

Anterior segment optical coherence tomography (AS-OCT) as a useful tool to identify retained lens fragments in the anterior chamber

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Accepted 23 September 2021

DESCRIPTION

We report a case of pseudophakic bullous keratopathy (PBK) in which clinical examination failed to identify a retained lens fragment (RLF) which was subsequently diagnosed using anterior segment optical coherence tomography (AS-OCT)

A 79-year-old man underwent routine phacoemulsification in the right eye with Infiniti Vision System (Alcon, Fort Worth, USA) under topical anaesthesia. Surgery was uncomplicated and intraocular lens (IOL) was placed in the capsular bag. Preoperative biometry with IOL Master 500 (Zeiss, Oberkochen, Germany) found an axial length of 26.78 mm and anterior chamber depth of 3.22 mm. There was no background of corneal pathology other than arcus senilis and on preoperative examination endothelium was unremarkable in both eyes.

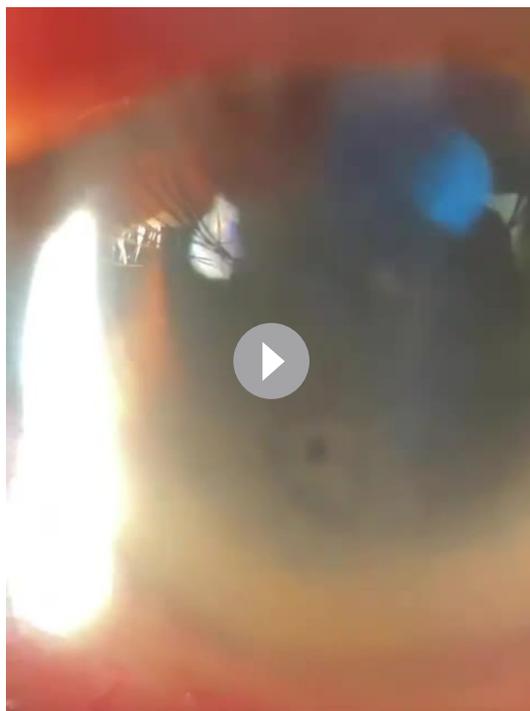
Two weeks postoperatively, he presented to clinic with PBK. Uncorrected visual acuity was 6/36 in the right eye. On examination, there was stromal oedema. Anterior chamber examination was unremarkable and intraocular pressure (IOP) was 14.

Initial management involved increasing his postoperative treatment of topical dexamethasone 0.1% to six times/day. At 1 month after surgery, visual acuity was 6/60 with ongoing PBK. At 2 months after surgery, he was referred to the corneal service for consideration of endothelial keratoplasty (EK). Visual acuity was counting fingers in this eye, due to PBK, IOP was 20 mm Hg (16 mm Hg in the other eye). OCT macula was unremarkable. When searching for any retained lens fragment (RLF) at this visit, none could be found on conventional slit lamp examination or gonioscopy, although view of the angle was obscured by severe corneal oedema ([video 1](#)).

With high suspicion of RLF, an Anterior Segment OCT (Heidelberg SPECTRALIS, Heidelberg, Germany) was performed using the corneal setting, single line, standard 11 mm scan, rotated at 90° vertical with a 20° field of view capturing 1024 A-Scan using 815 nm wavelength infrared light. An RLF in the inferior angle was found which measured 1244 µm across ([figure 1](#)).

Anterior chamber washout was performed 2 days later. The most recent follow-up is 3 months postwashout. Visual acuity is 6/60 unaided (6/24 pinhole) in the affected eye. He has corneal decompensation requiring EK, but has also developed cystoid macular oedema (CMO) which is being treated in advance of further surgery.

RLF is a rare complication of uneventful cataract surgery and appears more frequently in complicated



Video 1 Slit lamp biomicroscopy and slow motion gonioscopy views of the operated eye showing poor view with corneal decompensation and senile arcus.

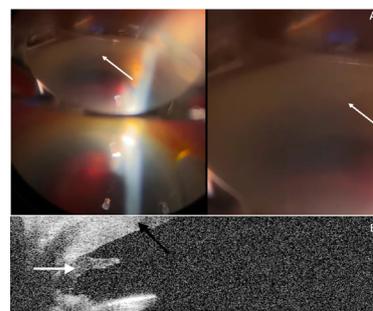


Figure 1 A) Suspected retinae lens fragment, however gross corneal oedema obscuring view B) Anterior OCT image showing retained lens fragment in the inferior iridocorneal angle, measuring 1244 µm, White arrow indicates retained lens fragment in iridocorneal angle and black arrow indicates cornea. OCT, optical coherence tomography.



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To cite: Akram H, Gunasekera CD, Roberts H, et al. *BMJ Case Rep* 2021;**14**:e244817. doi:10.1136/bcr-2021-244817

Images in...

cases. A recent large study reported an incidence of 0.124% with 47.5% found on the first postoperative visit and a mean time to diagnosis of 53 days. 89.3% were visualised via slit lamp examination and 10.7% required gonioscopy. Delay in diagnosis resulted in higher likelihood of requiring EK with 1.29 increase in risk of requiring EK per month of delay in diagnosis.¹ In our case, there was delay of just over 2 months, which according to Matarazzo *et al* represents a cumulative risk of 2.6.¹

To the best of our knowledge, this is the first report describing using AS-OCT to identify RLF. There is no widespread consensus on whether to offer empirical AC washout in cases of suspected RLF when conventional clinical examination (slit lamp and

gonioscopy) is negative. Although gonioscopy is used to detect anterior chamber foreign bodies that are not visible directly on the slit lamp,² conventional examination techniques may not always suffice, especially in patients presenting with PBK and poor view as in this case. Other methods, such as endoscopy have also been used.³ However, AS-OCT allows fine details to be observed that may be obscured by corneal oedema and has also been used to detect postoperative Descemet's detachment.⁴

AS-OCT is a versatile, simple, effective and quick imaging technique with a plethora of applications.⁵ In anyone presenting with corneal oedema after cataract surgery, high suspicion for RLF is warranted, especially when the eye is hypertensive and/or there is coexistent CMO. Early anterior chamber washout and removal may result in better clinical outcome via less endothelial cell loss and less risk of CMO. Prompt investigation using AS-OCT can prevent delay in intervention.

Patient's perspective

I never expected such a thing could happen after a routine surgery for cataract. I know so many people who have had theirs done and no problem. It is quite unfortunate but I am just glad someone was able to find out what is really going on and help me get better.

Learning points

- ▶ Retained lens fragment (RLF) after routine cataract surgery is an uncommon but unfortunate complication and should be suspected in any patient with significant corneal oedema with no history of endothelial disease, especially when the eye is hypertensive.
- ▶ Conventional examination including gonioscopy is insufficient to rule out RLFs, especially in cases of severe corneal oedema with obscured view of angle.
- ▶ Anterior segment optical coherence tomography may be more sensitive than conventional clinical examination in detecting RLFs and we suggest it is mandated in all newly presenting cases of pseudophakic bullous keratopathy to exclude retained lens matter not evident on conventional clinical examination alone.

Contributors HA wrote and edited manuscript, CDG helped write and edit manuscript, provide video and images, HR helped write and edit manuscript and JM helped and supported.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient consent for publication Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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