

My Worst Refractive Surgery Nightmare

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Case presented by

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My Worst RS Nightmare

- 48 yrs old male
- April 2008,
 - C/O: wants to get rid of his glasses and treat the opacity OD
 - Hx: Trauma to OD at the age of 12 yrs
 - O/E: superficial central corneal opacity OD, Clear lens OU, normal fundus OU
 - MR OD: +2.50 -1.50 x 160 ►► 0.3
OS: +1.75 sph ►► 1.0 –

My Worst RS Nightmare

Question 1

What would you do to treat this patient

- 1) Glasses only
- 2) LASIK OU
- 3) LASIK OS and PTK OD
- 4) RLE OU
- 5) RLE OU + later PTK OD

My Worst RS Nightmare

- **Decision** Rt PTK Lt Hyperopic LASIK
- April 2008: operative procedure
 - Wavelight Allegretto platform
 - Lt hyperopic LASIK using Moria 2 microkeratome LC-1 suction ring (attempted correction +2.00D)
 - Right PTK: manual epithelial debridement, 6 mm ablation diameter, depth 50 μ then another 50 μ using sodium hyaluronate 1% solution as masking agent
- One month Postoperatively:
 - Clear right cornea
 - UCVA: OD: CF 2 m (The nightmare)
 - OS: 0.8
 - MR OD: +10.00 D \gg 0.5 (The nightmare)
 - OS: + 0.50 \gg 1.0 -

My Worst RS Nightmare

- **Question 2**

- **How can you solve this refractive problem?**

- 1) Soft contact lens
- 2) Hyperopic LASIK
- 3) RLE
- 4) Nothing

My Worst RS Nightmare

- SCL: +12.00 OD ►► 0.5
- The patient was uncomfortable with SCL and wanted a permanent solution
- Decision: RLE (OD)
- Biometry: +40.00 D (Hoffer Q formula)

My Worst RS Nightmare

- Question 3

- What would you do in such situation?
 - 1) RLE with piggyback IOLs
 - 2) continue wearing SCL
 - 3) RLE using the highest IOLP available followed by hyperopic LASIK
 - 4) Hyperopic LASIK for +6.00 D and wearing glasses for residual error

My Worst RS Nightmare

- Decision: RLE + Piggyback IOLs
 - June 2008: RLE + Two foldable IOLs (acrylic IOL +31.00 D in the bag and a silicone IOL +9.00 D in the sulcus)
- Postoperative
 - November 2008: UCVA: 0.3
MR: -1.00 -2.00 x 165 ► 0.5
Mild superficial corneal haze
- June 2010: C/O: Severe right eye cloudiness
O/E: right corneal superficial central opacity
UCVA: 0.05

My Worst RS Nightmare

- Question 4
 - What would you do now?
 - 1) Keratoplasty (DALK or PKP)
 - 2) PTK + MMC
 - 3) Nothing
 - 4) Rigid gas permeable Contact lens

My worst RS Nightmare

- June 2010: C/O: Severe right eye cloudiness
O/E: right corneal superficial central opacity
UCVA: 0.05
- Decision: PTK + MMC
- October 2010:
 - VISX S4 platform
 - 6 mm ablation diameter, 50 μ epithelial laser ablation ► 50 μ stromal ablation + MMC 0.2% application for 20 seconds + copious irrigation with BSS
- November 2010: UCVA: 0.3 MR: -1.00 -1.00 x 25 ► 0.6

My worst RS nightmare

- Take Home Messages

- Taking the decision of PTK to remove superficial corneal opacities is critical.
- The procedure is not easy to perform properly as regards
 - complete removal of the superficial opacity and
 - obtaining a clear smooth corneal surface
- Beware of the postoperative hyperopic shift. It can negate the advantage of removing the opacity
- Recurrence of the original opacity or a PTK-induced opacity is very common

Thank You

Case 6

- 42 years old male
- He had LASIK (OU) 10 years ago for high myopia (-10.00 D)
- MR: OD: -2.50 sph
OS: -1.50 sph
- Pentacam(OU) was OK and thinnest location was 422 μ (OD) and 418 (OS)
- LASIK T/U (OU) was done.
- The patient travelled abroad and came 1 year later complaining of a white spot and diminution of vision in the right eye.



Case 6

- The flap was elevated and the stromal bed and the undersurface was scrapped thoroughly.
- The flap was repositioned and the gutter was thoroughly dried
- One month later the patient returned for examination with this picture.

What is your solution now?



My RS Nightmare

- October 2010: PTK + MMC
- November 2010: UCVA: 0.3 MR: -2.00 -1.00 x 25 ► 0.6
- April 2012: Rt moderate subepithelial opacity
UCVA: < 0.05
MR: -8.00 ► 0.3
- May 2012: Rt PTK + MMC
- June 2012: UCVA: 0.3+
MR: -1.00 -3.50 x 40 ► 0.5
Faint subepithelial haze
Rx: Steroid ED 3x & lubricant ED for one month
- August 2012: UCVA: 0.4
MR: -0.25 -2.00 x 20 ► 0.6
- I didn't see the patient since then.

PTK

(Phototherapeutic Keratectomy)

Indications

- FDA-approved indications for PTK include conditions that involve the anterior one-third of the cornea and affect visual function
- Best candidates:
 - Patients with superficial stromal opacities, without significant corneal irregularity or thinning
 - Patients with small elevated central lesions not amenable to treatment with a blade

PTK - Indications

- Epithelial, basement membrane, Bowman's layer dystrophies
- Stromal dystrophies with mostly anterior stromal involvement
- Anterior stromal scars from various etiologies
- Salzmann's nodular degeneration and keratoconus nodules
- Recurrent erosions

Preoperative Evaluation

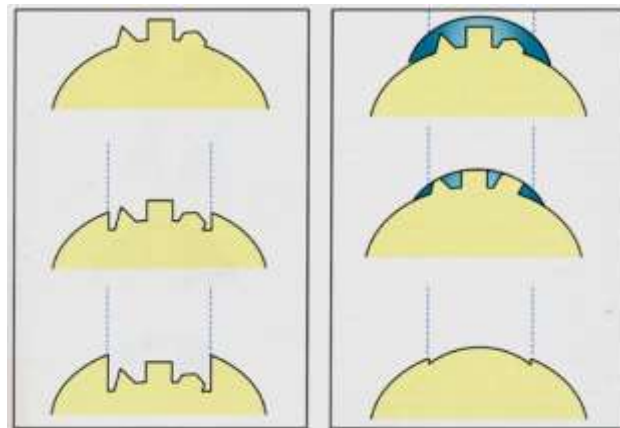
- History:
 - Conditions which may affect healing
 - Previous history of HSV keratitis
- Exam:
 - Special attention to type and depth of pathology at slit lamp and surrounding corneal thinning
 - Corneal pachymetry
 - Anterior segment OCT

Surgical Technique

For central anterior stromal opacities

- Goal: clear central opacities with minimal amount of tissue removal
- Shoot-and-check technique
- Resist temptation to ablate every opacity (and create excessive flattening and hyperopia)

Masking

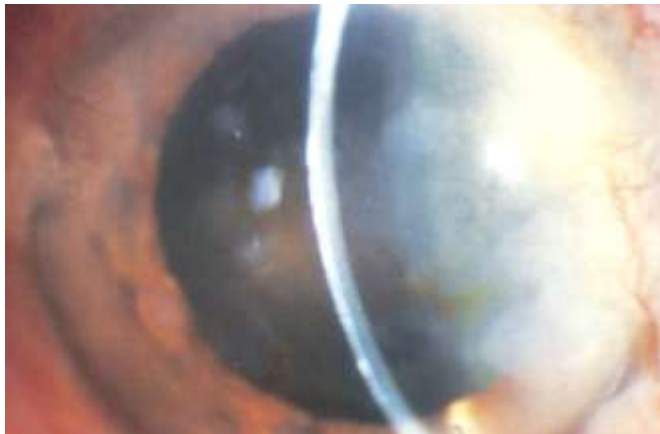


Surgical Technique

For elevated corneal opacities

- Center a small-diameter ablation zone over the lesion (but remember that flattening in a small optical zone induces more hyperopic shift)
- Shoot-and-check technique

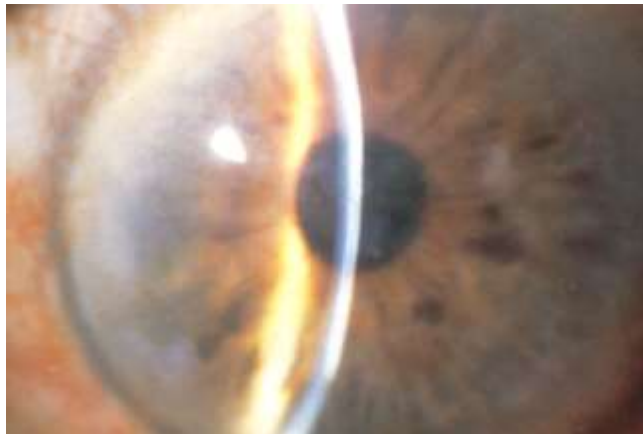
Salzmann's Nodules



After PTK



After PTK



Complications

Hyperopic Shift

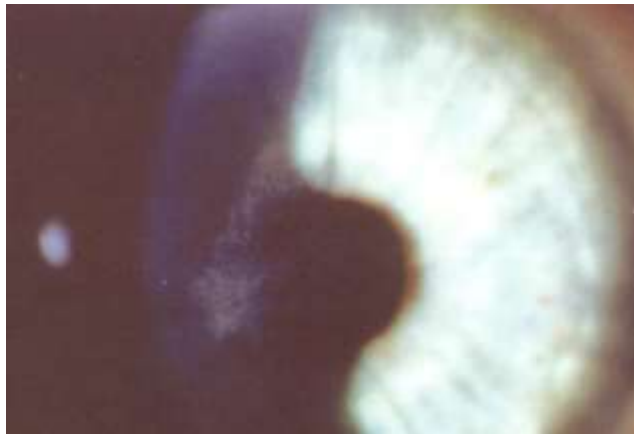
Irregular Astigmatism

Residual opacity

Subepithelial scarring

HSV keratitis reactivation

Residual Opacity

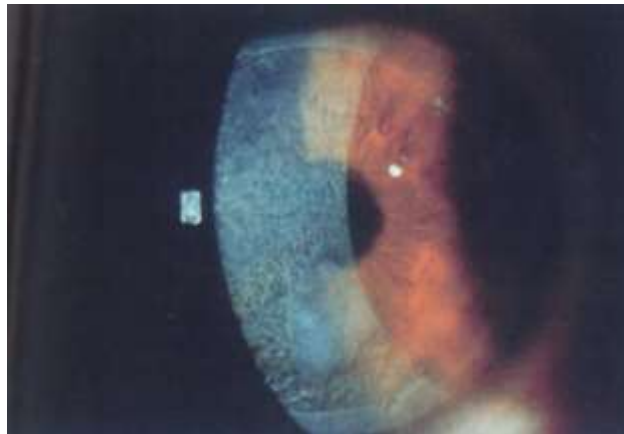


Recurrence after PTK

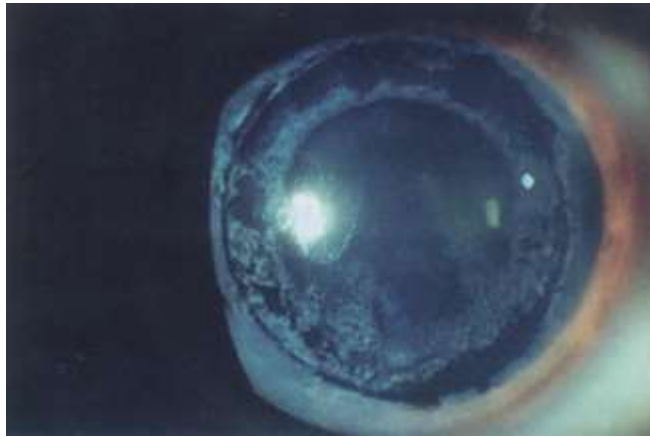
Dinh R et. al. Recurrence of Corneal Dystrophy after Excimer Laser Phototherapeutic Keratectomy Ophthalmology 1999; 106: 1490-7.

Dystrophy	Recurrence Rate	Mean follow-up
ABM	42% (5/12)	6 - 9 months
Reis-Bücklers	47% (8/17)	21.6 months
Granular	23% (3/13)	40.3 months
Lattice	14% (1/7)	6 months

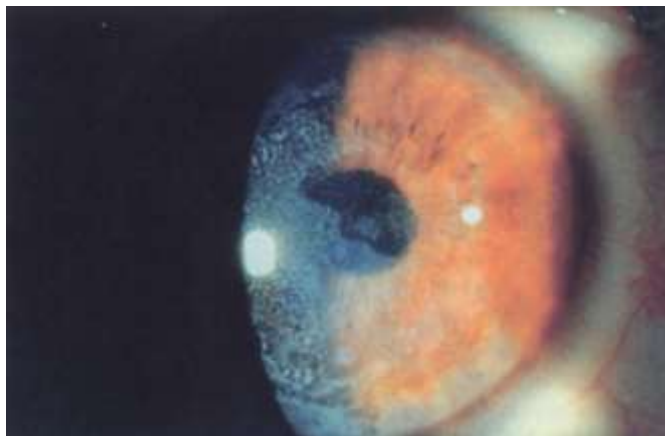
Prior to first PTK



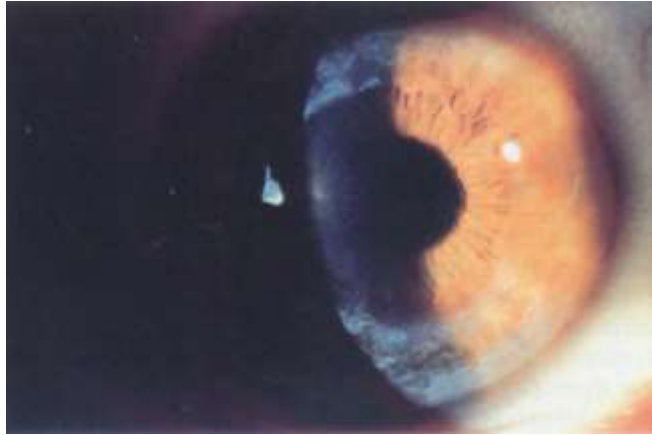
After first PTK



Recurrence after PTK



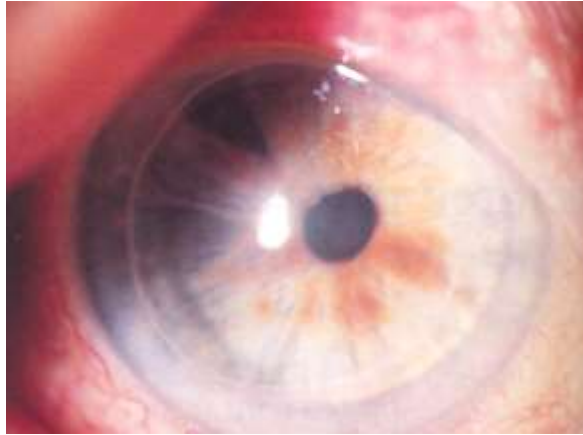
After second PTK



Recurrence in Graft



After PTK



Recurrence in Graft



After PTK



After PTK

