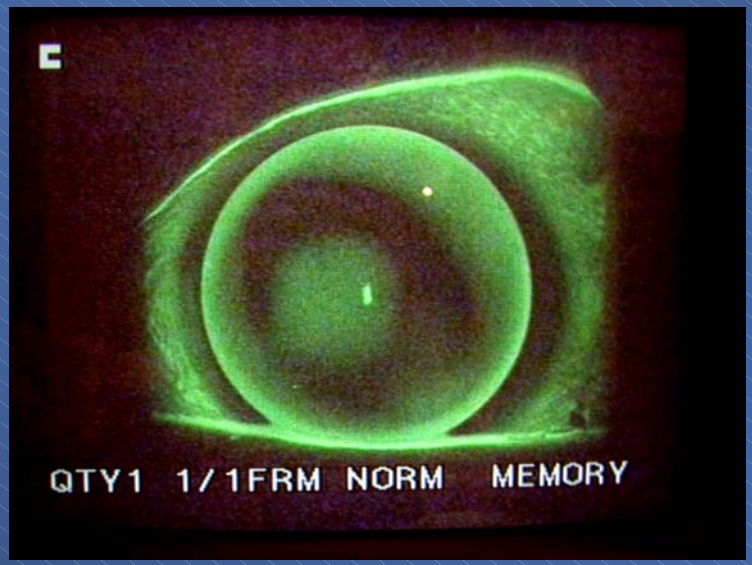
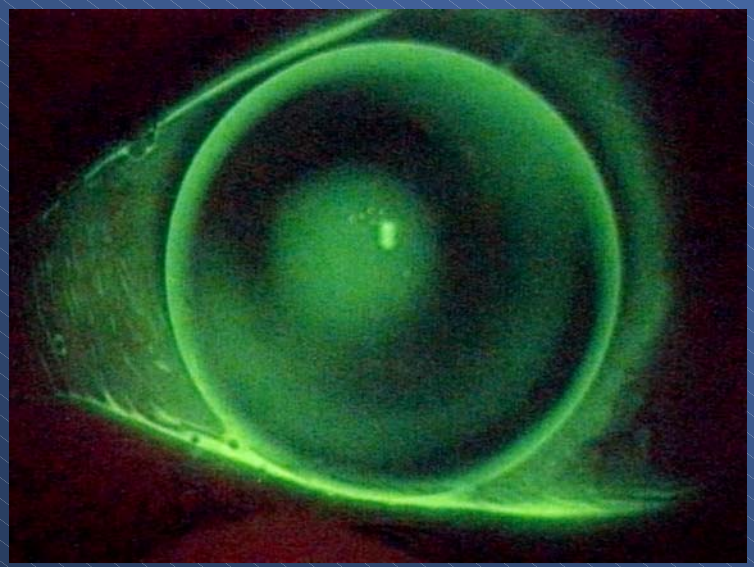
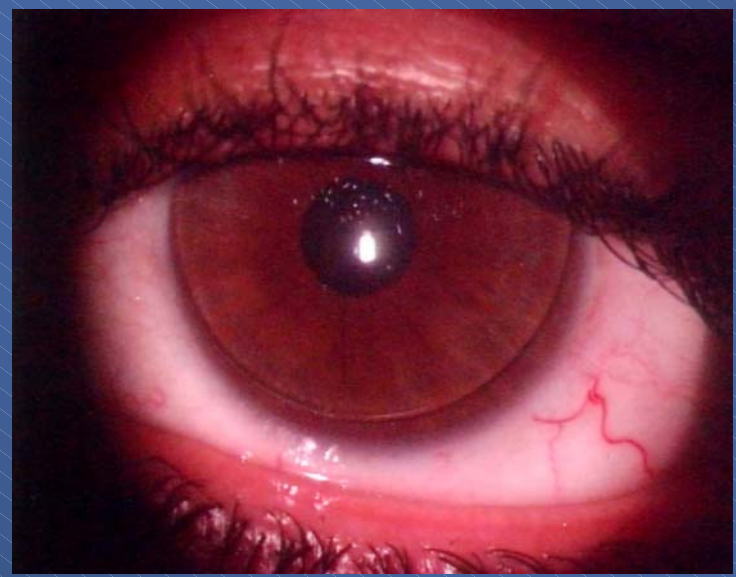


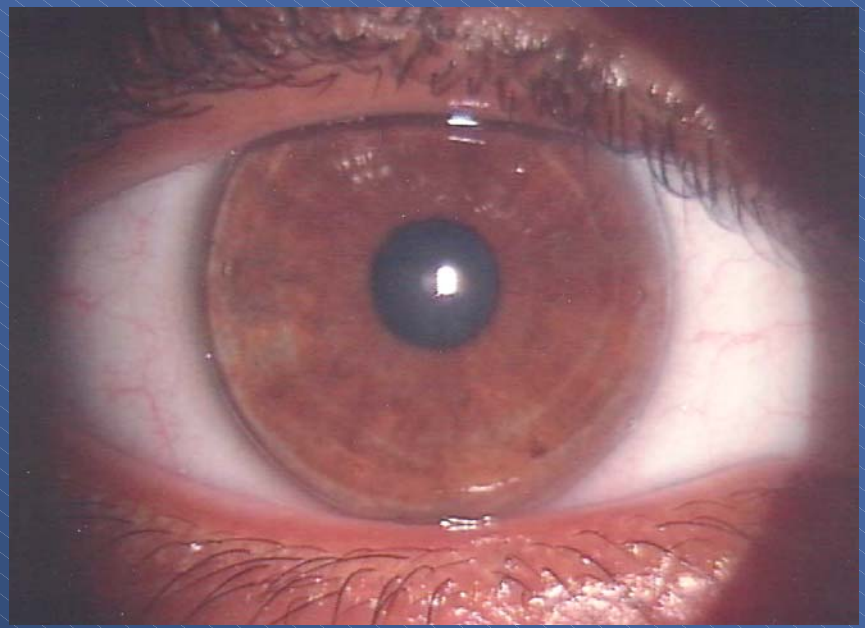
Photo refractive Keratectomy PRK and LASIK

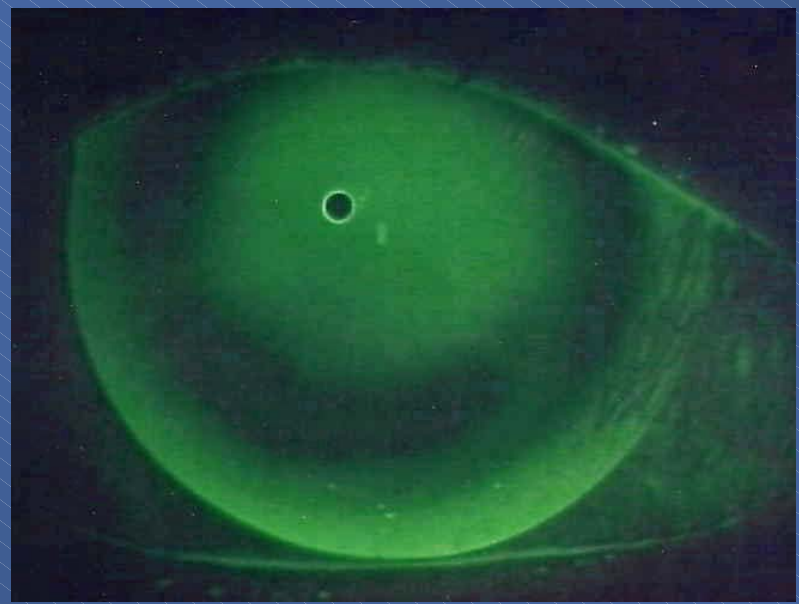




Post-refractive surgery

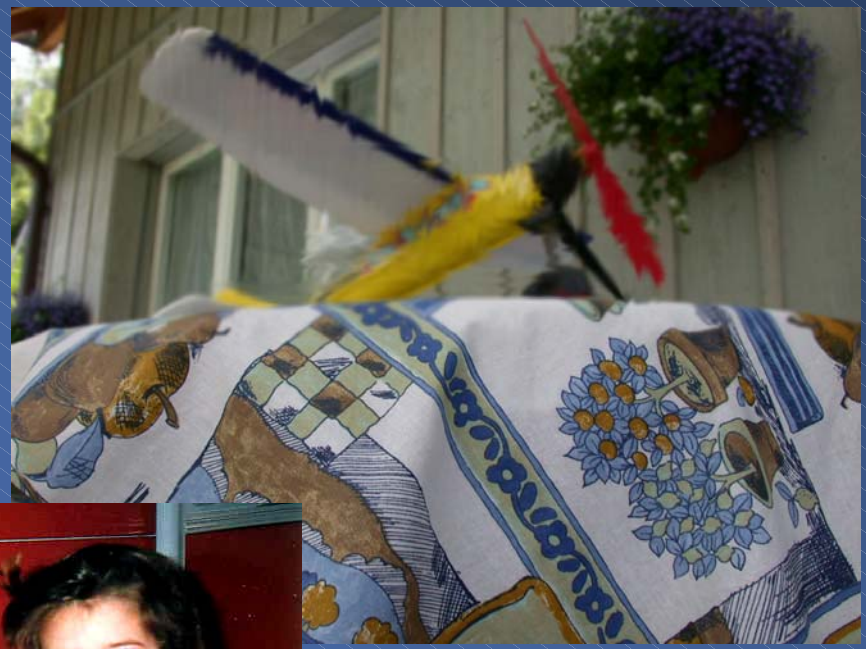
Photo refractive Keratectomy PRK and LASIK





Aphakia and Children

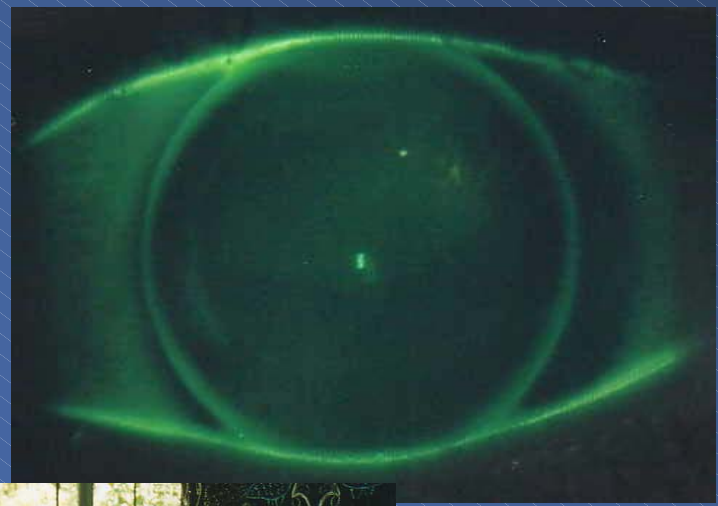
CL + Bifocal glasses :
Difficulties to ride a bike



CL + Bifocal glasses :
Difficulties to catch a toy

Aphakia and Children

Bi-, Tri- or Multifocal RGP

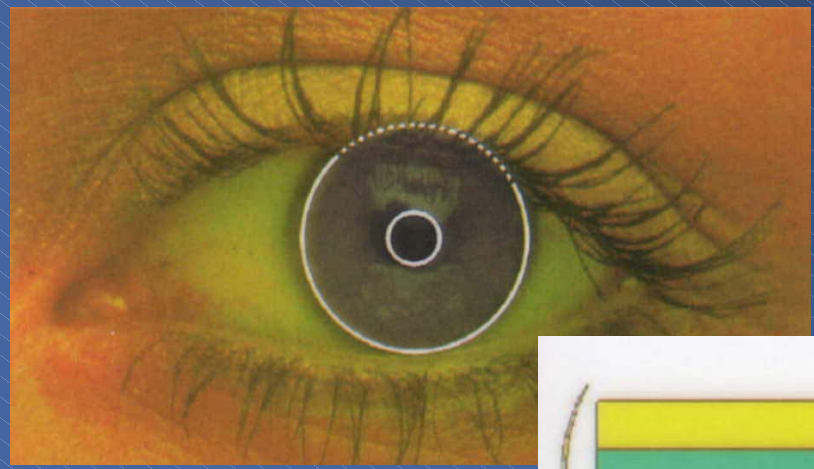


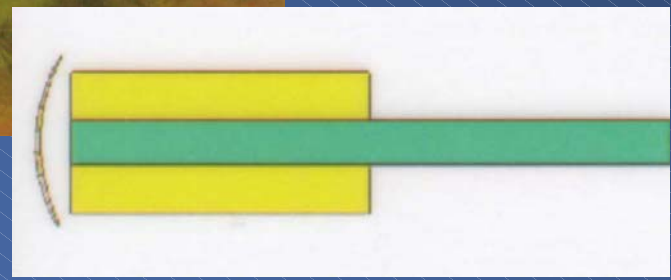
Aphakia and Children

Bi-, Tri- or Multifocal RGP

Presbyopia Fits

Simultanious Design
Bi- or multifocal, aspheric, aplanatic :
-> Centration !
-> larger OAD
(10,0 to 11,2 mm)



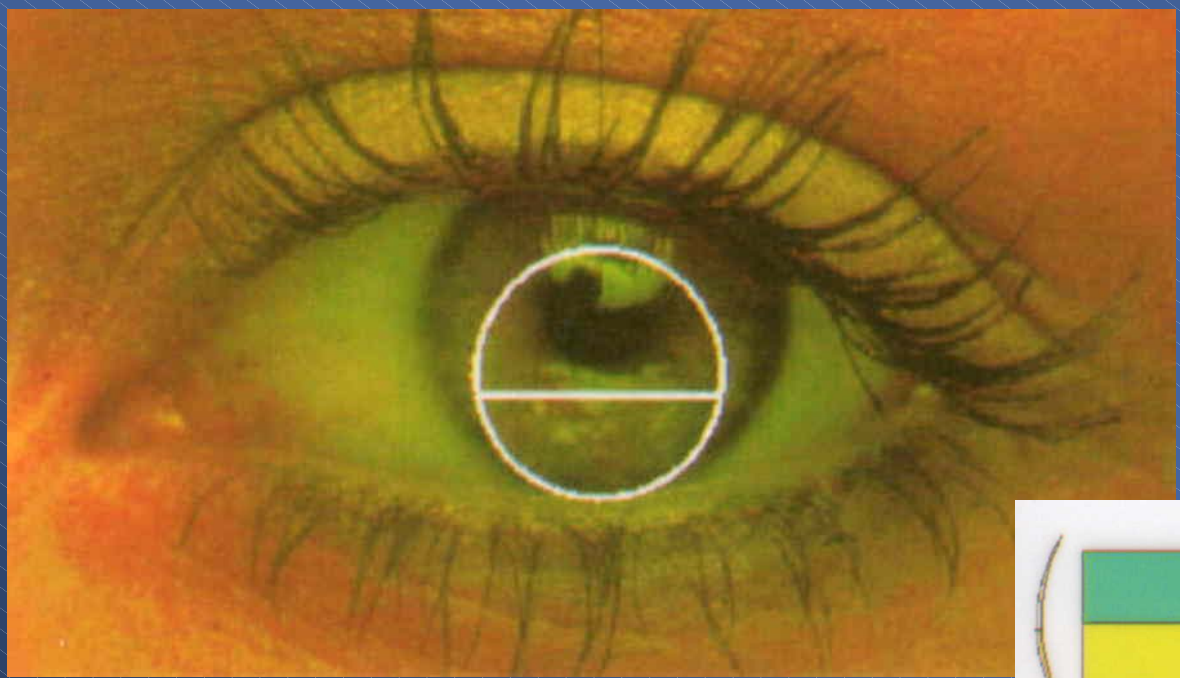


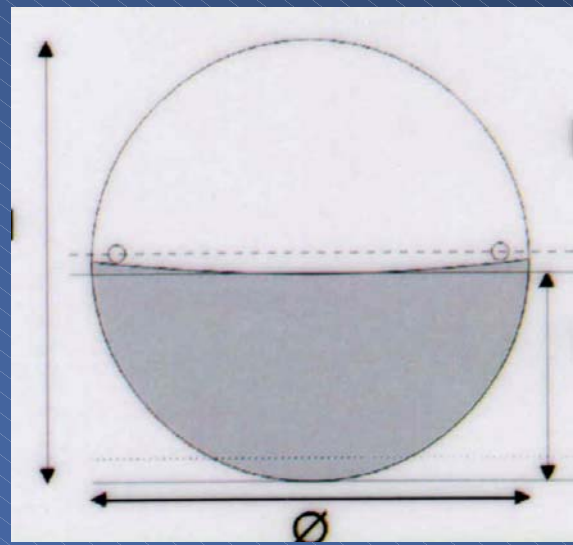
Presbyopia Fits

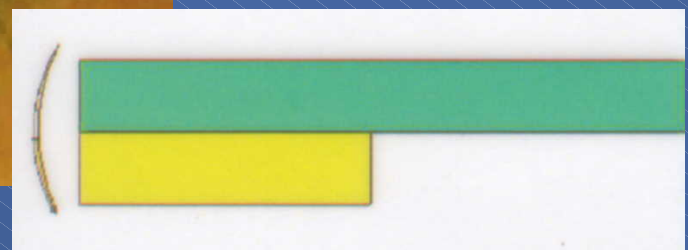
Translating Design Bifocal :

-> Movement !

-> smaller OAD (9,0 to 9,6 mm)



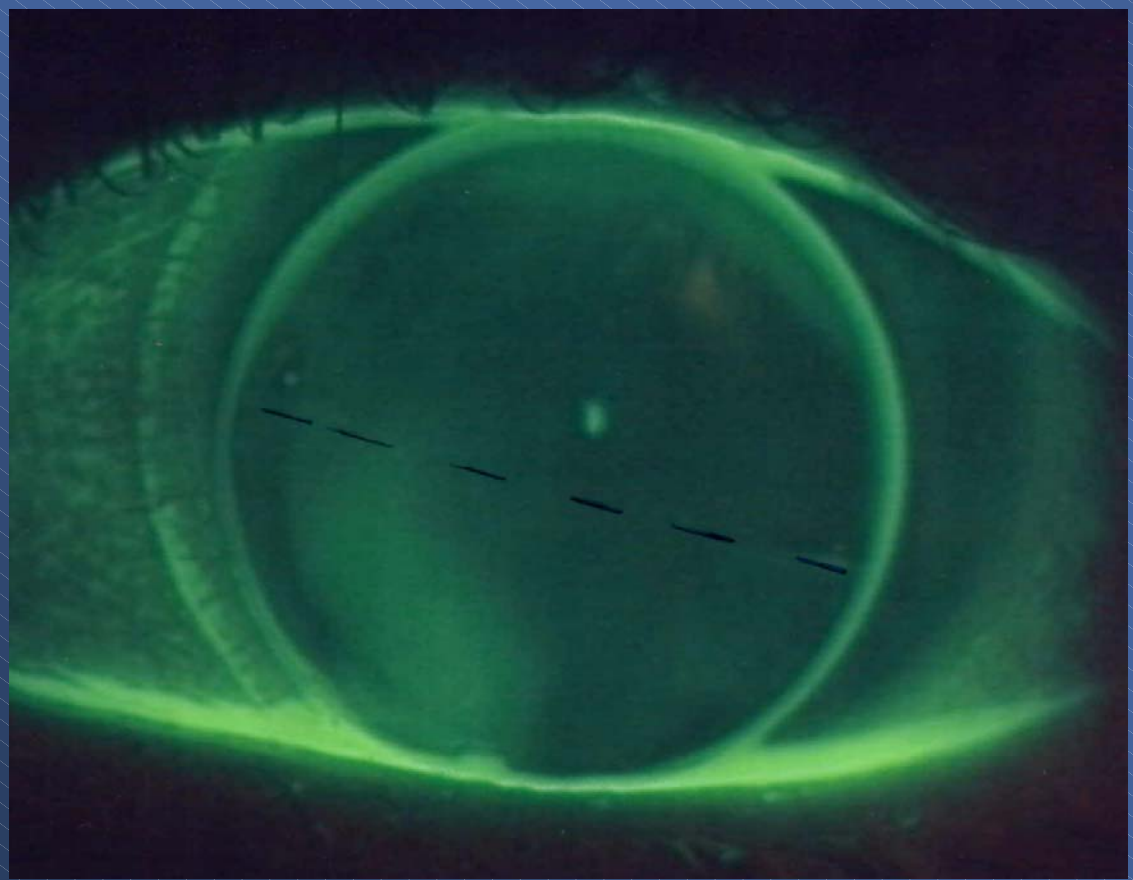


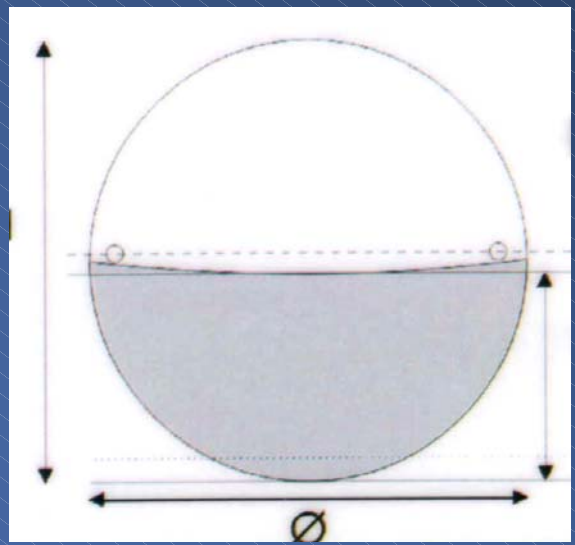


Presbyopia Fits

Translating Design Bifocal :

-> Movement !



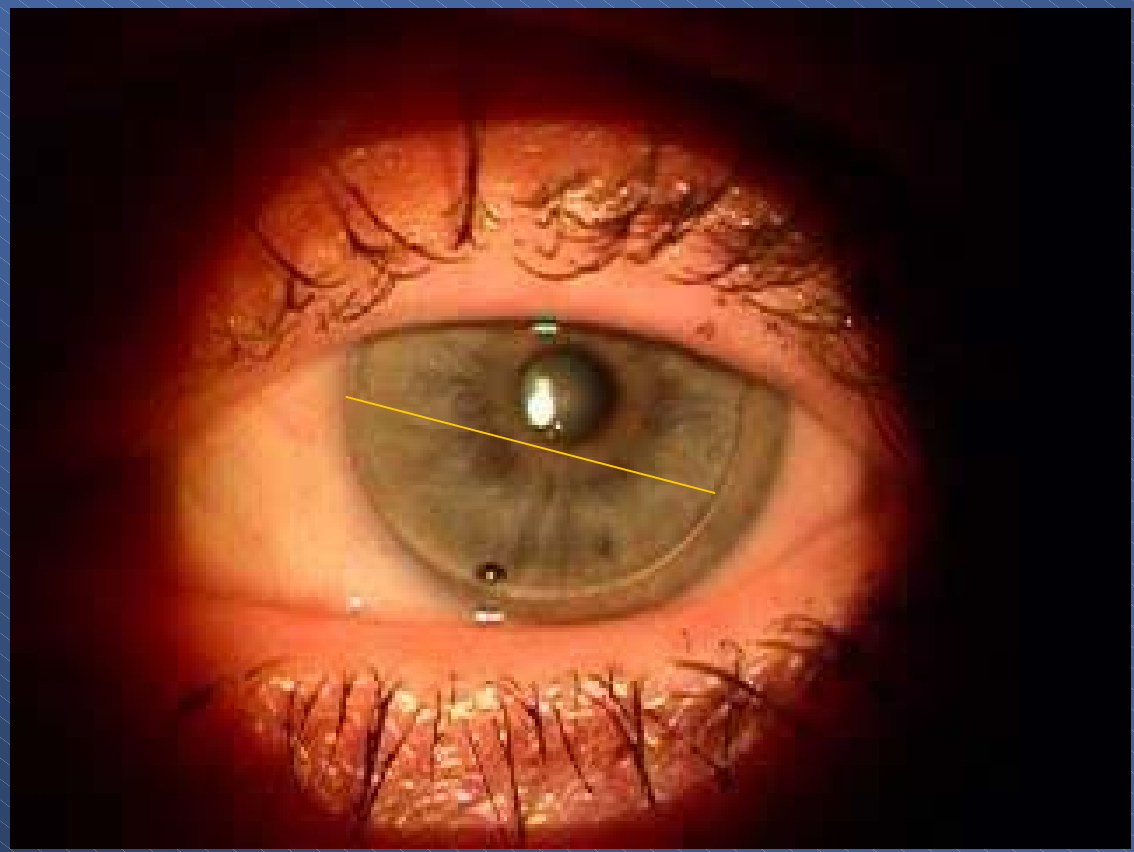


Backtoric Bifocal

Presbyopia Fits

Translating Design Bifocal :

-> Movement and Centration !



Ortho-Keratology

Centration and movement

(Soft design 2002, Example)

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Short Break

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Competition 2

6 cases of unsuccessfull RGP Fit‘s

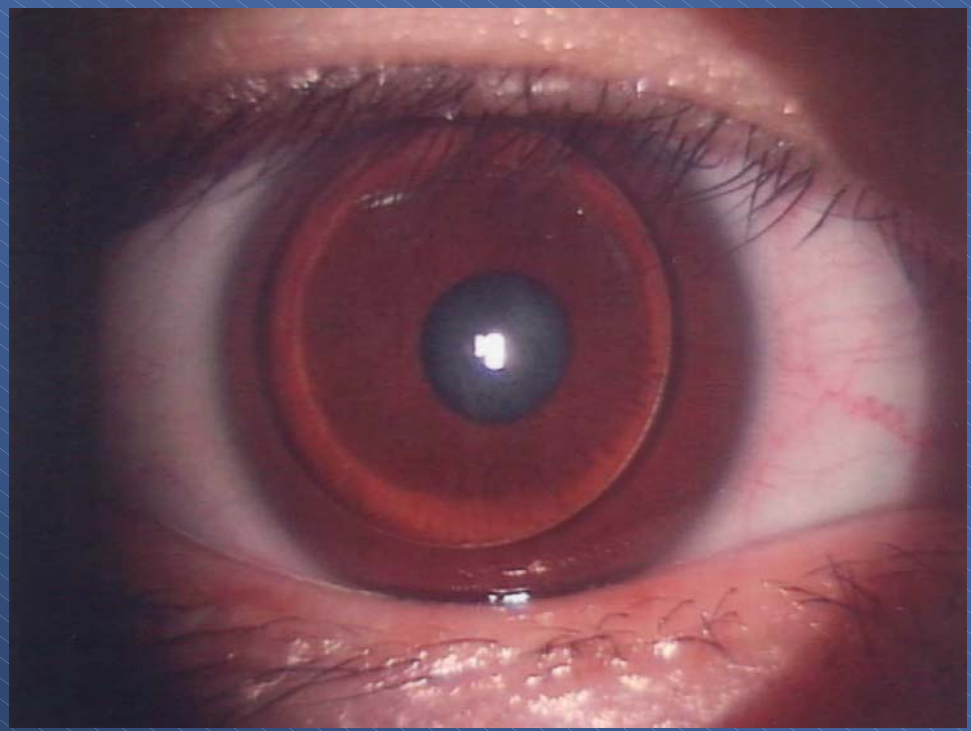
Please make notes :

What is the possible cause of the problem ?

What would you do different ?

What would you try next ?

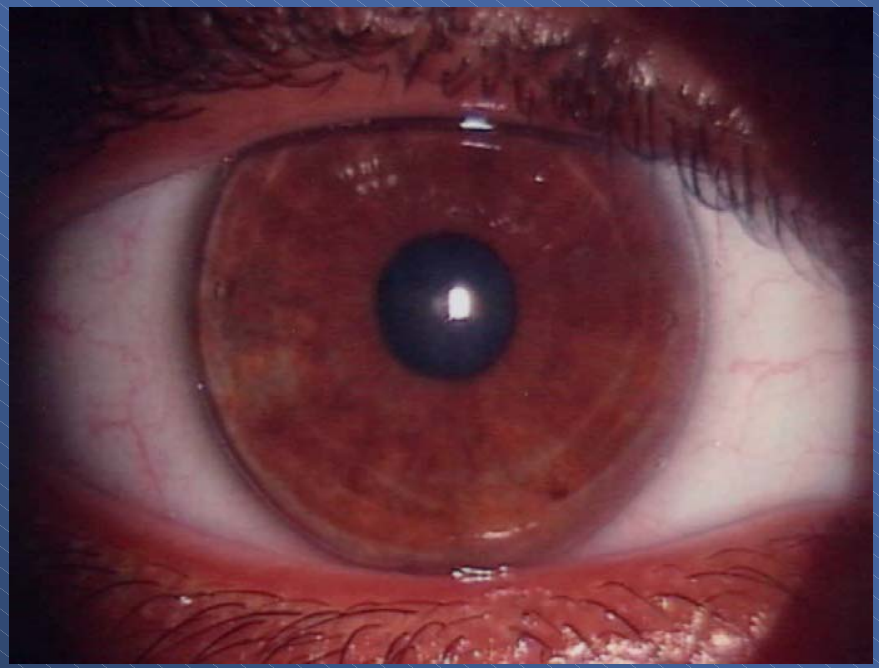
Case 1



Foreign body sensation :

- 17 y/o Girl
- New RGP fit 3 weeks ago
- Can‘t wear the lenses more than 3 hours per day
- Does not get better
- Wants to quit CL wearing

Case 1



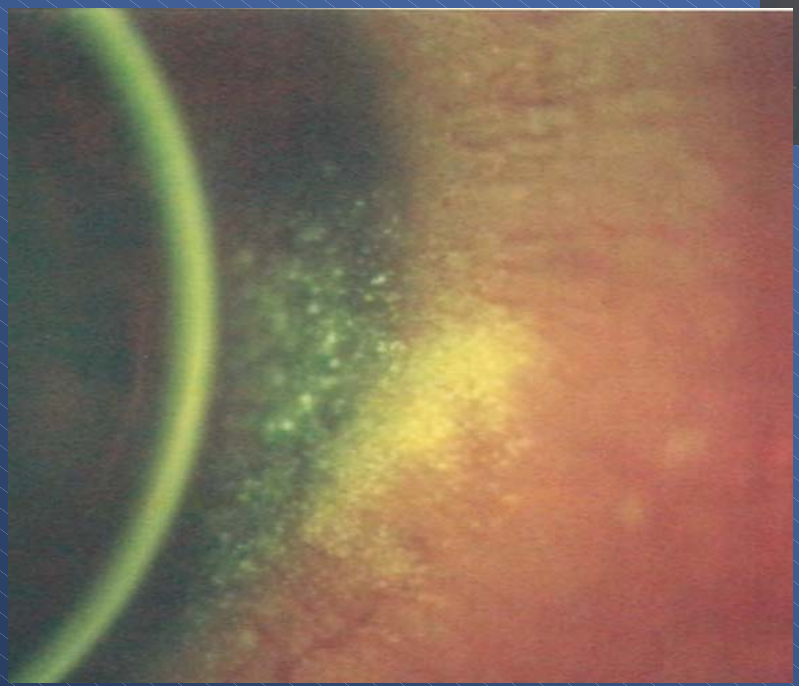
Foreign body sensation :

- CL touches the superior Lidmargin !
- OAD smaller or very large (Perilimbal lens)
- Thin Lens design
- peripheral slightly steeper fit
- If nothing helps = Soft CL

Case 2

3/9 Staining :

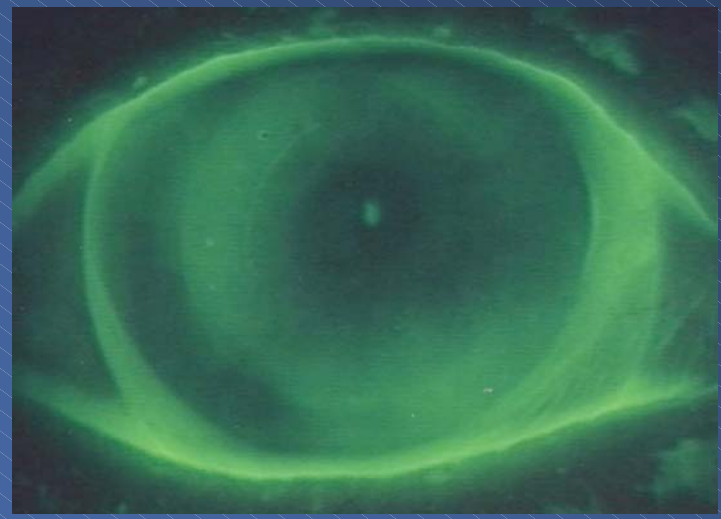
- 26 y/o men
- Myopia of –15 dpt
- Works in an office
- Always red eyes in the evening

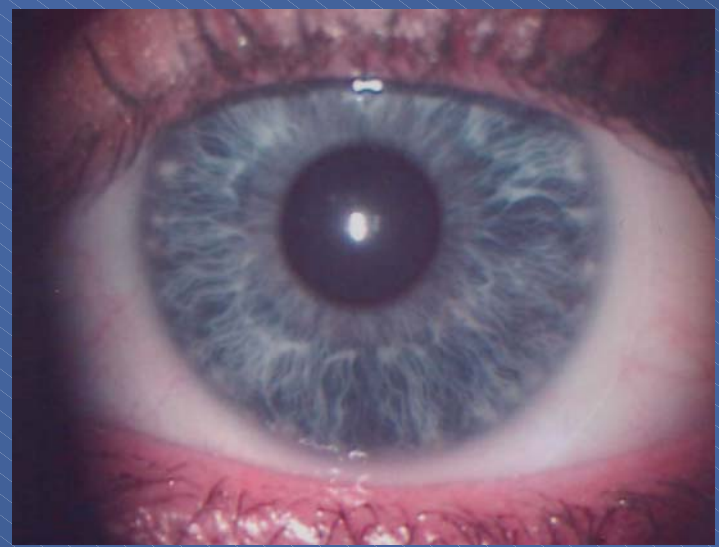


Case 2

3/9 Staining :

- Dryness
- Very small or very large OAD
- Thin Lens design
- Enhance horizontal movement
- Hyaluron-Acid rewetting drops every 4 hours
- Miniscleral lenses
- Use high wetting angle and high permeable materials





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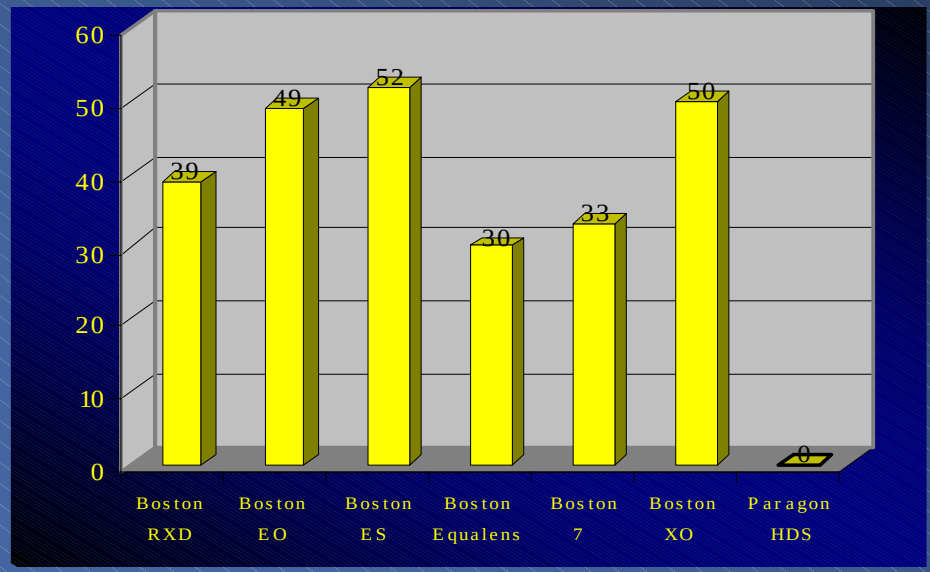
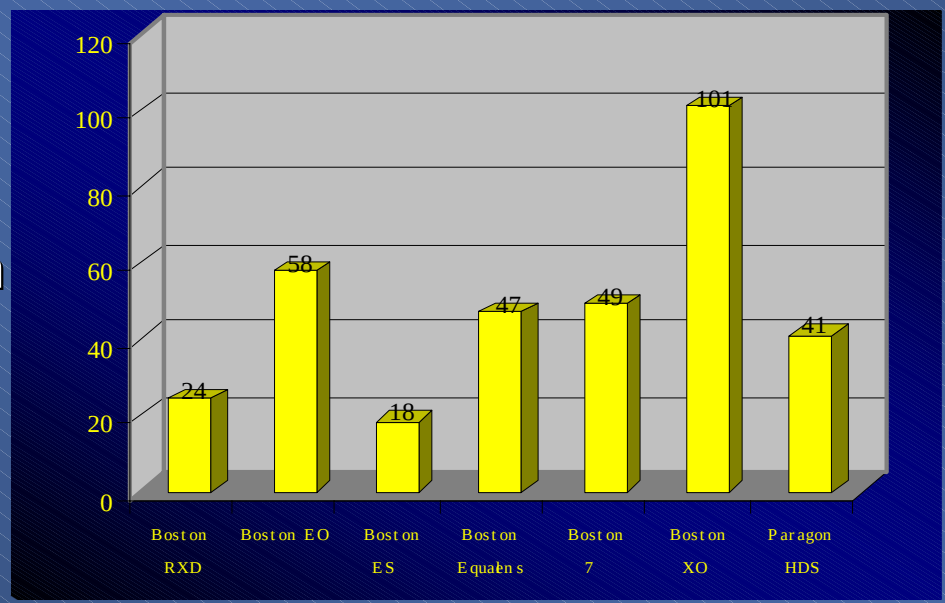




Case 3

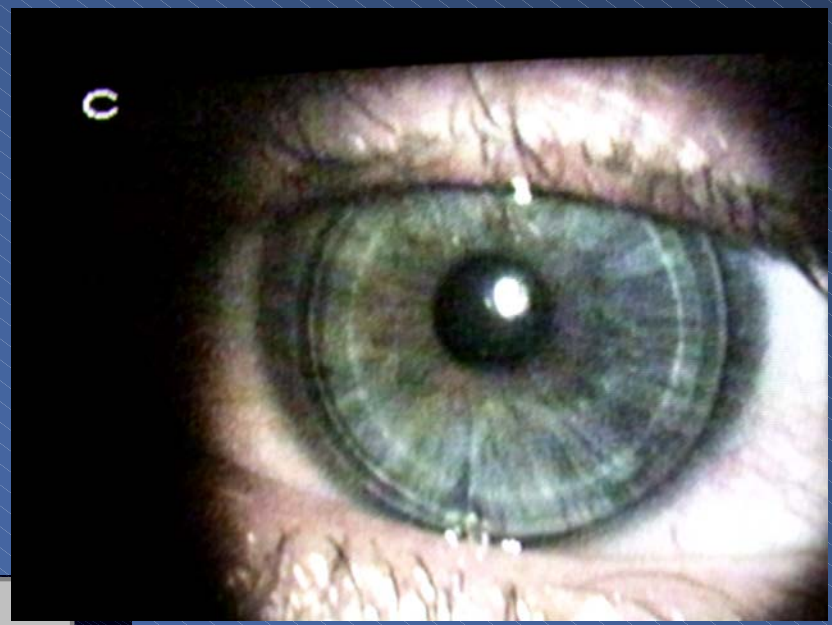
Sticking (tight) lens :

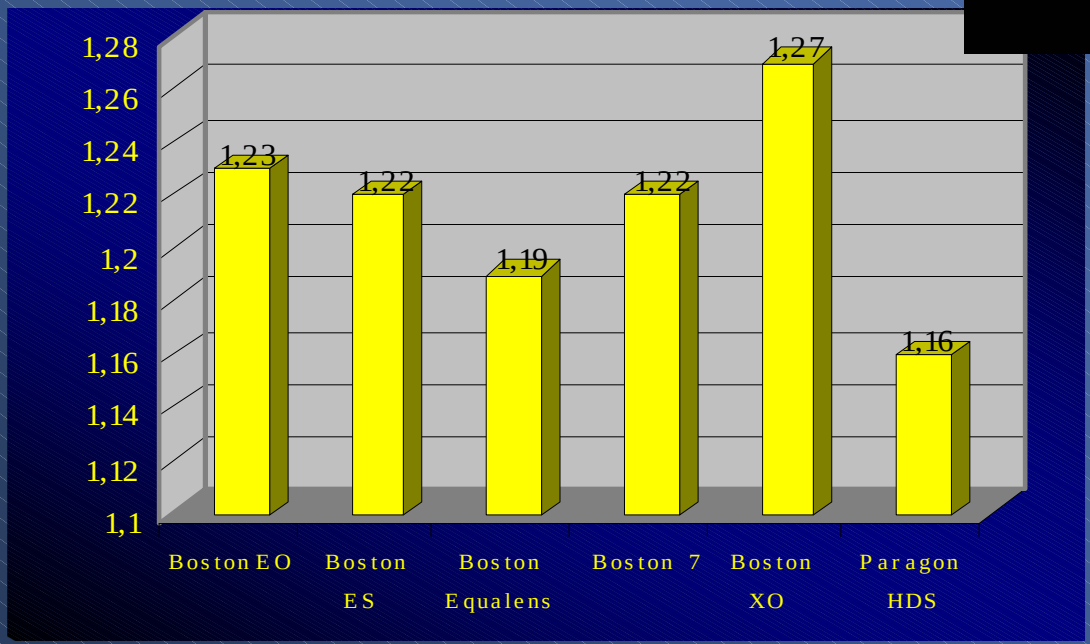
- 12 y/o Girl
- Hyperopia +8 dpt
- Hurts when she takes off her CL‘s

Case 3

Sticking lens :

- Larger OAD
- Minus carrier
- Lighter material (eg.Paragon HDS)
- Steeper fit

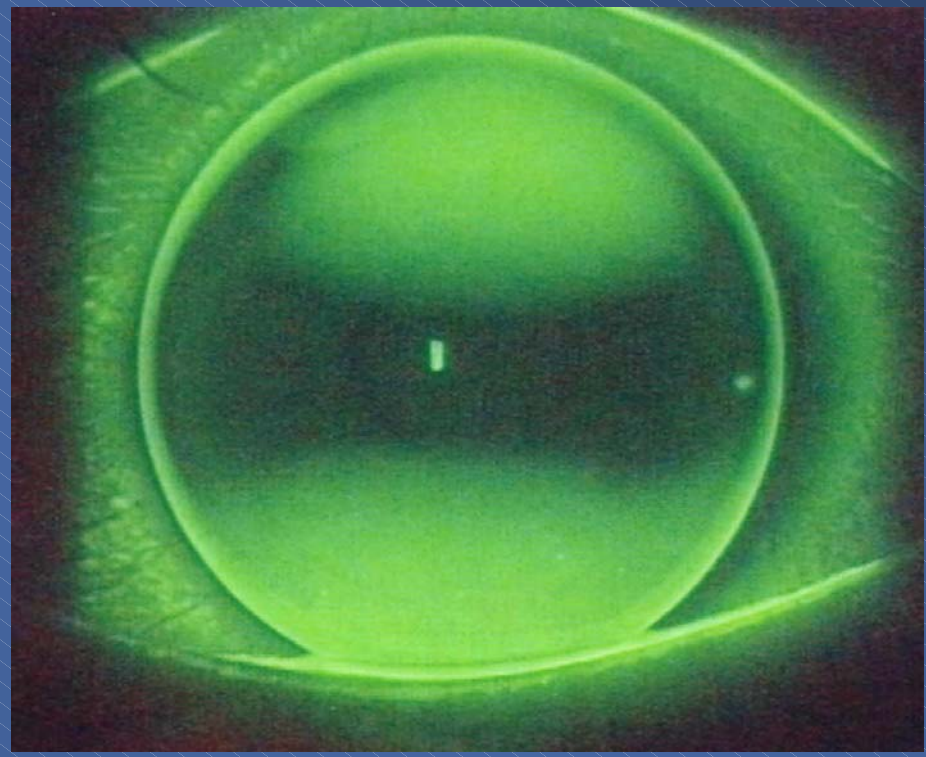




Case 4

Foreign bodies :

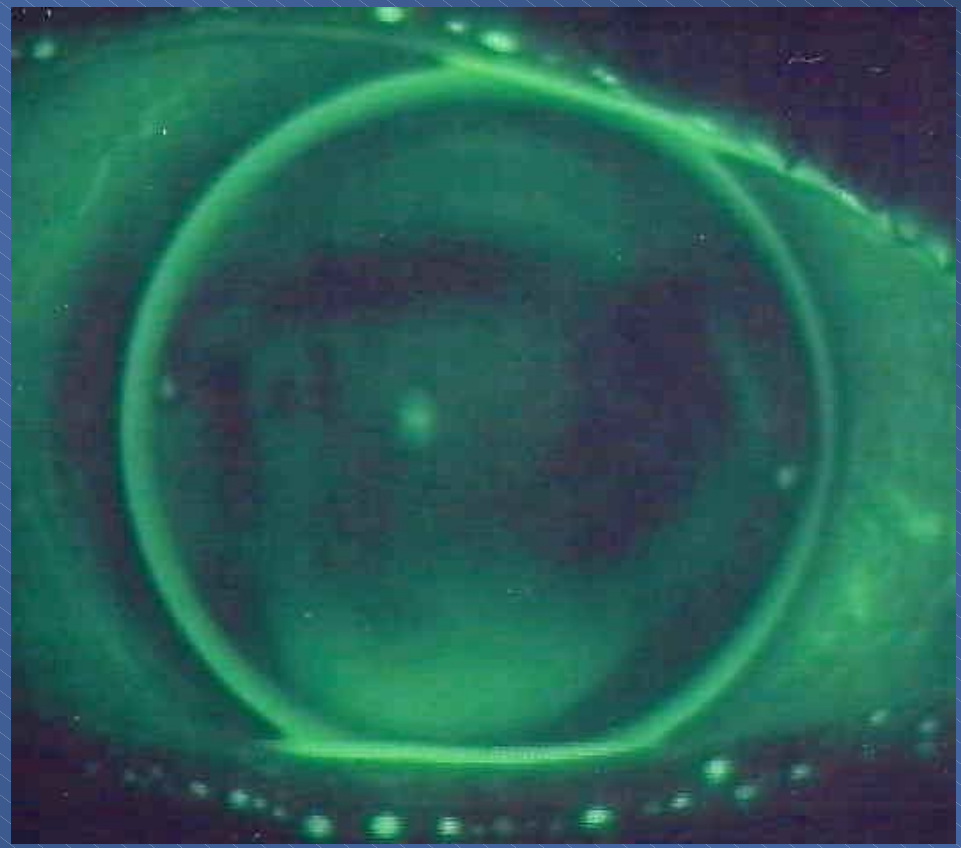
- 23 y/o man
- Hobby: mountain biking
- Astigmatic eye
- Handicapped by foreign bodies under the CL‘s
- Has lost lenses in the past



Case 4

Foreign bodies :

- Back-toric or sphero-toric design
- Large OAD
- Peripheral slightly steeper fit



Case 5

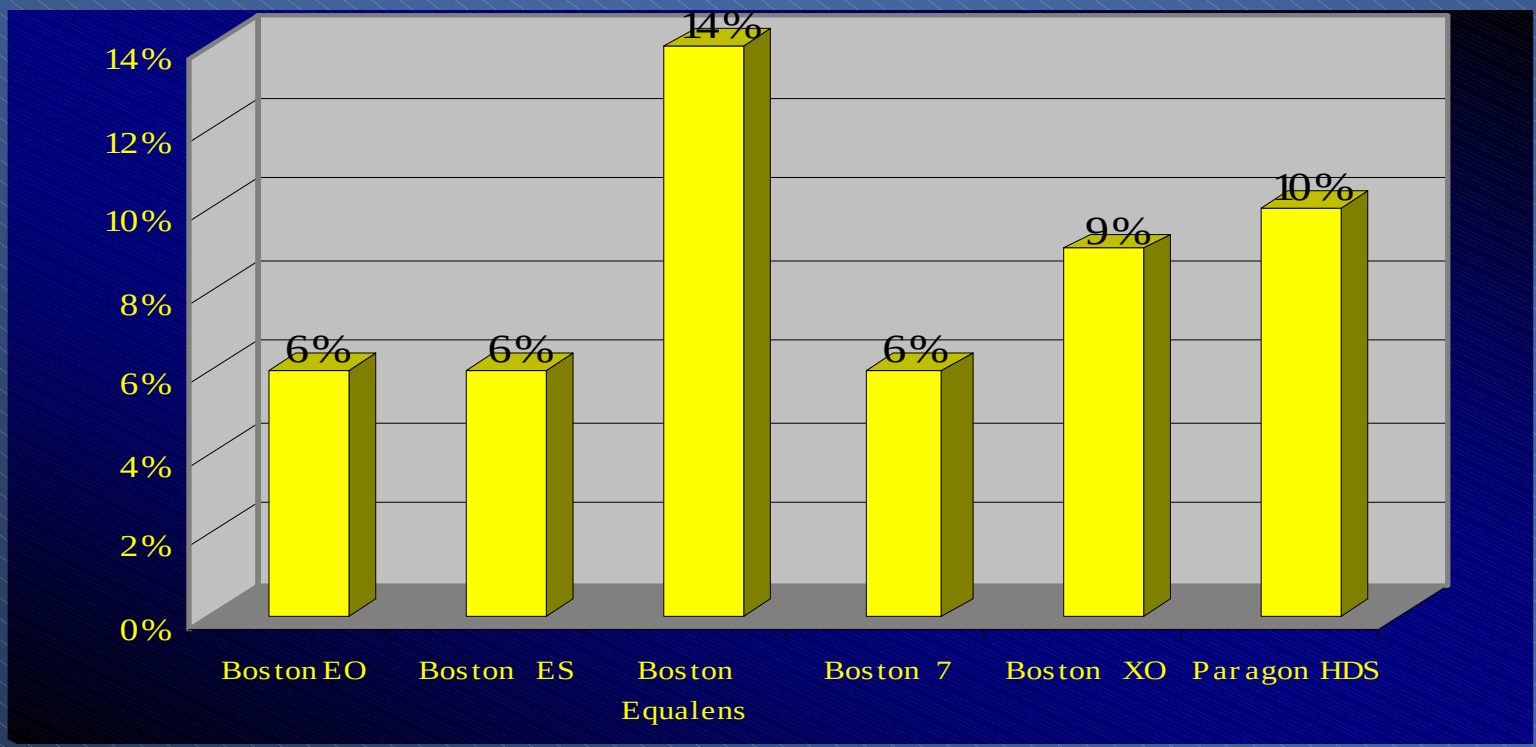
Vision changes :

- 52 y/o woman
- Consultant for cosmetic products
- Vision changes starts after a few hours and are getting worse every additional hour
- CL‘s are 2 years old
- Uses All-in-one Solution only

Case 5

Vision changes :

- Oil-, Protein deposits, scratches
- Fluor free material (eg. Boston 4)
- Low silicone content
- Hard material (Shore >83)
- Two step system with anti oil cleaner (eg. Lobob)
- Enzymatic cleaner

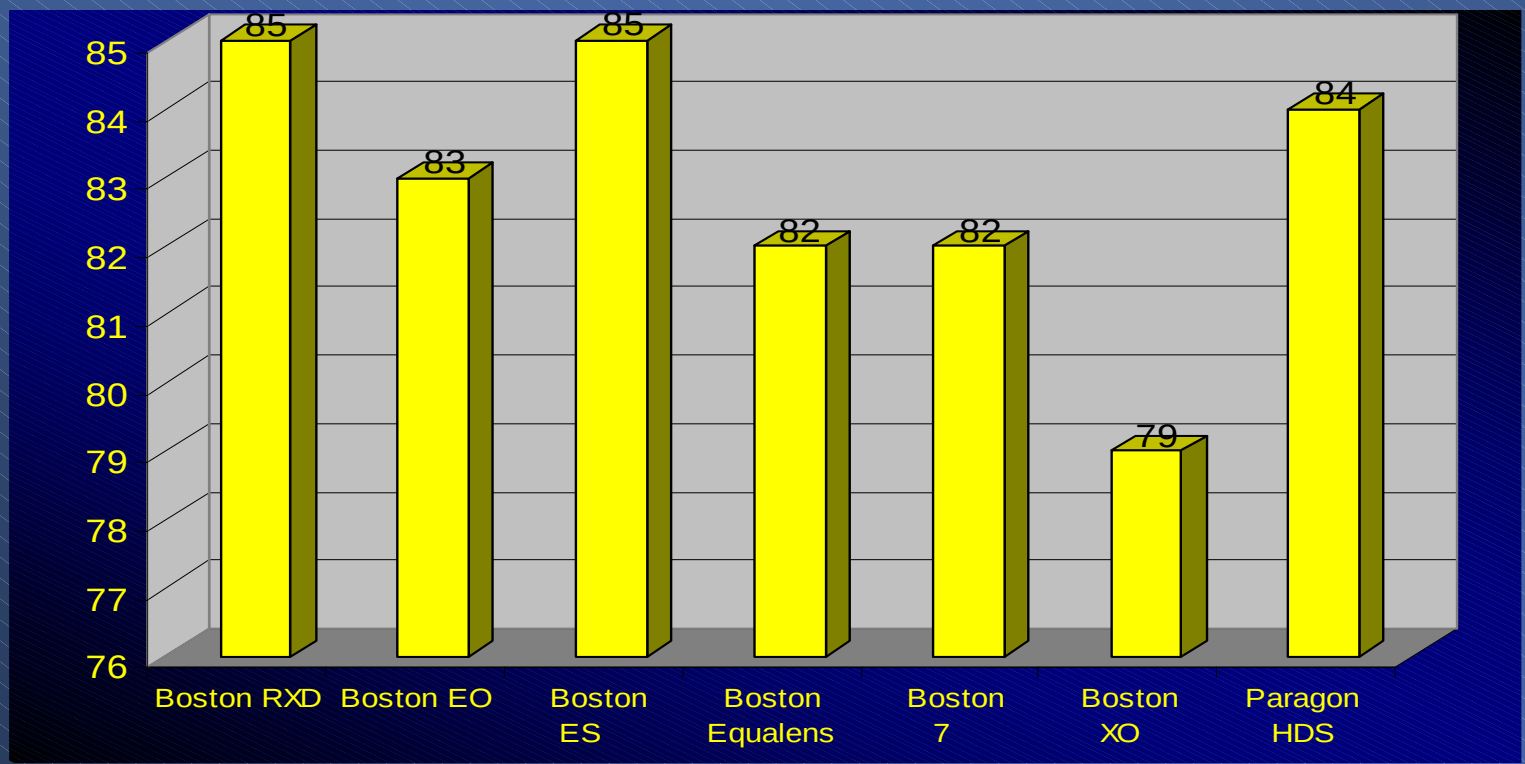


Case 5

Vision changes :

- Oil-, Protein deposits, scratches
- Fluor free material (eg. Boston 4)
- Low silicone content

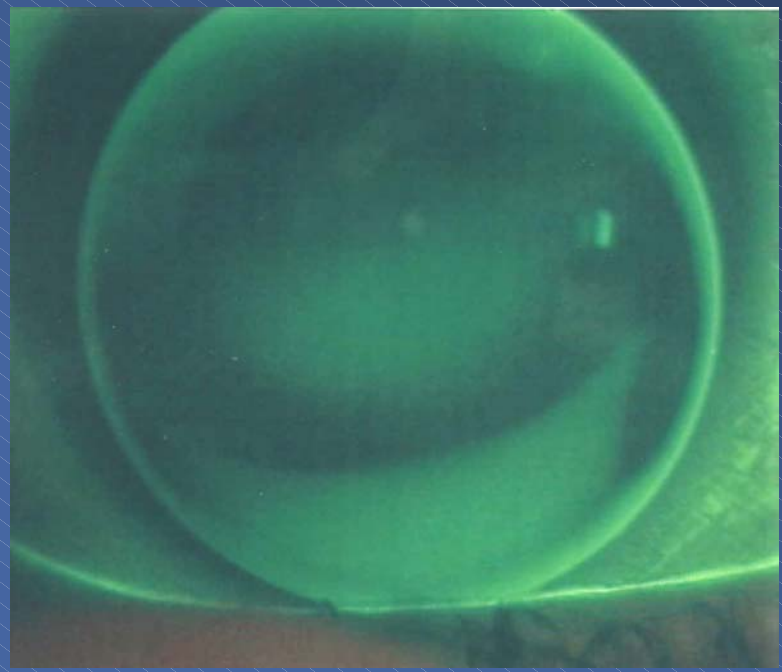
- Hard material (Shore >83)
- Two step system with anti oil cleaner (eg. Lobob)
- Enzymatic cleaner (eg. LEC)

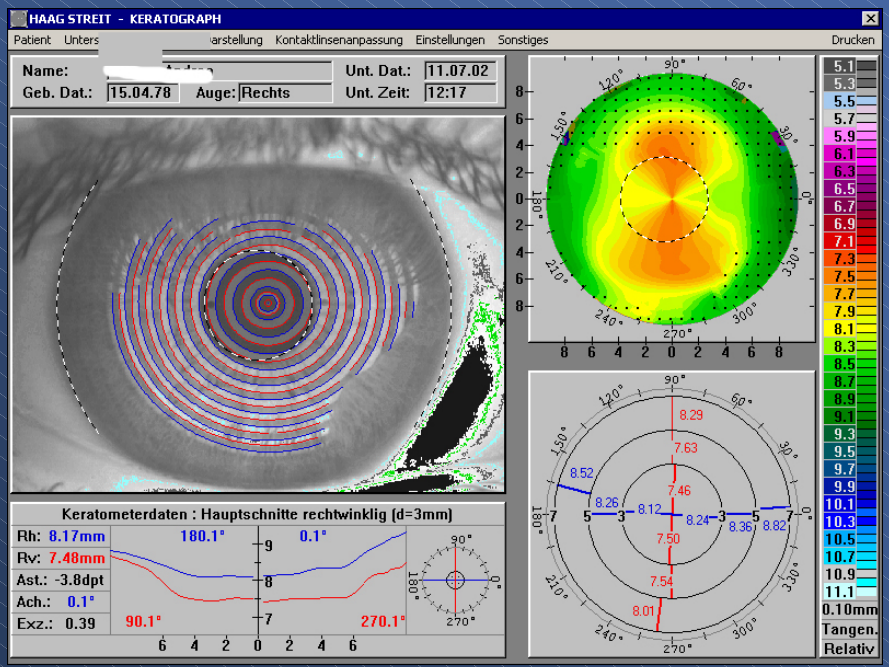


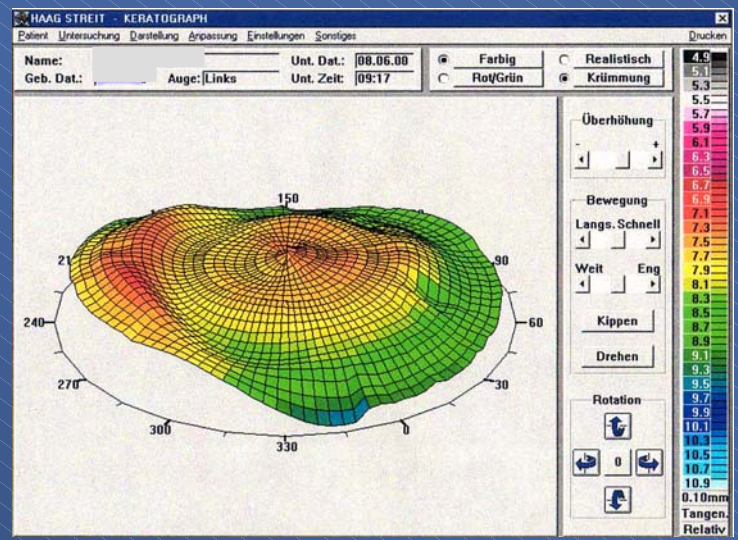
Case 6

Spectacle Blur :

- 36 y/o man
- Has been wearing RGP‘s for 5 years
- No problems, except after removing CL‘s for wearing eyeglasses







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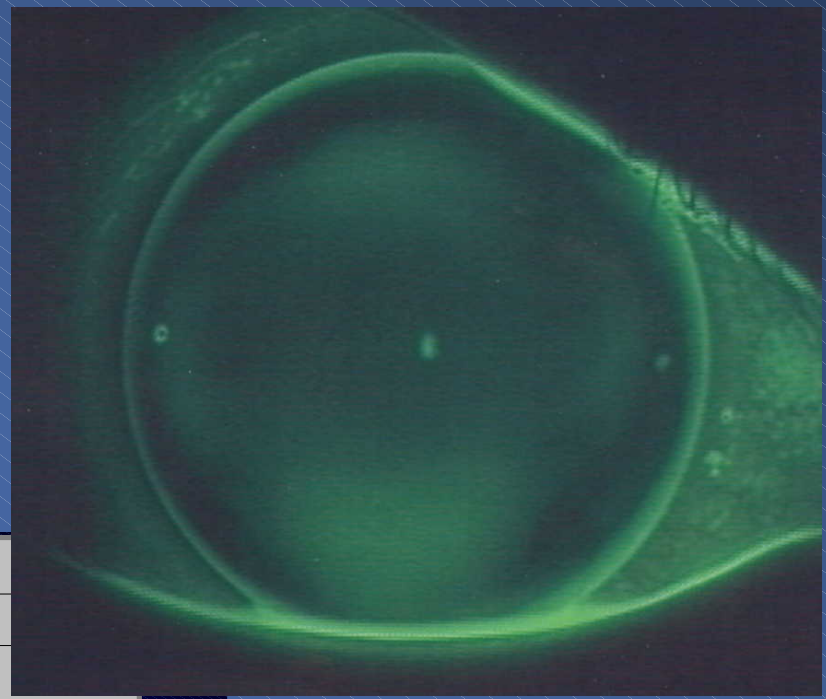
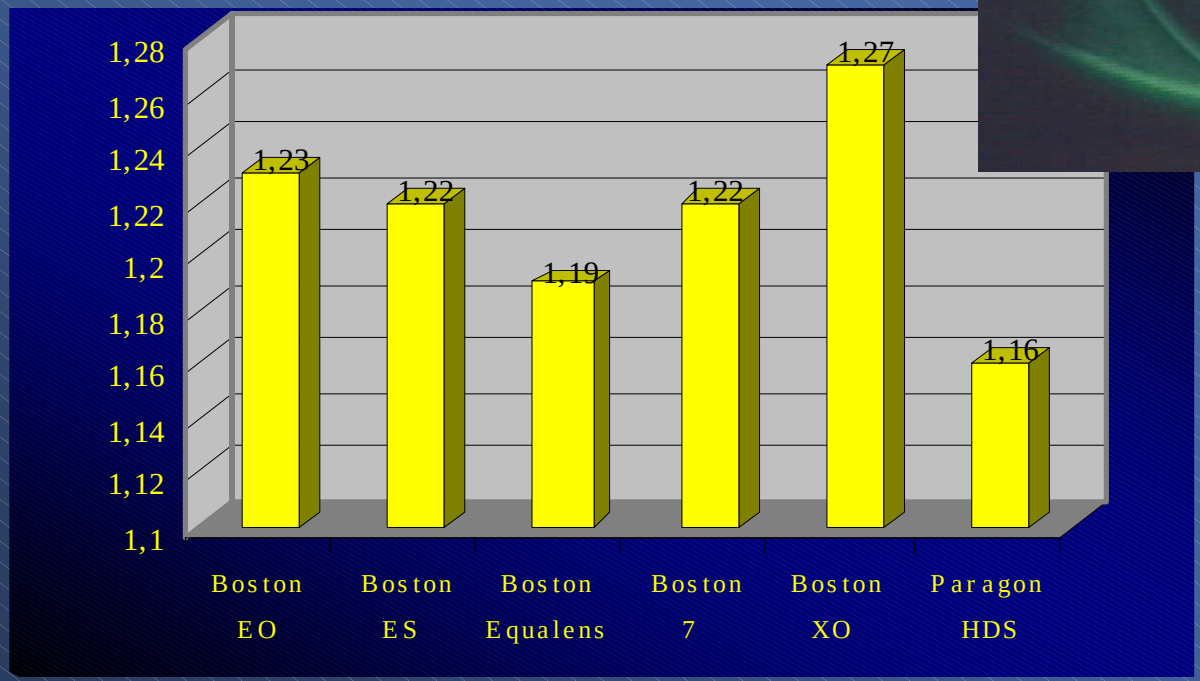
Case 6

Spectacle Blur :

- Decentration, High Rider, creating irregular Astigmatism
- Back-toric design
- Prismatic front design
- Heavy material





Conclusion and Discussion

Short, middle and long term prognosis :

RGP contact lenses are offering a high amount of technical and physiological possibilities to correct nearly every kind of ametropia.

They are safe and the cost is favorable for both, practitioner and consumer.

They offer a high consumer-practitioner binding.

Conclusion and Discussion

Problem based analysis is fundamental.

Consistent maximum integration of topography, technical possibilities, mechanical material attributes

AND

your knowledge and fantasy are the key factors to success.

Conclusion and Discussion

Fitting RGP contact lenses :

Proofs your fitting competency

Needs less fitting skills than you probably thought

Is an excellent and profitable choice for your practice

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Thank you !

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