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Large Diameter Keratoplasty

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Why Large Diameter?

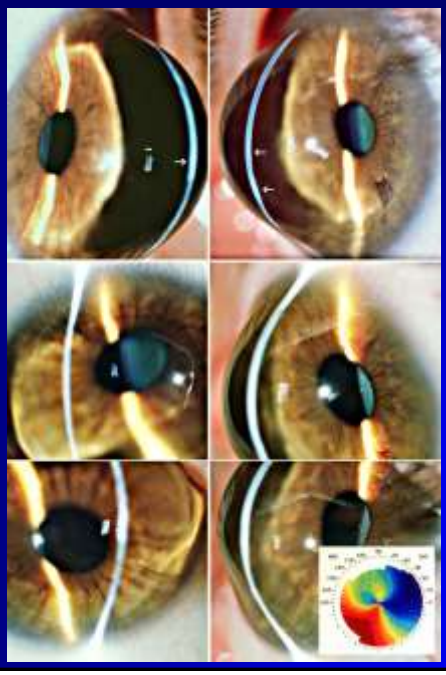
- Limbus to Limbus Pathology
  - Extreme ectasia (Keratoglobus)
  - Diffuse melting to periphery (keratolysis, Mooren's, trophic)
  - Resistant infections (fungal, *Acanthamoeba*)
- Reconstructive finality (sec. Optical)
- Multi-step approach: penetrating / lamellar

Case 1: Keratoglobus with thin periphery

OD

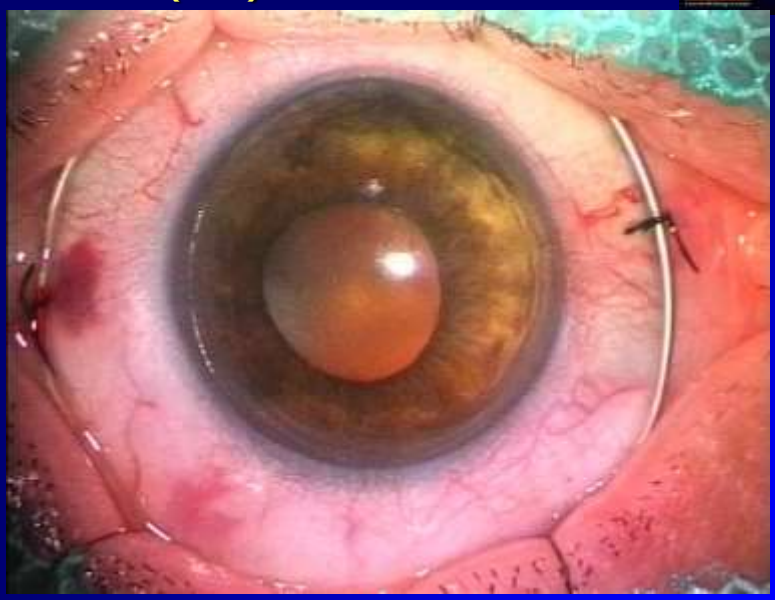
26 y/o Italian woman

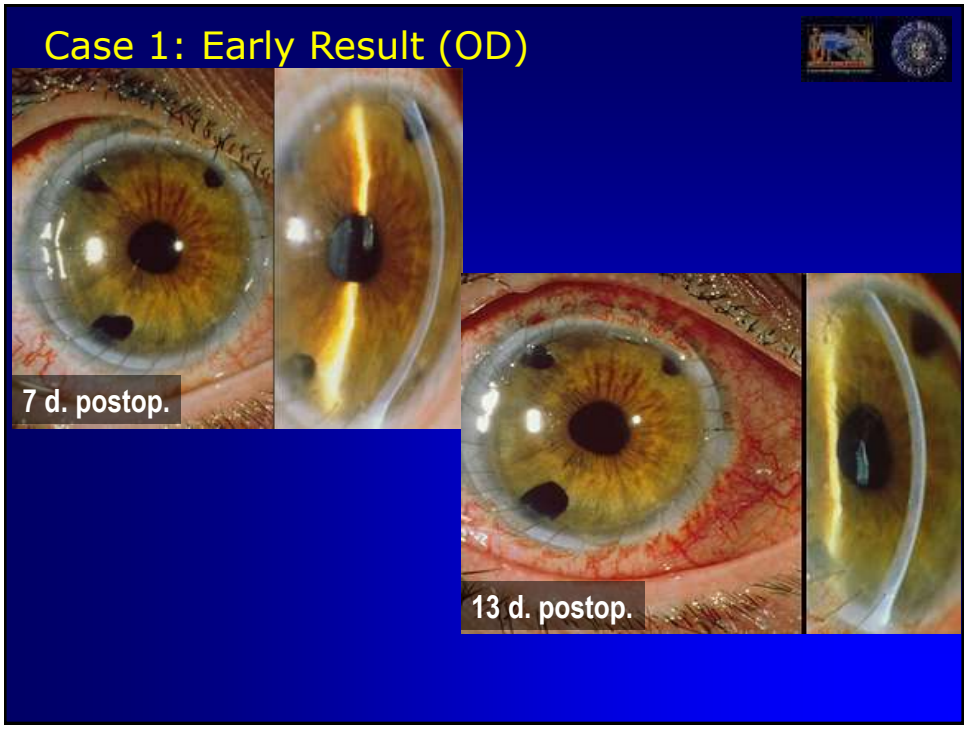
-20 -20@50º= 0.1

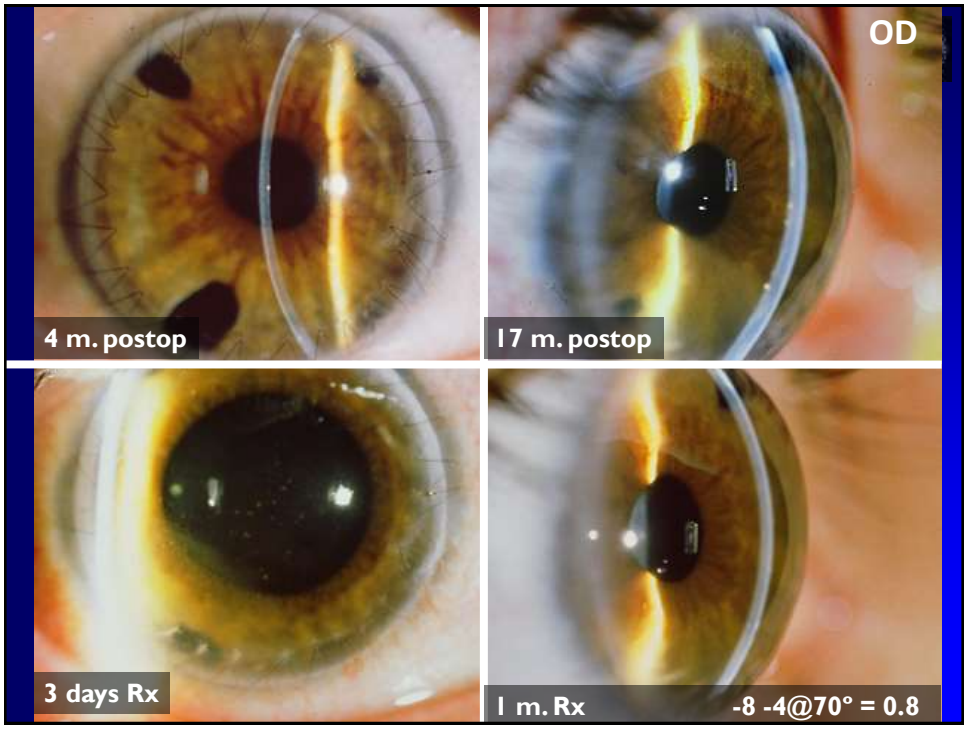


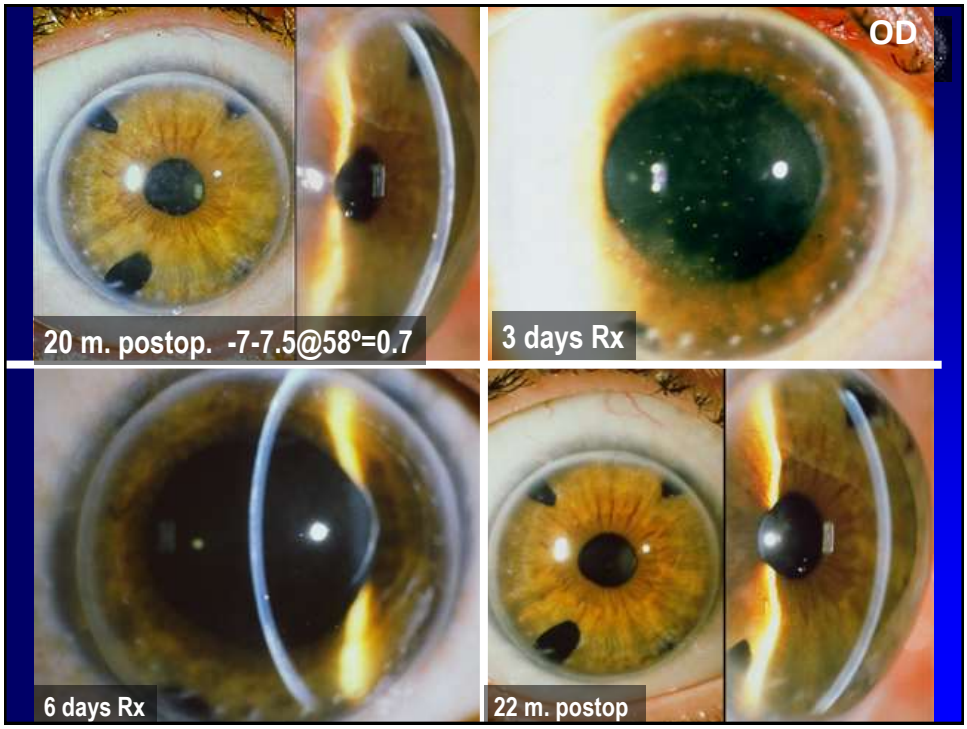
Joaquín Barraquer
(1927 – 2016)

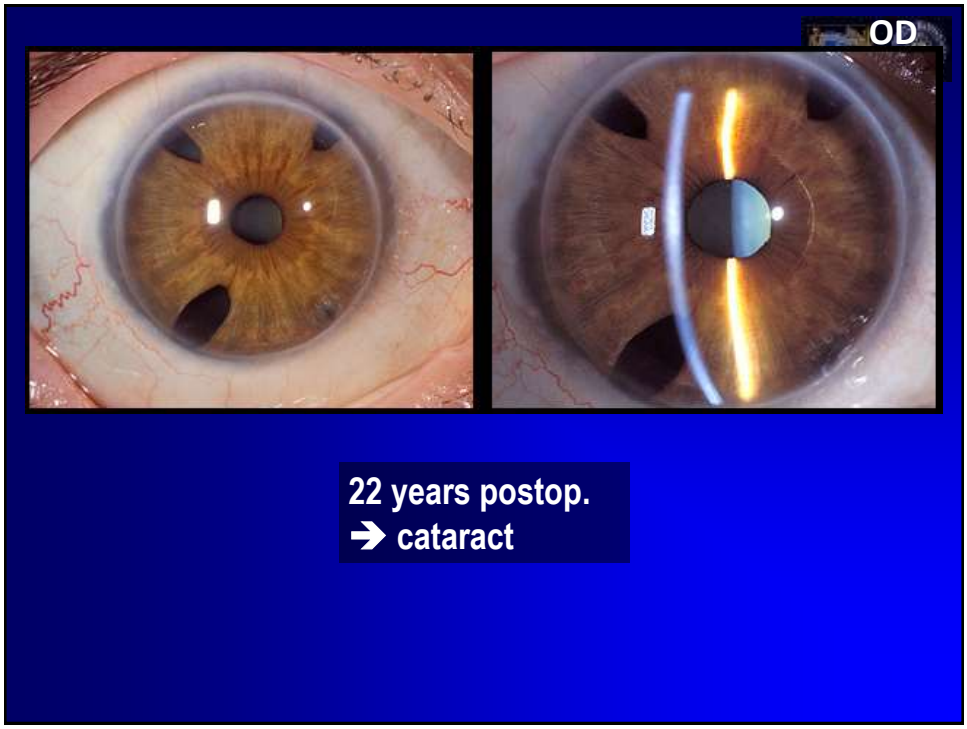
11 mm PK (OS)




Case 1: Early Result (OD)
7 d. postop.
13 d. postop.

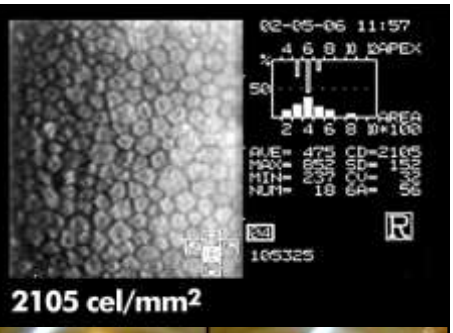

4 m. postop
17 m. postop
OD
3 days Rx
1 m. Rx
-8 -4@70° = 0.8

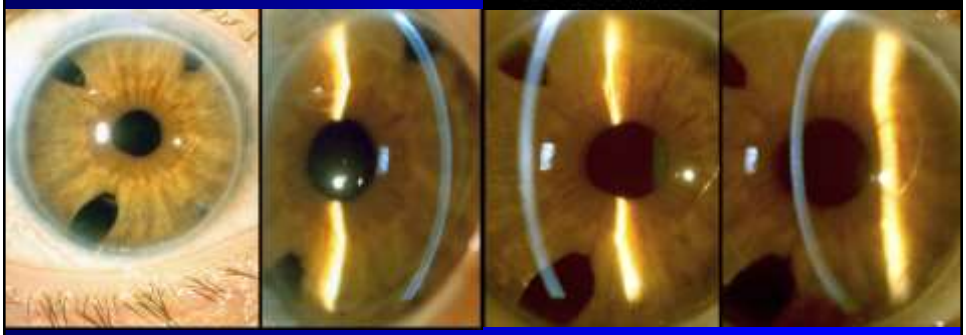

OD
20 m. postop. -7-7.5@58º=0.7
3 days Rx
6 days Rx
22 m. postop


OD
22 years postop.
➔ cataract

Cataract ➔ ECCE / PC-IOL

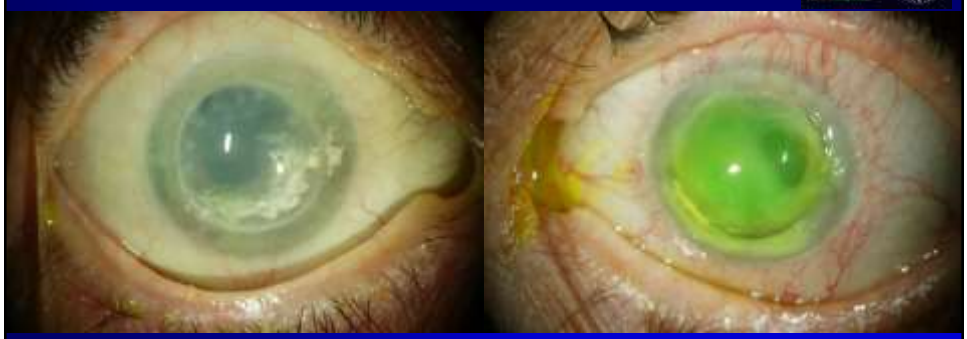
➔ 3 y. later (26 y. post-PK):
UCVA = 0.3
+2.25 -5@60º = 0.8 +5.25 Nº1
Endothelium !!





Good results in 10 of 12 similar cases, some required 2nd smaller PK

Case 2: Diffuse melt (trophic?)

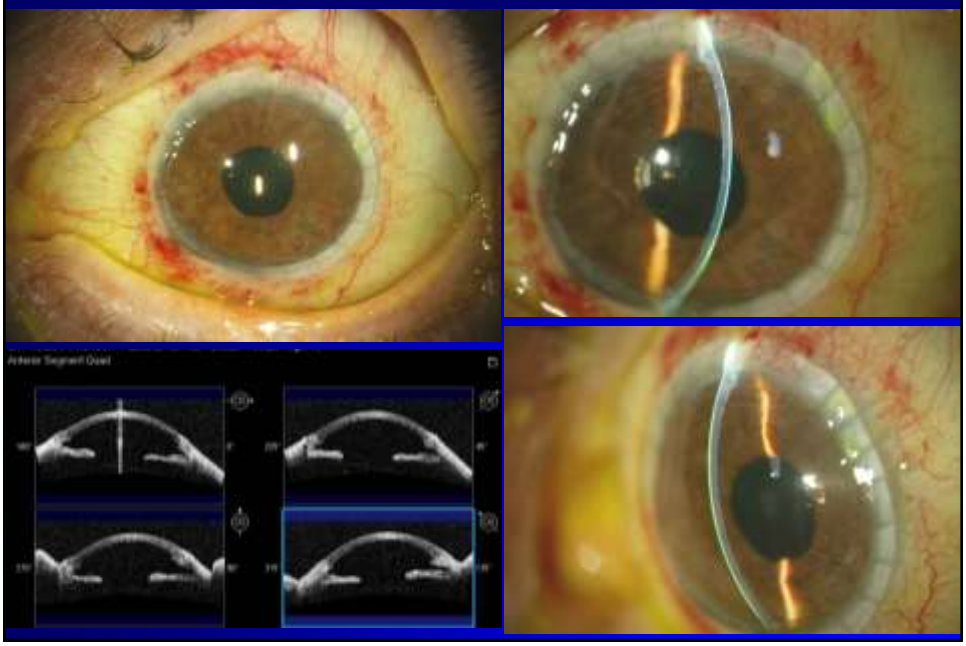


- 75 y/o woman (Iran) - Initial Dx. unknown (Keratoconus?)
- 1st PK 1950s (Dr. Castroviejo); 2nd PK 1970s
- 3x more PKs by 1988 (Dr. Khodadoust)
- 2007:
  - OD= barely LP (poor localization)
  - OS = 0.03; melting incl. periphery, descemetocele (post-rejection?)

OS Central & peripheral tissue loss

- **General problems:** age, depression, dehydrated, anemia (caecal ulcus), hypoproteinemia, esofagitis (post-steroid?)…
- **"Waiting Rx.":** Ofloxacin, Medroxyprogesterone drops, ➔ Dexa-free 3/d, Homatropin, Timolol, Doxyciclin, Bandage Contact Lens
- Starts **oral Cyclosporin A**
- **2 weeks later ➔ PK 10+ mm (tectonic) +ECCE/IOL (OS)**

C2 OS: 10+ mm PK

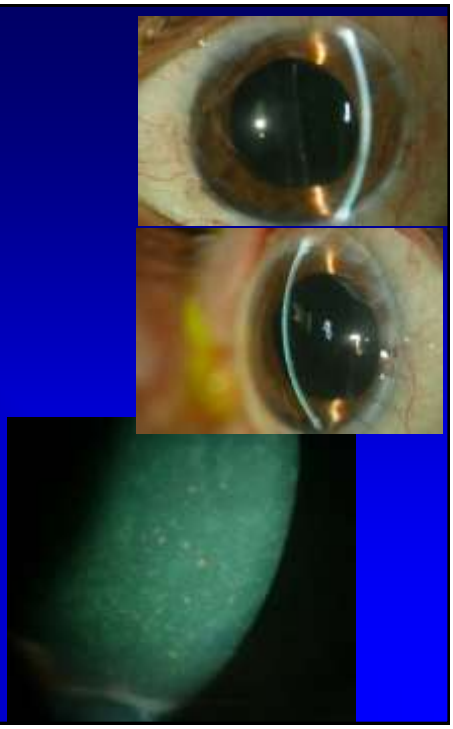


C2: Result 1

❖ **1 week**
- 60º -1.5 -2 = 0.3 +2 Nº2
- Endothel.: 2183 cel/mm²
- IOP = 8 mm Hg
- Rx: *Dexa-free, oral Pred. 1mg/Kg/dia, CsA, Unpreserved AT*

❖ **1 m**
- 30º -2 -1 = 0.5 +3 Nº2
- Endothel.: 2617 cel/mm²
- Steroids tapered (mant. CsA)

❖ **5 m.**
- 30º -4 -1.50 =0.2 +2.50 Nº 5
- Endoth.: 2427 cel/mm²
- Pigmented PKs, no líne, Flare
- Rx ➔ *Dexa 30drod/d, restarts oral Pred., cont. CsA, Cyclopl.*



C2: Result 2

❖ **1week later**
- 30º -1 -3 = 0.4 +1 Nº2
- No signs
- IOP= 15 mm Hg
- Rx: Slow taper *Dexa-free & oral Pred., maintains CsA, etc.*

❖ **9 m. postop.**
- Stable (VA = 0.4)
- Trace flare (chronic?)
- Ends oral Pred., keeps CsA, Dexa 4/d, lubricants…

❖ **13 m.**
- 130º -1 -3.50 =0.15 +0.5 Nº 4
- "Worsened the last months"
- Edema, folds, pigment, flare?, mild ciliary hyperemia
- Rx ➔ *restarts oral Pred., Pred-F c/h, keeps CsA, 5% CINa*

C2: Result 3

❖ **3 weeks later**
- Slow improvement (VA = 0.15), IOP= 15
- Epithelial ulcer (HSV?)
- Rx: Reduce Steroids, add Zovirax top. 5/d

❖ **9 m. later (21 m. post.)**
- Mild edema (VA = 0.1) Quiet eye
- We consider DSAEK ?
- Capsule "somewhat opaque"
- Nd:YAG ➔ 0.35; (+1 m) ➔ 0.5 !!
- *"Feels very weak" Returns home*

❖ **Maintains VA 0.3 – 0.4 until month 28**
- Fluctuating Vision
- Fragile surface (autologous serum, LCT➔ edema)
- Compliance difficult (lives alone in Tehran)
- Depressed…
- ➔ AV down to 0.25; Desires a solution

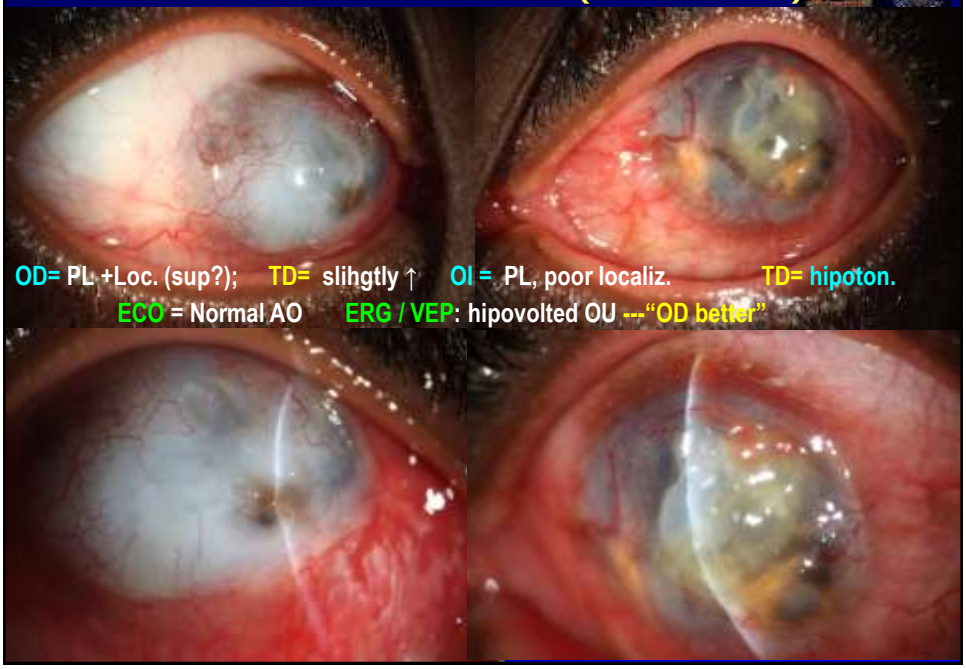
Maintains 0.3 - 0.4 VA for the last 3 years

Case 3: 24 y/o woman *(Senegal)*

- "Good vision until a few months ago"
- No antecedents
- "Corneal ulcers" OU since mid 2012

- Appearance one month before (phone)
  ➔ ➔

C3: 1st visit in Barcelona (1 m later)



OD= PL +Loc. (sup?); TD= slihgtly ↑ OI = PL, poor localiz. TD= hipoton.
ECO = Normal AO ERG / VEP: hipovolted OU ---"OD better"

Early Result

- **OD:**
  - **@1 wk: 0.06 (+7)**
  - **@2 wks: 0.1 (160º-5 +7)**
- **OS:**
  - **➔ Decide reconstructive surgery OS**
  - **Prognosis?**
  - **IOL +25**

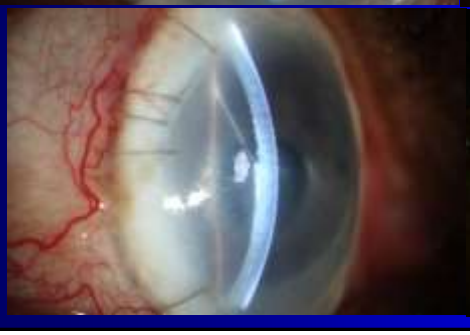
OS: Result@3 weeks

- Cornea clear
- VA=0.2 (40º -3.50 +7.00)
- IOP= 18 (timolol 0.5 2/d)

1 m. later: 1st rejection episode OD

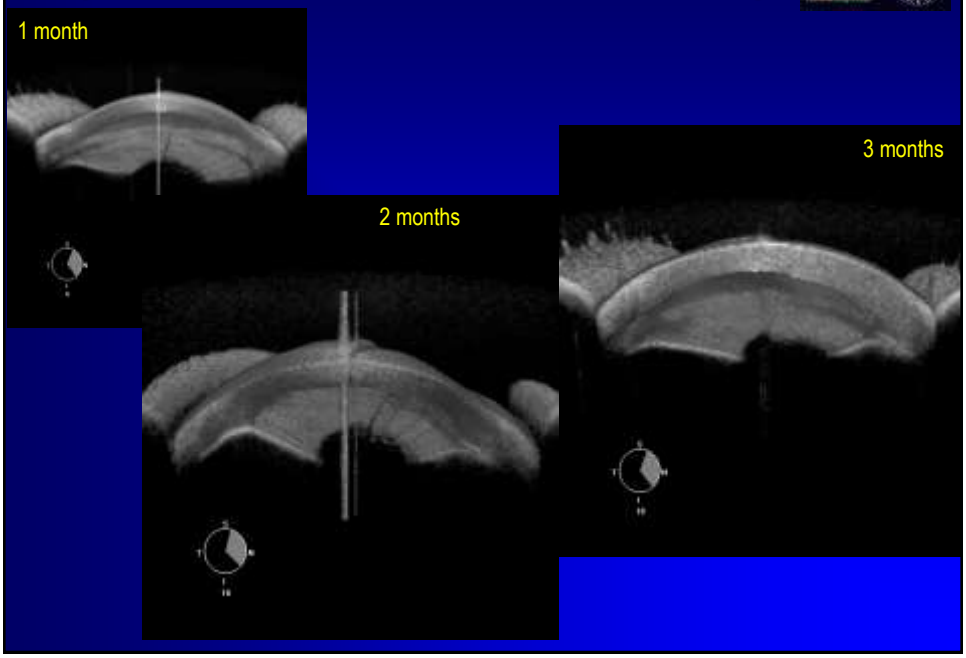
OD➔ Dexa-Free 30 g/d; Pred. oral 1 mg/kg/d; CsA oral + topical 2%

OD: Stabilizes, but…

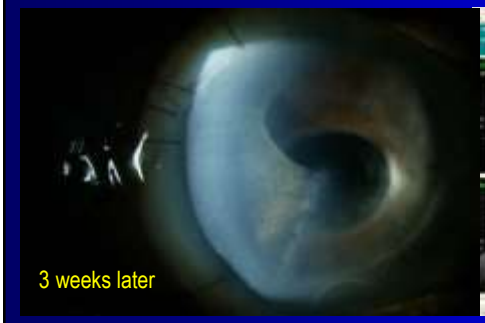


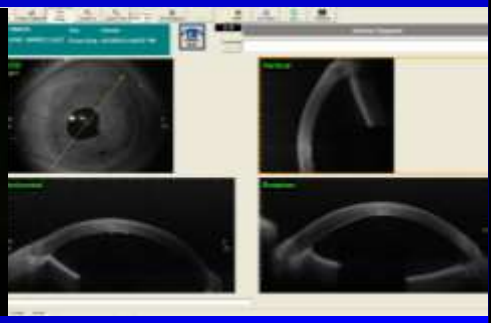
Retrocorneal membrane OD

Synechiae/membrane evolution (OD)



OS: Rejection@1 m despite Rx





Result@≈3 m

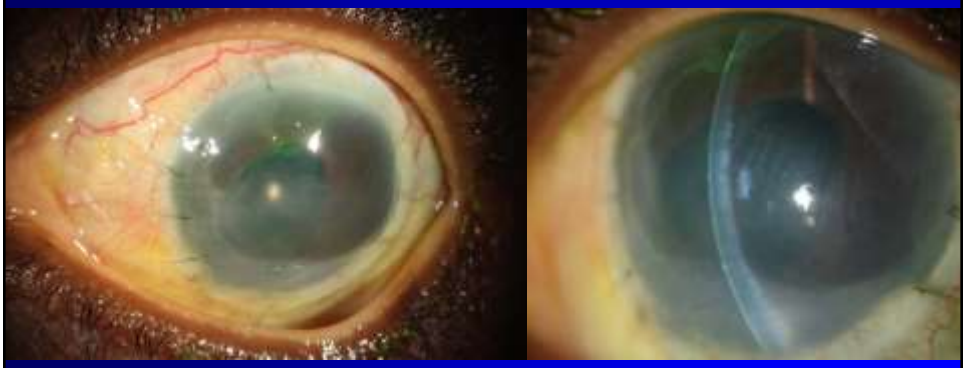
➔AO capsulotomy Nd:YAG (prev. fibrosis)

- OD= 0.1; 85º-5.00 +7.00= 0.2; IOP= 12
- OS= 0.3; 150º-2.50 +5.00= **0.95 !!** IOP= 16
- Potential VA (interferometry):

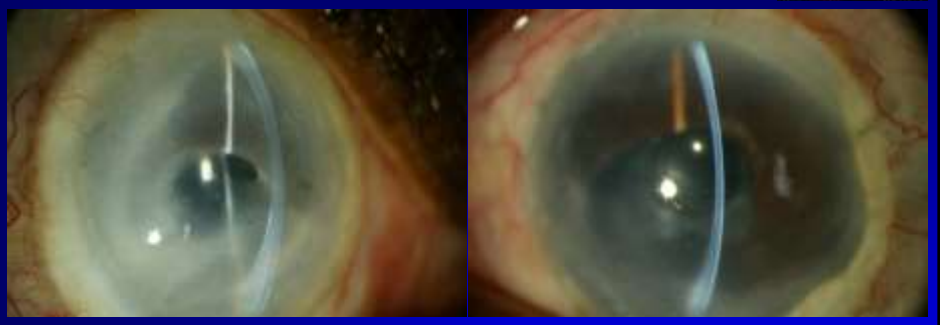
  OD = 0.2 **OS = 1.2**

OS: 2nd rejection episode@4 month

- One week before: Pred. tapered x Cushing S. (maintains Methothrexate & CsA oral)
- ➔ VA drops to 0.1; superior K line, edema, epithelial defect…
  - ➔ Restarts Pred. oral + increase local Dexa, B. Contact Lens

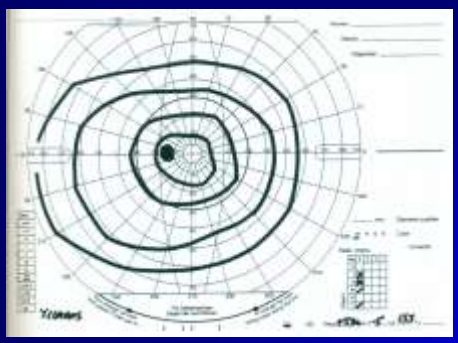


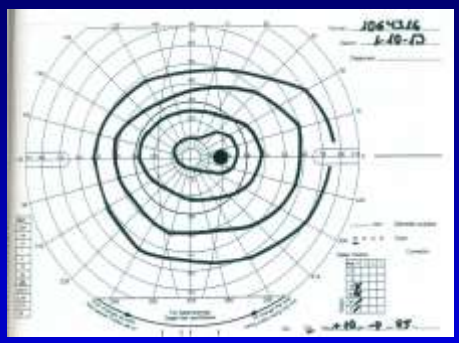
Last Visit @10 months



- OD = 0.15 (90º -4 +4) PIO= 14
- OS = **0.40** (150º -6+2) PIO= 10
- Med:
  - Dexa-Free OD= 3/d; OI= 5/d; CsA 2% 3/d
  - Timolol 2/d OU
  - Replaces oral Methotrexate/CsA for Azathioprine

Visual fields & Retina: WNL





- Fundus Examen: normal OU
- Macular OCT: central thicknes = 222 / 231 um
- Ocular Surface: stable

Large Keratoplasty: Summary

- Useful in selected cases (tectonic / therapeutic / optic?):
  - Extreme ectasia (keratoglobus)
  - Diffuse corneal tissue loss (keratolysis, Mooren's ulcer, etc.)
  - Refractory infections (fungal, *Acanthamoeba*)
  - Anterior chamber epithelial ingrowth
- Challenges:
  - Allograft rejection / Inflammation (persistent/recurrent)
  - Glaucoma
  - Ocular surface problems
- Opportunities (to learn about…):
  - Corneal graft rejection & tolerance mechanisms
  - Endothelial dynamics/regeneration?
  - Role of angular/limbus structures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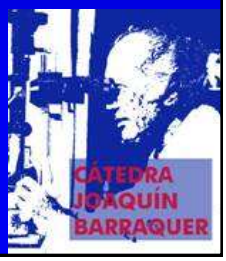
Thank You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