

New Cutting Edge Technology to Manage a Case of Dense Cataract with Keratoconus

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Purpose

To present modern management of a case with dense cataract and keratoconus. Compare IOL master, Verion to ORA (Optic wave Refractive Analysis) for accuracy in providing Toric IOL power and axis.

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Introduction

Modern technology such as femtosecond laser assisted cataract surgery, Verion and ORA can precisely mark the axis and the power of toric IOL to correct high astigmatism for some keratoconus eye. Sufficient vision can be obtained post-op so further treatment like Lasik, rigid contact lens or corneal transplant can be avoided.

Case Presentation

63 years old male with history of corneal transplant and wearing a rigid hard contact lens with 2+ NS cataract over his right eye. He presented with 20/40 vision right eye ($-1.00+0.25 \times 45$) and 20/200 ($-7.75+1.00 \times 3$) vision left eye. There is dense cataract (2+ NS, 3+PSC) and a stage 1 keratoconus (Amsler-Krumeich classification) presented over left eye. K: 44.75x48.75x7, mean K: 45.9

- Pre-op IOL Master and Alcon toric IOL calculator suggested SN6AT8 +18.00 at 9 degree for -1.00

- Pre-op Verion suggested SN6AT9 +18.50 at 9 degree for $-1.17+0.20 \times 9$
- ORA intraoperatively suggested +15.50 T4 at 14 degree for $-0.64+0.50 \times 11$
- Surgery was done with LenSx 2.23 and Centurion phaco under Verion imaging
- ORA was used to select the toric IOL and rotation of the IOL: +15.50 T4 at 14 degree for $-0.64+0.50 \times 11$
- Post-op 1 day: $+0.25+0.50 \times 33$ 20/40 with plaque at posterior capsule
- Yag laser capsulotomy done 1 month post-op

Result

1 month post-op: Vision without correction: 20/25, Refraction: $-0.50+1.25 \times 11$ 20/20-2.

Discussion

Due to difficulty in accurate Intra Ocular Lens (IOL) power calculation and correction of astigmatism cataract surgery in eyes with keratoconus can be challenging. Different formula in toric IOL calculation can be used in mild keratoconus. For moderate and advanced keratoconus, predictability in IOL power calculation is more difficult, and no particular formula seems to provide an advantage over another [1]. Toric IOLs may be used to provide good uncorrected postoperative visual acuity after cataract surgery in an eye with keratoconus and high regular corneal astigmatism [2, 3]. However, It seems necessary to avoid cases with irregular astigmatism with toric IOL because the induced higher order aberrations may severely compromise the quality of vision.

With these new cutting- edge technologiesin selecting correct power and axis for toric IOL for this case, satisfactory refractive outcome was achieved. Rigid contact lens or cornea

transplant can be avoided for this patient. Future case series study to further confirm the adequacy of these technologies is needed.

Figure 1: Right eye with rigid contact lens, cornea graft and cataract

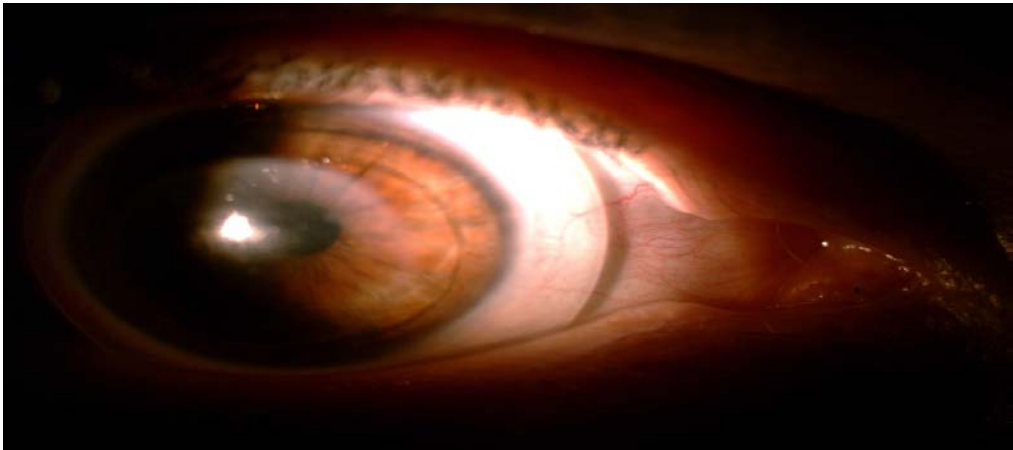


Figure 2: Pentacam of left eye

