Hydrophilic acrylic intraocular lens opacification following Descemet's Stripping Automated Endothelial Keratoplasty

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BACKGROUND & OBJECTIVES

- Opacification of hydrophilic acrylic intraocular lenses (IOLs) has been well documented as a potential complication following Descemet stripping automated endothelial keratoplasty (DSAEK) surgery which utilises intracameral air or gas.[1]
- Hydrophilic lenses continue to be implanted in patients with risk factors for corneal decompensation (e.g. Fuchs Endothelial dystrophy) who may require future surgical procedures involving intracameral gas or air.[2]
- We report ten cases of IOL opacification following DSAEK at a medium-sized District General Hospital.
- We aim to increase awareness of this potential complication, to help guide IOL selection at the time of cataract surgery.

METHOD

- A retrospective, observational case study was undertaken to identify the incidence of IOL opacification in all patients who have undergone DSAEK at the Countess of Chester Hospital between January 2011 and November 2022 who were either pseudophakic or had simultaneous cataract surgery
- Clinical care records were reviewed to identify the incidence of IOL opacification, indication for DSAEK, type of gas used, IOL model and material, number of re-bubble procedures, time to onset of IOL opacification and best corrected visual acuity (BCVA)

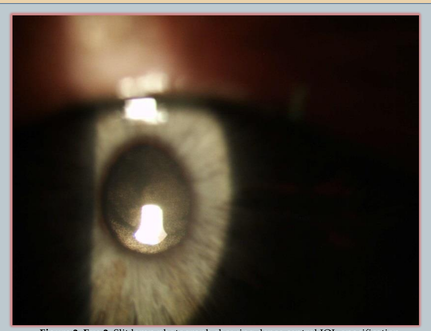


Figure 2. Eye 2: Slit lamp photograph showing dense central IOL opacification
LogMAR BCVA : Hand Movements
Rebubbles: 3 (air 2x + SF6 20% 1x)
IOL model: Rayner 970C

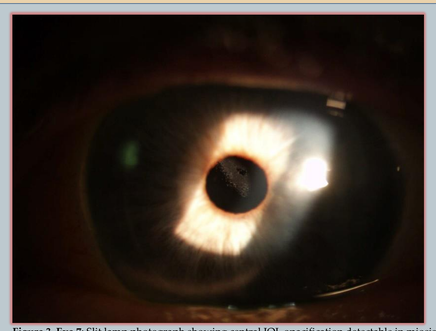


Figure 3. Eye 7: Slit lamp photograph showing central IOL opacification detectable in miosis
LogMAR BCVA: 0.3
Rebubbles: 0
IOL model: Rayner 970C



Figure 4. Eye 8: Slit lamp photograph showing dense IOL opacification
LogMAR BCVA : 0.8
Rebubbles: 0
IOL model: Rayner 970C

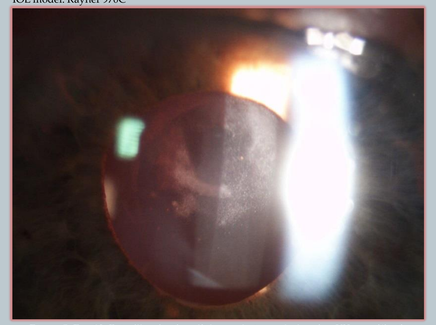


Figure 5. Eye 10: Retroillumination slit lamp photograph showing IOL opacification
LogMAR BCVA : 0.3
Rebubbles: 0
IOL model:: Rayner 970C

RESULTS

- 103 DSAEK procedures were performed by three surgeons on 90 eyes
- Indications for DSAEK are illustrated in Figure 1.

IOL opacification

- 10 eyes (11.1%) developed IOL opacification (Figures 2-5), of whom 8 had hydrophilic IOLs (7 Rayner ® 970C, 1 Rayner® RayOne RA0600C) and 2 eyes had unknown IOL material (Figure 6)
- Of the known hydrophilic acrylic IOL group, more than a quarter (28.5%) developed IOL opacification
- Of 10 eyes with IOL opacification, intraoperative SF6 20% was used in 2 eyes, whilst air was used in the remainder
- 4 of the 10 eyes with IOL opacification had undergone rebubbling at least once
- First documentation of IOL opacification ranged from as early as 7 weeks to 5 years and 6 months postoperatively

Impact on visual acuity

- In eyes with IOL opacification, LogMAR BCVA ranged from 2.3 to 0.2 with a mean of 0.55 (Figure 7)
- 8 eyes had no other sight-limiting comorbidities to explain the reduced vision
- Two eyes required IOL exchange with visual improvements of 0.3 (Eye 1) and 0.2 (Eye 5)
- 8 patients were managed conservatively

CONCLUSION

- Similar to prior reports, we have found a significant incidence of hydrophilic IOL opacification following DSAEK surgery (28.5%). A limitation of our study was the significant proportion of eyes with uncertain IOL material due to previous cataract surgery elsewhere
- Our series confirmed that this complication can occur after DSAEK without rebubbling, as previously noted,[3] and in the context of either air or gas
- Although our cases with known IOL type are involving one manufacturer, it is important to note that cases have been reported with other manufacturers[4]
- Our case series highlights the importance of avoidance of hydrophilic acrylic IOLs in patients at high risk of corneal endothelial failure
- The same caution should also be applied to IOL selection in phacoemulsification in patients at high risk of vitrectomy, in which similar opacification of hydrophilic acrylic IOLs has also been noted[5]

Figure 1. DSAEK Indications

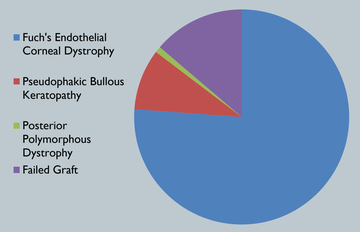


Figure 6. IOL Opacification by IOL Material

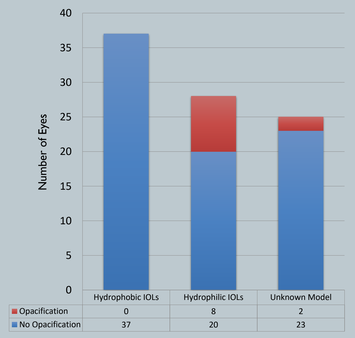
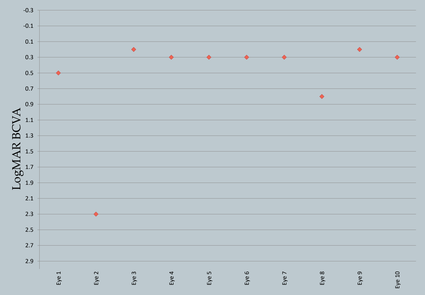


Figure 7. LogMAR BCVA of Opacified IOLs



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