

# **Irregular corneas**

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**post graft, LASIK and the rest ...**

**M i c h a e l B ä r t s c h i**

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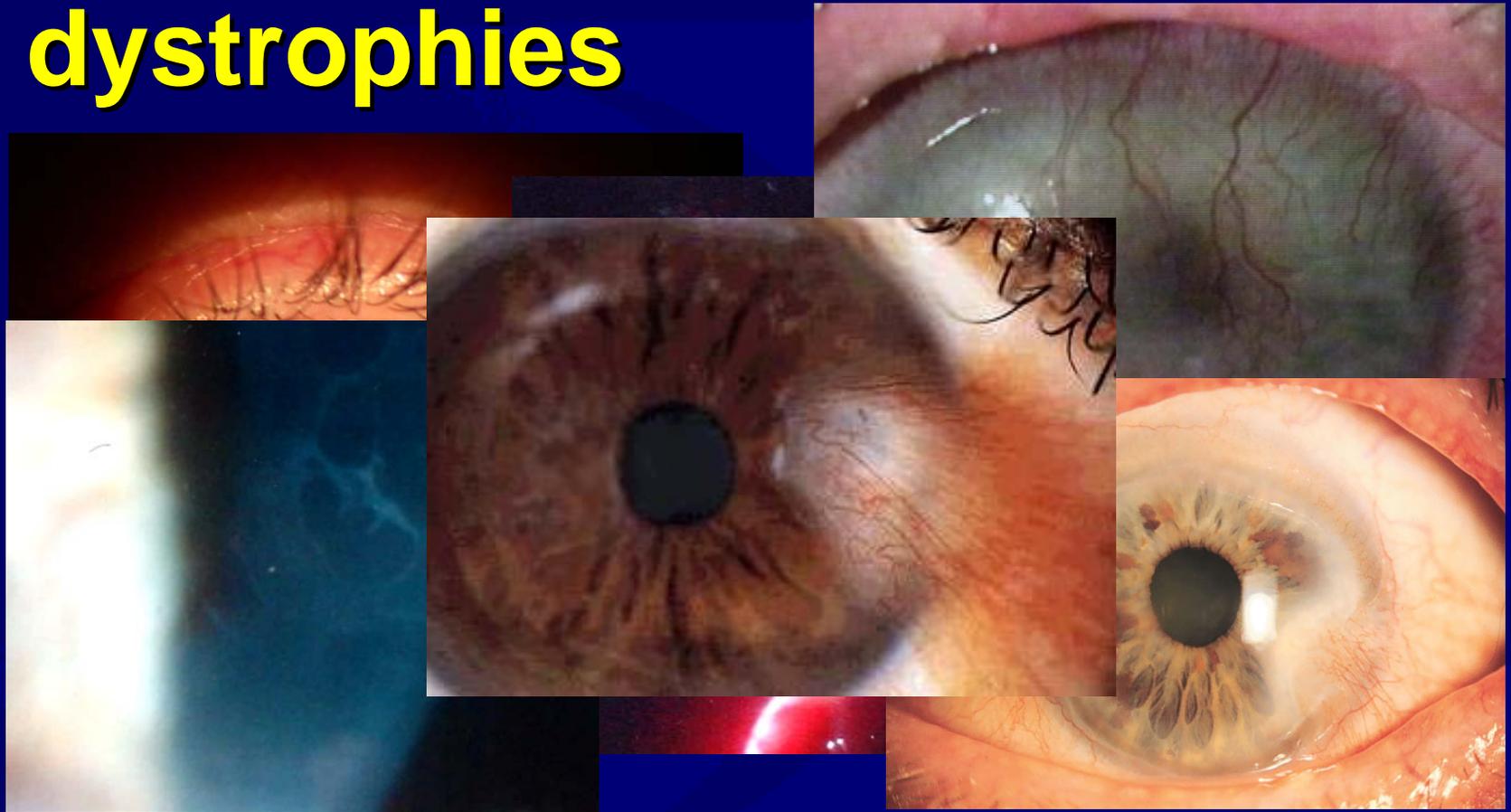
# Learning Objectives

1. To appreciate why patients may still need a CL correction after surgery.
2. To understand how the corneal topography has been altered.
3. To appreciate the indications for the different CL options.
4. To appreciate the fitting approaches that may be required by case history evaluation.
5. To be aware of typical after care problems by case history evaluation.

# Main Reasons for irregular corneas

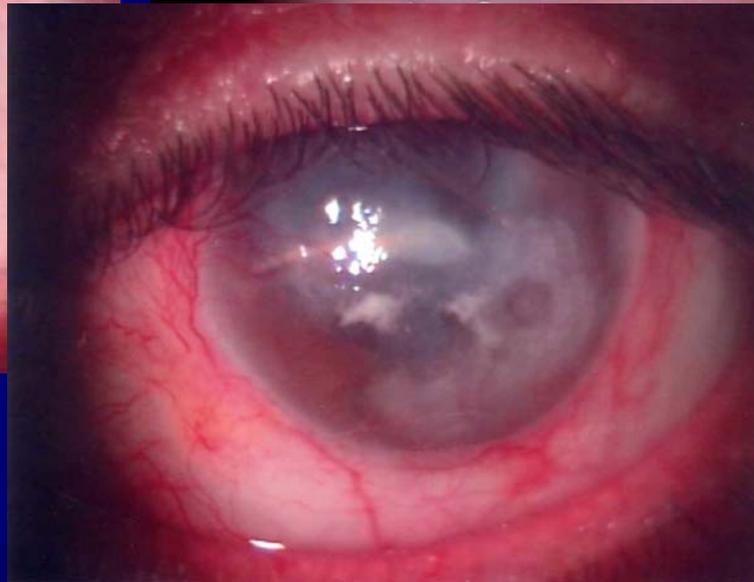
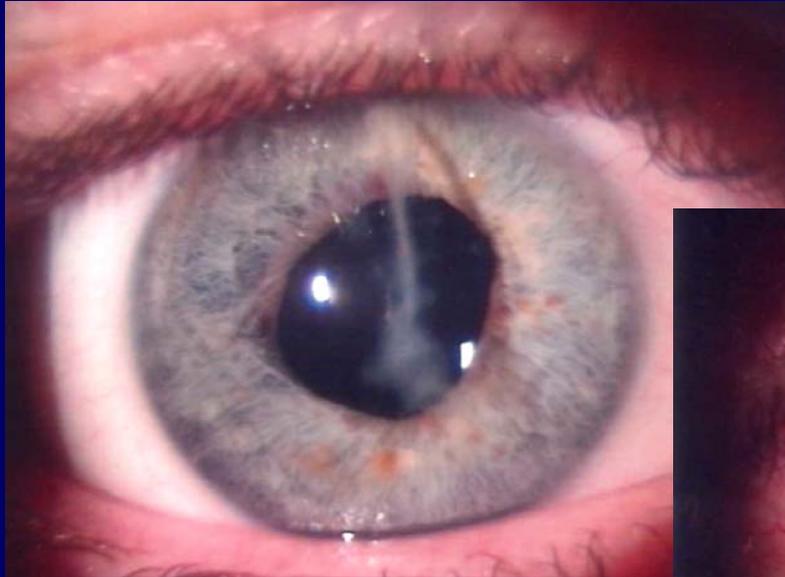
- Corneal degenerations or dystrophies  
(Keratoconus, Terrien, EBM dystrophy, Pterygium)
  - Traumata's (mechanical, chemical, burns)
  - Post-surgery (refractive surgery, cataract surgery, glaucoma surgery, lid surgery)
  - Post-infections (microbial, viral, fungi)
  - others (contact lenses, Chalazion)
- and certainly many more !

# Corneal degenerations and dystrophies



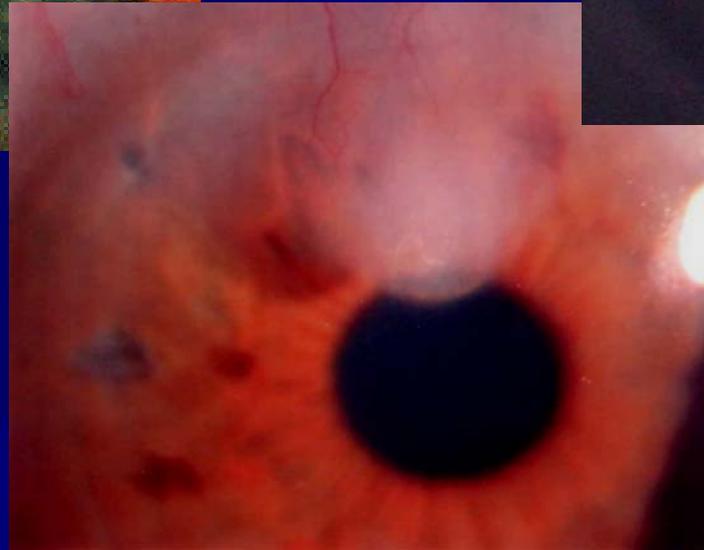
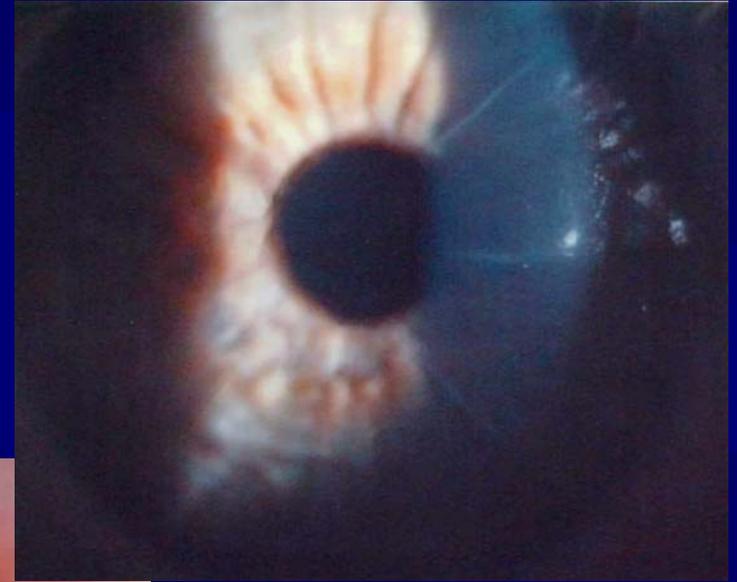
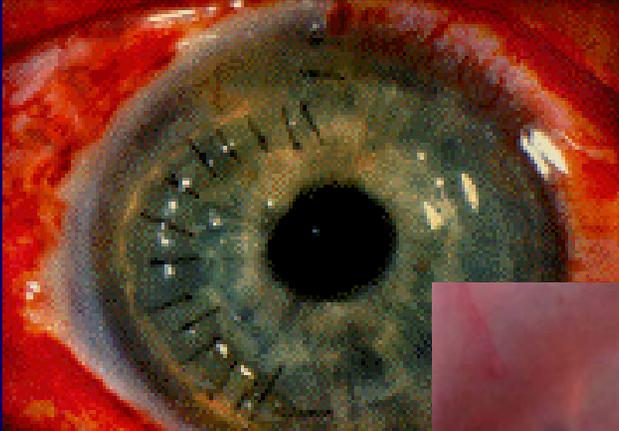
Bandkeratopathy, Keratoconus, Lyell Syndrom, Marginal Degen.,  
Terrien, EBM Dystrophies, Pterygium, .....

# Traumata



Mechanical, chemical, burns, .....

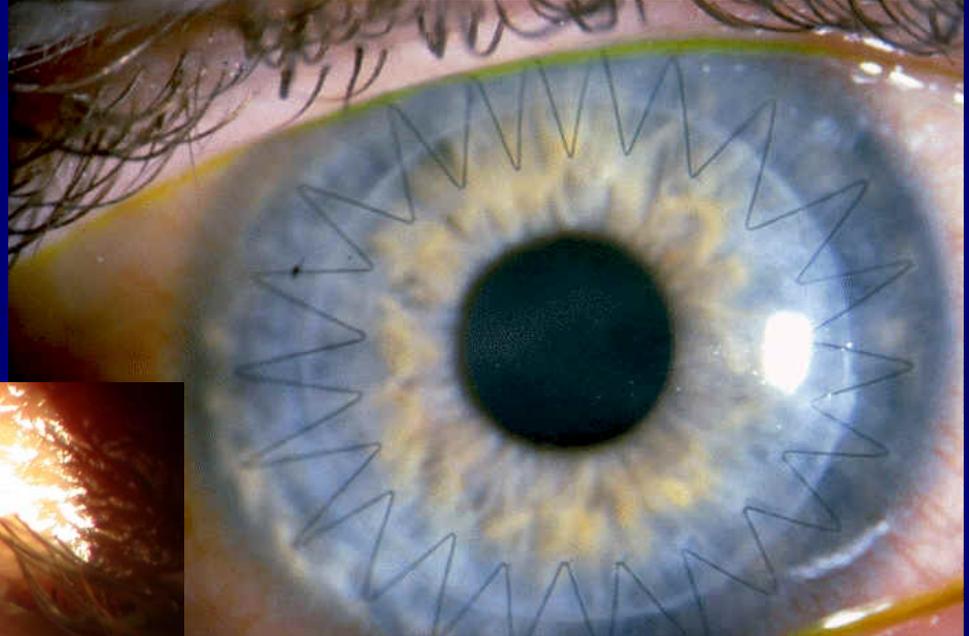
# Post-surgery



Graft after Terrien, post-Trabeculectomy, Photo refractive Keratectomy, Laser-in-situ-keratomileusis LASIK,....

# Post-surgery

Penetrating  
Keratoplasty



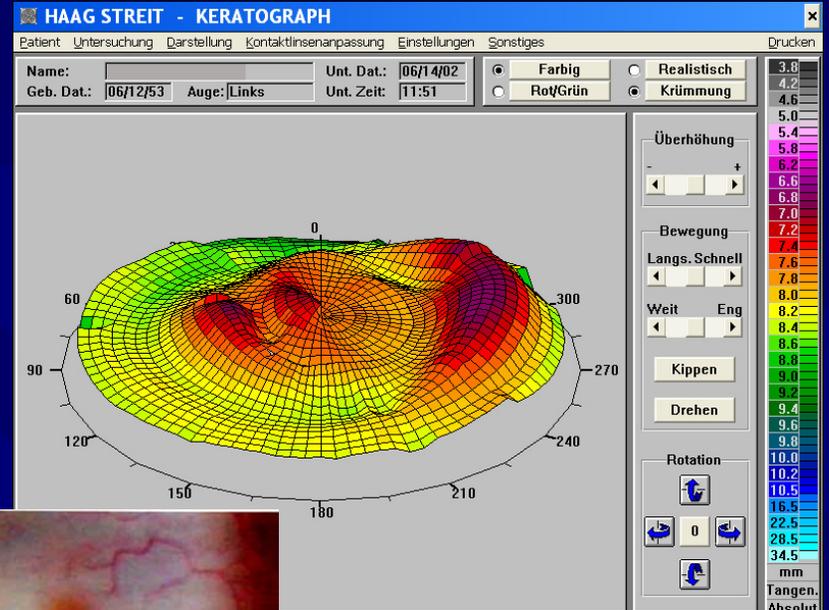
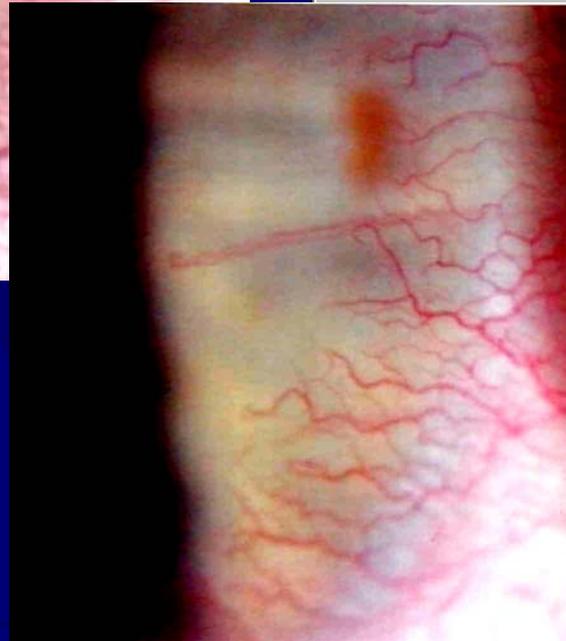
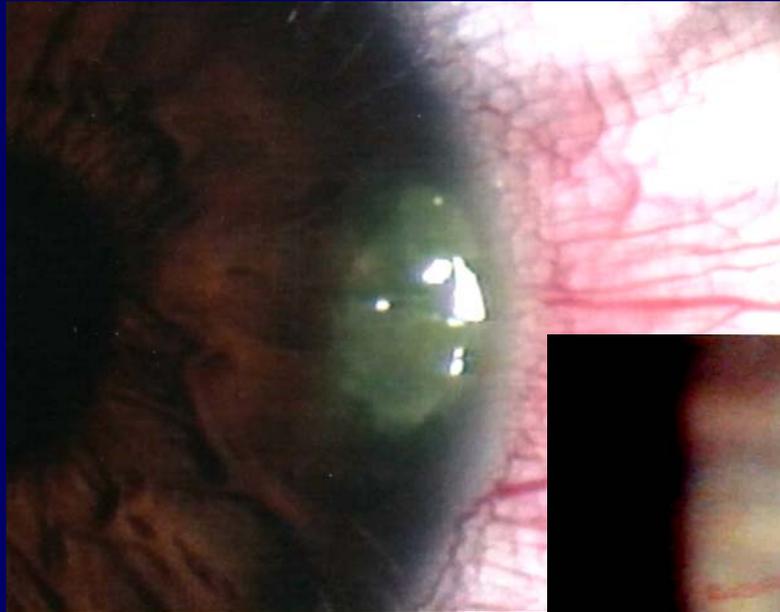
Intacs

# Post-infections



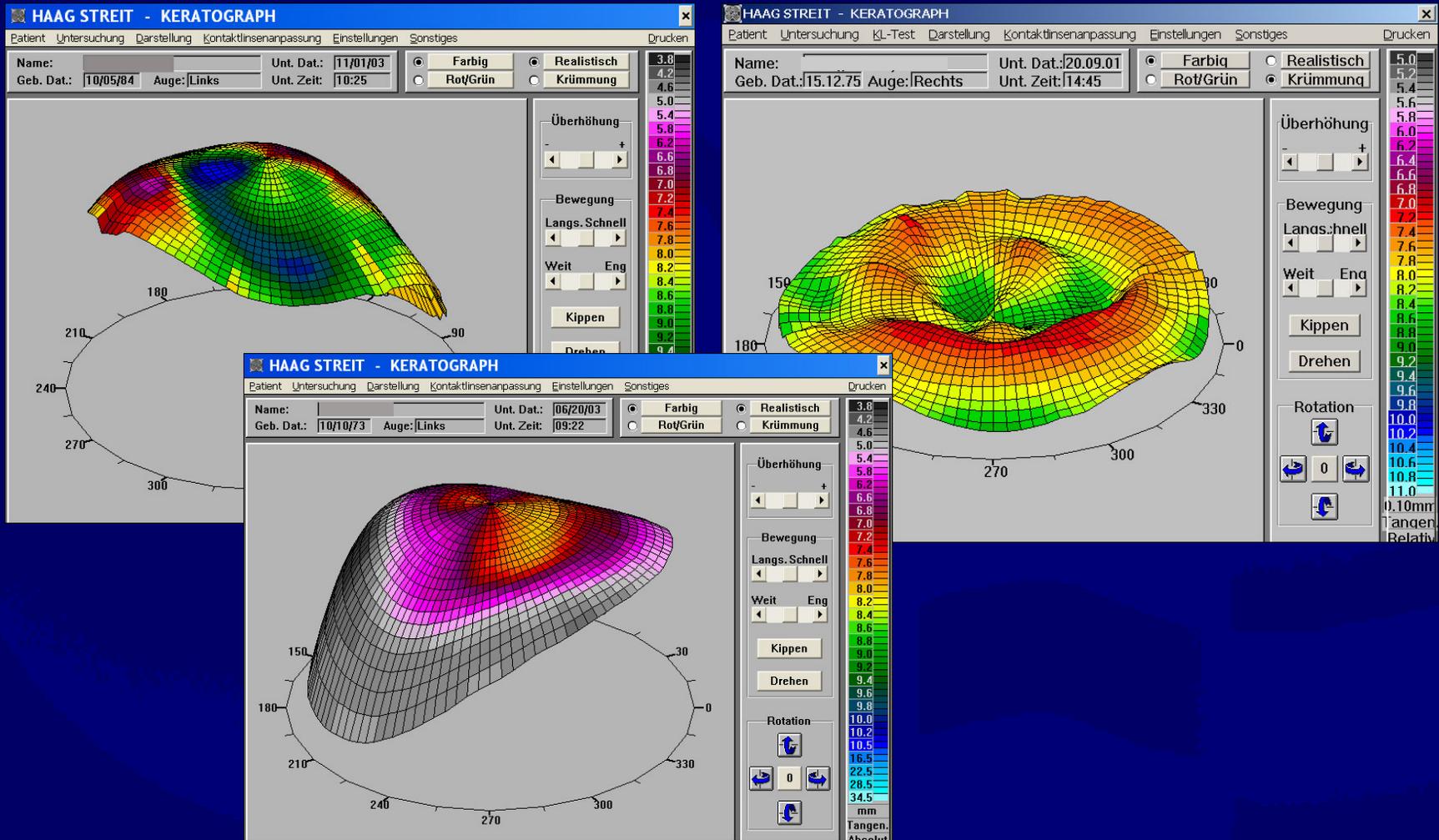
Bacterial, Viral, Fungi, Protozoen, ...

# Others ...



CLPU, High Rider with inferior step, Neovascularisation, ..

# 3-D Topography



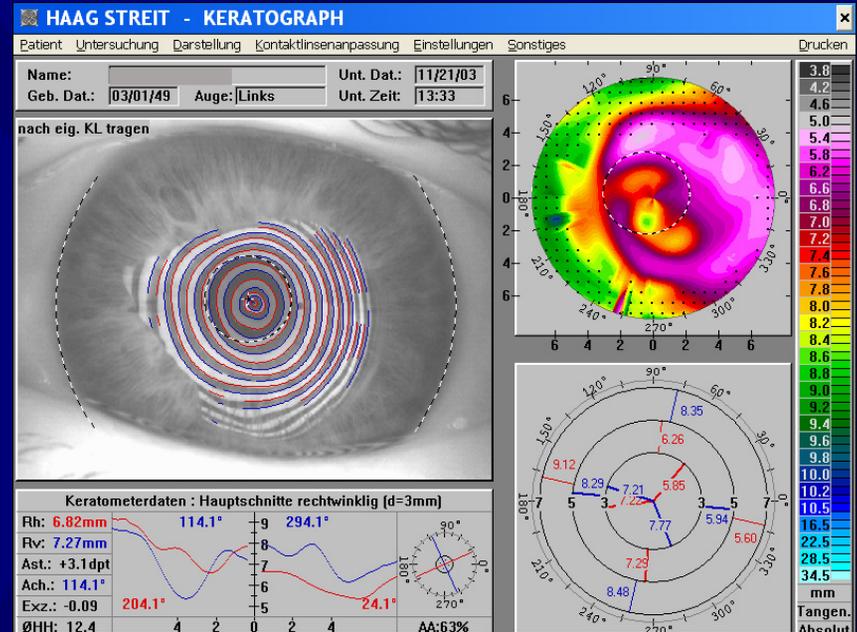
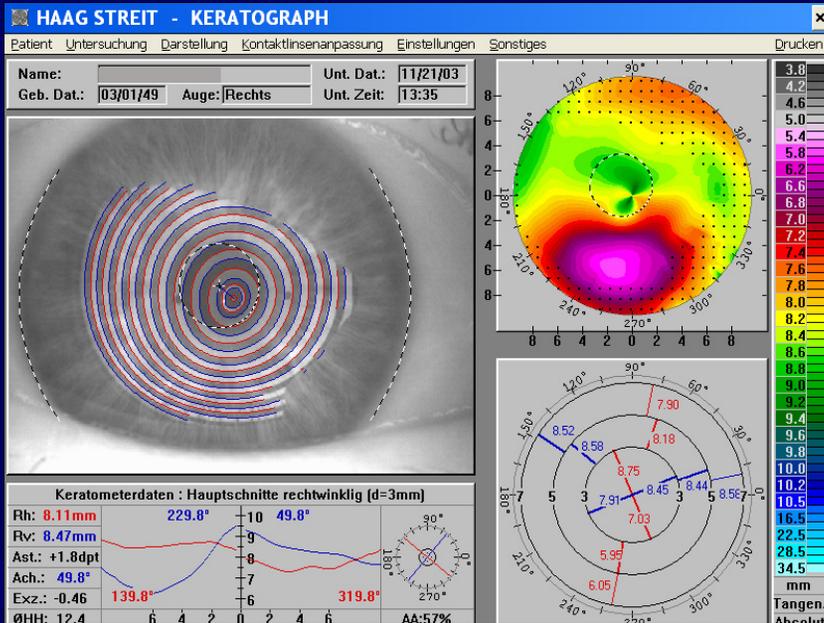
Interstitial Keratitis, Herpes, Lamellar Keratoplasty

# Corneal steps after PKP

Nightmare for CL fitting

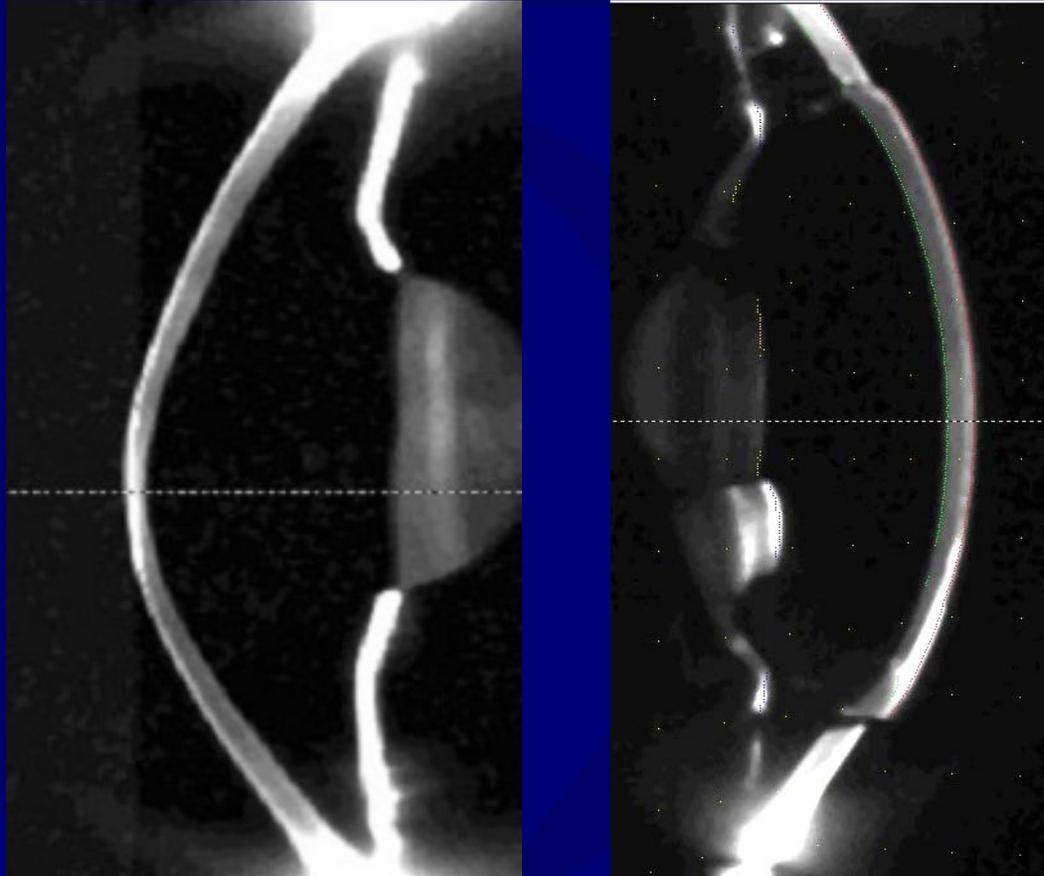


# Change in Topography



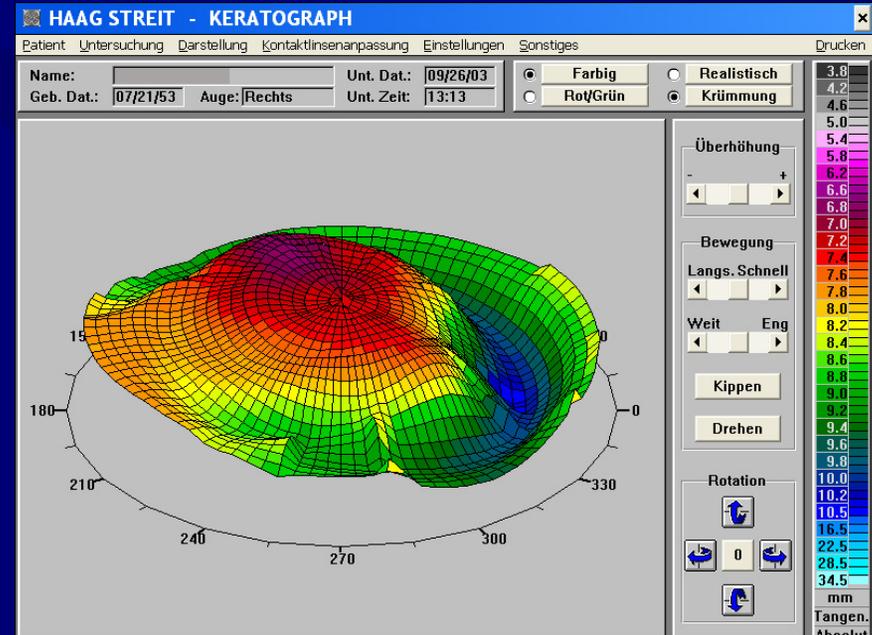
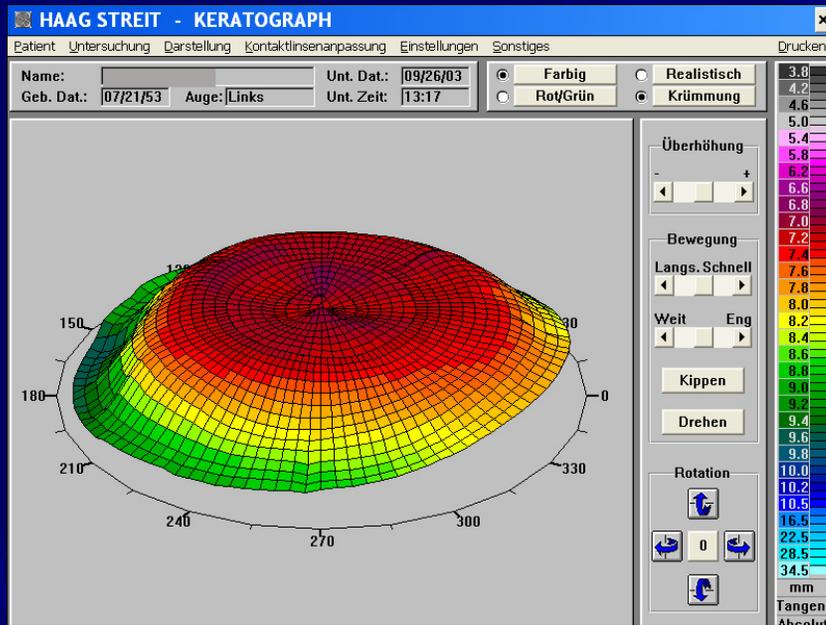
Post-surgery (e.g. PKP)

# Change in Shape



From Keratoconus to Keratoplasty

# Change in 3-D Topography



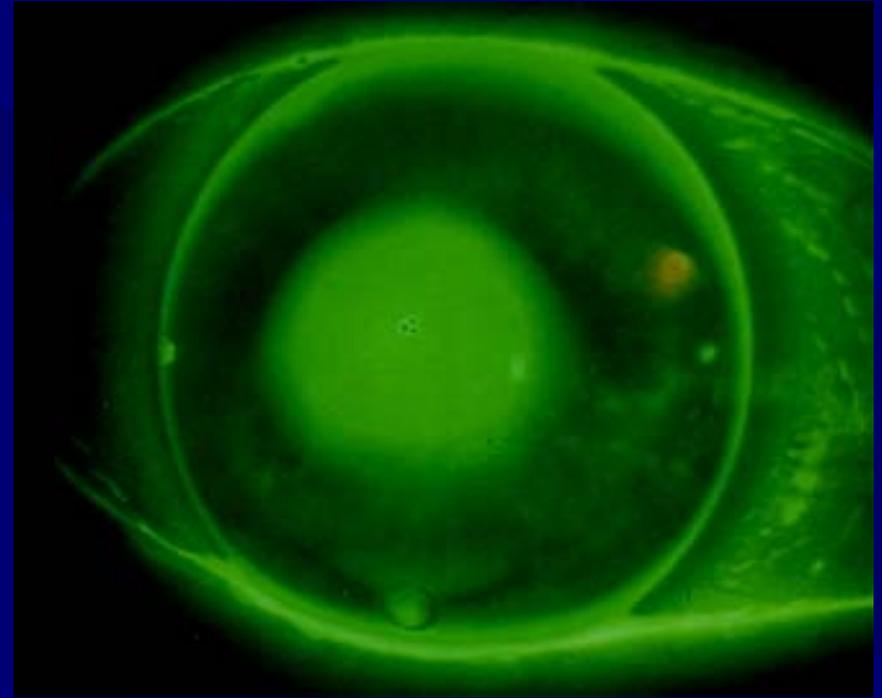
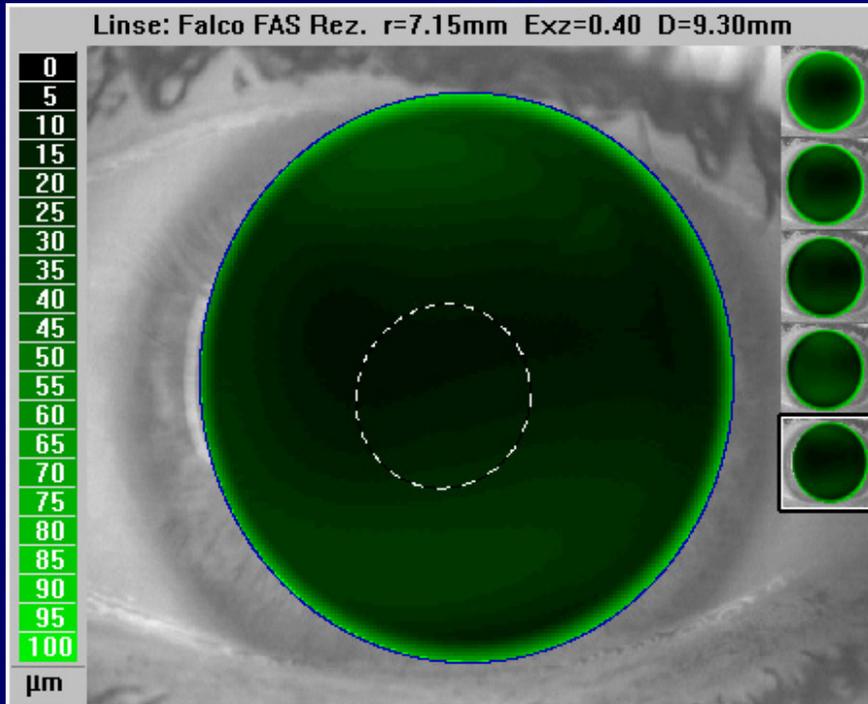
Pre and Post-LASIK in Hyperopia

# Change in Vision



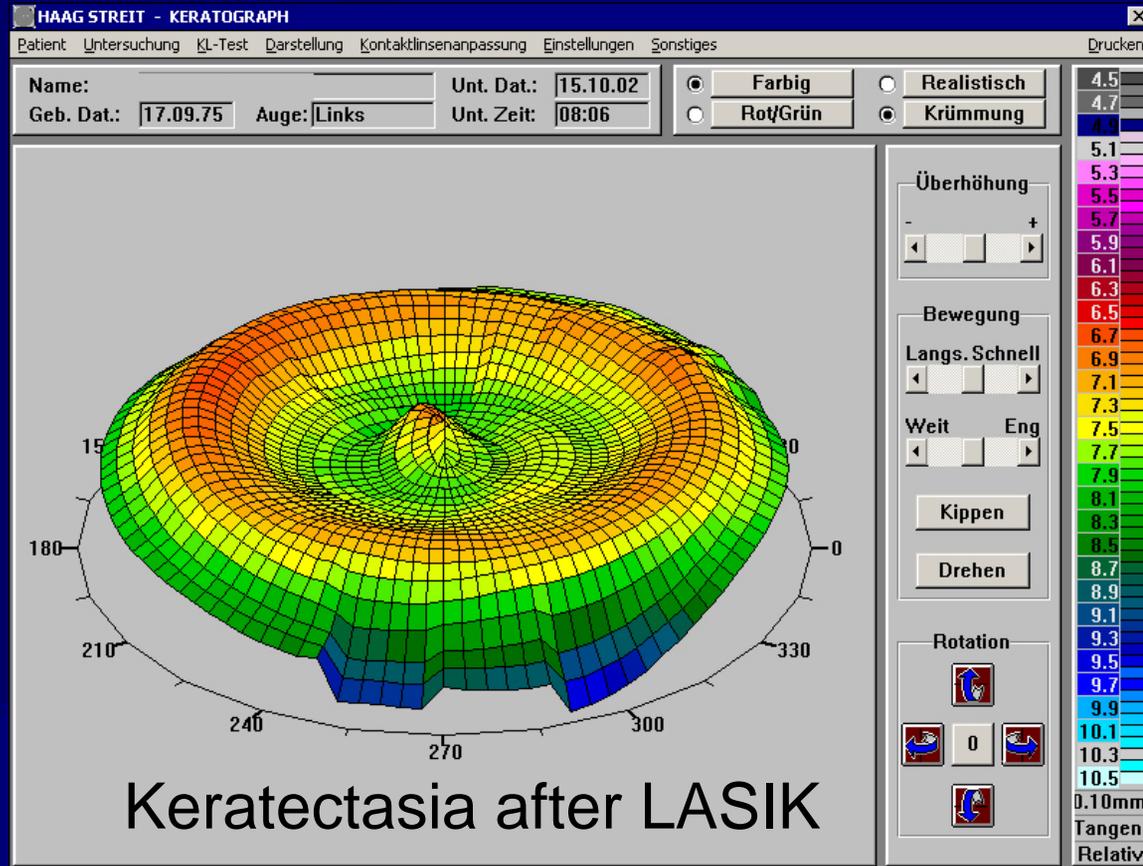
Aberrations after LASIK or PRK

# Change in CL Design



Differences of Fluo image Pre and  
Post-LASIK for Myopia

# “Less” successful surgery



# Monitoring post surgery

Close monitoring every 3-6 month after surgery for any changes in appearance and shape with Slit lamp, Topographer / Scheimpflug camera and Fluorescein.

Take digital photos or video sequences for better monitoring. Drawing is better than nothing but mostly not detailed enough.

# Fitting options and approach



Always make the lens a happy lens !

# Fitting options and approach

There is (unfortunately) no single way to fit all this individually different shapes of post-surgery corneas !! There are only two similarities that fit best this corneas in my experience :

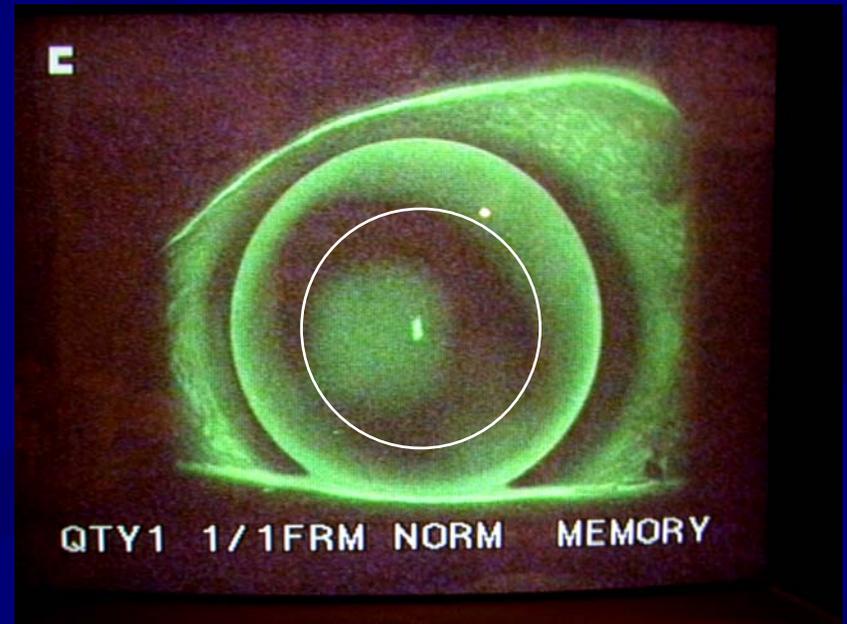
- GP lenses do correct the mainly high irregularities and aberrations better than soft lenses.
- Fit large diameters of GP lenses for best possible centration and more stable vision.

# Fitting options and approach



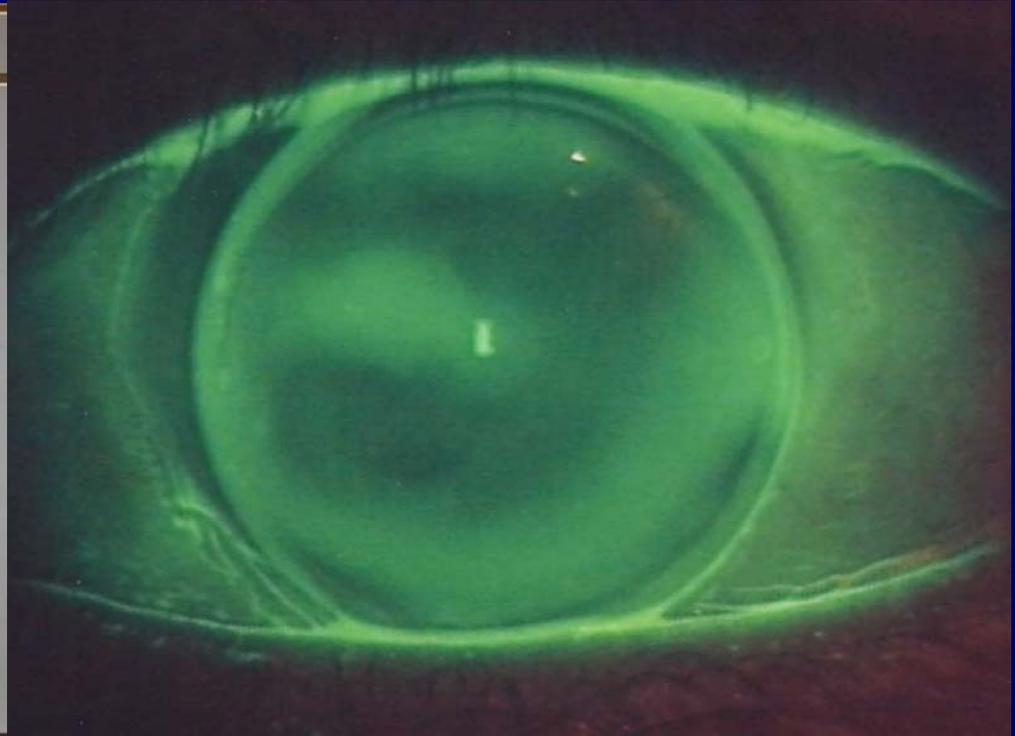
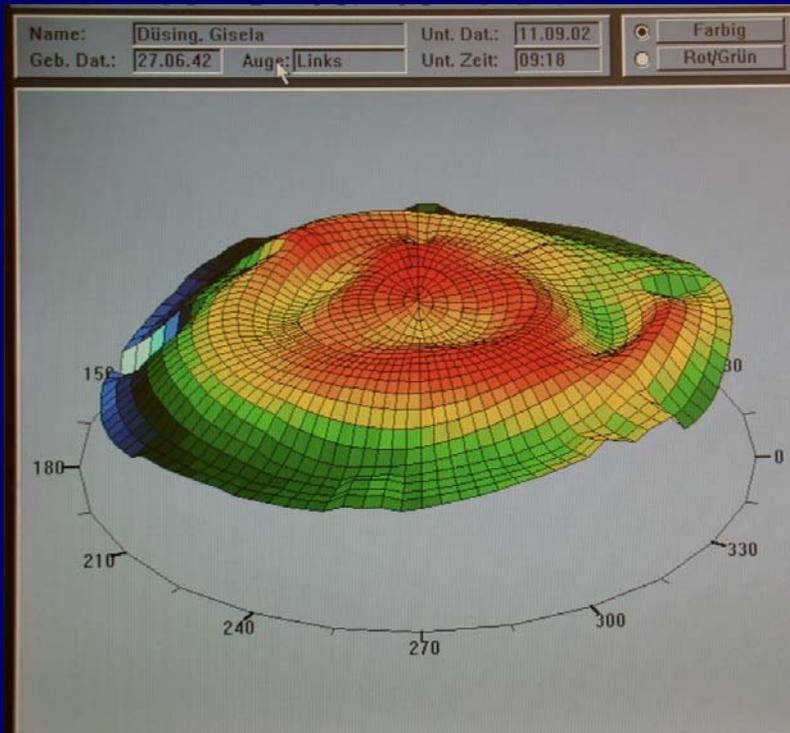
Small OAD on a post-LASIK eye

Large OAD on decentered LASIK ablation



Large diameters often works better

# Fitting options and approach



Oval OAD (e.g. 11,0 x 10,2 mm) with minus carrier after trabeculectomy with prominent (!) filtering blebs.

# Fitting options and approach

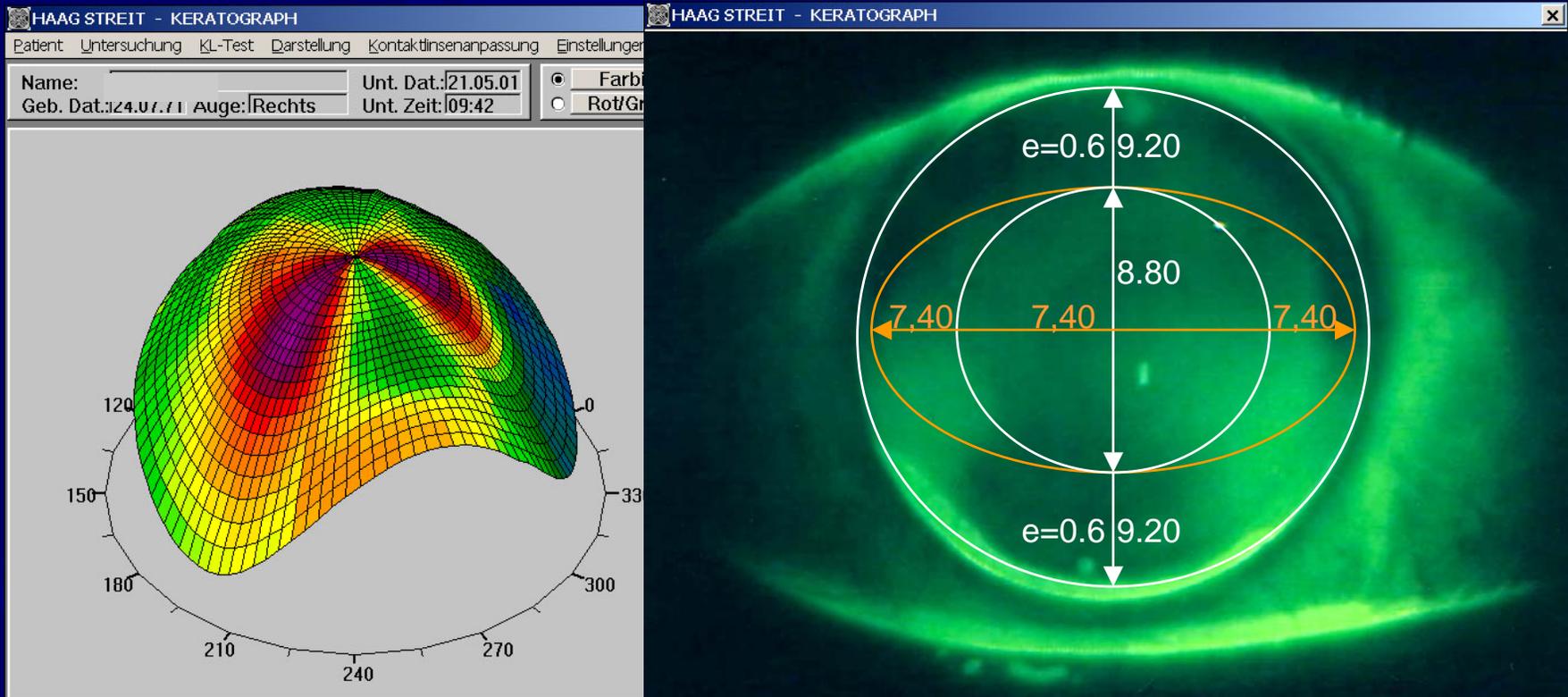
Use the whole spectrum of CL designs:

spheric, aspheric, toric, peripher-toric, reverse.

Use high O<sub>2</sub> permeable materials:

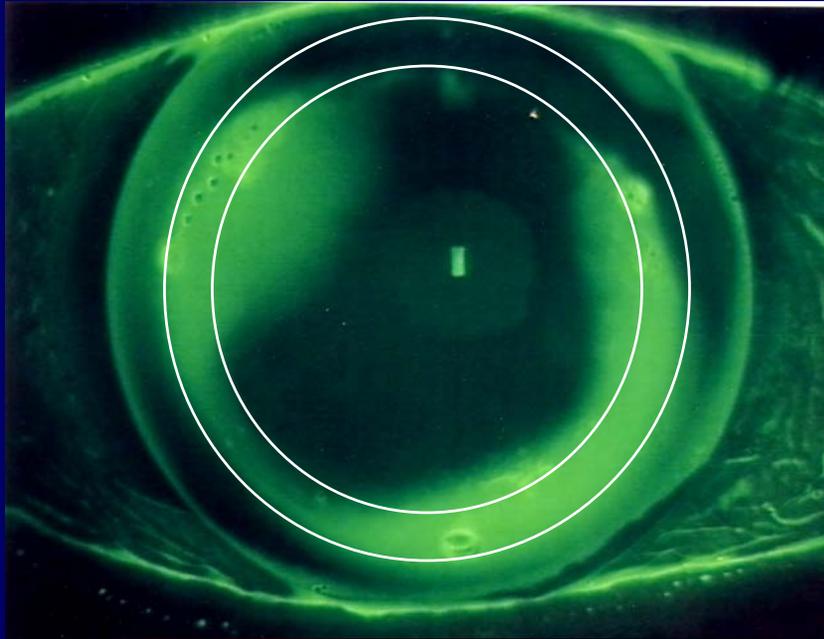
Boston XO, Contamac Extreme, Menicon Z

# Fitting options and approach

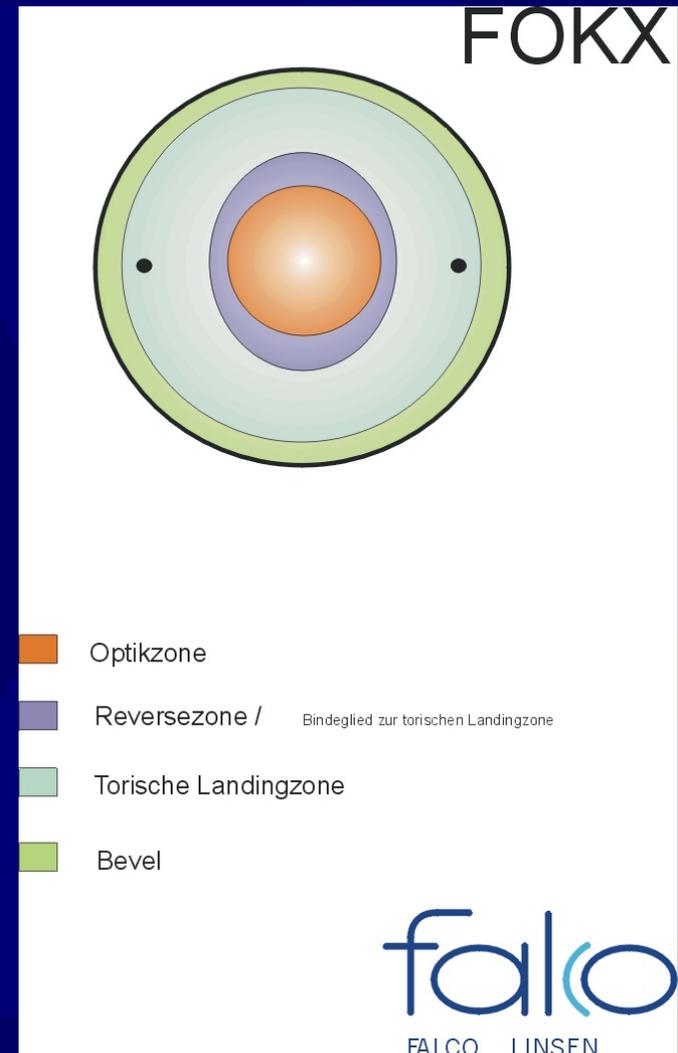


Backtoric-periphertoric combination for an eye with  
Terrien degeneration.

# Fitting options and approach



Reverse geometries works fine on Keratoplasty with steep edges.



# Fitting options and approach

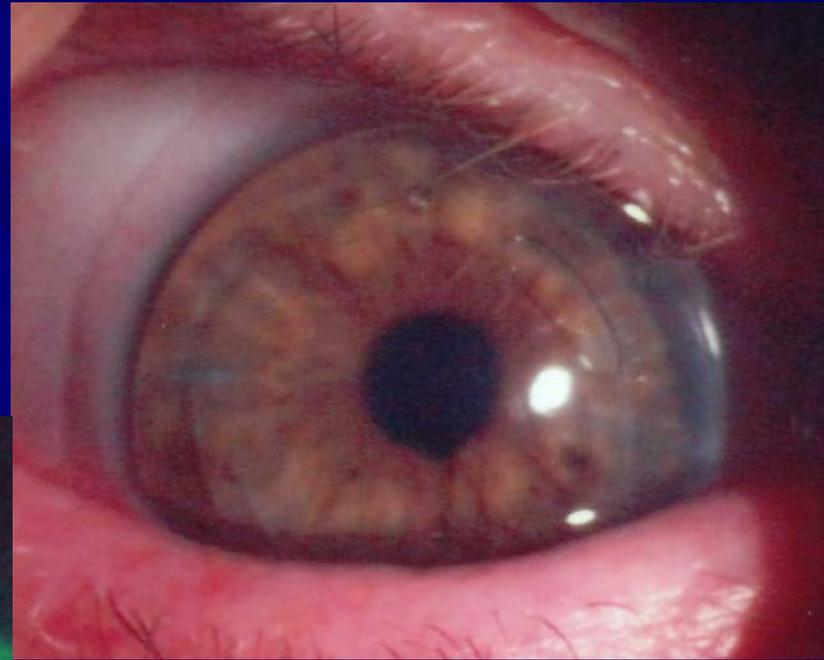
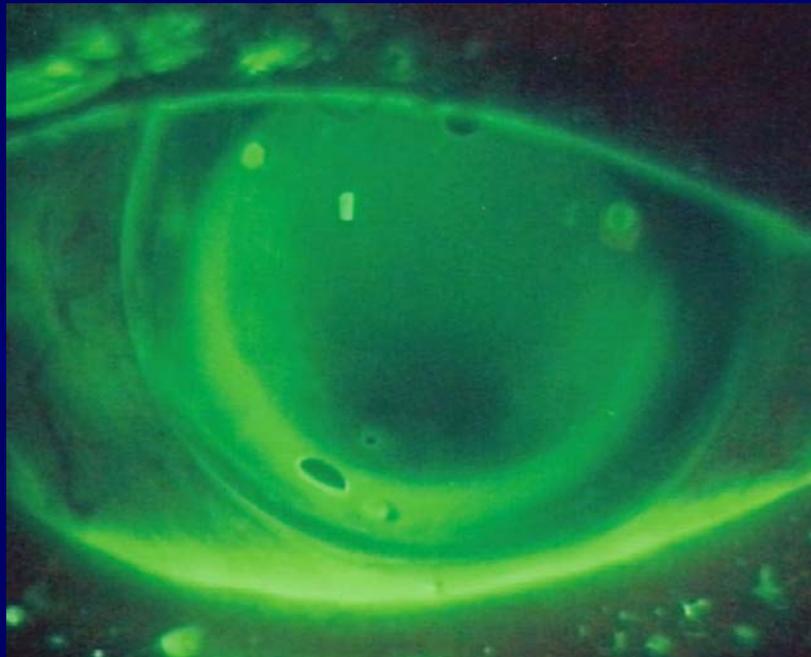
Use piggyback combinations in case of extreme sensitive corneas post-surgery or in case of dust behind the GP lens (CIBA Night & Day and high permeable GP lenses are working fine).

Use peripheral fenestration holes in case of air bubbles under the lens.

Do not accept staining or mechanical warpage on sensitive zones.

# Fitting options and approach

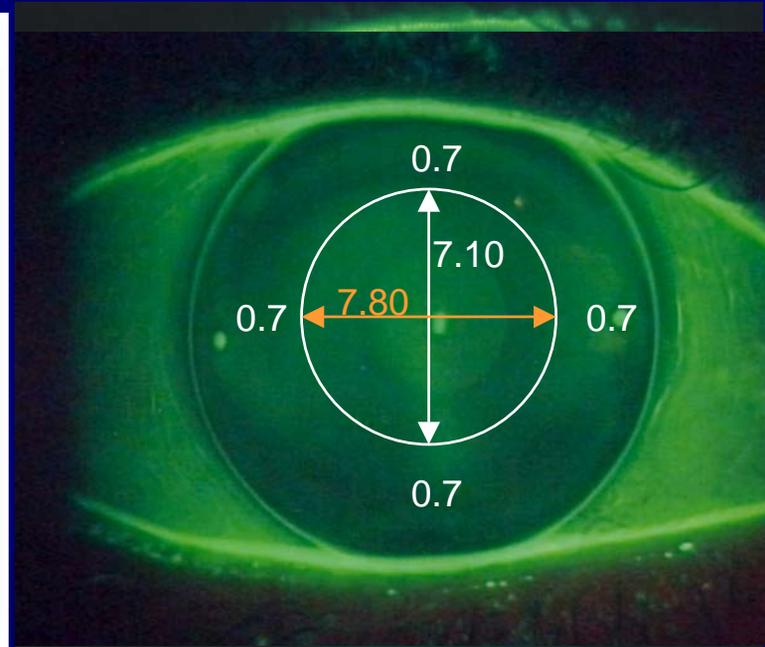
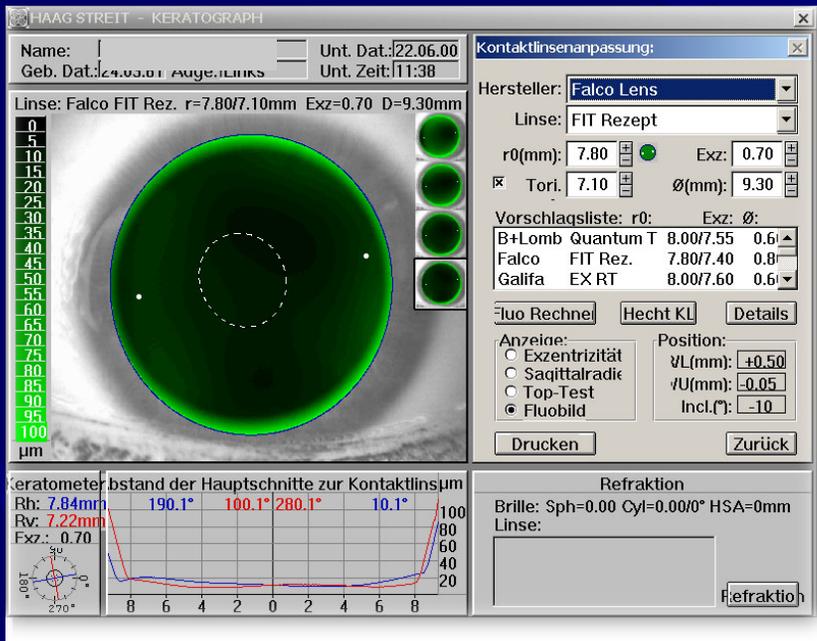
Piggyback →



← Fenestration holes

# Typical after care problems

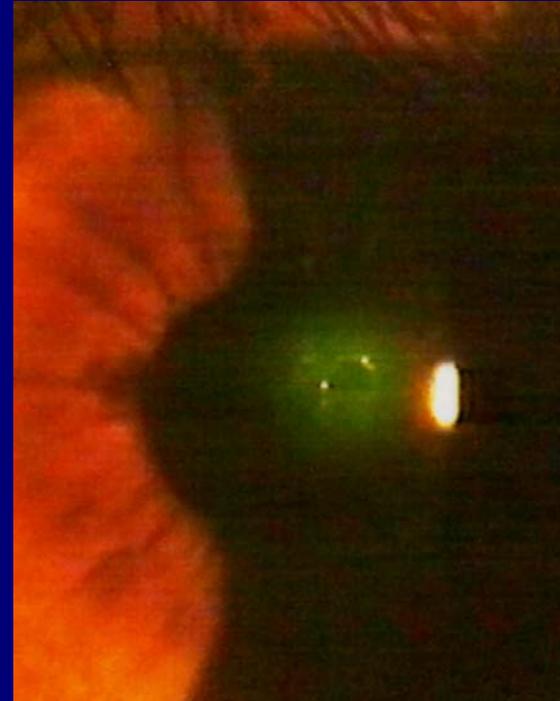
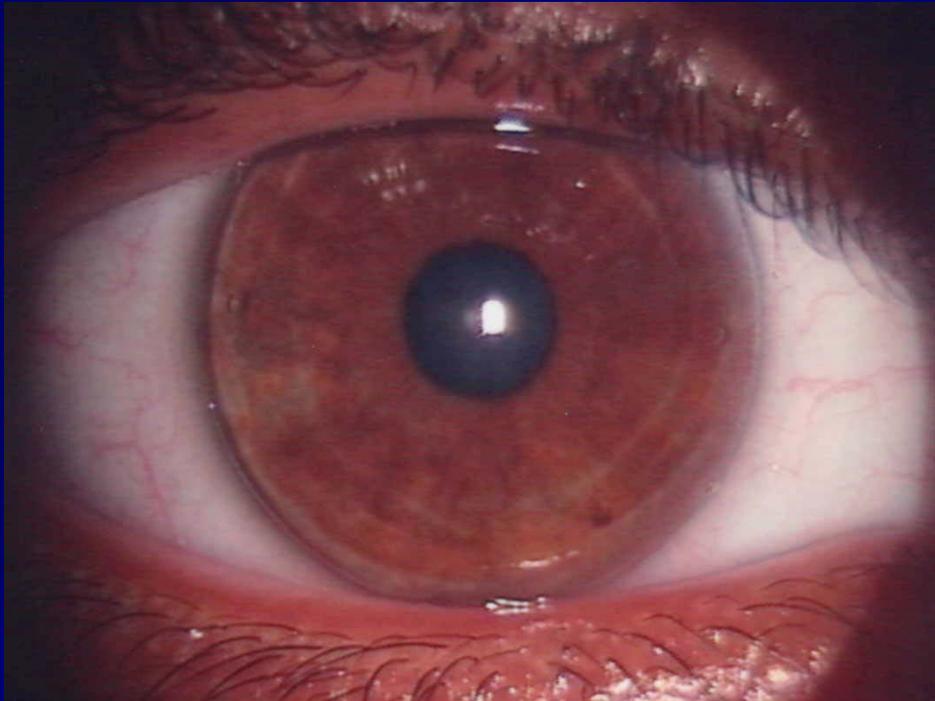
Loss of lenses (due to the irregular form of the cornea, steep graft edge)



Try to fit more adequate (alignment), reverse or single curve design, large diameter, slightly steep in the periphery

# Typical after care problems

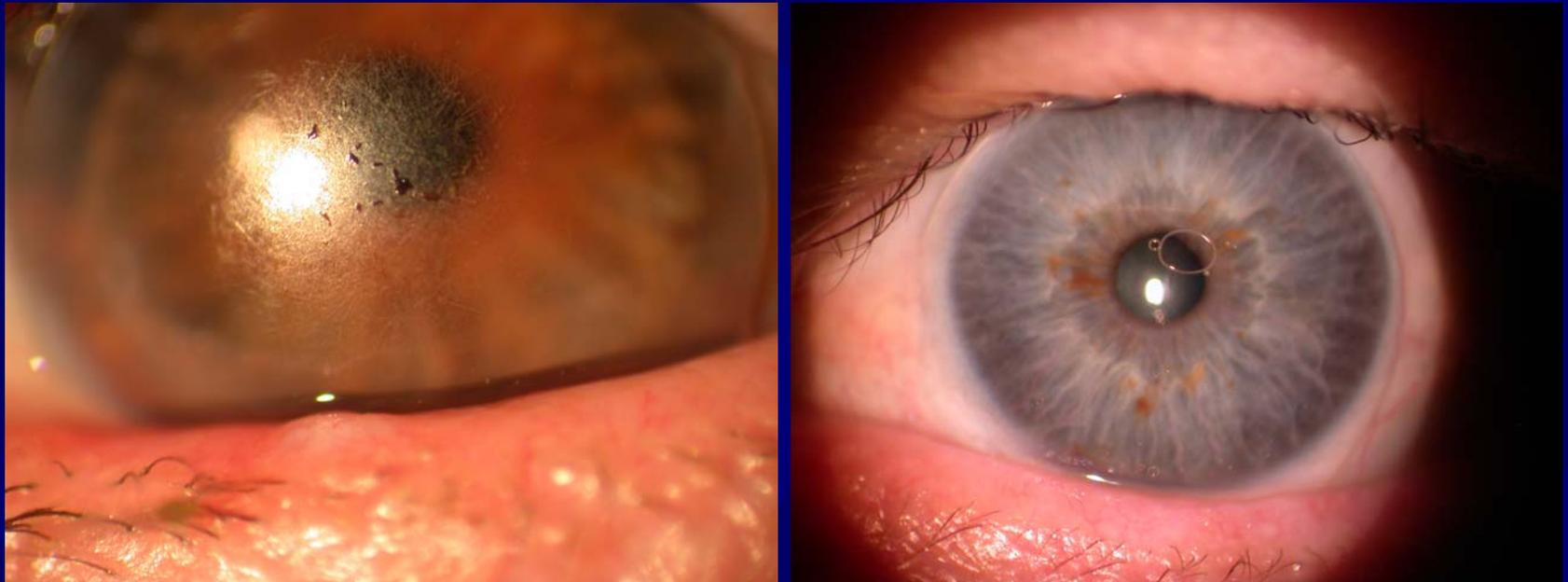
Foreign bodies under the lens



Large diameter with slightly steep periphery,  
adequate alignment in the periphery

# Typical after care problems

Physiological unacceptable and cornea sensitivity



Overpass the sensitive zone, miniscleral lens, piggyback, higher  $O_2$  permeability, check lens care system

# Conclusion and discussion

Irregular corneas are demanding and contact lens fitting do need a lot of GP experience.

Every irregular cornea is individual and different from any cornea before.

Very often toric or reverse geometries are used to fit eyes with penetrating or lamellar Keratoplasty.

Large diameters for better centration and more stable vision, high O<sub>2</sub> permeable materials and an adequate lens care system are essential for physiological acceptance of this lenses.

Over passing irregular areas and fitting on more regular and stable cornea areas are often the way to long term success.

# Enjoy the meeting !



My family in Verbier, Switzerland