Retained Presumed Intraocular Cotton Fiber after Implantable Collamer Lens Implantation: A Case Report

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Abstract
Retained intraocular foreign body is a known complication of ophthalmic surgery. The presence of intraocular cotton fibers after ophthalmic surgery is well-documented in different procedures including cataract and vitreoretinal surgeries. This report describes a case of retained cotton fiber after implantable collamer lens (ICL) implantation. This report describes a case of a 23-year-old female who was diagnosed with high myopia and mild astigmatism. The patient was selected to undergo ICL implantation in her right eye. The postoperative examination was done a few hours after the procedure, and a cotton fiber was incidentally found to be attached to the posterior surface of the ICL without causing visual disturbances or any other abnormal findings. This patient was followed up closely within the 2 postoperative weeks, and a 1-year follow-up did not reveal any change in the cotton fiber place or position, nor was there any other complication. In conclusion, cotton fibers are typically inert and usually do not lead to major complications. The decision of whether to surgically remove these fibers or not should only be made after weighing the benefits against the risks of such intervention. Recurrent inflammatory reactions or iridocyclitis related to the presence of cotton fibers could validate surgical intervention; however, the presence of cotton fibers solely does not necessitate early surgical removal.
Introduction

A retained foreign body is a well-known complication after intraocular surgery. There are many documented retained foreign bodies after intraocular surgeries which include metallic-appearing particles, patients’ cilium, or even suture needles and others [1]. Cotton fibers are microscopic particles that may not be visible under a microscope. As a result, they may be inadvertently implanted in the eye during intraocular surgery. These fibers can be easily visualized during slit-lamp biomicroscopy in the postoperative period and can present difficulty in making the decision of the postoperative management for such cases [2, 3]. Even though cotton fibers are believed to be sterile, retained antigenicity might predispose to an inflammatory reaction [4]. To the authors’ knowledge, there were no previously reported cases about retained cotton fibers after implantable collamer lens (ICL) implantation, and there is limited data regarding the long-term outcome of such an incident. This report describes a patient who underwent ICL implantation and was found to have one cotton fiber attached to the posterior surface of the implanted lens postoperatively.

Case Description

A 23-year-old female was diagnosed with high myopia and mild astigmatism and presented to the ophthalmology clinic seeking vision correction. She did not give any past ocular, medical, or surgical history apart from asthma, which is well controlled without any medications. Preoperatively, her best-corrected visual acuity (VA) was 20/30 in the right eye. Subjective refraction in the right eye was −10.75 × −1.00/165 and cyclo-refraction was −10.00 × −1.00/165. On slit-lamp examination (SLE), the cornea, anterior chamber (AC), and posterior chamber appeared within normal limits. The white-to-white corneal diameter was 11.50 mm and AC depth was 2.9 mm in both eyes. So, the patient was selected for ICL insertion size 12.6 in her right eye.

The patient was examined 4 h postoperatively. Her IOP was 13 mm Hg and she had clear cornea with regular pupils. Her AC was deep and quiet. The ICL was in place, and a thread from the drape was found just behind the ICL (Figs. 1, 2). On postoperative day one, the patient did not have any new complaints. Her VA was 20/20 and IOP was 12 mm Hg in her right eye. During SLE, she had a clear cornea with no infiltrate and deep and quiet AC. Lens examination revealed the ICL in place with a good vault, and a tiny white thread was attached to the posterior surface of the ICL with no cataractous changes. Red reflex was present and no signs of vitritis were observed. Upon discharge, the patient was prescribed moxifloxacin 0.5% 4 times daily for a week and prednisolone acetate 1% 4 times daily tapered over 4 weeks duration. This patient was followed up closely in the 2 postoperative weeks and did not have any new complaints or changes on examination. 1 year after the procedure, the patient had a quiet eye with a VA of 20/20; the cotton fiber was still in the same place and position with no apparent surrounding changes.

Discussion

Cotton fibers can be lost from surgical cloths, gauze, or cotton-tipped applicators, all of which are commonly used in eye surgery. They may enter the eye directly through incisions or cling to intraocularly inserted tools. Cotton fiber can enter the anterior chamber when cotton balls or gauze incorporated into the surgical set adhere to surgical instruments, etc. It is important to construct a surgical set that does not use cotton balls or gauze [1]. Weng et al. [5]
proposed that pressure over corneal wounds with cotton-tipped materials should be minimized as much as possible to decrease the chance of cotton-fiber migration through the wounds. Cotton fibers can cause corneal wounds to become lodged, so if cotton fibers are found in the anterior chamber during cataract surgery, it is important to remove them. Shimada et al. [6] observed that cotton fibers were present in the AC of 6.4% of all patients during cataract surgery, and an attempt to remove all fibers detected at the time of surgery was done. Of all patients who underwent cataract surgery, 1.7% of cases were found to have residual cotton fibers in the AC on SLE postoperatively.

In an experimental trial, cotton fibers, as well as cellulose and cilium, were introduced into rabbits’ eyes in an attempt to observe any inflammatory response against these foreign bodies. Both cellulose and cilium were found to cause a significant inflammatory reaction when introduced into the AC. However, cotton fibers were found to cause only minimal inflammation [7]. Cotton fibers do not appear to produce cystoid macular edema or corneal endothelium damage, nor do they appear to raise the risk of endophthalmitis in human eyes [1, 6]. However, Joshi RS reported a patient who presented with recurrent iridocyclitis due to retained cotton fiber in the AC 6 years after undergoing cataract surgery, and the decision of removing the cotton fiber surgically was made. As a result, individuals with cotton fiber in the ocular structures should be closely monitored, as the cotton fiber might cause inflammatory reactions years after surgery [8].

**Fig. 1.** Postoperative external right eye photo showing the intraocular cotton-fiber thread captured posterior to the implantable collamer lens (ICL) centrally.

**Fig. 2.** Slit-lamp photograph of the right eye reveals a relatively quiet eye with a cotton fiber thread captured between the implantable collamer lens (ICL) and the anterior capsule.
The decision of removing the entrapped cotton fibers should be based on the potential risks and benefits of undergoing this procedure. The presence of a cotton fiber intraocularly per se does not necessitate surgical removal if it was not causing any reactivity or symptoms. However, surgical removal is to be considered when fibers are found to be the cause of recurrent uveitis or any significant inflammatory response [1, 8]. Furthermore, it is believed that retained intraocular cotton fibers are way more common than reported, and the long-term outcomes are yet to be fully understood since they often go unrecognized [5]. The reported case was followed up in short intervals for 2 weeks after the operation and was advised to come to the hospital as soon as she develops any new complaints in her right eye, and no adversities were observed during the 1 postoperative year.

Statement of Ethics

This case report was approved by the Institutional Review Board (IRB) of King Khaled Eye Specialist Hospital, Riyadh, with approval number RP 22012-CR. Written informed consent was obtained from the patient for the publication of the case details and any accompanying images.

Conflict of Interest Statement

None of the involved authors reported any conflict of interests related to publishing this case report.

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Author Contributions

Abdulrahman AlNaim, Motazz AlArfaj, Shaker Al Rashidi, Salem Al Zaid, and Abdulaziz AlSarhani: manuscript writing and data collection.

Data Availability Statement

All data that support the findings of this study are included in this article. Further inquiries can be directed to the corresponding author.

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