ENDOILLUMINATION-ASSISTED CATARACT SURGERY IN EYES WITH CORNEAL OPACITIES

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Continuous curvilinear capsulorhexis (CCC) and phaecoemulsification (PE) in eyes with coexisting corneal opacity are challenging due to poor visibility with conventional microscopic illumination.



Transcorneal illumination with fiber-optic endoillumination can be effective in these cases, but requires the use of the surgeon's non-dominant hand to hold the light source, potentially making the PE procedure significantly more challenging. Endoillumination assisted cataract surgery in eyes with corneal opacities is useful for avoiding keratoplasty in patients with minimal to moderate corneal opacities who can be visually rehabilitated with cataract surgery alone .



It also avoids risky open sky cataract surgery in those with severe opacities that require keratoplasty.

<u>Opacities</u>

Purpose

To describe the surgical techniques and outcomes of anterior chamber endoillumination assisted CCC and PE in eyes with co-existing cataract and corneal opacities.

Methods

- 1. Interventional case series of six eyes of five patients with preexisting corneal opacities and cataract.
- 2. All surgeries were performed by an experienced corneal surgeon.
- 3. In three eyes anterior chamber chandelier endoillumination was used to enhance the surgeon view during CCC.
- 4. In the remaining three it was used to enhance the surgeons view during CCC and PE.



Corneal opacities cause haziness and decrease depth perception by scattering light from the operating microscope.

27 gauge twin light chandelier



•Fibre optic probes with cone shaped tips allow panoramic Illumination

•The silicone cuff makes the probes self retaining and hands free



Surgical Technique

- 1. Coat the cornea with a cohesive ophthalmic viscosurgical device (OVD)
- 2. Inject air into anterior chamber (AC) and then trypan blue under the air bubble and over the anterior capsule
- 3. Wash trypan blue out with balanced salt solution
- 4. Inject high density cohesive OVD into AC
- 5. Use a disposable 27 gauge needle to create 2 paracenteses at 5 and 7 o'clock positions and insert the chandelier fibre optic probes 2mm into the AC. Use silicone stoppers to achieve a self-retaining position.
- 6. Switch endoillumination device on, operating microscope light off & dim the operating room lights
- 7. Create CCC
- 8. Hydrodissection
- 9. Phacoemulsification
- ^{10.} Switch microscope light on and remove chandelier endoillumination system
- ^{11.} Cortical aspiration, cohesive OVD into bag, insertion of IOL, OVD removal and hydration of wounds as per standard cataract surgery
 - BENEFITS OF USING THIS TECHNIQUE:
 - Less corneal scatter and better anterior segment visualisation
 - *Hands free endoillumination*
 - May avoid the need for high risk "open sky" cataract surgery
 - Less risky than using the chandelier system in the vitreous cavity for the same purpose

<u>Outcomes</u>

- There were no intraoperative or post operative complications.
- In all cases AC endoillumination facilitated an uncomplicated CCC and PE procedure.
- All eyes had postoperative visual improvement compared to their best corrected preoperative vision.

Endoillumination-Assisted Cataract Surgery in Eyes with Corneal Opacities

	Age	Sex	Ocular History	Procedure	Pre OP BCVA	Post OP BCVA
Pt 1	64	F	Corneal scarring secondary to herpetic keratitis and age related cataract	AC endoillumination assisted PE + IOL	HM	20/200
Pt 2	72	F	Corneal scarring secondary to exposure keratitis due to lagophthalmos (caused by a right- sided lower motor neurone facial palsy) and age related cataract	AC endoillumination assisted PE + IOL	20/200	20/40
Pt 3	82	F	Decompensated Fuchs endothelial dystrophy and age related cataract	AC endoillumination assisted PE + IOL followed by Top Hat- Keratoplasty	HM	20/60
Pt 4	49	М	Trauma which had resulted in a paracentral scar (moderate in severity) partially involving the visual axis, multiple posterior synechiae and significant cataract	AC endoillumination assisted PE + IOL	CF	20/120
Pt 5 od	83	М	Corneal scarring secondary to herpetic keratitis and age related cataract	AC endoillumination assisted PE + IOL	HM	20/200
Pt 5 os	83	М	Corneal scarring secondary to herpetic keratitis and age related cataract	AC endoillumination assisted PE + IOL	20/200	20/120

Pre operative View

Intraoperative View





Conclusion

- Anterior chamber chandelier endoillumination is a helpful illumination technique for enhancing the intraoperative view of the crystalline lens for safer phacoemulsification surgery through what is commonly regarded as a challenging corneal view.
- The twin light chandelier system provides a high intensity "hands-free" source of dual endoillumination.
- We believe that this technique can be safely adopted by most cataract surgeons, for use in cataract surgery in the presence of mild to moderate corneal opacities.

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