

Comparison of Keratome LASIK vs. Femtosecond LASIK vs. PRK After Penetrating Keratoplasty

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Surgical Parameters

- All surgeries done by same surgeon (TP)
- LVC \geq 18 months post PKP
- LVC \geq 6 months post final suture removal
- Lasik: VISX Star S4 and Zyoptix XP microkeratome
- PRK: VISX Star S4 with 12 seconds 0.02% MMC

Demographics

Lasik

- N = 42
- Mean Age = 52
- Preop BCVA: 20/25
range: 20/16 – 20/50
- Preop Cyl (K): 5.13
range: 0.50 – 11.37
- Preop Sph Equiv: -2.20
range: -8.13 → +4.25

PRK

- N = 47
- Mean Age = 51
- Preop BCVA: 20/32
range: 20/20 – 20/80
- Preop Cyl (K): 7.40
range: 1.13 – 19.33
- Preop Sph Equiv: -1.39
range: -10.75 → +4.50

Results - 6 Months Post op

LASIK

- Cyl (K): 3.03 (0.37 – 7.50)
- Cyl (M): 2.09 (0.50 – 6.75)
- Sph Eq: -0.68 (-3.63 - + 2.13)

PRK

- Cyl (K): 4.29 (1.38 - 9.00)
- Cyl (M): 2.23 (0.00 – 6.75)
- Sph Eq: -0.88 (-3.75 - +1.38)

Results – 6 Months Post op UCVA

Lasik

- Mean UCVA = 20/42
- 64% patients \geq 20/40
- 45% patients \geq 20/25
- Enhancement 10/42 (24%)

PRK

- Mean UCVA = 20/60
- 50% patients \geq 20/40
- 10% patients \geq 20/25
- Enhancement 9/47 (19%)

Results – 6 Months Post op BCVA

Lasik

- Mean BCVA = 20/22
- 100% patients \geq 20/40
- 83% patients \geq 20/25

PRK

- Mean BSCVA = 20/27
- 93% patients \geq 20/40
- 50% patients \geq 20/25

LASIK Complications

- Epithelial Ingrowth
 - 6/42 (14%) – none visually significant
 - None past the graft margin
- 1 torn flap at graft margin at enhancement lift
- 1 flap edge elevated – foreign body sensation
- 0 cases graft edema/rejection

PRK Complications

- Haze : 3/47 (6%)
 - 2 pts: 1+ haze with no loss of vision.
 - 1 pt: 3+ haze with 4 lines loss BCVA. PTK →20/20
- 1/47 (2%) cases graft edema/rejection

Femto-LASIK using AMO iFS Laser

Demographics:

N = 3

Mean Age = 55

Preop BCVA: 20/25
range: 20/23 – 20/29

Preop Cyl (K): 3.12
range: 2.62 – 3.87

Preop Sph Equiv: -5.66
range: -5.25 → -6.25

1 Month Post Op:

Cyl (K): 3.03 (0.37 – 7.50)

Cyl (M): 2.09 (0.50 – 6.75)

Sph Eq: -0.68 (-3.63 - + 2.13)

Mean BCVA: 20/28

*VISX Star S4 used for tissue ablation after flap creation.

**No complications noted during flap creation in any of the cases.

***No graft rejections or complications with flap healing in any of the cases.

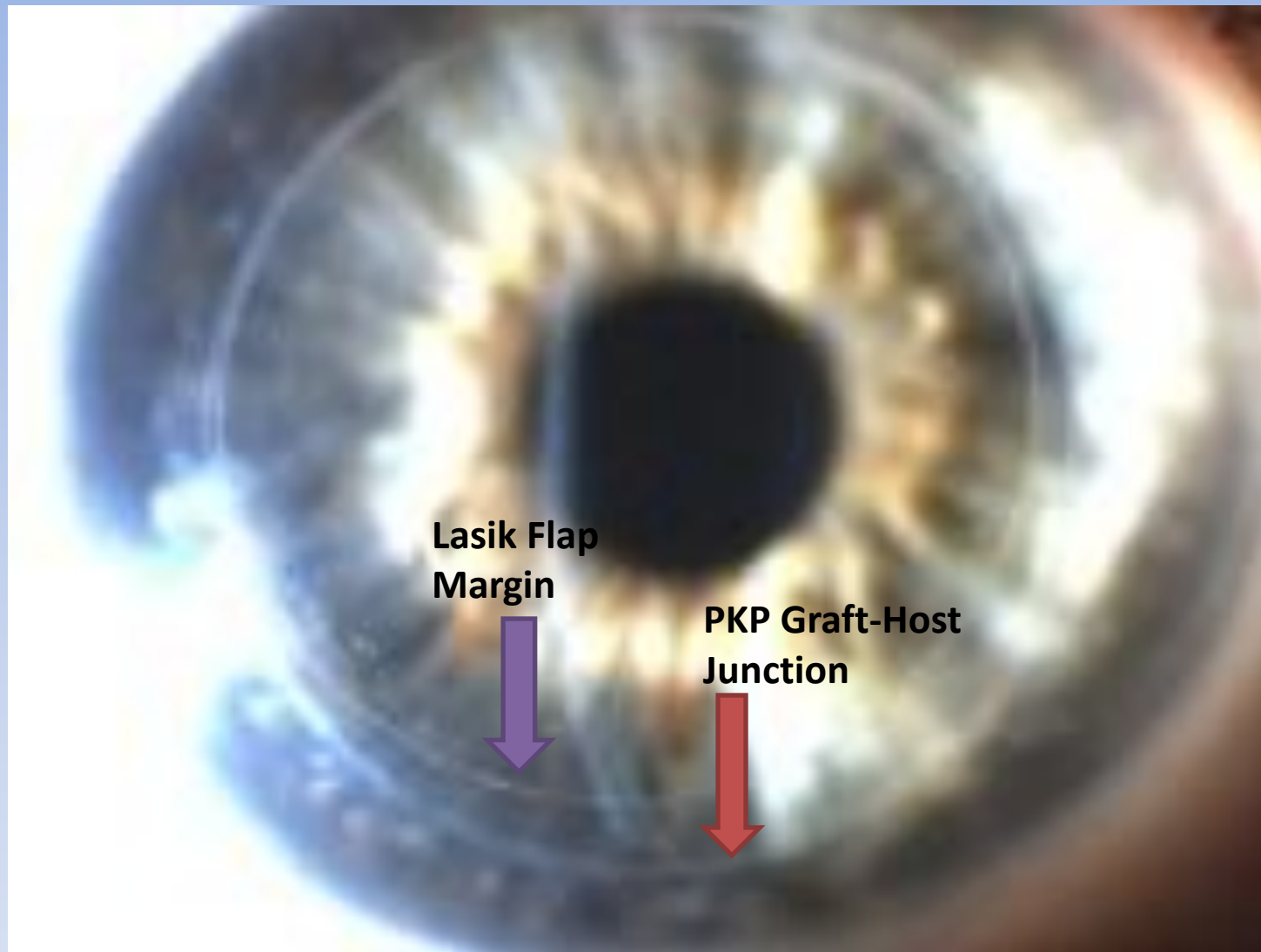


Figure 1: LASIK flap created within graft, centered on pupil. Flap created with the AMO iFS femtosecond laser.

Conclusions

- Lasik and PRK are both safe and efficacious in treating post PKP astigmatism, myopia, hyperopia and anisometropia.
- Mean UCVA better after Lasik than PRK by 2 lines.
- Mean BCVA better for Lasik than PRK by ½ line.
- % of patients better than 20/40 was slightly higher for Lasik than for PRK (100% vs. 93%).
- % of patients better than 20/25 was also higher for Lasik than for PRK (45% vs. 10%).
- Use of the femtosecond iFS laser to create the LASIK flap seems effective and safe to perform on eyes with prior penetrating keratoplasty, particularly for the correction of the spherical component. More data and longer follow up is required.