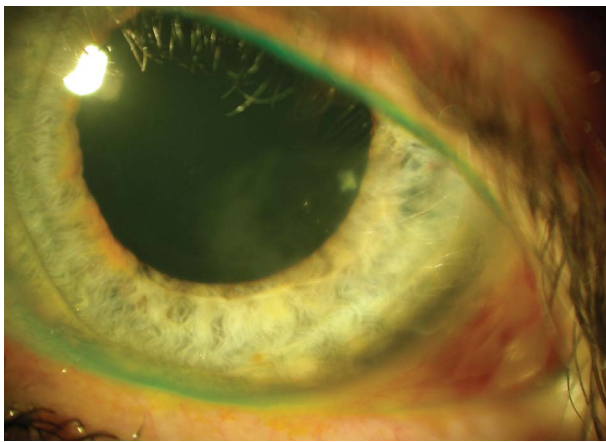


**Figure 1:** (a) Intraoperative clinical photograph demonstrating intrastromal implantation of the intraocular lens. (b) Post removal of the lens a visible tract remains.

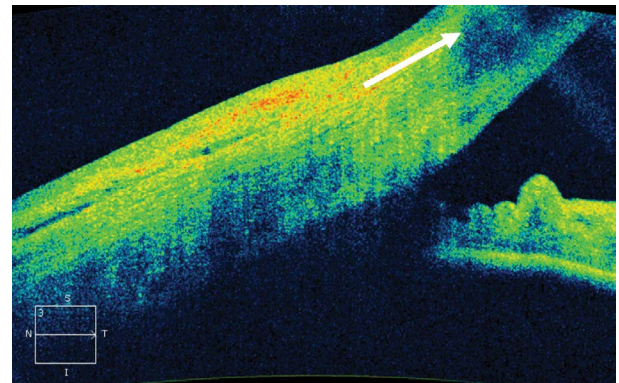


**Figure 2:** Anterior segment photograph at 3 months post-procedure. Mild stromal haze is visible where the lamellae dissection occurred.

## Discussion

There have only been three other reported cases of iatrogenic intrastromal lens implantation during cataract surgery [3-5]. These cases had similar resolution of corneal oedema with satisfactory final visual acuity of 6/6 attained in two cases with the third case achieving 6/9.

Intrastromal insertion of the lens occurs when the force generated by the IOL edge overcomes the cohesive forces between the stromal lamellae, allowing lamella dissection and creating a false lens passage. Centrally the cornea contains approximately 200 layered lamellae which are produced by collagen fibrils embedded in a hydrated matrix of proteoglycans [6]. Proteoglycan complexes create interlamellar adhesion by binding collagen fibrils at specific axial sites along the fibrils [6,7]. The lamellae are extensively interwoven in the anterior and mid-stroma centrally and this interlacing extends to the posterior stroma in the peripheral cornea [6]. The clear corneal incision made during cataract surgery alters the structural integrity and biomechanical properties of the cornea by cutting through these interwoven lamellae [8]. The increase in obliquely oriented lamellae in the periphery increases the interlamellar adhesive strength compared to the centrally located lamellae [7]. It is hypothesised that these interweaving lamellae act as anchoring fibres which tear instead of separate, thereby contributing their tensile strength to the overall adhesion forces between lamellae [7].



**Figure 3:** Anterior Segment OCT LE demonstrating a relatively anterior path of the IOL dissection tract through anterior corneal stroma (white arrow).

Two of the three previously reported cases of IOL implantation state the lens type used (Alcon Acrysof SN60AT 24.0D and Tecnis ZCB00 16.0D) with the third case only demonstrating an intraoperative photograph where a single piece foldable IOL can be seen [3-5]. The two known cases used a sharp edge lens design with corresponding injector systems and all cases used wound-assistance with the IOL delivery [3-5]. Apart from corneal dissection, iatrogenic injuries to the cornea from IOL insertion include Descemet's membrane tears or detachment [5]. It is unclear what role lens edge design contributes to these complications but we postulate that sharper edge designs confer a higher risk of dissection through corneal lamellae. Ocular risk factors previously considered include small, tight or stepped wounds, disease which impairs the view through the cornea to visualise the injector tip and any factors leading to lengthened, flattened entry through the wounds, such as shallow anterior chambers [3,5]. Delivery cartridges not equipped with a depth guard to limit how far the nozzle advances in the wound may allow inadvertent stretching and deepening of the incision as well as splitting of the nozzle tip [9]. Other operative factors including small, sharp injector tips, insufficient anterior chamber viscoelastic and wound-assisted IOL delivery may result in premature insertion into the stromal lamellae [5].

This case highlights that intrastromal insertion of an IOL is a possible complication of using a wound-assisted square-edged lens design injector system. Conservative management with active surveillance in this and previous cases have all resulted in reversal of post-operative corneal oedema with minimal long-term sequelae. Surgeons should consider how wound construction, cartridge design and injection technique may be modified to avoid this potential complication of cataract surgery (Figure 3).

## Patient Consent

Written consent to publish potentially identifying information, such as details or the case and photographs, was obtained from the patient's legal guardian.

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## Conflicts of Interest

The following authors have no financial disclosures BDM, SOH

## Authorship

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

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