Intraoperative optical coherence tomography guided iris stromal cyst treatment with absolute alcohol injection

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**ABSTRACT**

**Purpose:** To report on the utility of intraoperative optical coherence tomography (iOCT) in the treatment of a traumatic iris cyst with aspiration and alcohol injection.

**Observations:** A 61-year-old male, with a past ocular history of a left corneoscleral laceration in 1982, presented with gradual onset of blurring of vision in 2021. Examination revealed a large iris stromal cyst. He subsequently underwent iOCT guided iris stromal cyst aspiration and absolute alcohol injection.

**Conclusions and importance:** Our case demonstrated the efficacy of iOCT to aid in direct visualization and safe guidance of the alcohol into the iris cyst, reducing the risk of collateral damage.

**Keywords:** Iris cyst, Alcohol induced sclerosis, Intraoperative optical coherence tomography

**ARTICLE INFO**

1. Introduction

Iris cystic tumors can arise from iris pigment epithelium or stroma. Iris stromal cysts are difficult to treat as they are progressive and tend to recur with aspiration alone.\textsuperscript{1} Sclerosing agents such as alcohol, 5-fluorouracil and mitomycin C have been used as adjuncts.\textsuperscript{1} However, there are cases of inadvertent injection of sclerosing agents into the anterior chamber, leading to complications including cataract, cornea endothelial damage and glaucoma.\textsuperscript{2} This report describes a case of utilising intraoperative optical coherence tomography (iOCT) (RESCAN

![Fig. 1. Preoperative anterior segment photo and ultrasound biomicroscopy of an iris stromal cyst.](image-url)
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700™, ZEISS, Germany) to safely guide the injection of alcohol into the iris stromal cyst.

2. Case report

A 61-year-old Chinese male presented with gradual blurring of vision and recent floaters in his left eye. His relevant past ocular history was of a left corneoscleral laceration sustained from a screwdriver injury in 1982. Best corrected visual acuity in the left eye was hand movement. Slit lamp examination showed a large inferonasal iris stromal cyst, measuring 10 by 10 mm, inducing Descemet membrane folds and superonasal drawing of the pupil (Fig. 1). The patient also had a cataract of nuclear sclerotic density 4+. The eye was otherwise quiet and the posterior pole was unremarkable. Ultrasound bio-microscopy showed diffuse low regular internal reflectivity of the iris cyst with endothelial touch. The patient underwent left eye iris stromal cyst aspiration and absolute alcohol injection according to the protocol by Shields et al. During the surgery, iOCT was employed to visualize the iris stromal cyst before performing aspiration. This was followed by 100% alcohol injection directly into the cyst for 2 minutes before aspiration. The cycle was then repeated twice.

3. Discussion

Iris stromal cysts are challenging to manage as they tend to increase in size over time and occupy the anterior chamber. This eventually leads

Fig. 2. Intraoperative optical coherence tomography (iOCT) showing the deflation of the iris cyst (A), re-inflation with absolute alcohol (B), and collapsed iris cyst after aspiration at the end of surgery (C).

(a)

(b)

(c)
to intraocular complications including angle closure and glaucoma, necessitating surgical intervention. Simple aspiration of the iris stromal cyst alone may not be adequate as it tends to recur, especially if it is secondary to trauma or ocular surgery. Shields et al. reported a case series of 16 patients with iris stromal cysts treated with absolute alcohol to induce sclerosis. In their case series, the iris stromal cysts were classified as primary congenital (n = 6), primary acquired (n = 4), or secondary (n = 6). Of the 16 cases, one was lost to follow-up and 10 out of 15 cases needed one procedure for cyst involution. In our case, the iris stromal cyst was related to trauma. Under the guidance of real-time iOCT, the surgeon was able to view the iOCT images through the oculars of the microscope (OPMI LUMERA 700®, ZEISS, Germany) and place the needle directly into the cyst to aspirate its contents, followed by alcohol injection. The iOCT allowed real-time visualization of cyst aspiration, ensuring all contents were removed, and in addition allowed controlled inflation with alcohol. Potential complications with the use of absolute alcohol injection include transient corneal edema and anterior segment inflammation.

Sinha et al. described the use of real time imaging of iOCT to guide the open surgical removal of a large iris stromal cyst in an 11-year-old patient. Our case demonstrated the use of iOCT to visualize and guide the cyst aspiration and alcohol irrigation. Complete collapse of the iris stromal cyst was confirmed by iOCT at the end of the surgery (Fig. 2). Direct visualization with iOCT aided the accurate placement of the needle into the cyst for aspiration of its contents and injection of alcohol, avoiding damage to adjacent corneal endothelial cells. In our case, the endothelial cell count was 1700 cells/mm² at 3 months postoperatively. Preoperatively, we were unable to obtain a good reading of the endothelial cell count due to the large iris stromal cyst.

4. Conclusion

In summary, we report the case of a traumatic iris stromal cyst which was successfully treated with absolute alcohol induced sclerosis under the guidance of iOCT.

Patient consent

Consent to publish the case report was not obtained. This report does not contain any personal information that could lead to the identification of the patient.

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Authorship

All authors attest that they meet the current ICMJE criteria for Authorship.

Declaration of competing interest

None of the authors have any conflicts of interest to disclose.

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