

# Therapeutic bandage contact lenses for corneal protection

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# Overview

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- Clinical cases 30'
- Attributes 6'
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# Objectives

To review definitions, conditions and techniques in the use of therapeutical bandage contact lenses.

To introduce advantages of using therapeutical bandage contact lenses of different materials and attributes.

To provide an understanding of the pathophysiology, manifestations and appropriate management of patients with corneal disorders.



# Definitions

Corneal disorders :

Any kind of disturbances or diseases of the cornea, who interfere with the normal physiology of the human corneal tissue.



# Definitions

Therapeutic bandage contact lenses :

A bandage lens (also called a therapeutic lens) is a contact lens used primarily for a therapeutic or treatment purposes.

Bandage lenses should be fitted so as to minimally disturb corneal physiology.

(Definitions by CIBA Vision)



# Protection from:

1. Tear evaporation
2. Mechanical Abrasion
3. Mechanical „Pressure“
4. Recurrent Erosions
5. Physiological Destabilization
6. Infections and Inflammations
7. Allergies



# Protection from:

1. Pain and Itching
2. Tearing
3. Blepharospasmus
4. Blinding
5. Redness
6. Edema
7. Scarring
8. „Funny looking“

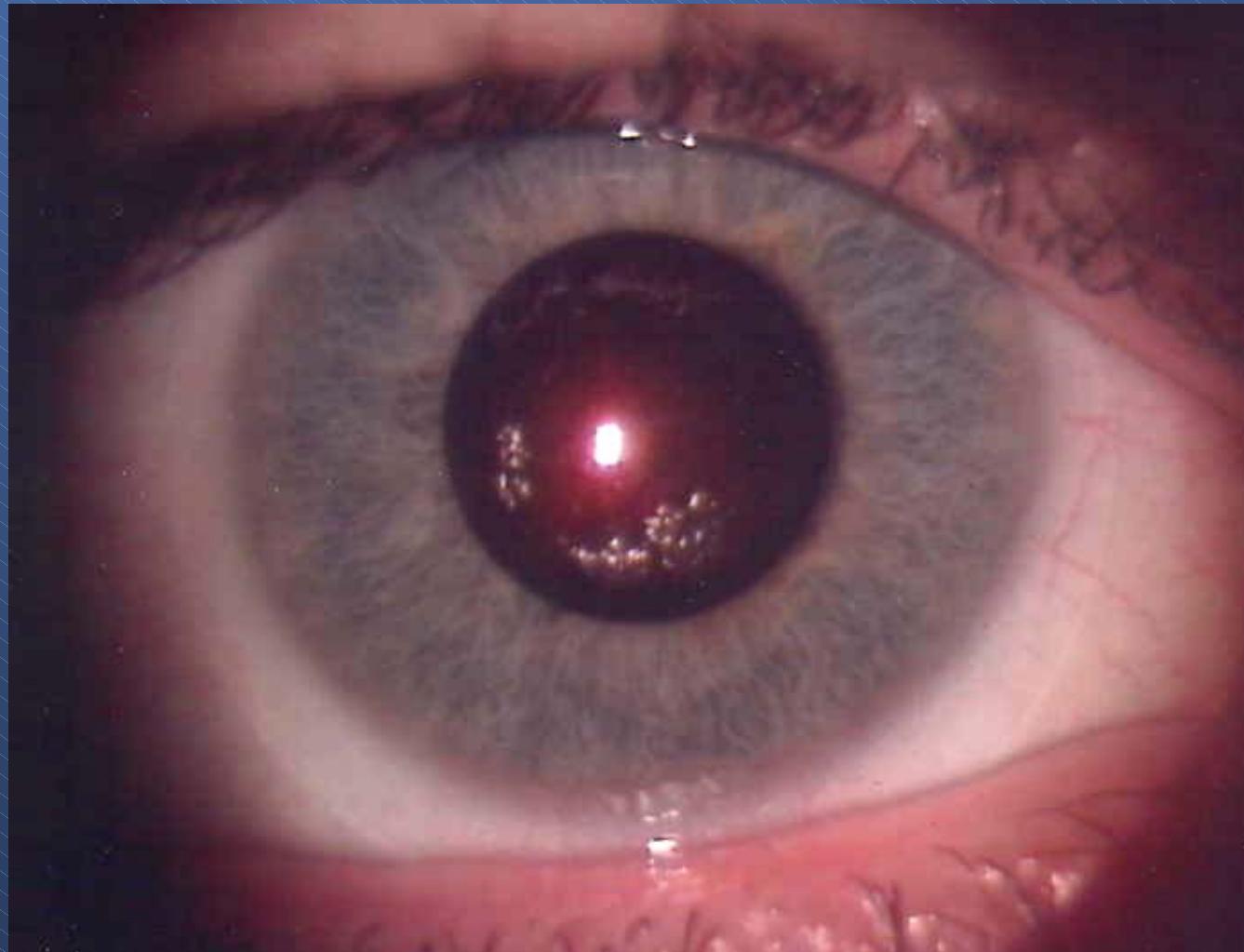


# Protection for:

1. Epithelial cell regrowth
2. Speed corneal healing
3. Physiological stabilization
4. Slow tear evaporation
5. Medical treatment



# CL Materials



Soft CL's  
(speciality)



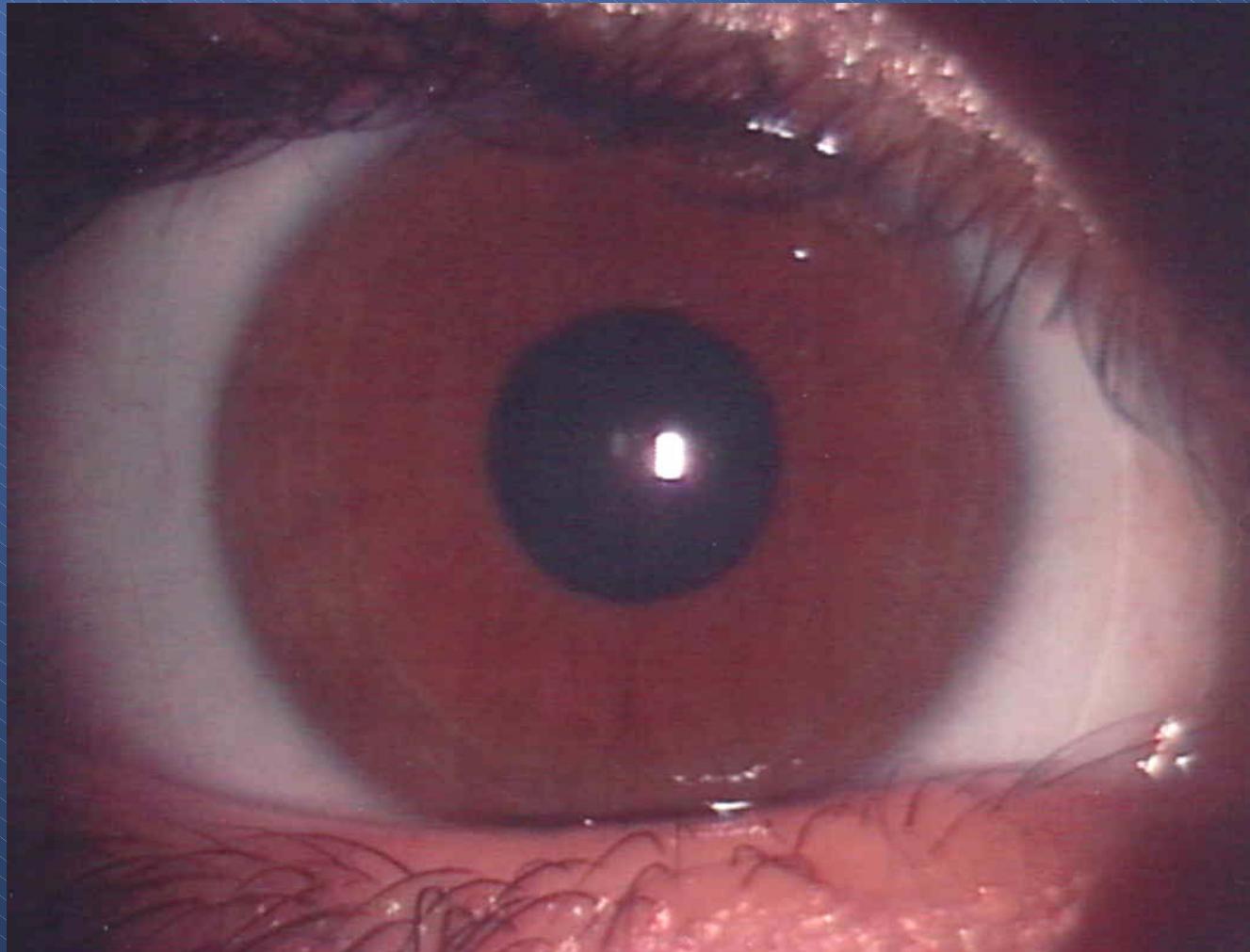
# CL Materials



Soft CL's  
(disposable)



# CL Materials



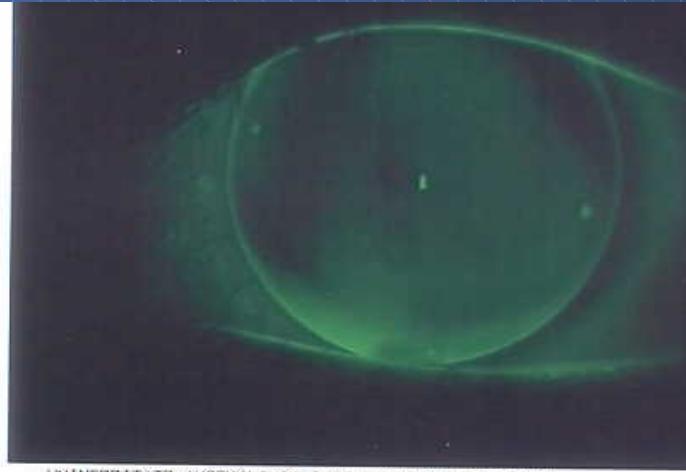
Silicone-  
Hydrogel CL's



# CL Materials



UNIVERSITÄTS AUGENKLINIK BASEL, MICHAEL BARTSCHI



UNIVERSITÄTS AUGENKLINIK BASEL, MICHAEL BARTSCHI



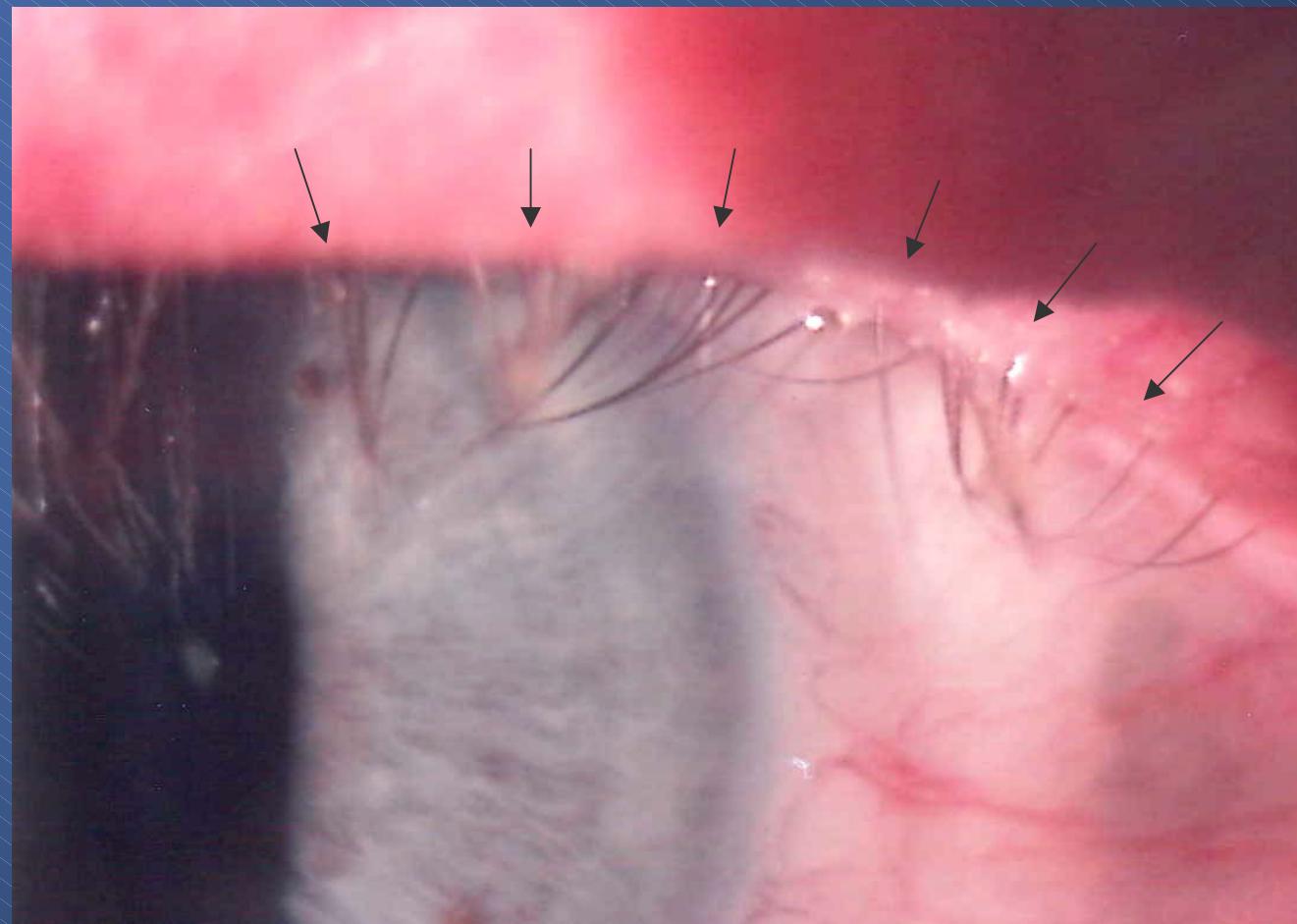
Rigid gas  
permeable  
CL's



# Clinical cases

## Trichiasis :

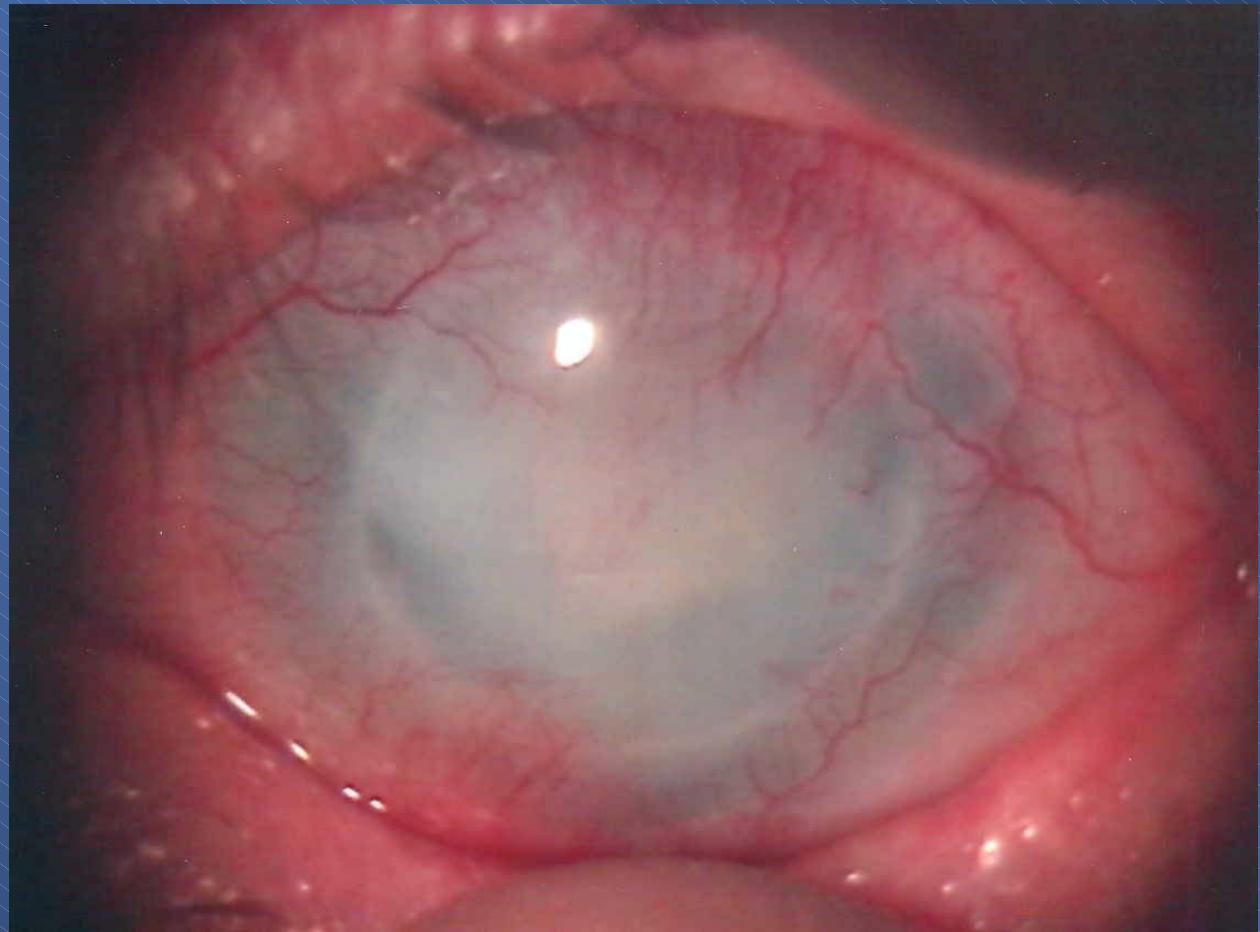
- mech. Protection
- Pain, tearing,  
Blepharospasm,  
redness
- Infections
- Scarring
- „Funny Looking“



# Clinical cases

## Trichiasis :

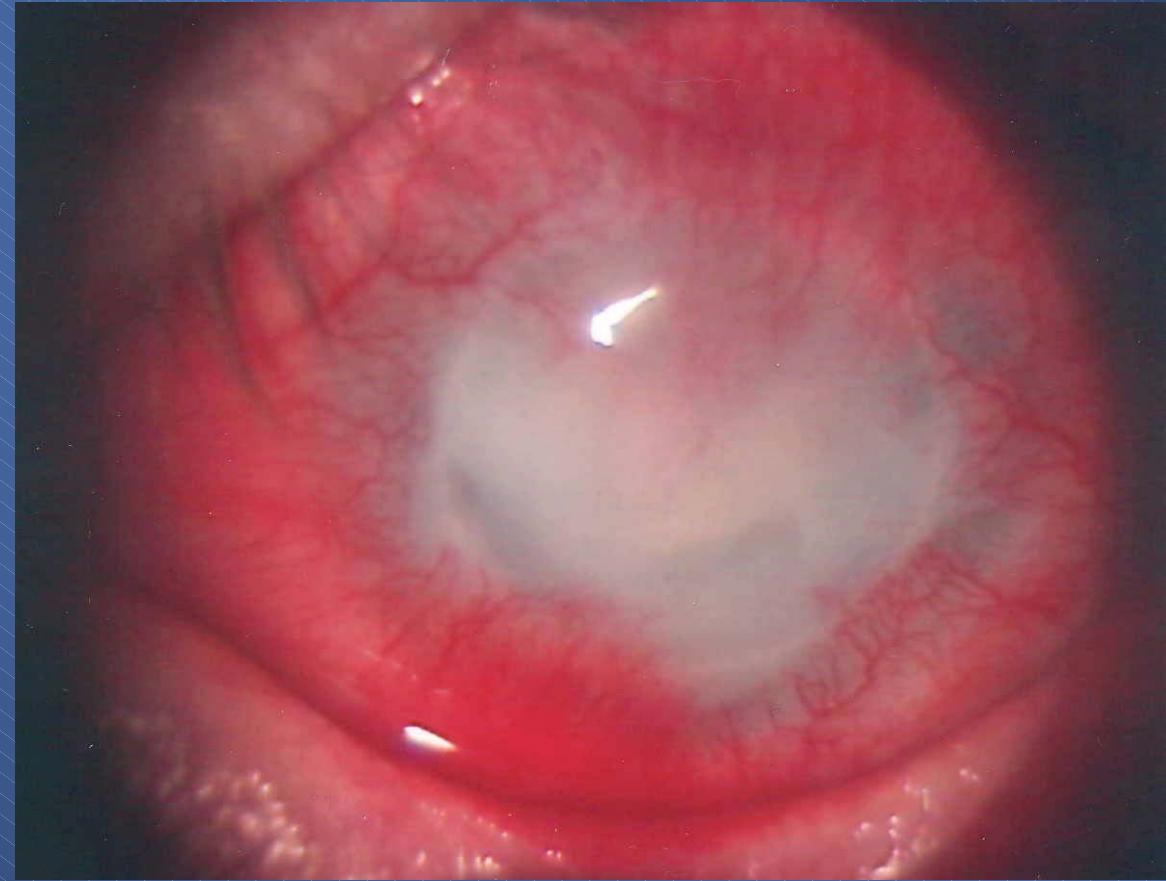
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- Pain, tearing,
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- Scarring
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# Clinical cases

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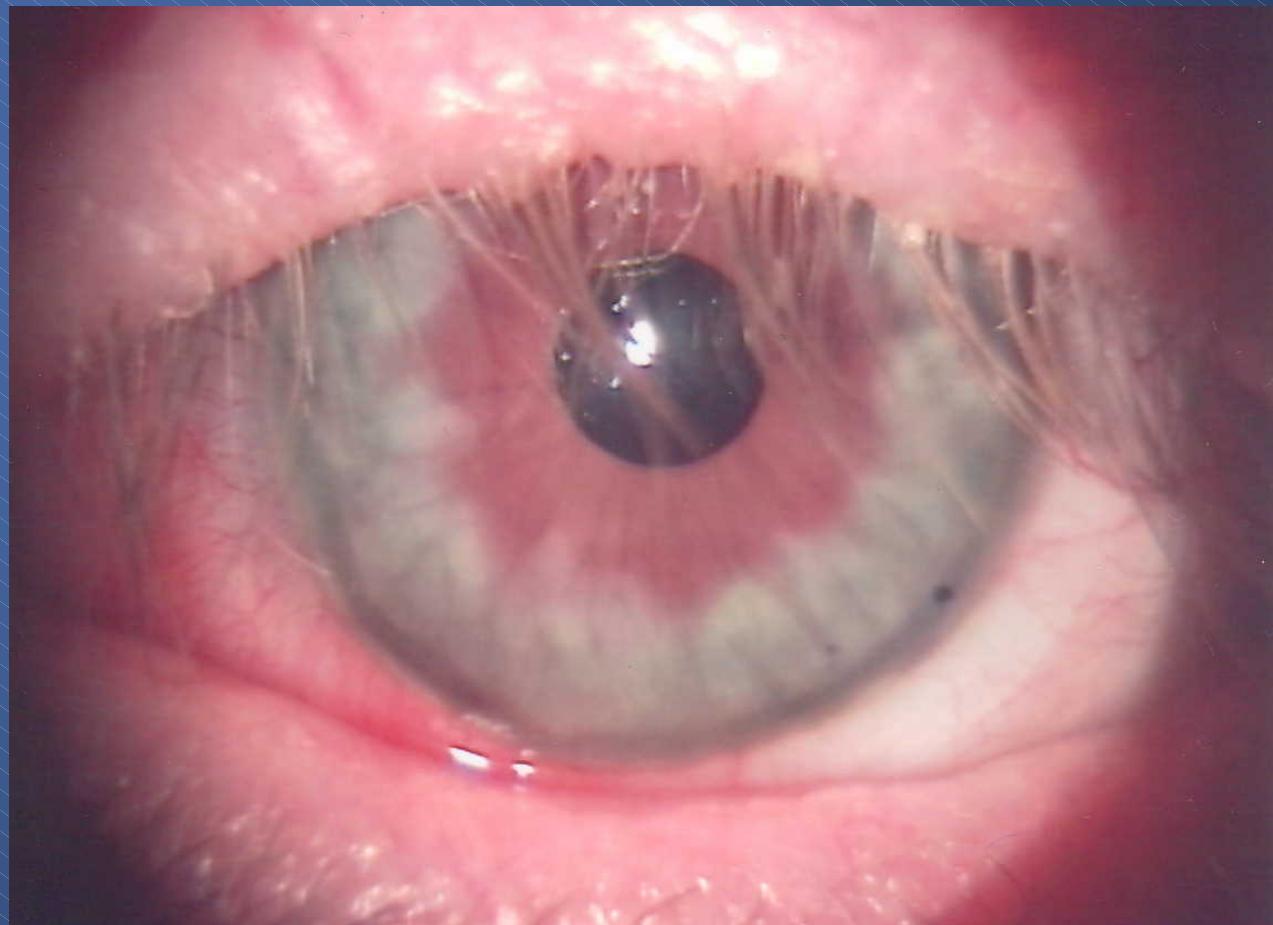
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- Infections
- Scarring
- „Funny Looking“



# Clinical cases

## Trichiasis :

- mech. Protection
- Pain, tearing,
- Blepharospasm,
- redness, scarring
- Infections
- Scarring
- „Funny Looking“



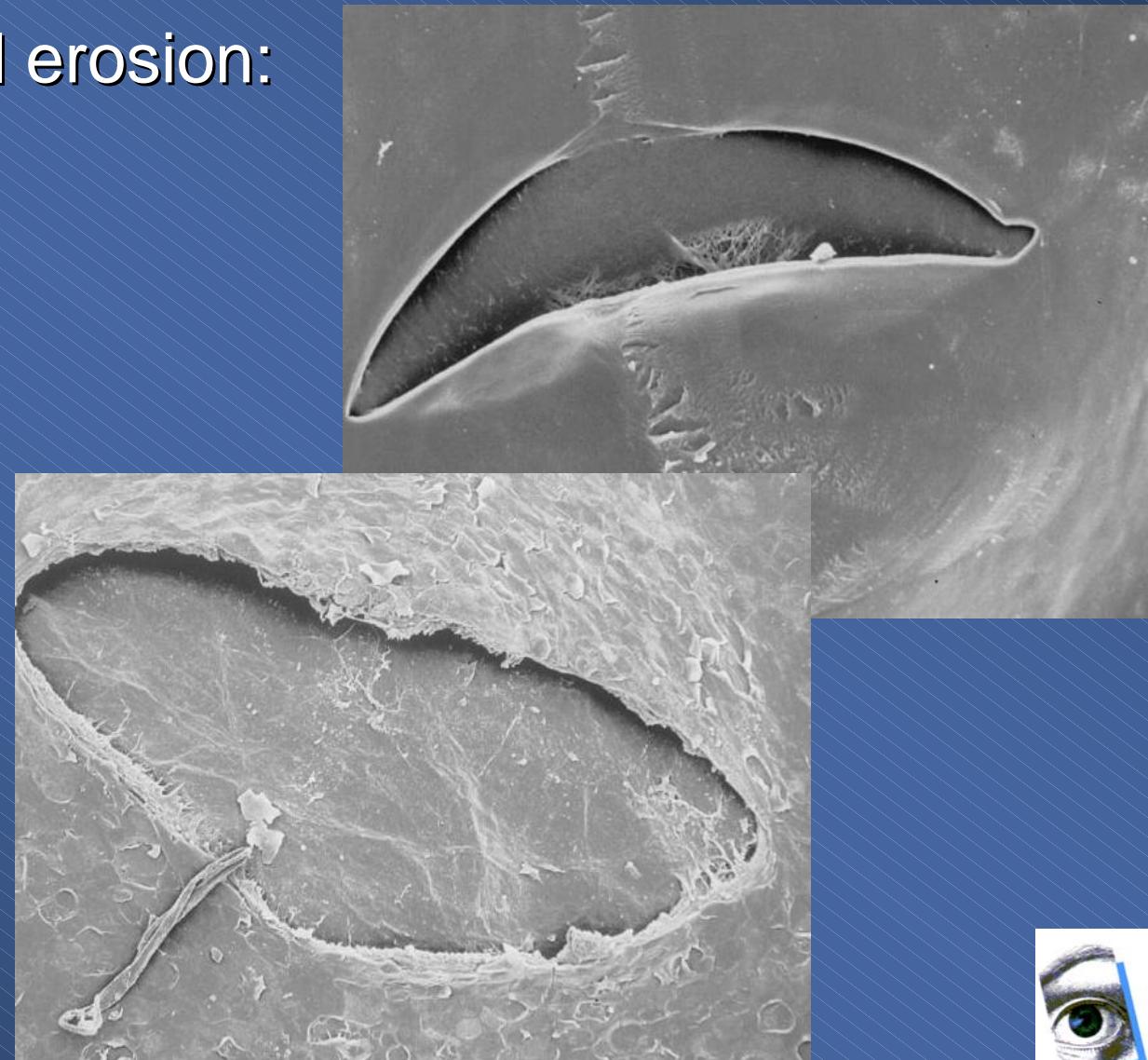
⇒ Prosthetic soft speciality CL (Cantor & Silver MMA-VP 70%)



# Clinical cases

## Recurrent corneal erosion:

- mech. Protection
- corneal healing
- Pain, tearing,
- Blepharospasm,  
redness, blinding
- Infections
- less scarring





## Recurrent corneal erosion:

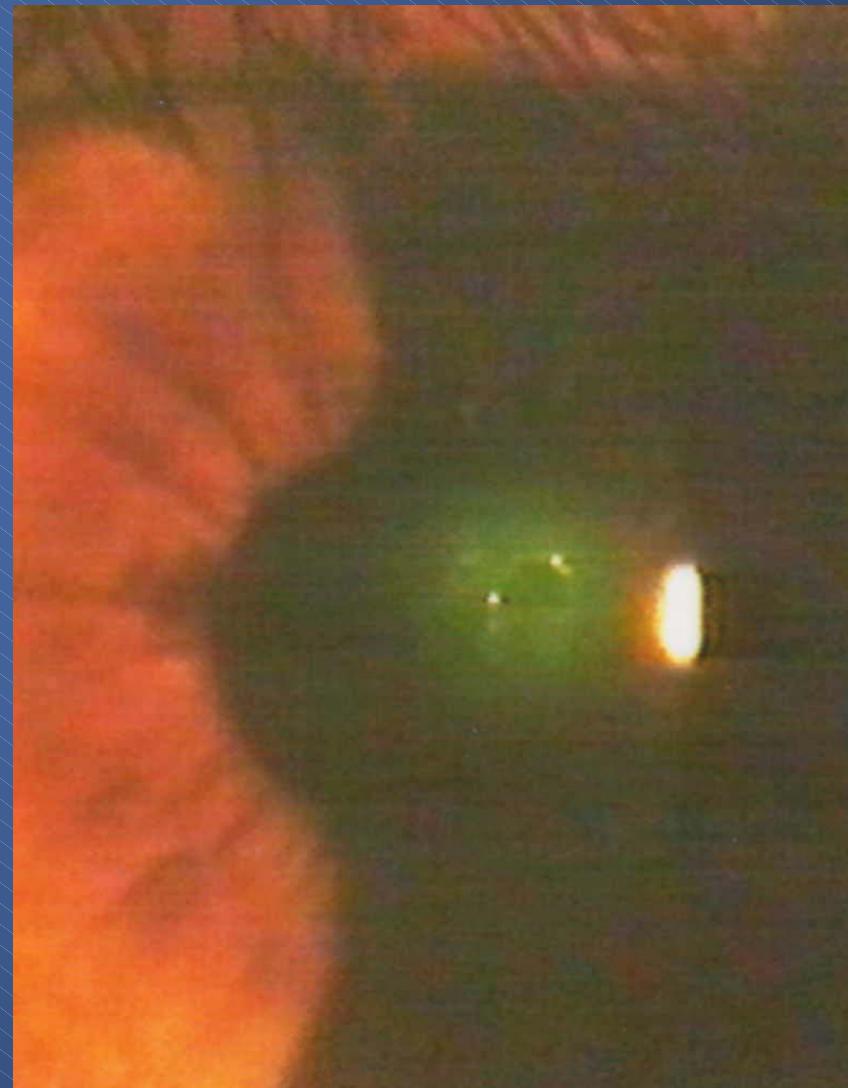
- mech. Protection
- corneal healing
- Pain, tearing,
- Blepharospasm,
- redness, blinding
- Infections
- less scarring



# Clinical cases

Recurrent  
corneal erosion:

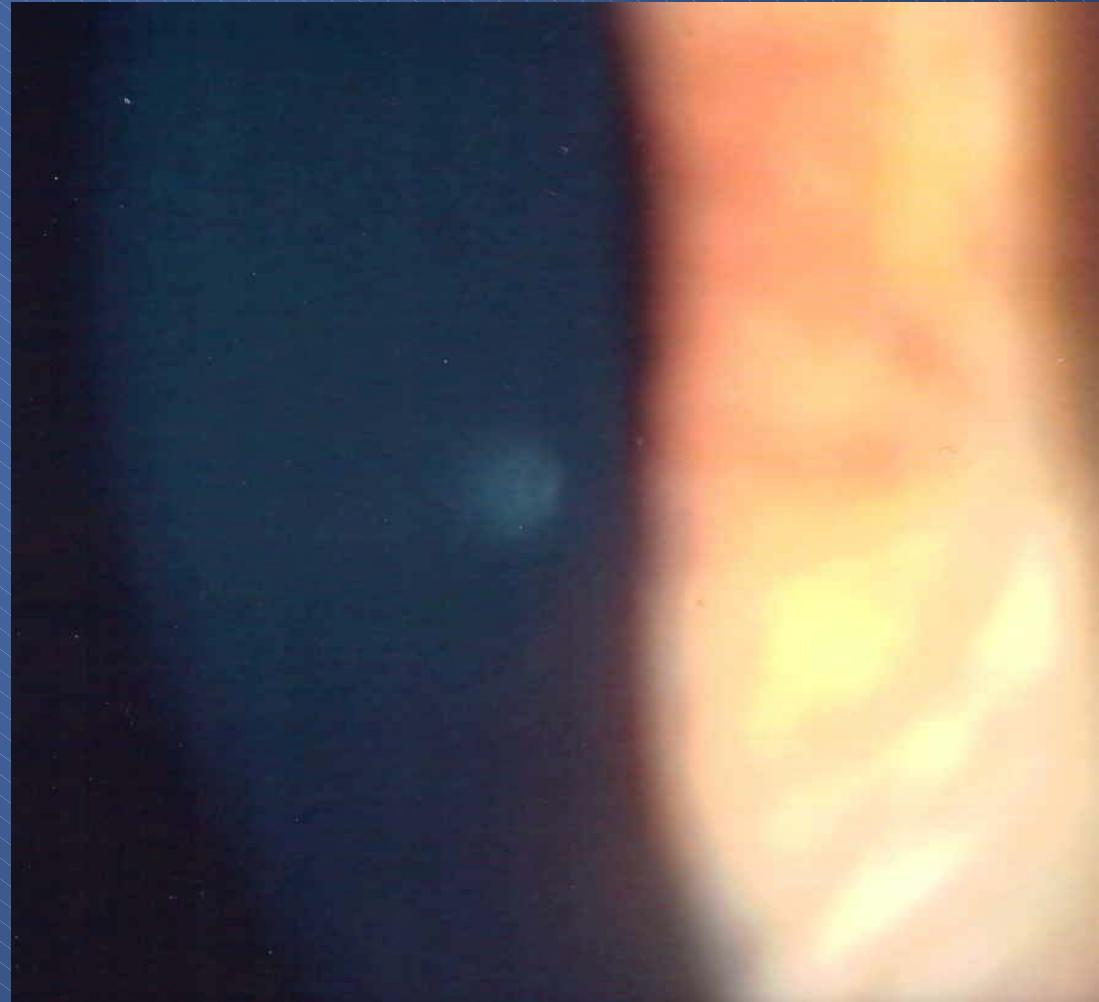
- mech. Protection
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redness, blinding
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- less scarring



# Clinical cases

Recurrent  
corneal erosion:

- mech. Protection
- corneal healing
- Pain, tearing,
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redness, blinding
- Infections
- less scarring



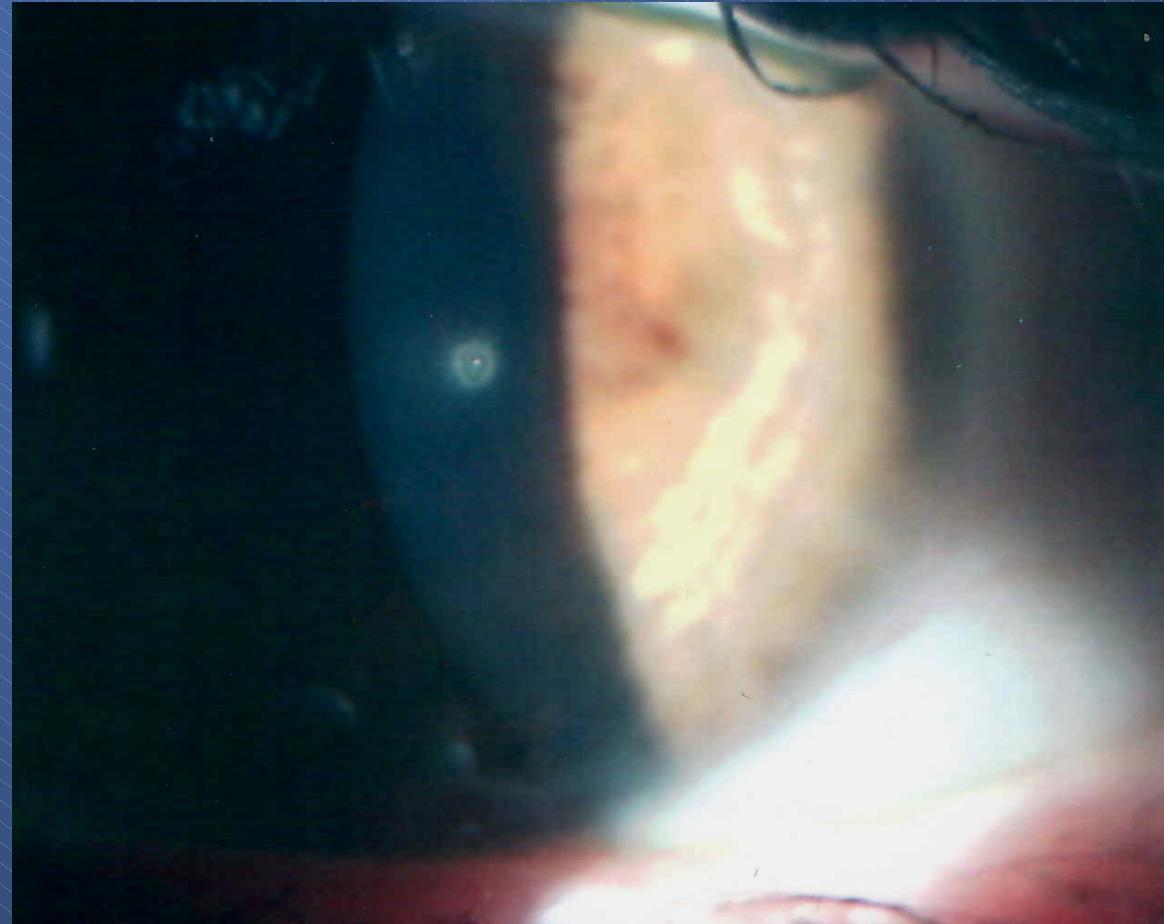
⇒ Soft speciality CL (Conso BG 80%, Hecht/Ascon)



# Clinical cases

## Recurrent corneal plaques:

- mech. Protection
- corneal healing
- Discomfort
- less scarring
- physiological
- Stabilization



# Clinical cases

## Recurrent corneal plaques:

- mech. Protection
- corneal healing
- Discomfort
- less scarring
- physiological
- Stabilization



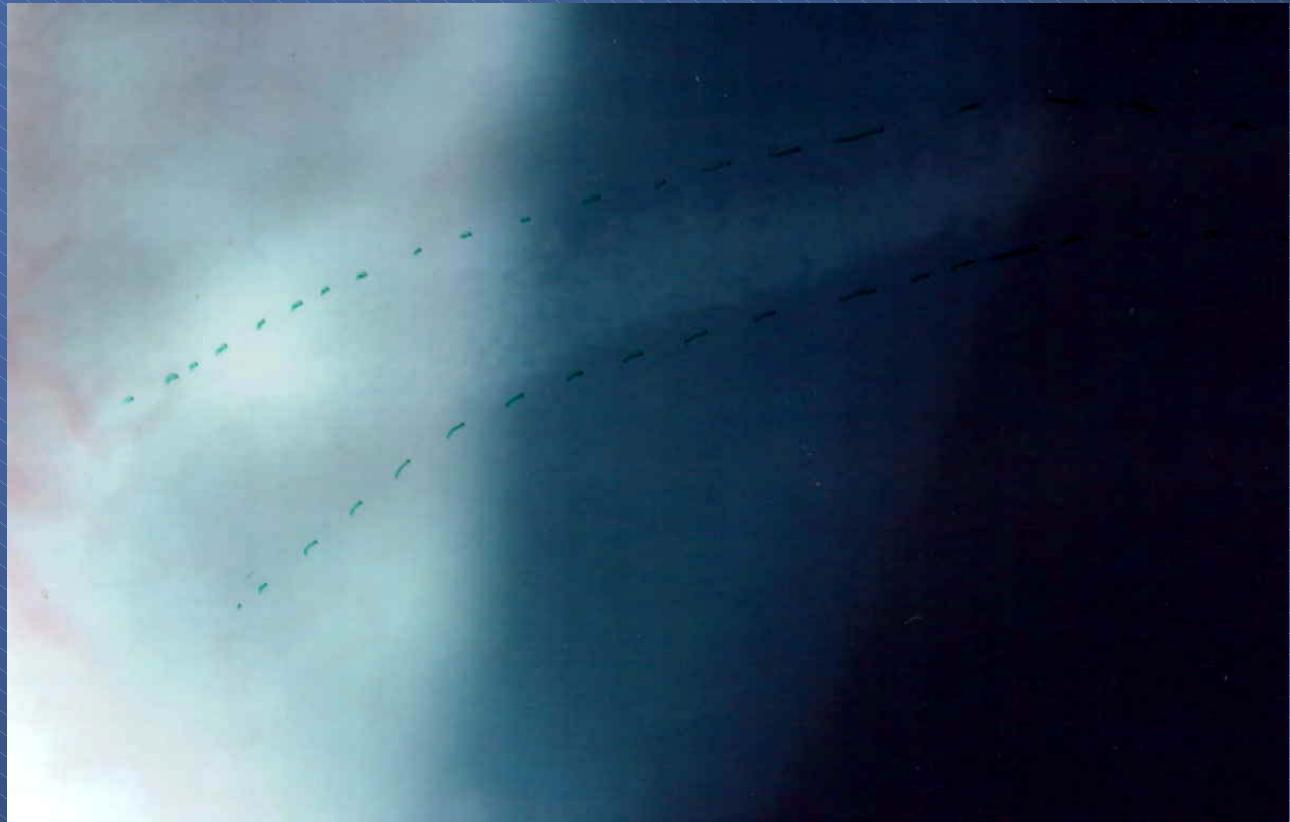
⇒ Silicone-Hydrogel (Pure Vision, B&L)



# Clinical cases

Recurrent basal cell disorder :

- mech. Protection
- corneal „healing“
- physiological Stabilization
- optical Stabilization



# Clinical cases

Recurrent basal cell disorder :

- mech. Protection
- corneal „healing“
- physiological Stabilization
- optical Stabilization

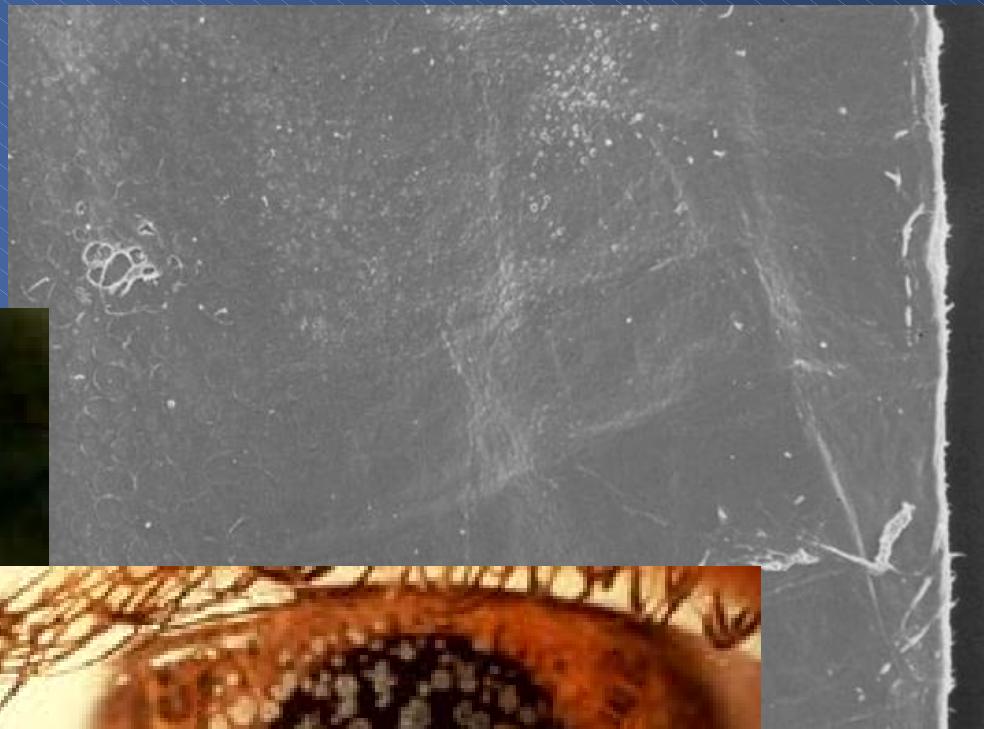


⇒ Silicone-Hydrogel (Pure Vision/B&L, Night & Day/CIBA)



# Clinical cases

## Cornea Dystrophies :

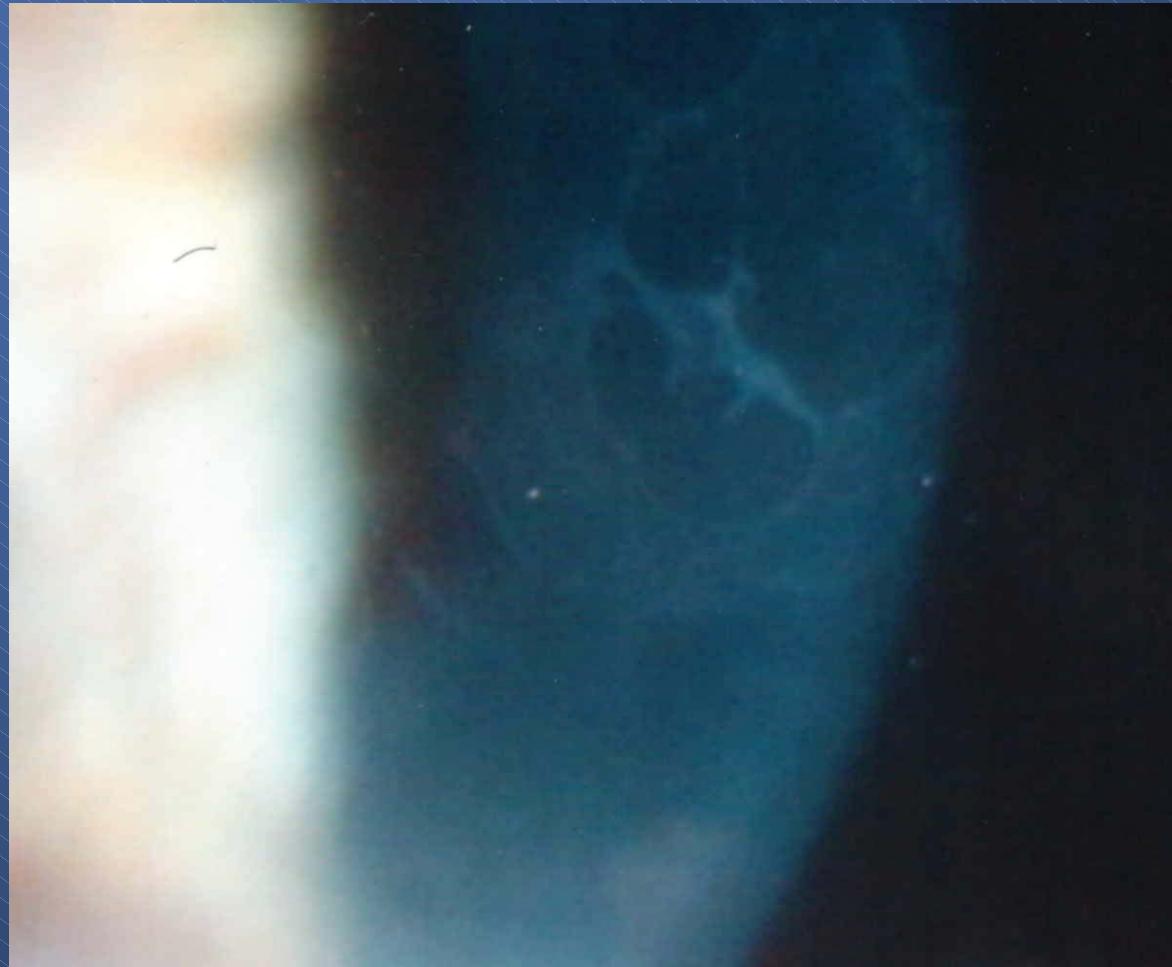


# Clinical cases

## Epithelial basement membrane Dystrophies :

(Cogan or  
Map-Dot-Fingerprint)

- Discomfort
- physiological Stabilization
- optical Stabilization



# Clinical cases

## Epithelial basement membrane Dystrophies :

(Cogan or  
Map-Dot-Fingerprint)

- Discomfort
- physiological Stabilization
- optical Stabilization



⇒ Soft Disposable CL (H2O Extrem, Benz)



# Clinical cases

## Epithelial basement membrane Dystrophies : (Meesman)

- Discomfort
- physiological Stabilization
- optical Stabilization



# Clinical cases

## Epithelial basement membrane Dystrophies : (Meesman)

- Discomfort
- physiological
- Stabilization
- optical
- Stabilization



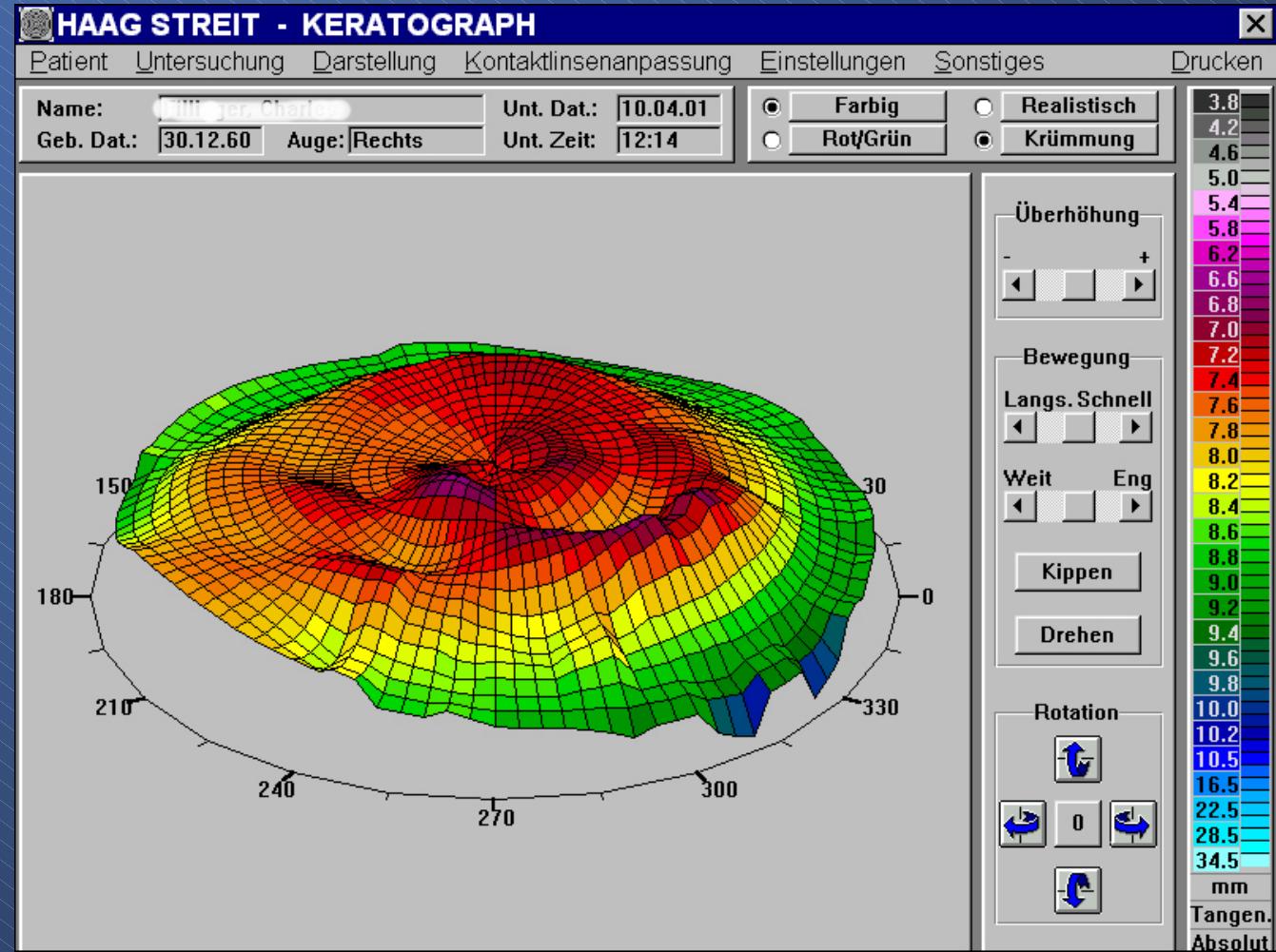
⇒ Soft specialty CL (Conso BG 80%, Hecht/Ascon)



# Clinical cases

## Epithelial basement membrane Dystrophies : (in general)

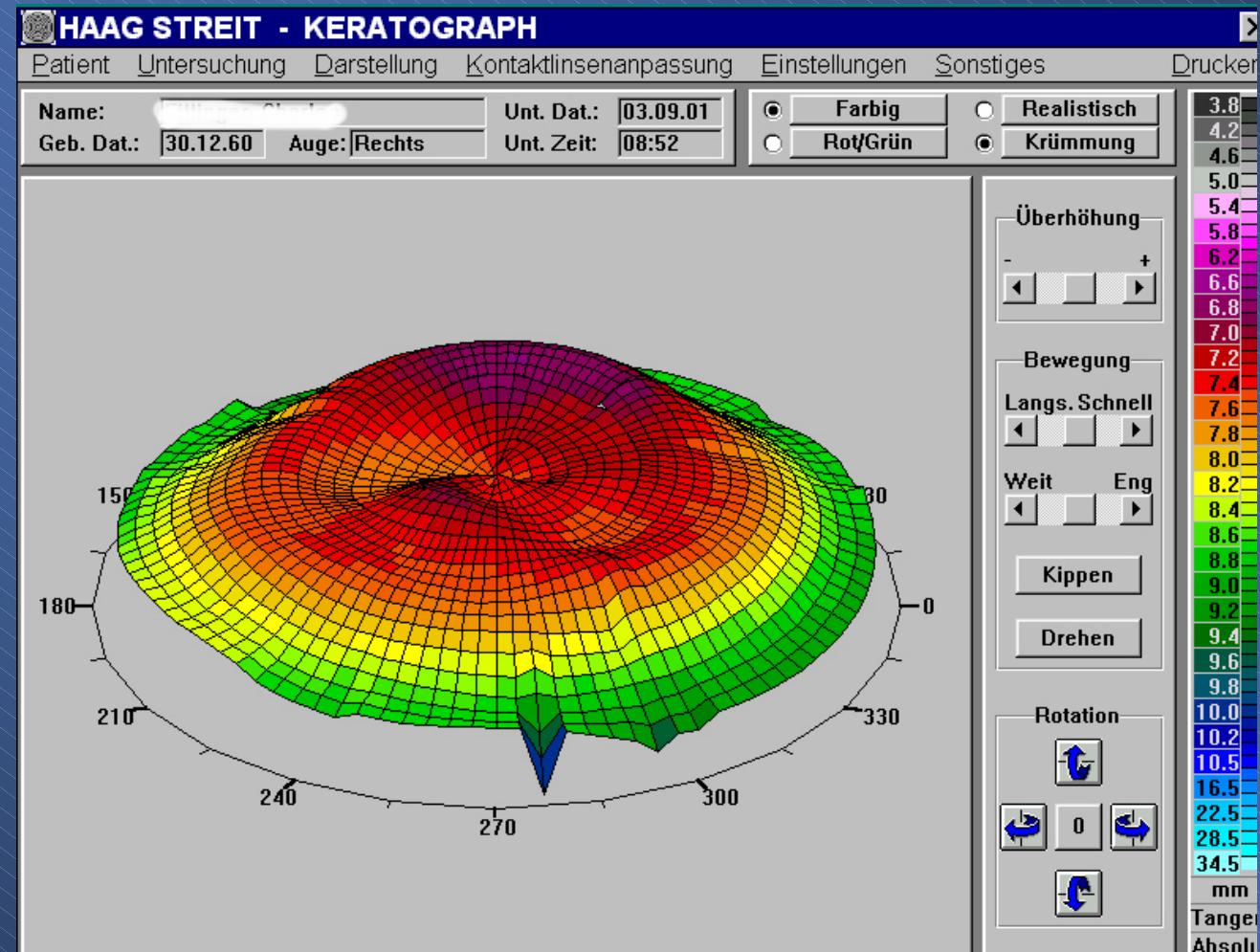
- optical  
Stabilization



# Clinical cases

## Epithelial basement membrane Dystrophies : (in general)

- optical  
Stabilization

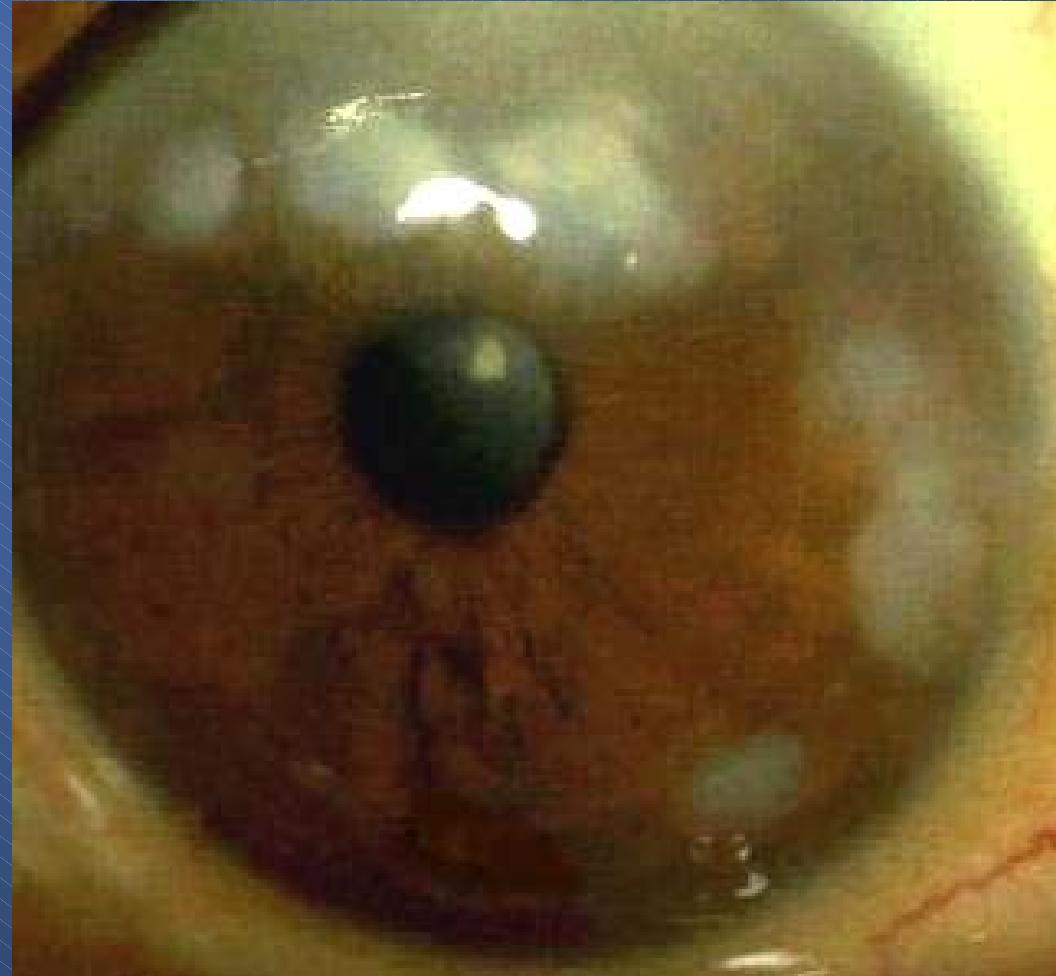


# Clinical cases

## Epithelial / stromal Degeneration :

(nodular Salzmann)

- Discomfort
- physiological Stabilization
- optical Stabilization

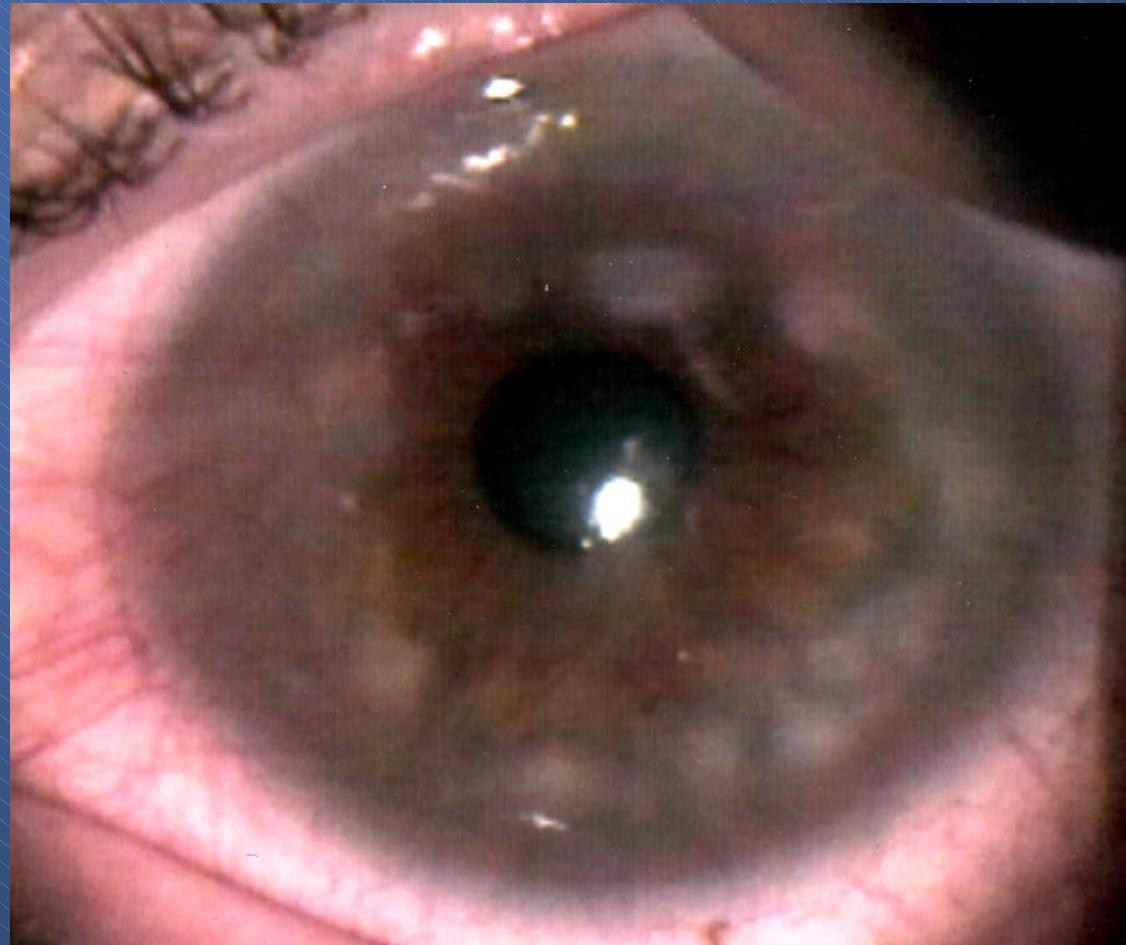


# Clinical cases

## Epithelial / stromal Degeneration :

(nodular Salzmann)

- Discomfort
- physiological Stabilization
- optical Stabilization

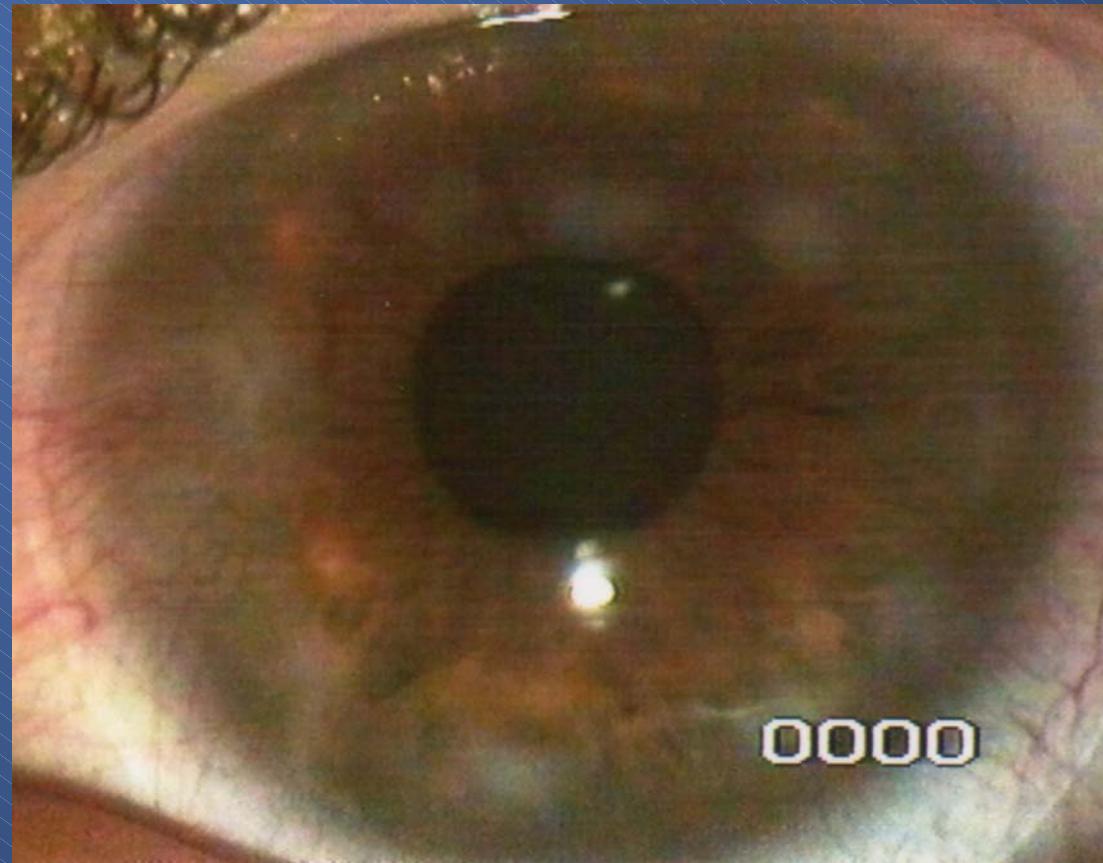


# Clinical cases

## Epithelial / stromal Degeneration :

(nodular Salzmann)

- Discomfort
- physiological Stabilization
- optical Stabilization



⇒ Silicone-Hydrogel (Pure Vision/B&L, Night & Day/CIBA)



# Clinical cases

## Atopic Keratoconjunctivitis :

- mech. Protection
- corneal healing
- Pain, tearing,  
Blepharospasm,  
redness, blinding
- less scarring
- epithelial regrowth



# Clinical cases

## Atopic Keratoconjunctivitis :

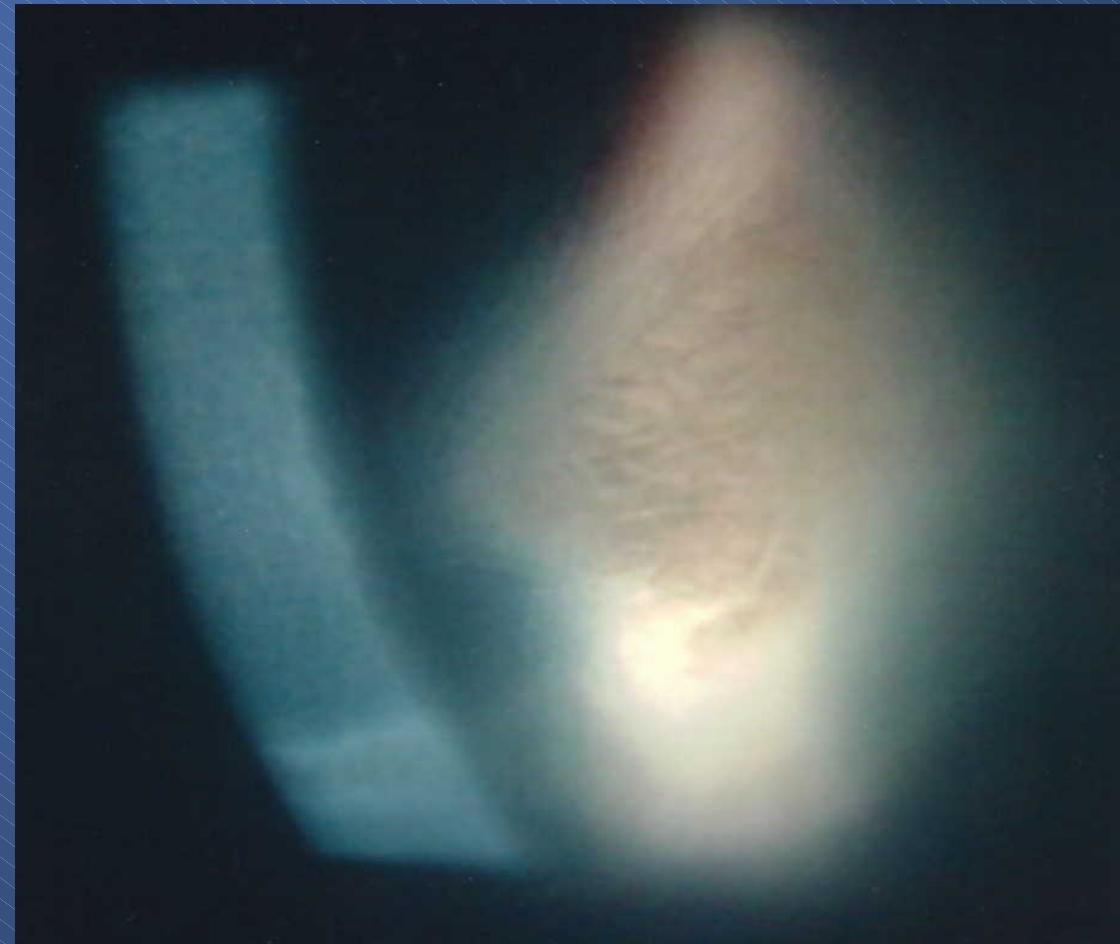
- mech. Protection
- corneal healing
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# Clinical cases

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# Clinical cases

## Atopic Keratoconjunctivitis :

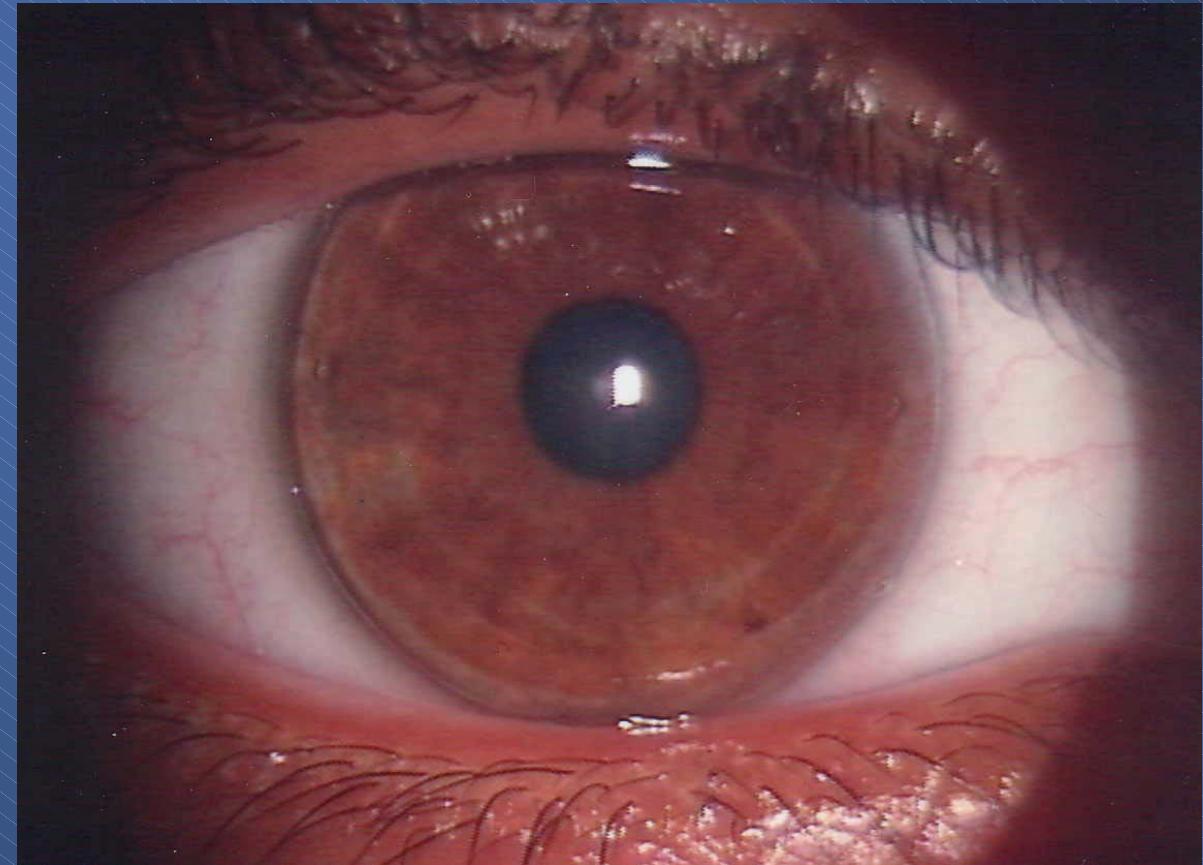
- mech. Protection
- corneal healing
- Pain, tearing,  
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redness, blinding
- less scarring
- epithelial regrowth



# Clinical cases

## Atopic Keratoconjunctivitis :

- mech. Protection
- corneal healing
- Pain, tearing,  
Blepharospasm,  
redness, blinding
- less scarring
- epithelial regrowth



⇒ Soft Disposable CL / RGP (PERIT, Falco)



# Clinical cases

## Bullous Keratopathy :

- Pain, tearing,
- Blepharospasm,
- redness, blinding
- „less scarring“
- „epithelial regrowth“



OD



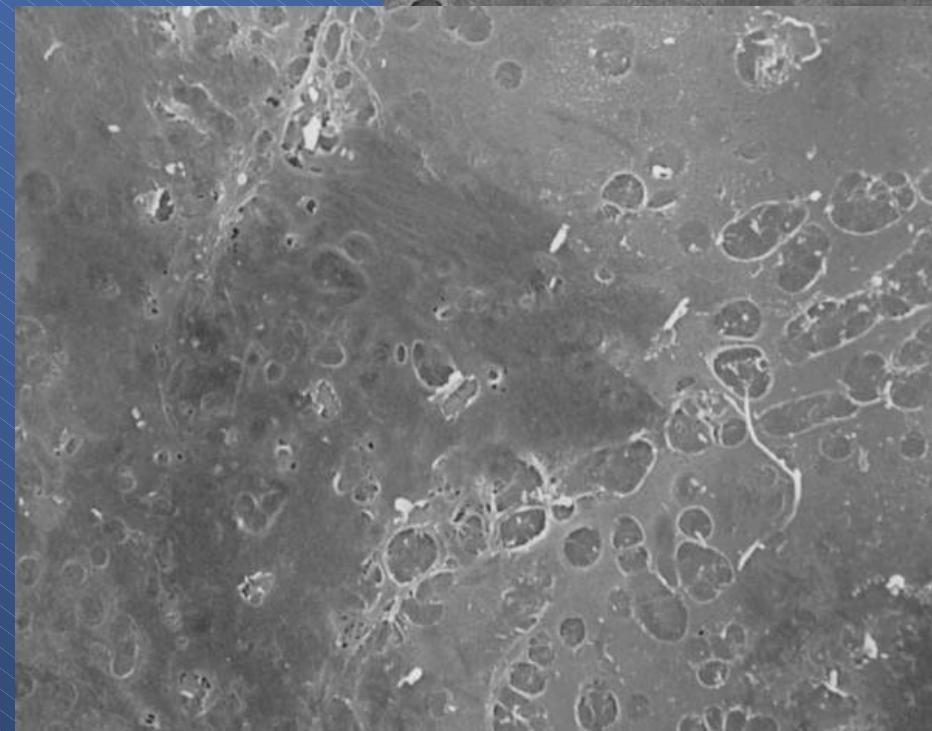
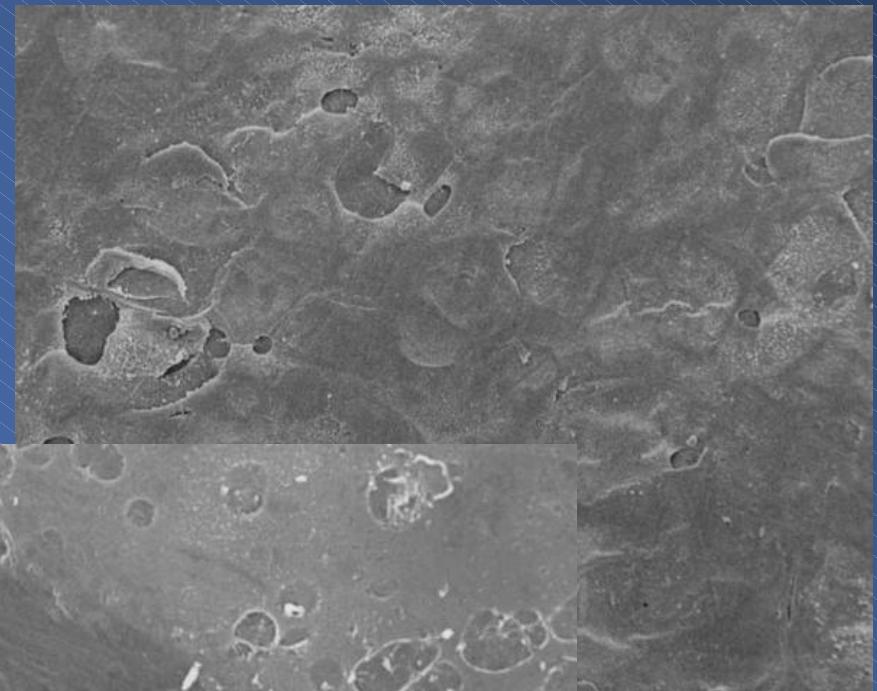
OS



# Clinical cases

## Bullous Keratopathy :

- Pain, tearing,  
Blepharospasm,  
redness, blinding
- less scarring
- epithelial regrowth



# Clinical cases

## Bullous Keratopathy :

- Pain, tearing,
- Blepharospasm,
- redness, blinding
- less scarring
- epithelial regrowth



- ⇒ Soft disposable CL (Acuvue, J&J, 1 Week EW)
- ⇒ Silicone-Hydrogel (Pure Vision/B&L, Night & Day/CIBA, 1 Mt CW)

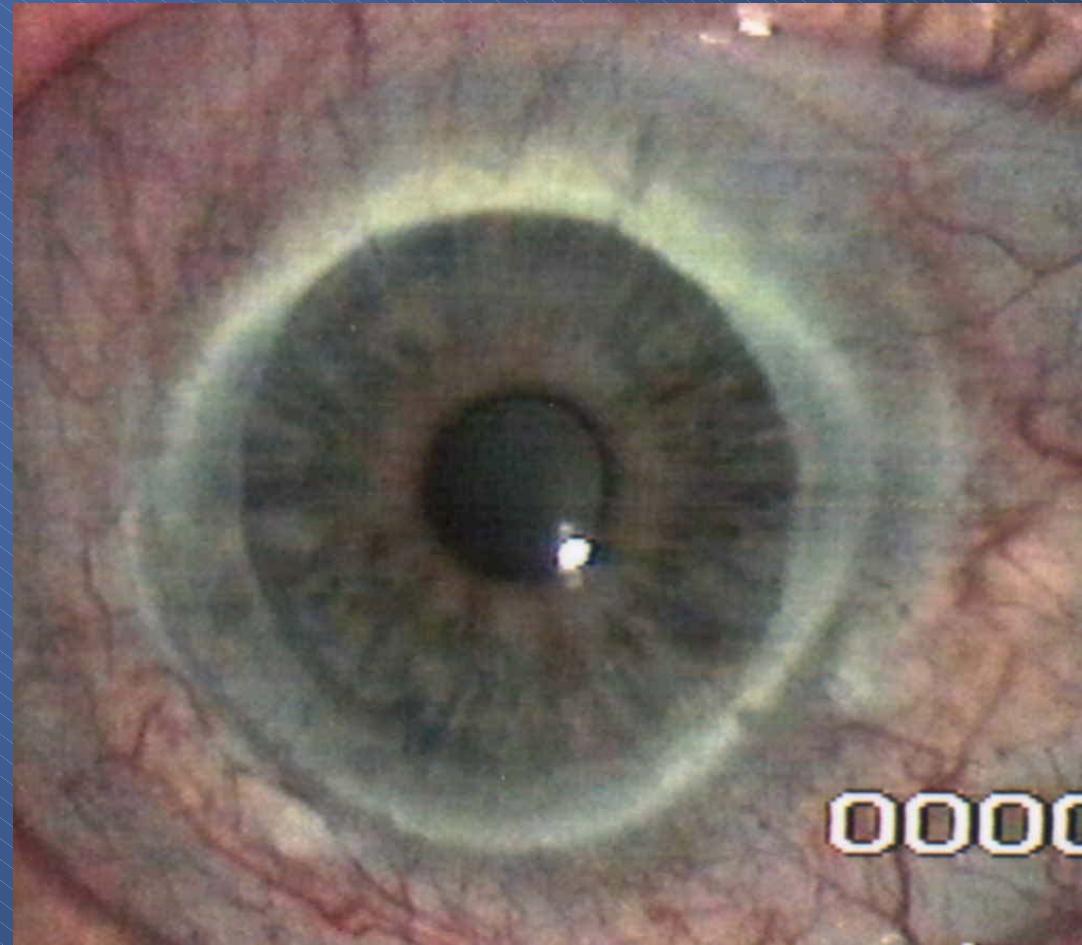


# Clinical cases

Bullous Keratopathy :

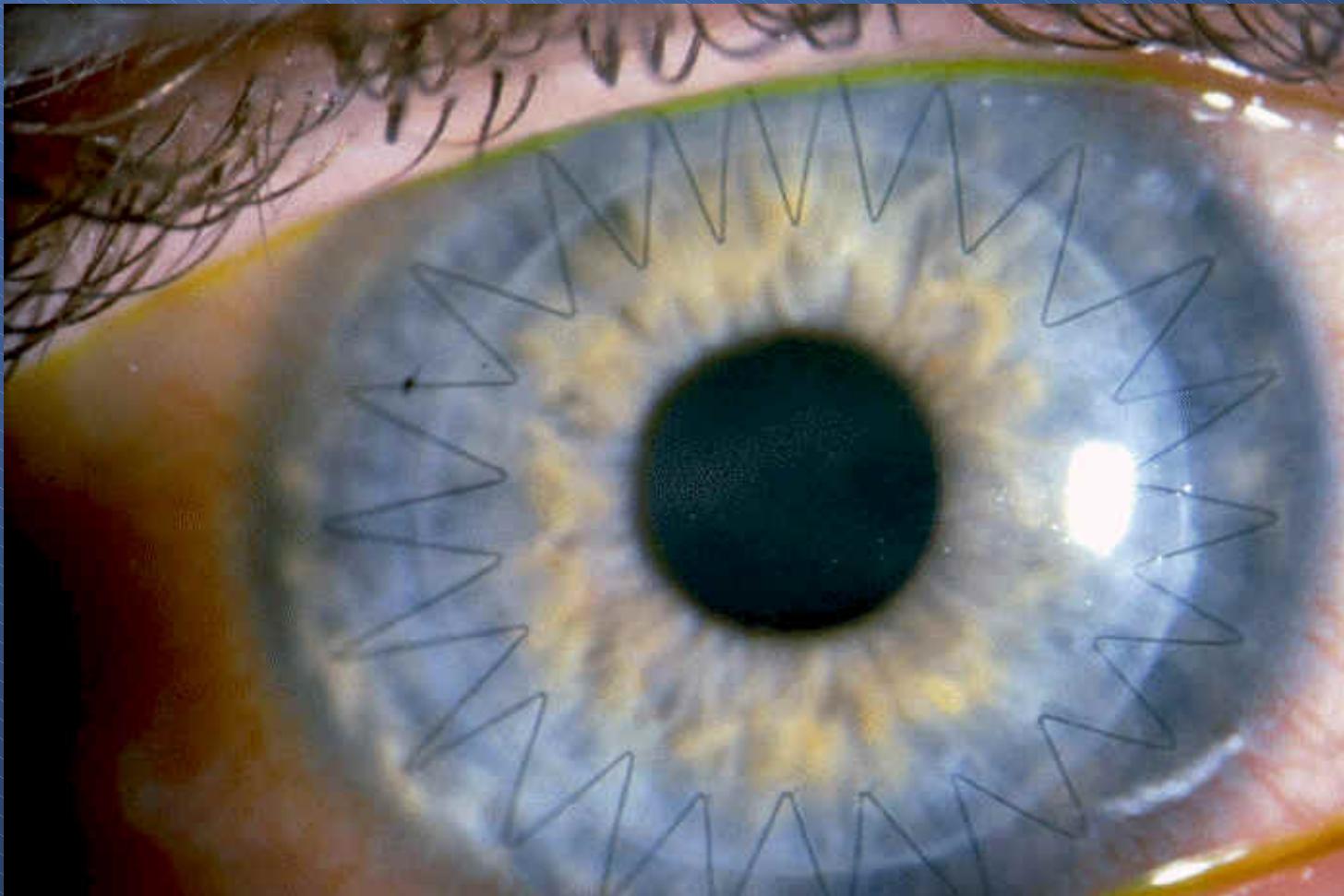
Surgical treatment =

Penetrating Keratoplasty



# Clinical cases

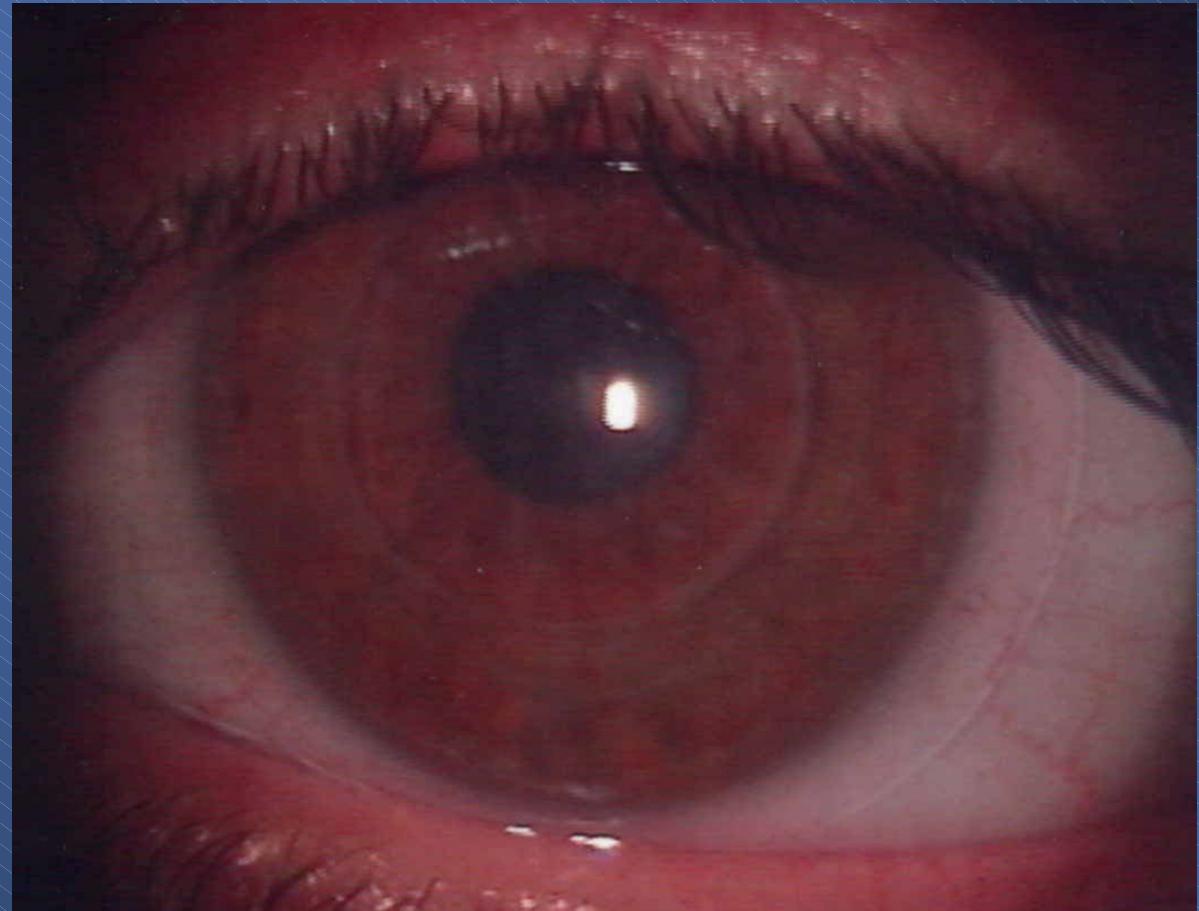
Penetrating Keratoplasty :



# Clinical cases

## Penetrating Keratoplasty :

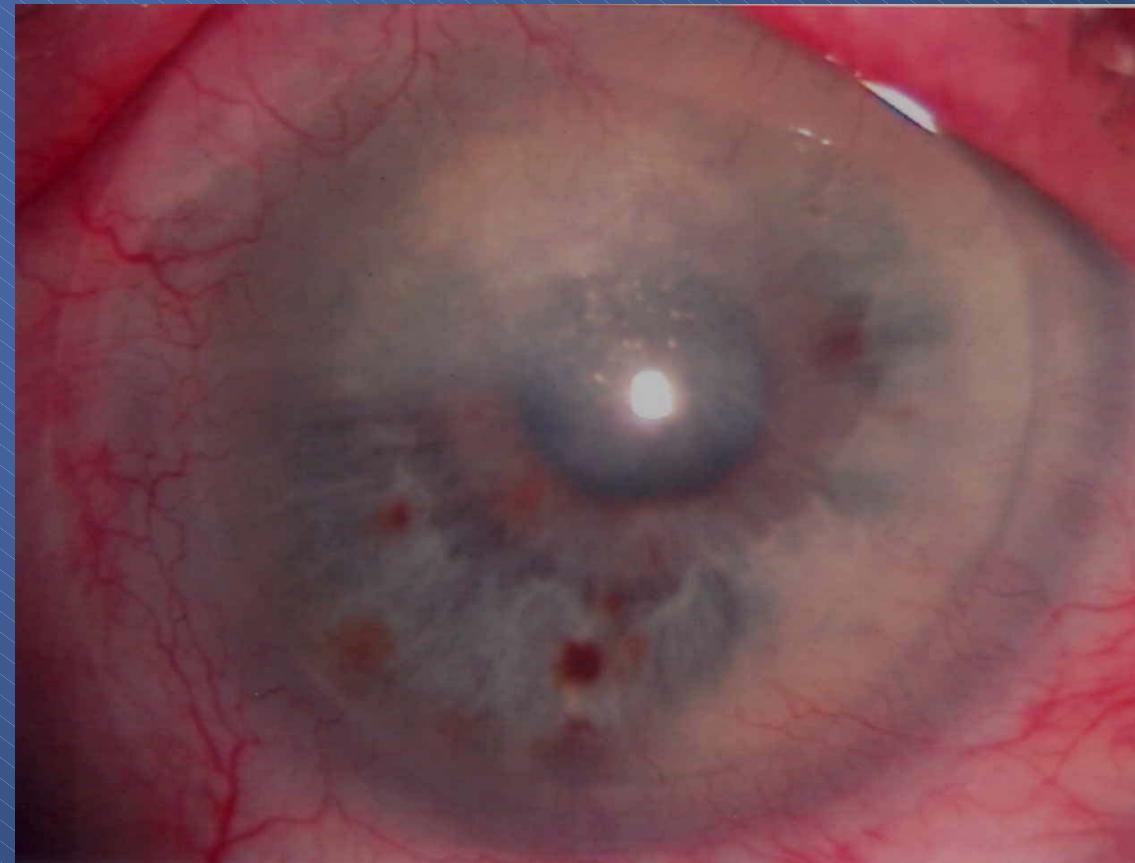
- Thread relaxation
- After thread removal  
(only in rare cases)
- Repulsion
- Physiological Stabilization



# Clinical cases

## Penetrating Keratoplasty :

- Thread relaxation
- After thread removal  
(only in rare cases)
- Repulsion
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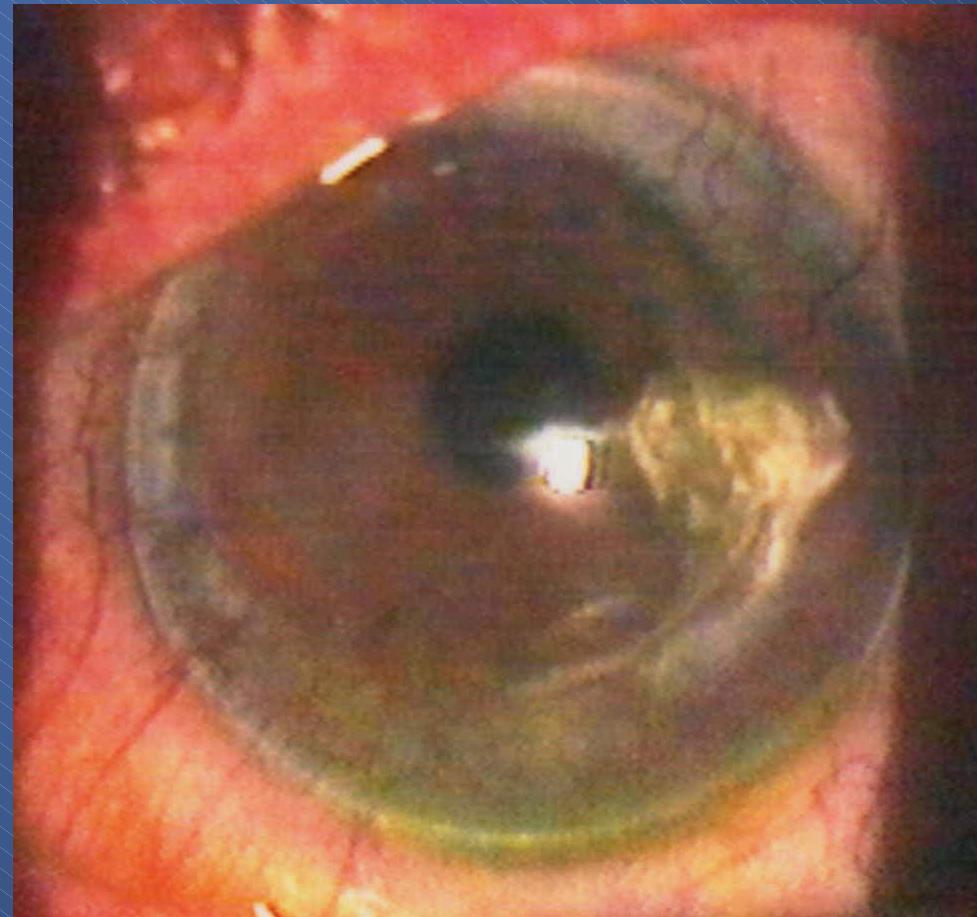
⇒ Silicone-Hydrogel CL (Focus Night&Day, CIBA)



# Clinical cases

## Penetrating Keratoplasty :

- Thread relaxation
- After thread removal  
(only in rare cases)
- Repulsion
- Physiological Stabilization



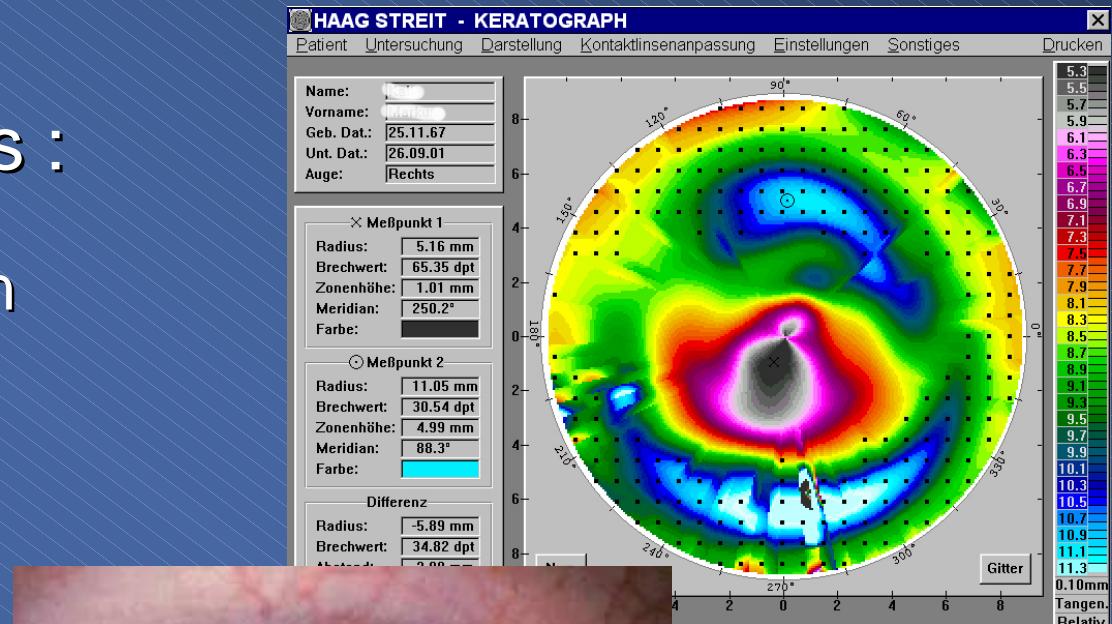
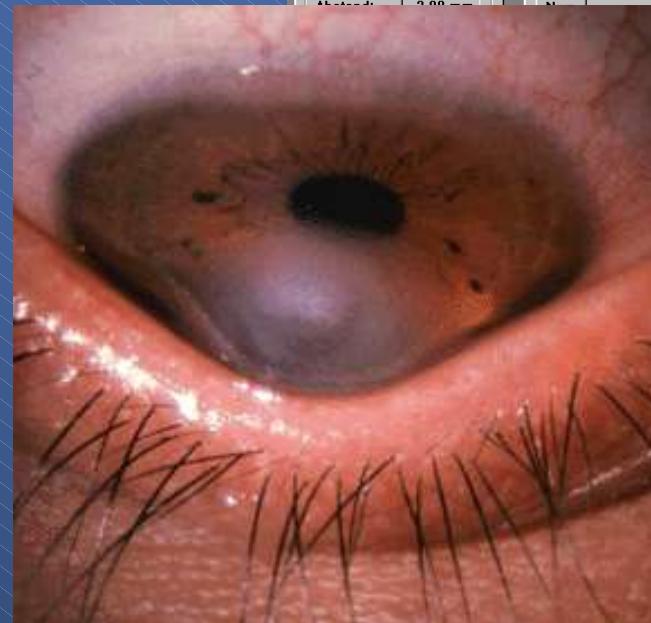
⇒ RGP CL (Miniscleral OAD 13,5 mm, Falco,)



# Clinical cases

## Severe Keratokonus :

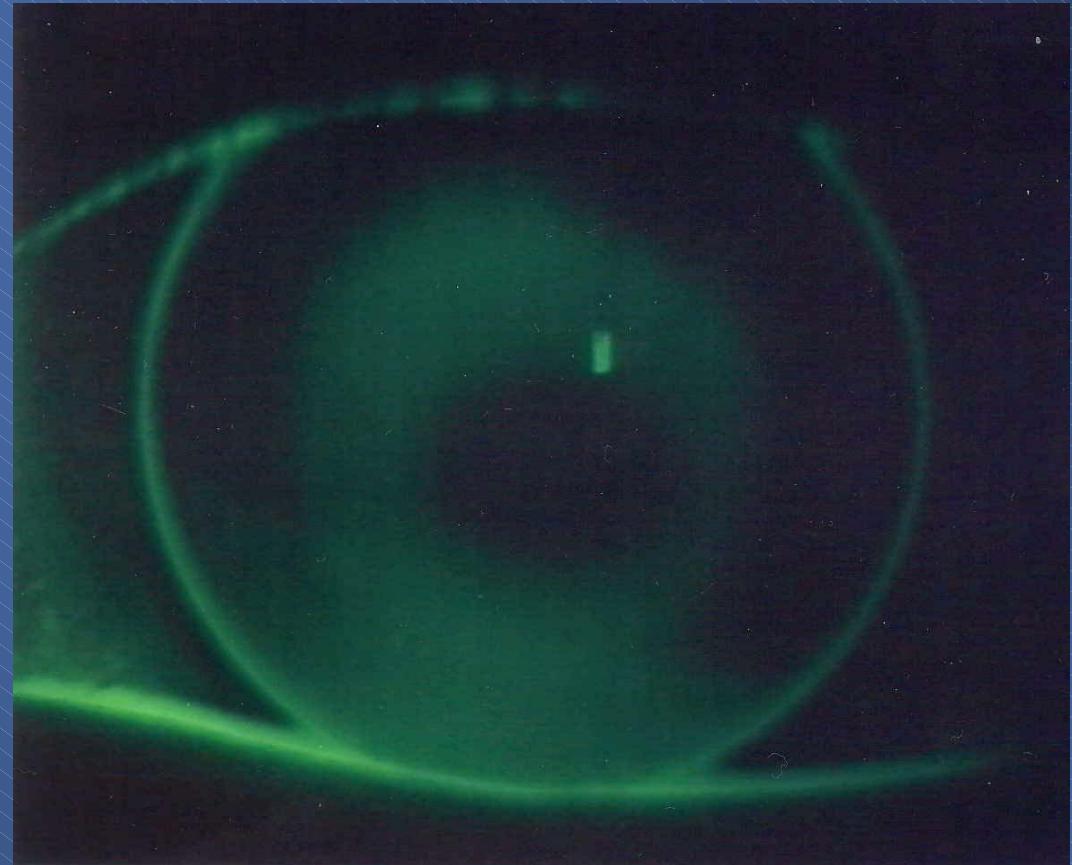
- mechanical Protection
- Pain, tearing,
- Blepharospasm,  
redness, blinding
- less scarring (?)
- less Progression (?)



# Clinical cases

## Severe Keratokonus :

- mechanical Protection
- Pain, tearing,
- Blepharospasm,  
redness, blinding
- less scarring (?)
- less Progression (?)



# Clinical cases

## Severe Keratokonus :

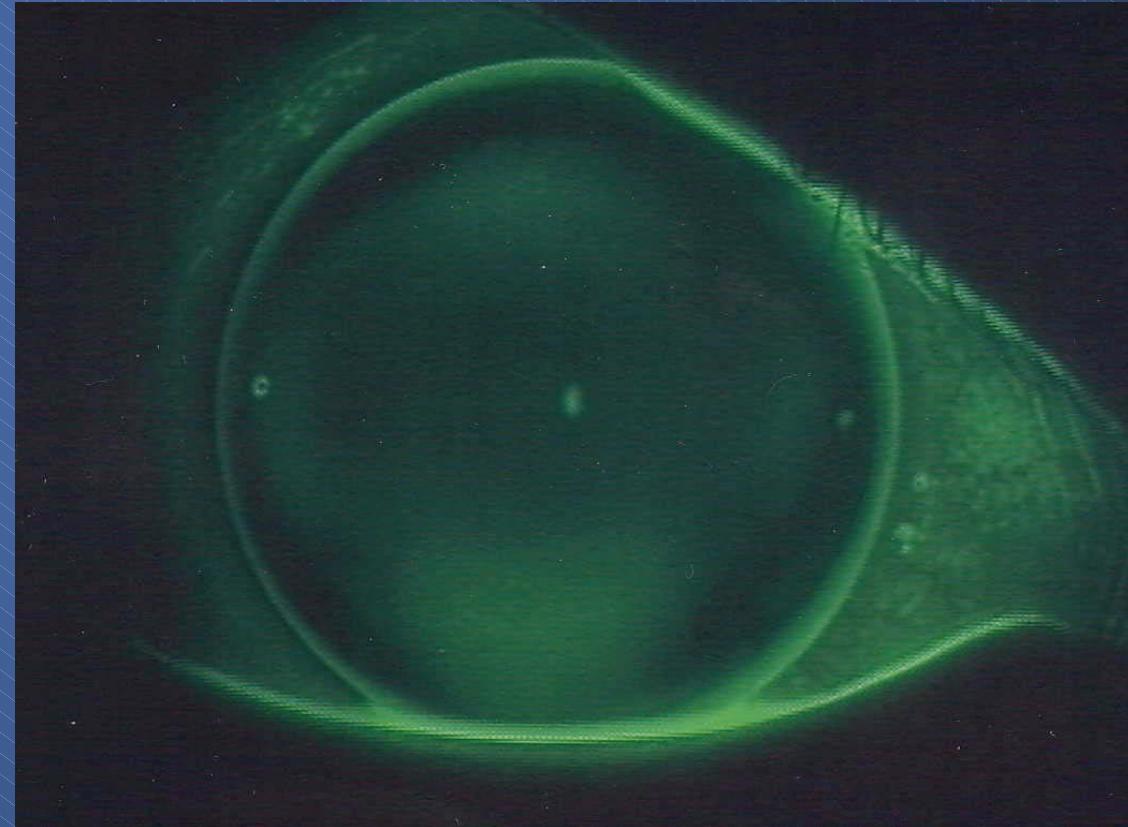
- mechanical Protection
- Pain, tearing,
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redness, blinding
- less scarring (?)
- less Progression (?)



# Clinical cases

## Severe Keratokonus:

- mechanical Protection
- Pain, tearing,
- Blepharospasm,  
redness, blinding
- less scarring (?)
- less Progression (?)



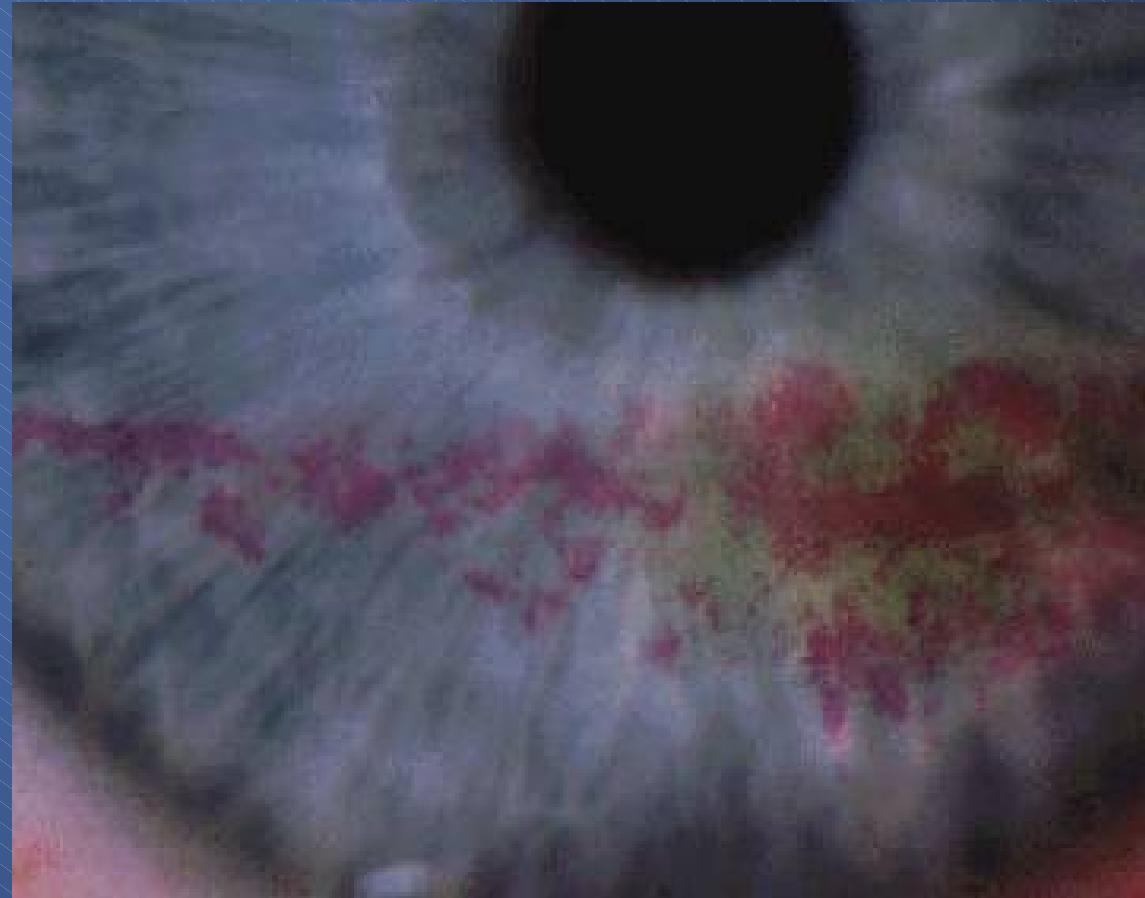
⇒ RGP CL (FITQ, Boston XO, Falco)



# Clinical cases

## Dry Eye :

- Tear evaporation
- Discomfort, pain
- Redness
- Slow tear evaporation



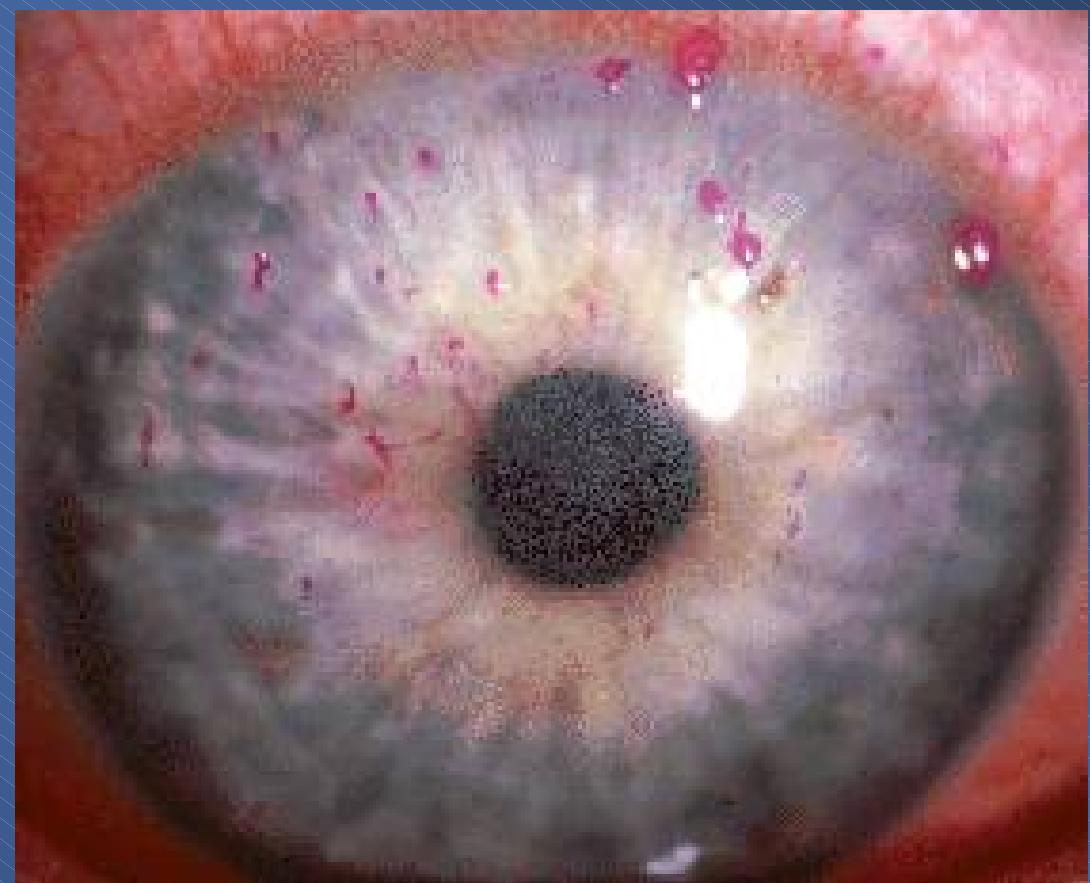
(Keratitis elagophalmo)



# Clinical cases

## Dry Eye :

- Tear evaporation
- Discomfort, pain
- Redness
- Slow tear evaporation



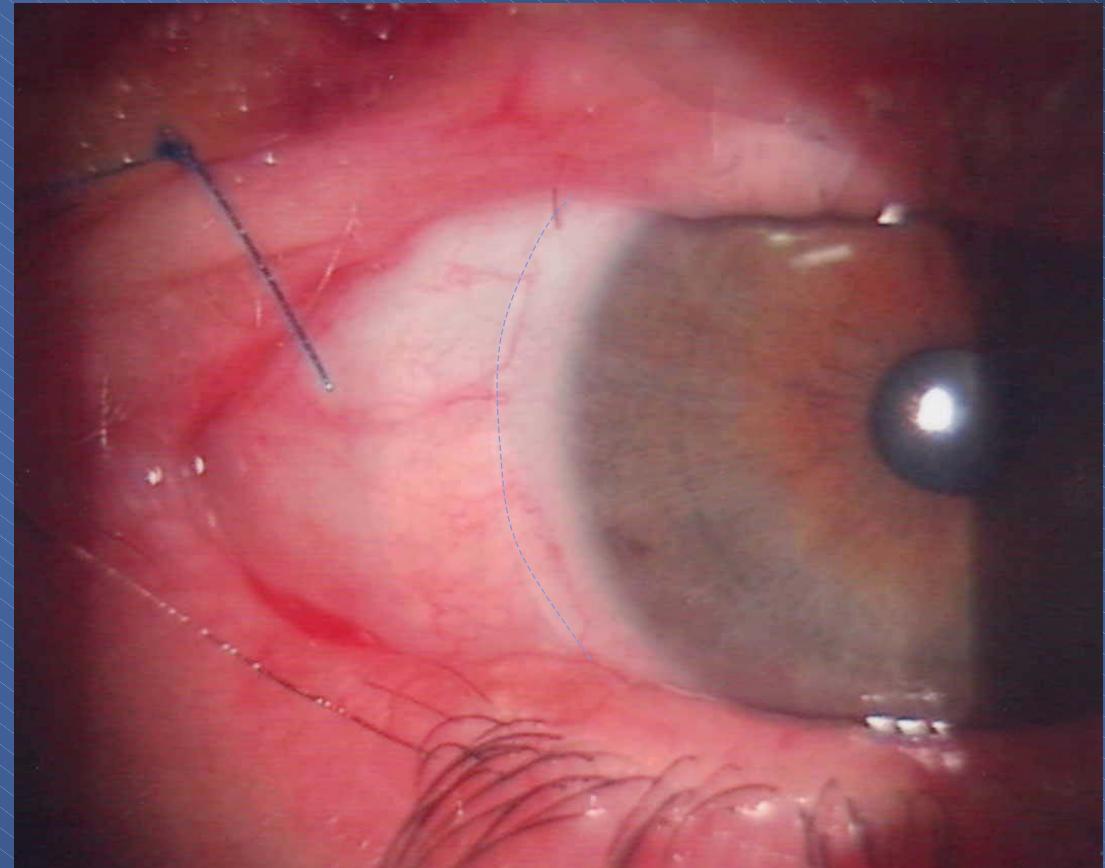
(Keratitis filiformis)



# Clinical cases

## Dry Eye :

- Tear evaporation
- Discomfort, pain
- Redness
- Slow tear evaporation



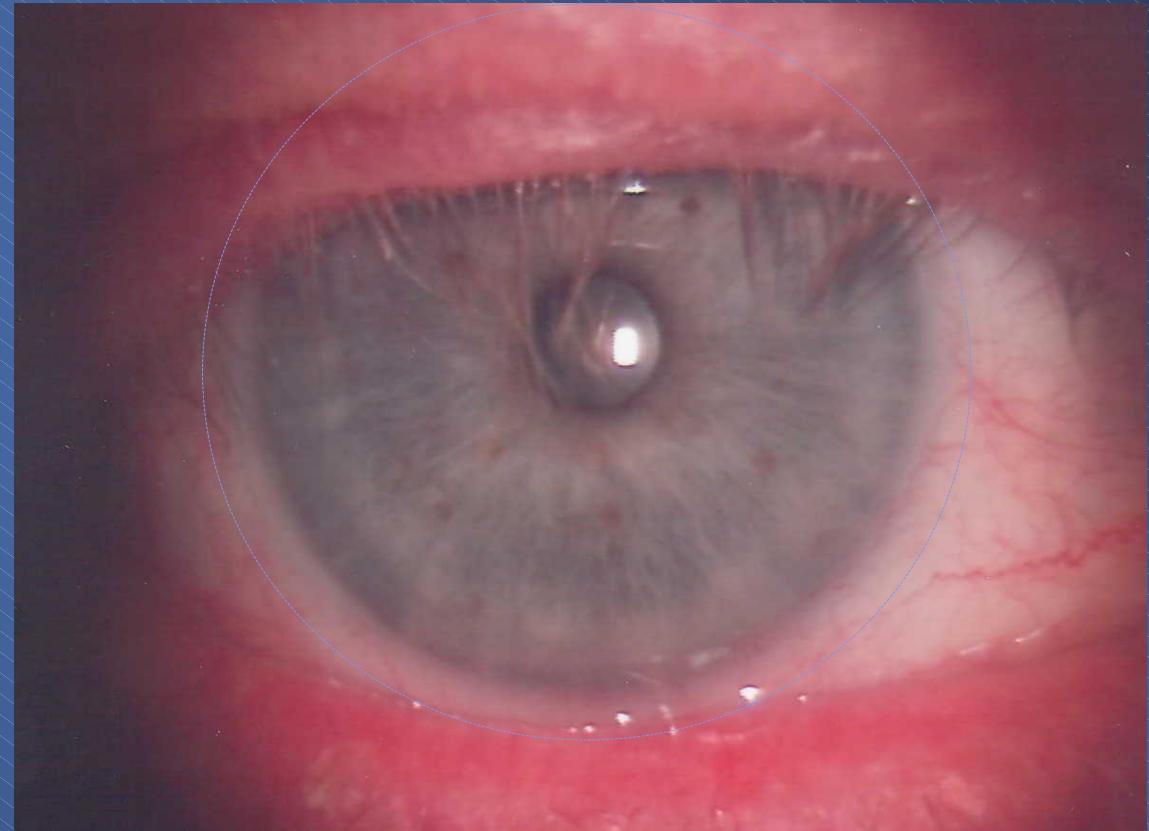
(Lid Surgery)



# Clinical cases

## Dry Eye :

- Tear evaporation
- Discomfort, pain
- Redness
- Slow tear evaporation



(Keratitis neuroparalytica)

⇒ Silicone-Hydrogel CL (Focus Night&Day, CIBA)



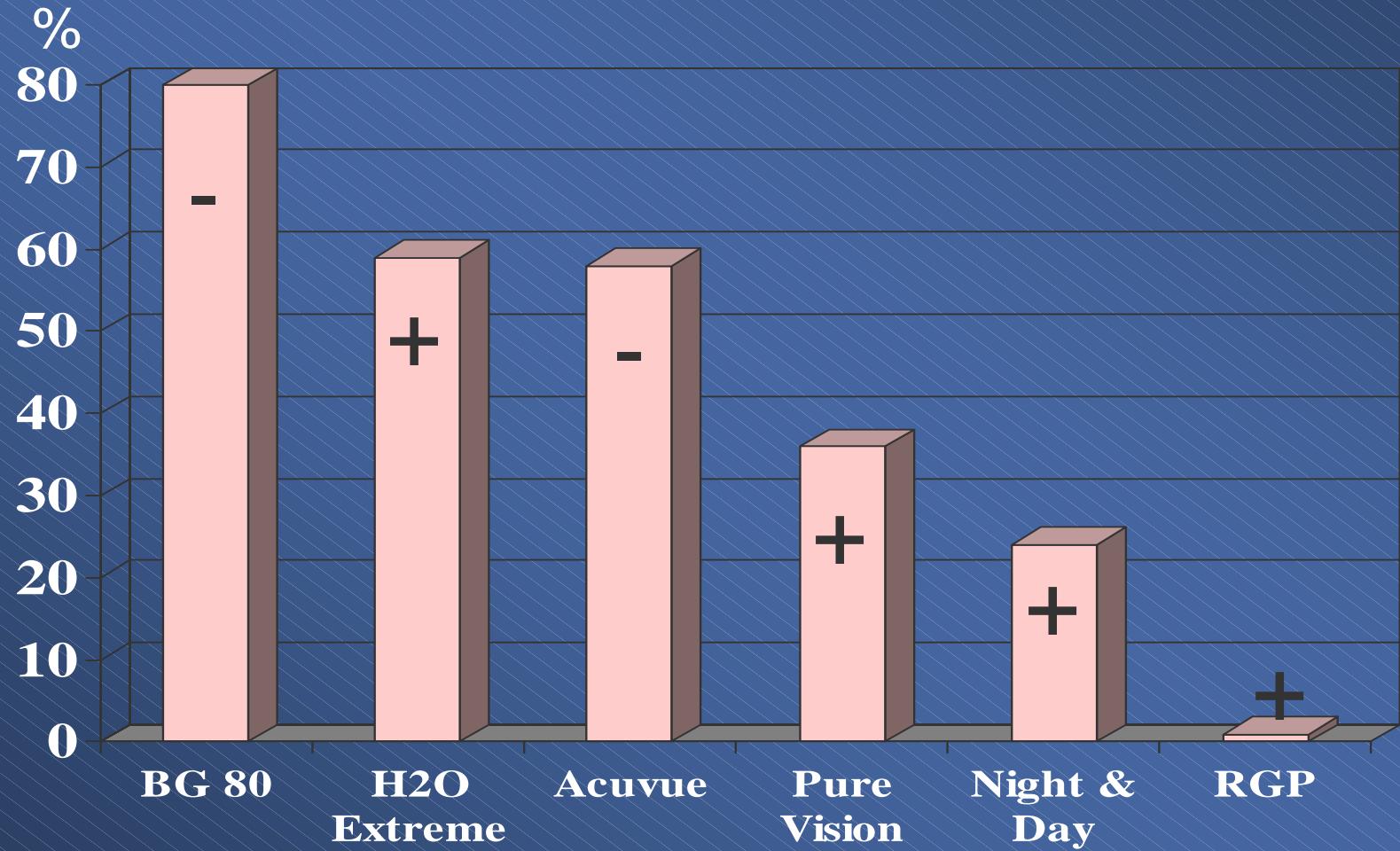
# Attributes

- Water binding
- Ionic binding
- Deposits
- Drug binding
- Oxygen Transmissibility
- Flexural modulus



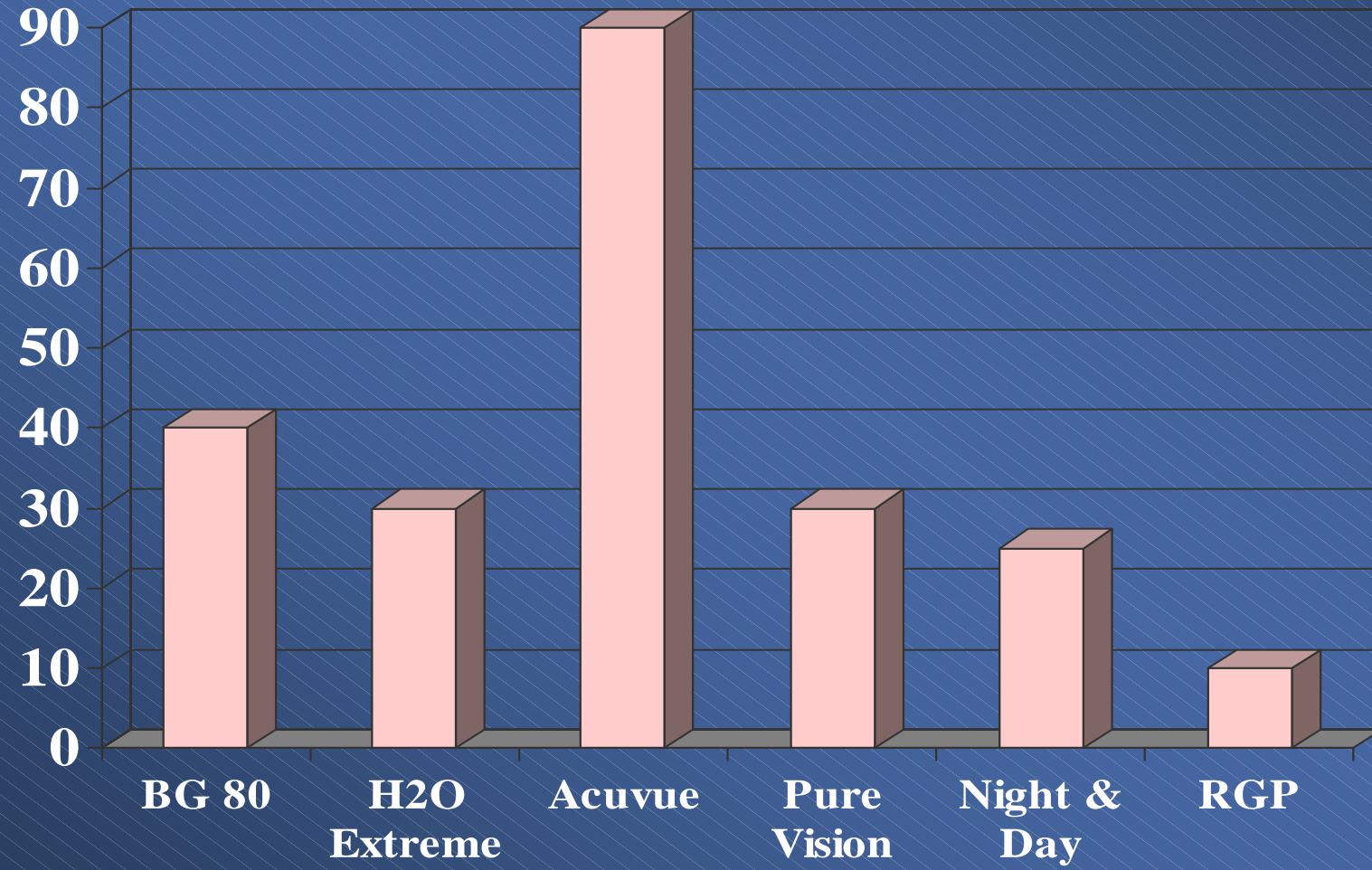
# Attributes

## Water binding



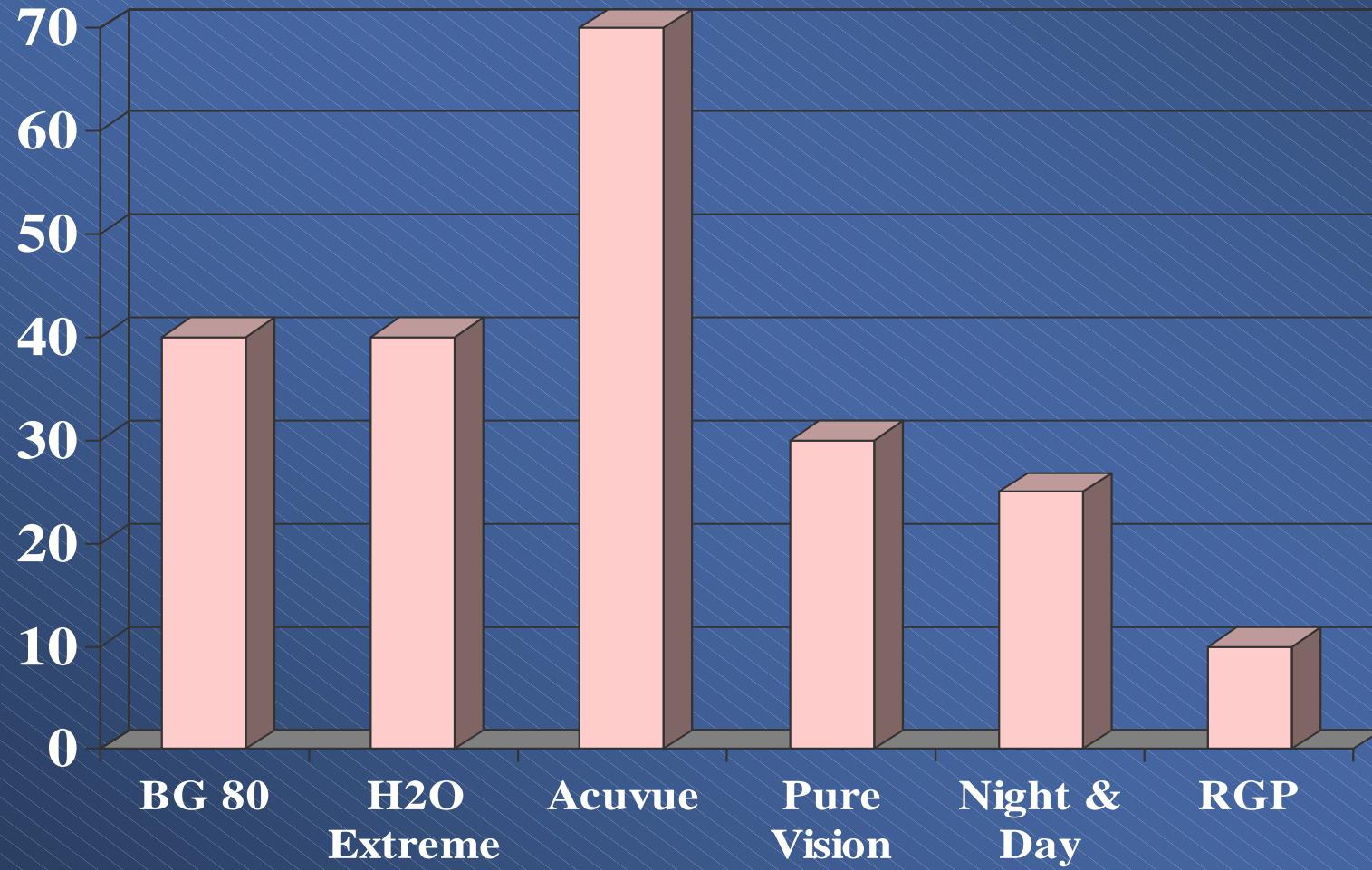
# Attributes

## Ionic binding



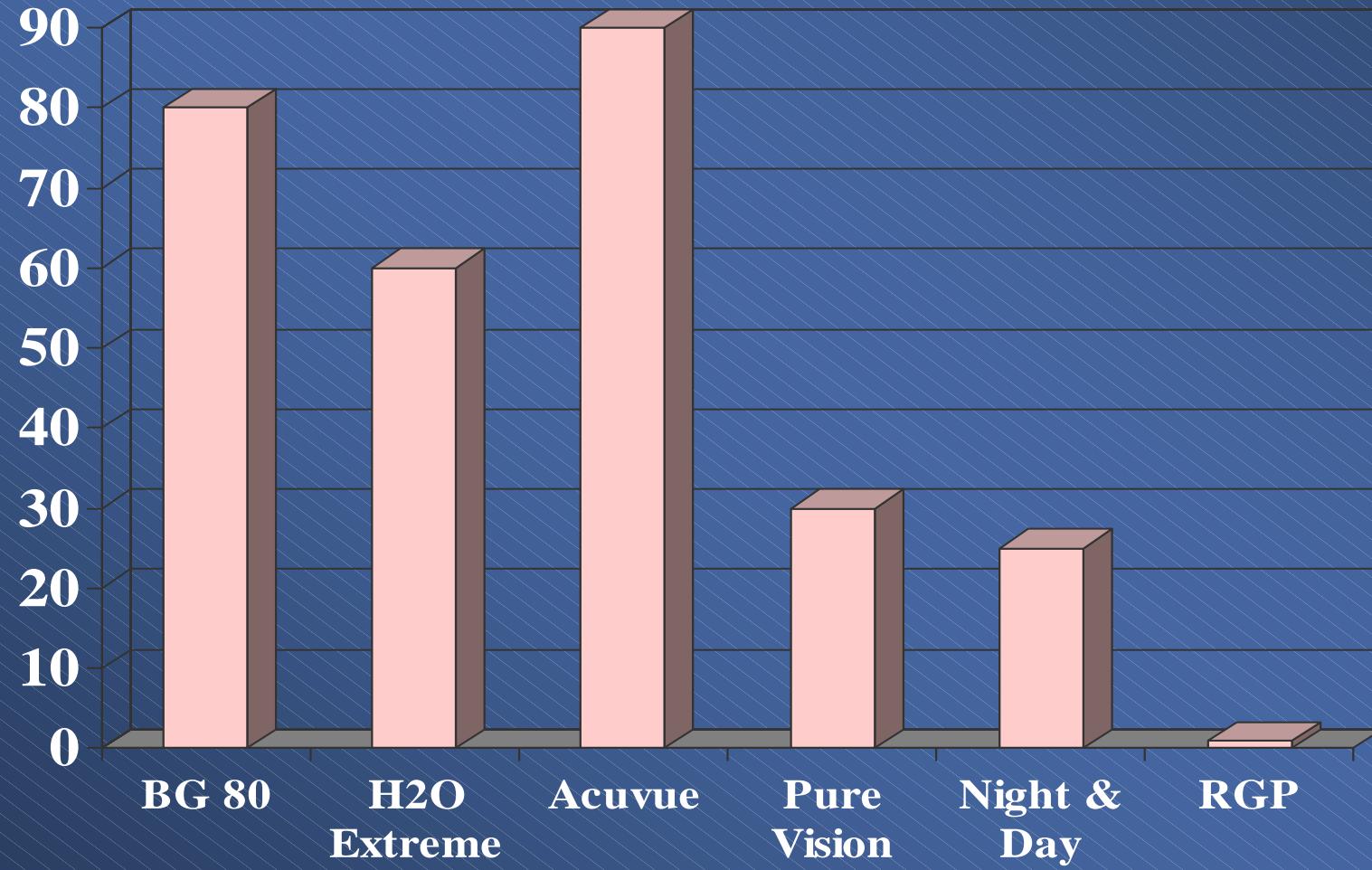
# Attributes

## Deposits (Proteins,Lipids)



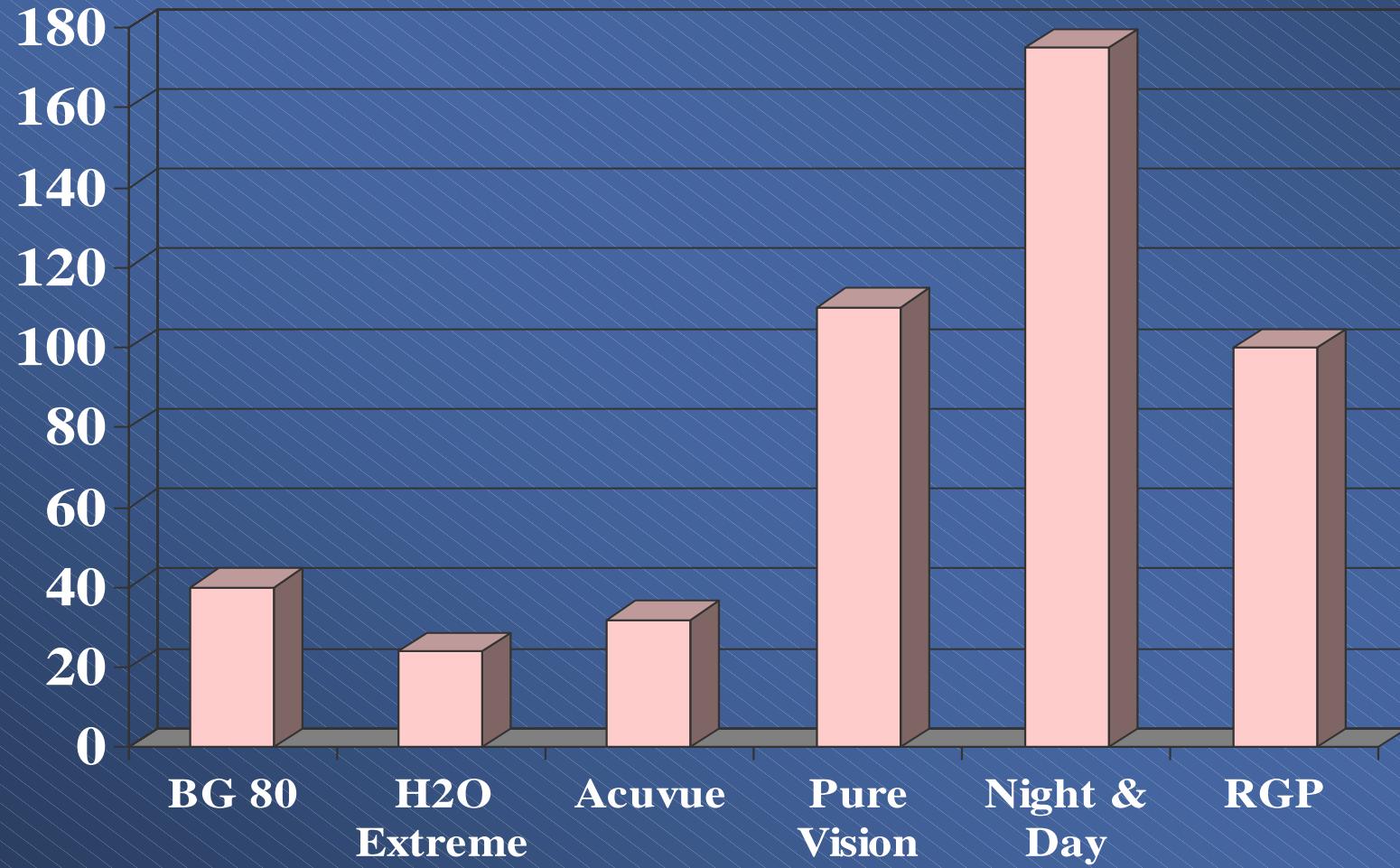
# Attributes

## Drug binding



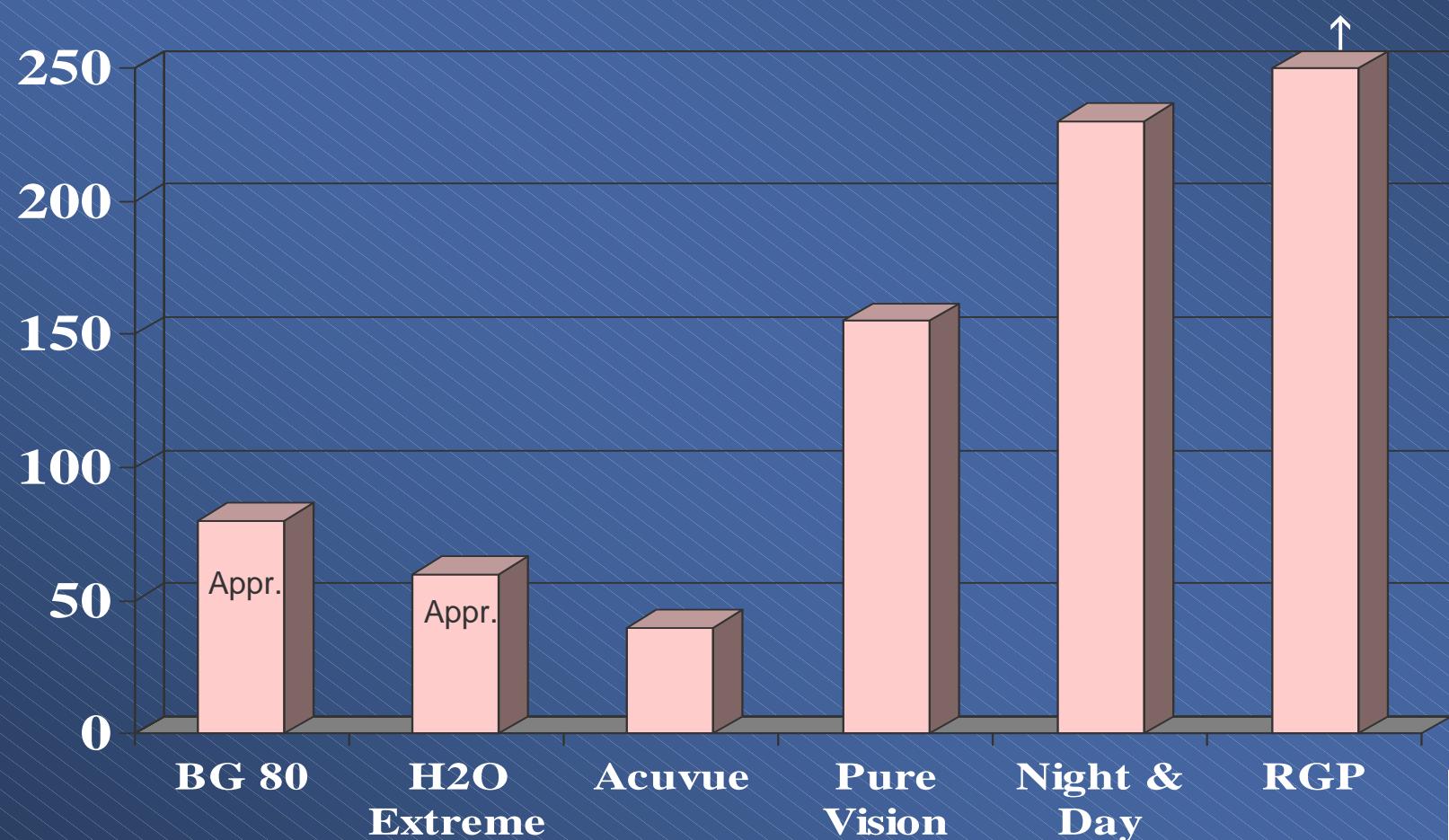
# Attributes

## Oxygen Transmissibility (ISO)



# Attributes

## Flexural Modulus



# Fitting tricks

Choosing the right attitudes :

- Low evaporation rate for corneal protection.
- High evaporation rate for epithelial dehydration.
- High ionic and drug binding as a drug reservoir for antibiotics, hyperchlorid, cycloplegics, steroids or NSAID (Drops or ointment). Take attention to preservatives and epinephrine !



# Fitting tricks

Choosing the right attitudes :

- Avoid high deposit rates because of microbial binding.
- High O<sub>2</sub> -Transmissibility for speed corneal healing and enhanced epithelial cell regrowth.
- Moderate to high stiffness/modulus for corneal surface modeling.



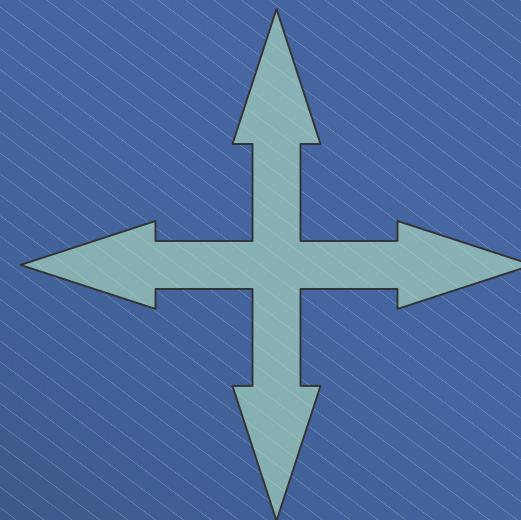
# Fitting tricks

Choosing the right wearing modality :

Temporary Wear

Daily Wear

Extendet Wear (weeks)



Continuous Wear (months/years)



# F i t t i n g   t r i c k s

Choosing the right wearing modality :

Temporary Wear = Modeling, Comfort, mech.Protection

Daily Wear = Modeling, Comfort, mech.Protection

Extendet Wear = Corneal healing and epithelial regrowth,  
Modeling, physiological stabilization,  
medical treatment, Comfort, mech.Protection

Continuous Wear = Physiological stabilization, slow tear  
evaporation, Modeling, mech.Protection



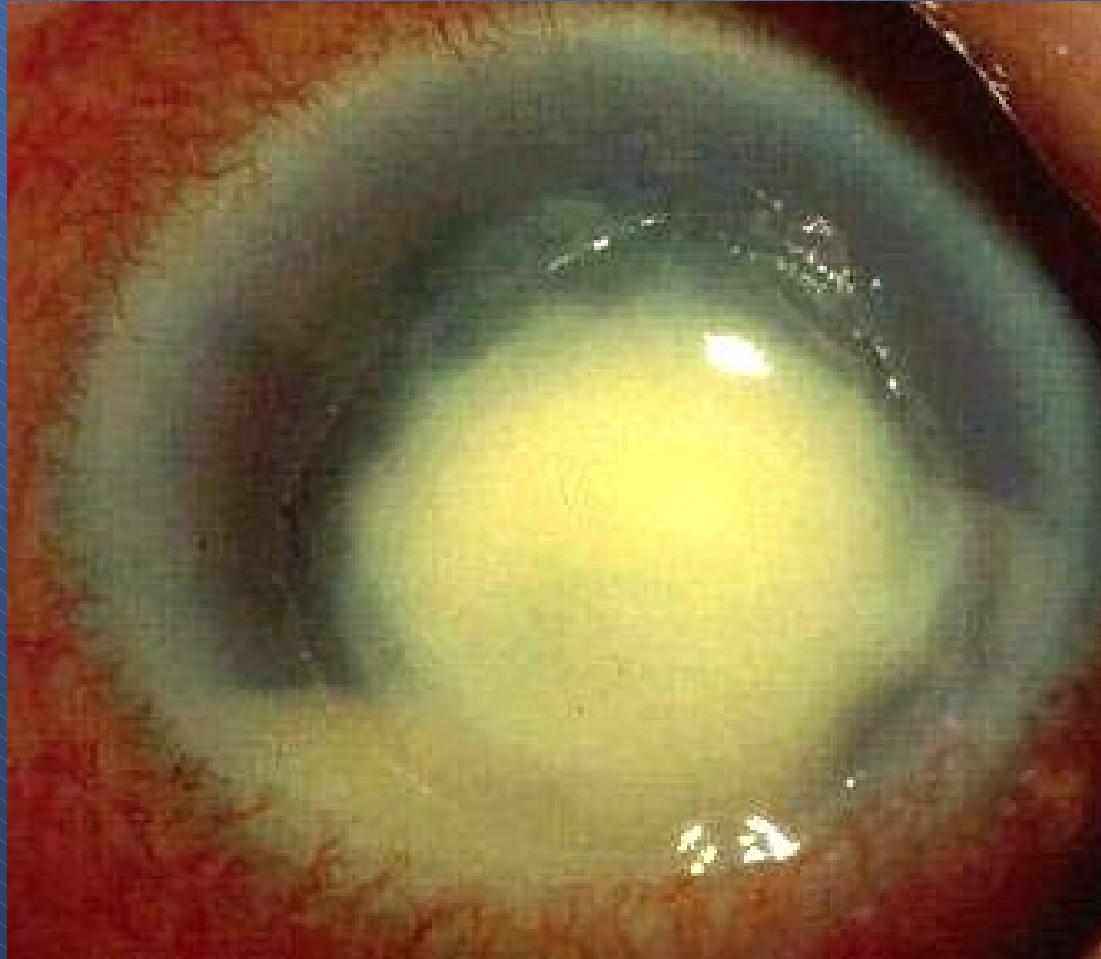
# Risks

- Loss
- Evaporation
- Lack of oxygen
- Microbial infections
- Chemical contamination



# Risks

## Microbial infections



# Prognosis

Short term prognosis :

Therapeutic bandage contact lenses are useful to protect the convalescent cornea from negative environmental influences.

They are helpful to protect the patient from discomfort and pain.

They are usable as a drug deposit with care.



# Prognosis

Middle and long term prognosis :

Therapeutic bandage contact lenses are useful to protect the long term dystrophic cornea from negative environmental influences.

They are helpful to model the mild irregular corneal surface for better vision.

They are helpful to protect the patient from discomfort and pain.

They can make happy patients !



# Conclusion

Used with a closed monitoring on a co-management base between the Ophthalmologist and the Optometrist, therapeutic bandage contact lenses are a good alternative to conservatives methods.



# Thank you!

