

17TH INTERNATIONAL CONFERENCE OF THE
RESEARCH INSTITUTE OF OPHTHALMOLOGY

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*Anterior Segment Eye Diseases
Current Status & Future Directions*

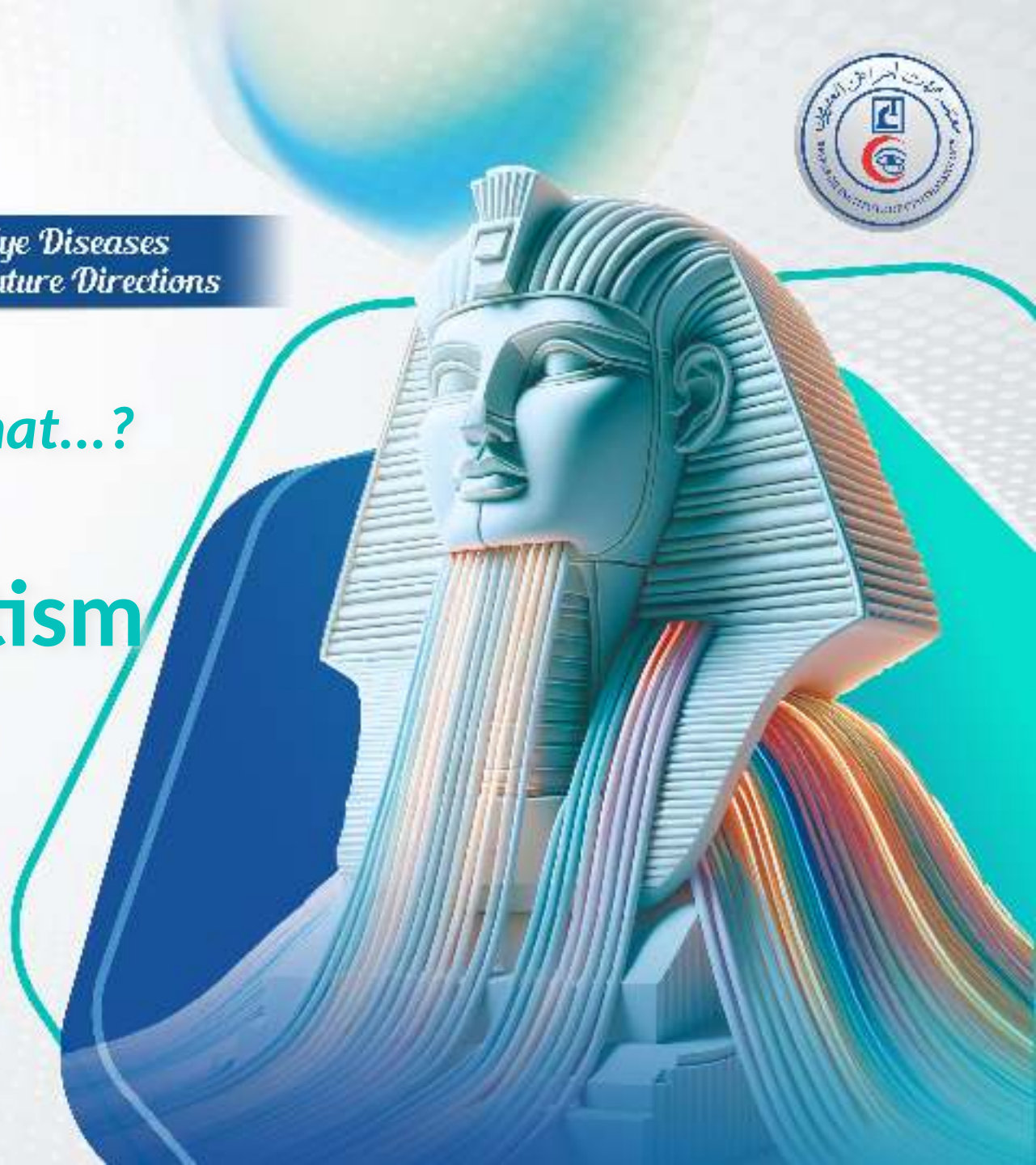


Keratoplasty good – Vision bad - Now what...?

Post-keratoplasty Astigmatism Options for correction

Thomas Neuhaus

München



Problem: Post-pKp-Ametropia

- Discrepancy – good anatomical result – clear graft – potentially good vision – but practical usability limited
- Most frequent obstacle: Ametropia
 - Spherical
 - Astigmatic
 - Irregular

Possible Solutions

- Spectacles
- Contact lens
- Surgical
 - cornea
 - Lens
- NB: Ideal situation for refractive surgery: Perfect exactness not mandatory, but success with achieving practical functional usability of eye

Spectacles

- Simplest solution
- Obvious limits
 - Anisometropia (sph and cyl)
 - Anamorphic distortion
 - Irregular Ametropia

Attention:

- *No exclusion „a priori“ („will certainly not work....“)*
- *Trying beats prejudice*
- *Surprising solutions possible!*
- *Trying is extra chance without extra risk...*

Contact Lens

- Principally best optical solution
- Problems
 - As always: Fitting and Tolerance:
 - (KP-Indikation not rarely due to prior CL intolerance!)
 - Stimulation of vascularisation particularly unwelcome...

Attention:

- *No exclusion „a priori“ („will certainly not work....“)*
- *Always worth giving a chance (reduced corneal sensitivity!)*
- *Use all modern solutions!*
 - *E.g. SynergEyes, Mini-scleral-lens*

Surgical Options

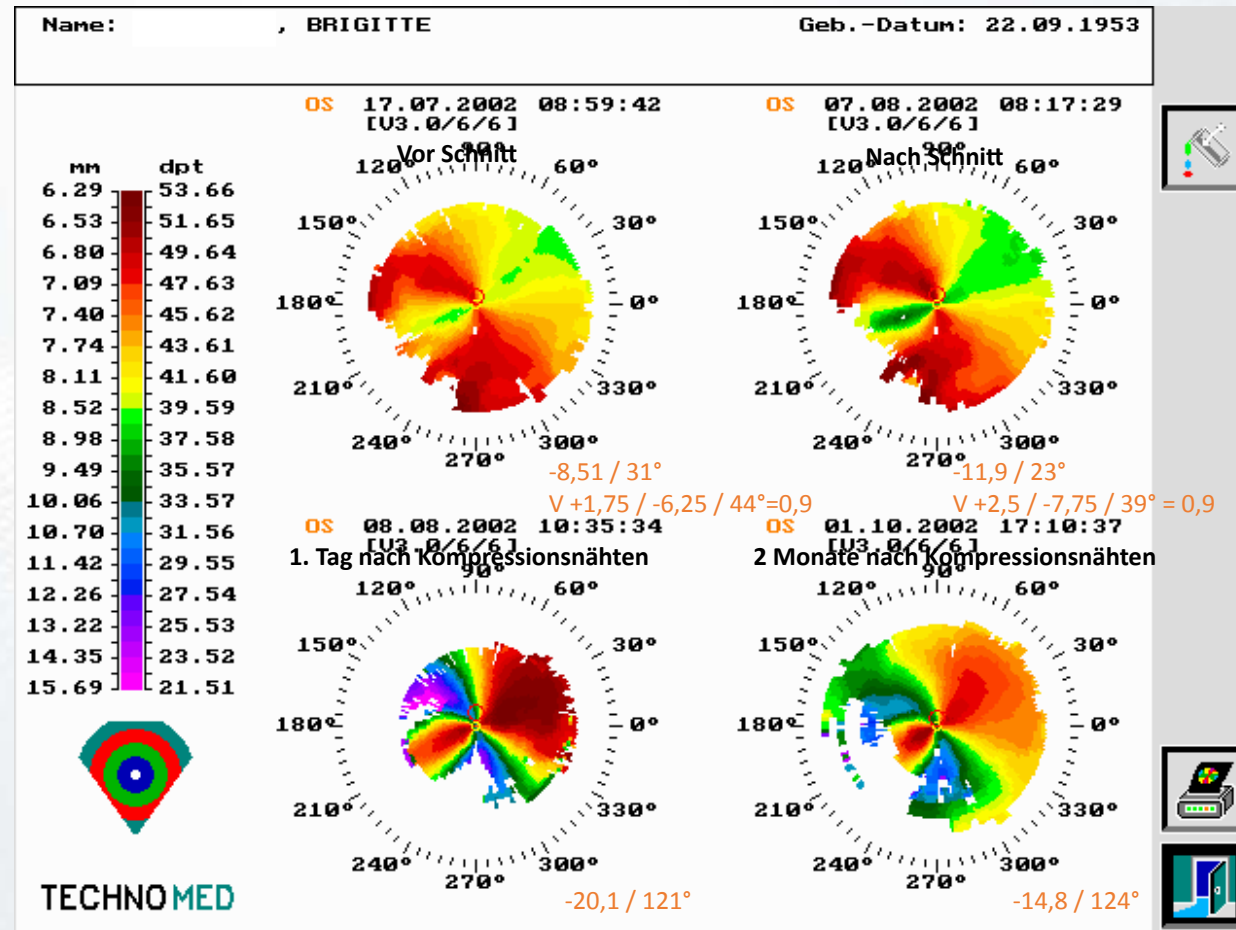
- Corneal
 - Wound revision
 - AK
 - PRK, LASIK
- IOL
 - (Toric) IOL
 - (Toric) phakic IOL
 - (Toric), „add-on“-IOL
- Repeat Keratoplasty
 - When nothing else works
 - Pre-decompensated Endothelium

Wound revision

- Always consider with asymmetric situations
 - Subclinical dehiscence
- „Flat band“ relatively typical
- Long healing course
 - After KP has taken much time already...

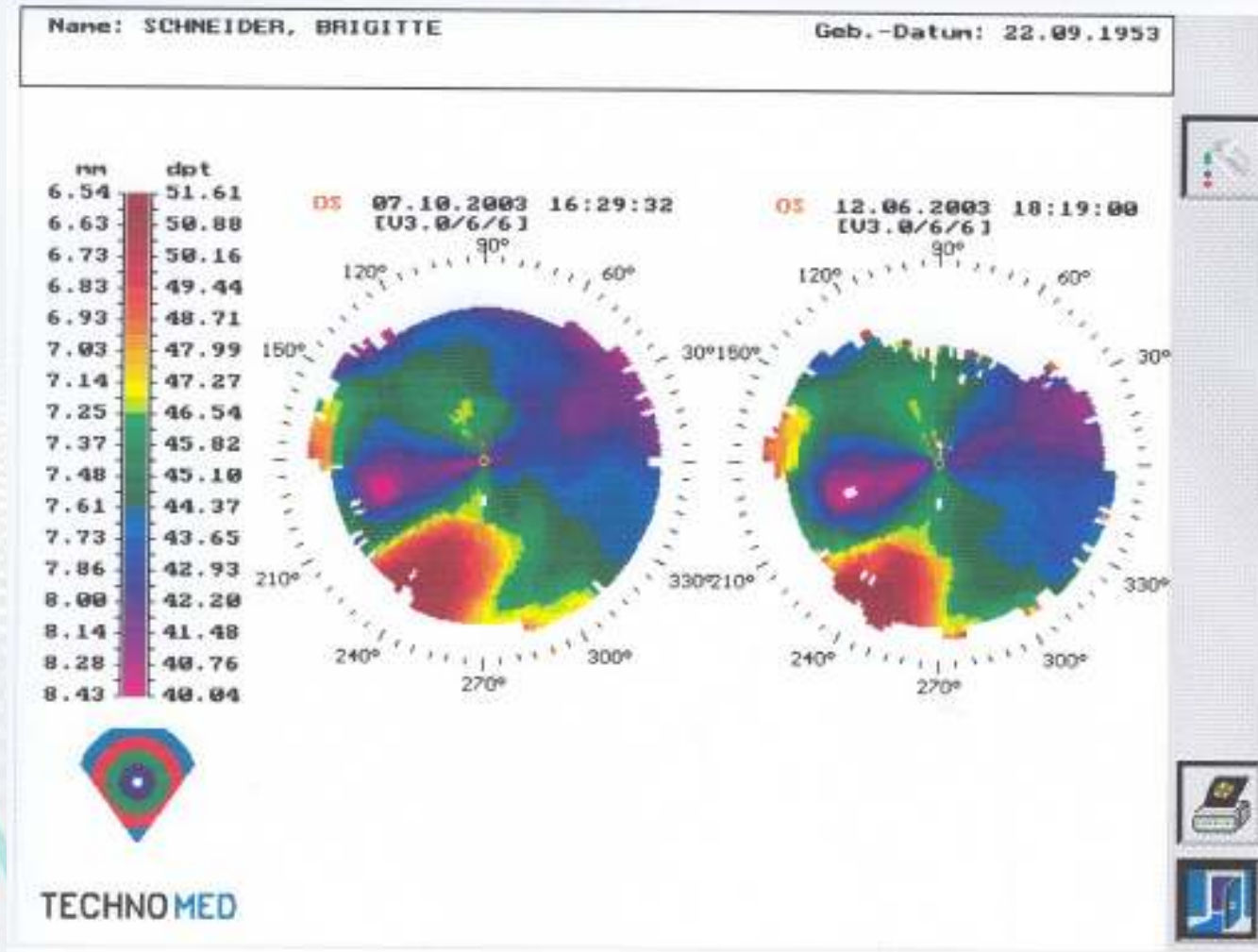
Example: Brigitte S.

3 compression sutures in „flat band“



Example: Brigitte S.

1 year later



$V_{sc} = 0,5$

$V_{cc} \pm 0 \text{ cyl } -3,25/26^\circ = 1,2$

(Anti-)Astigmatic Keratotomy (AK)

Advantage

- Can correct relatively large amounts
- Technically (potentially) low expenditure
- Limited to transplant
 - In case of repeat kp no influence

Disadvantages

- The higher the astigmatism, the less predictable
- Gaping incision
- Long term instability
- Irregular Topography („Keratopyramis“)
- Corrects into spherical equivalent

(Anti-)Astigmatic Keratotomy (AK)

Our current preference

- Indication
 - Lowering of astigmatism into a range, where further correction is then possible more precisely with other means
- Technique
 - With fs-Laser
 - Preferably under a lamellar Keratotomy if possible
 - Limited extent (max 8-9 D)
 - depth
 - 85% under lamella
 - 75-80% (acc. amount) through surface
 - Nomograms in development...

Photoablative Correction

PRK - LASIK

- Is - potentially – very exact
 - Depending on amount and transplant stability
- Limited to transplant
- Can be combined with other options
 - Fine correction – „touch up“

PRK

vs.

LASIK

- Independent of scar-irregularities
-

- High risk of „haze“/scarring
 - MMC questionable effect
- Limited amount of correction

- Larger amount of correction
 - Risk of scarring small
-

- Change of refraction by cut
 - 2 step technique
- Microkeratome preferred
 - Scar intraparencies
- Flap –associated complication-potential
 - Scar irregularities !!

Example

Pat. Klaus A. 35 J, LA

Keratoplastik 1991

31.03.99 -1,5 -8,5 80° = 0,6 / Schnitt

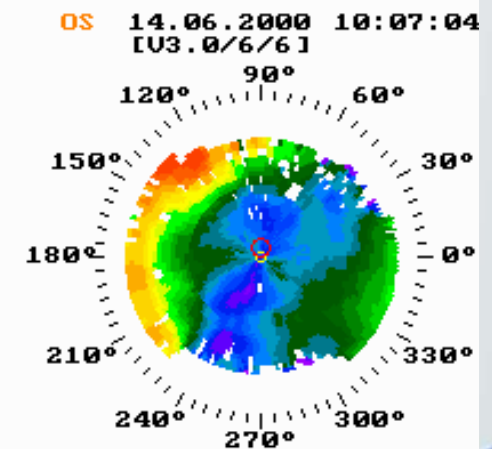
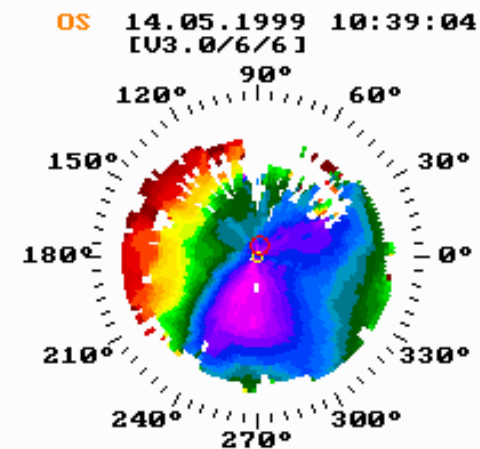
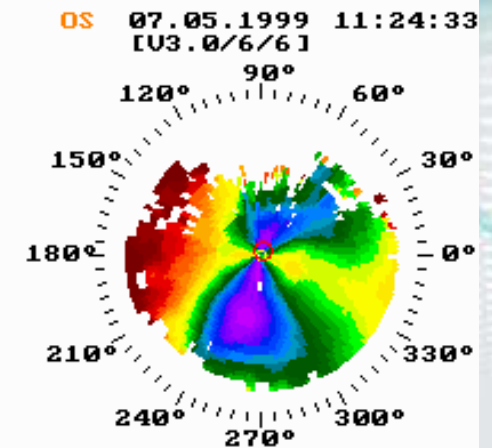
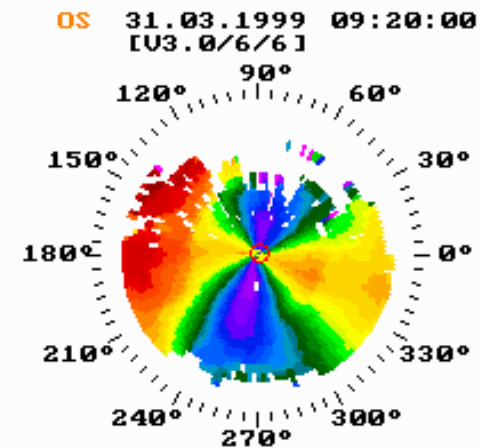
07.05.99 -1,0 -7,0 77° = 0,8 / LASIK

14.05.99 -1,0 -2,5 80° = 0,8

14.06.00 -0,5 -1,75 70° = 0,8

R, KLAUS

Geb.-Datum: 03.10.196



LASIK after pKp

- Carteful evaluation of indication
 - Stable refraction for 4-6 months, within range of method
 - Solid regular interface, no internal gaping etc
- Technique
 - 2 step, Mikrokeratome > fs-laser
- Is safe
 - No BCVA loss in our series
- Is efficacious
 - 95,5% target achieved: BCVA practically usable
 - 56% UCVA $\geq$ preop BCVA
 - 93 % fullfills patient satisfaction
- Predictability sufficient
 - cyl 43% $\leq$ 1D, 70% $\leq$ 2D;
 - Sph 67% $\pm$ 1D
- Sufficiently stable
 - Limited by transplant stability

Intraocular Lenses

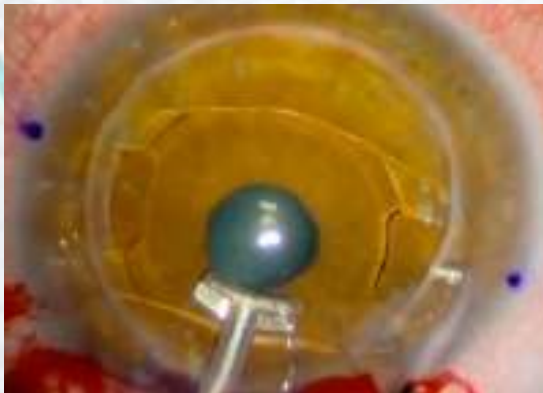
Lens exchange

- Cataract
- Presbyopic age
- (Very) high correction required
 - Correction range largest possible (custom high astigmatism corrections available)
 - Excellent predictability
- Attention to endothelium
 - When long term prognosis of graft doubtful, prefer spherical correction in the bag, toric add-on – can be adjusted in case of repeat graft

Intraocular Lenses

Phakic:

- High spherical corrections with limited astigmatism
 - Astigmatic range enlargeable with AK, LASIK...
- Clear lens, remaining accommodation
- When scar conditions prohibit LASIK
- Excellent predictability
- Reversible
- Low complication potential – cataract acceleration



Max. D-Wert/Meridian
+14,0 / -23,0
Max. cyl-Wert 7,5 D
-15,5 bis +14,0 mit
cyl -7,5



Max. D-Wert/Meridian
+5,5 / -18,0
Max. cyl-Wert 6,0 D
-12,0 bis +5,5 mit
cyl -6,0

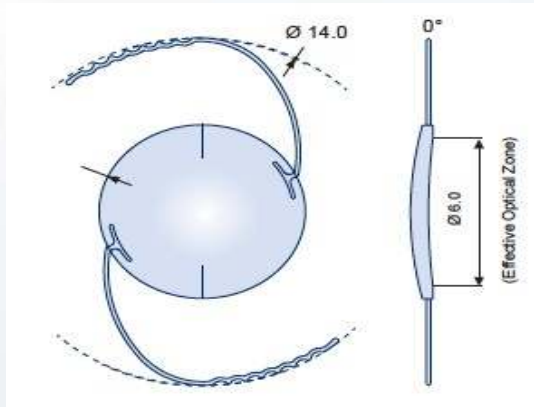
Intraocular Lenses

„add-on“:

- With pIOL-Pseudophakia
- Later refractive changes
 - Occurred
 - Possible – to be expected (e.g. repeat pKp)
- High corrective range, excellent predictability
- Reversibility (e.g. with repeat Kp)



± 10,0 Sph – 1,5 – 11,0 cyl
Darüber auf Anfrage



Max Meridiane + 14,0 bis – 30,0
Max cyl 30 D



Max Meridian ± 9 D – max cyl 6 D
-3.0/-6.0 bis +9,0/-6,0

Repeat-Keratoplasty

- High ametropia / combined
- Irregularity (small diameters)
- Suboptimal Transparency
- „Bad“ endothelium / bad prognosis



- No useless saving attempts
- Better „an end with horror than horror without end“
- Prognosis usually good

Conclusion

- What a patient can theoretically see with best refraction can, today, almost always be made usable: There is no need or justification to not optimally use all options
- With irregular astigmatism use all modern contact optic solutions fully
- No false aversion against repeat Kp
 - A keratoplasty does not primarily have to *look* good and clear, but must enable the patient to *see* well
 - A functionally unusable Kp, no matter how clear, is as justified an indication for repeat KP as the original indication – e.g. Keratokonus...
 - Don't trivialize – but also don't dramatize

***The success criterion of keratoplasty
Is not the anatomical-morphological, but the functional result!***



Vielen Dank

