Intraocular Eyelash after an Uneventful Cataract Surgery: Case Report and Literature Review

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Abstract
The presence of an eyelash in the anterior chamber after an uneventful phacoemulsification and intraocular lens implant surgery is exceedingly rare, with 8 cases reported globally. We present a patient in whom an eyelash was found trapped in the main cornea wound at post-operation week 1 after an uneventful surgery and unremarkable postoperation day 1 review. The eyelash was removed immediately. The patient denied rubbing his eye and there is video evidence of an uneventful surgery with no eyelash in the anterior chamber at the end of the surgery. Interestingly, the orientation of the eyelash supports previous reports that the eyelash tends to migrate intraocularly through the cornea wound in one direction (i.e., with proximal end/follicle first), purportedly due to the cellular arrangement of an eyelash. Management of such cases should be undertaken on a case-by-case basis. The treatment strategy includes observation or prompt removal, either at the slit lamp or at the operating theatre, depending on a few factors including extent of ocular inflammation, time of presentation, eyelash contact with the cornea endothelium, and location of the eyelash. Patients should be reminded not to rub their eyes after cataract surgery.
Introduction

The presence of an intraocular eyelash after uneventful phacoemulsification and (IOL) implant surgery is exceedingly rare, with 8 cases reported globally [1–8]. The treatment strategy includes observation or prompt removal, either at the slit lamp or at the operating theatre, depending on a few factors including extent of ocular inflammation, time of presentation, eyelash contact with the cornea endothelium, and location of the eyelash. We present a patient in whom an eyelash was found trapped in the main cornea wound at postoperation week 1 after an uneventful surgery and unremarkable postoperation day 1 review.

Case Report

This is a case of a 69-year-old Chinese gentleman who underwent an uneventful phacoemulsification and IOL implant (Sensar 1-Piece Hydrophobic Acrylic AABOO Monofocal; Johnson & Johnson Surgical Vision, Inc., New Brunswick, NJ, USA) surgery of the right eye. The surgery was performed under informed consent with topical anesthesia and sedation. The eye was cleaned with povidone-iodine and draped. Eyelashes were covered with Tegaderm film dressing. No eyelash trimming was done. A stab wound was made with a Beaver blade and a 2.65-mm biplanar temporal clear cornea incision was created with a keratome. This was followed by a continuous curvilinear capsulorhexis, hydrodissection, nucleus disassembly using a stop and chop technique, irrigation and aspiration of soft lens material, insertion of an IOL into a viscoelastic inflated bag, removal of the viscoelastic, hydration of the cornea wounds, and topical spray with cefazolin, gentamicin, and dexamethasone. Postoperation, the patient was initiated on a routine 1-month course of guttae (G.) tobramycin and G. betamethasone 3-hourly.

The postoperation day 1 review was uneventful with an uncorrected visual acuity (VA) of 6/7.5 and an intraocular pressure (IOP) of 12 using Goldmann applanation tonometry (GAT). The cornea was clear, with a deep anterior chamber of 1+ cells. The pupil was round. The Seidel’s test was negative. On the postoperation week 1 review, a large eyelash was found trapped in the cornea main wound. The proximal end (follicle) of the eyelash protruded into the anterior chamber and was in contact with the cornea endothelium. The distal end (tip) of the eyelash was in between the anterior and posterior lips of the cornea main wound. The patient was asymptomatic and denied eye rubbing or trauma. See Figure 1. The uncorrected VA was 6/9.5 and the IOP was 12 (GAT). The cornea was clear with a deep anterior chamber of 0.5+ cells and no flare. The pupil was round. The Seidel’s test was negative. After discussion with the patient, the eyelash was removed under topical anesthesia using the jeweler’s forceps at the slit lamp. The removal was uneventful. The cornea main wound remained clear, and the anterior chamber remained formed. The Seidel’s test was repeated and was negative. Postprocedure, the eye drops were changed to G. moxifloxacin and G. prednisolone acetate 3-hourly with a 1-week course of oral ciprofloxacin twice daily.

The postprocedure reviews 1 week and 1 month later were unremarkable. At the postoperation month 1 visit, the best corrected VA was 6/6 and the IOP was 13 (GAT). The cornea remained clear with a deep and quiet anterior chamber. The endothelial cell count was performed and was normal. The patient had used the prescribed postoperative eye drops for 1 month by then and was advised to stop the eye drops in view of the unremarkable examination findings.
Discussion

Intraocular eyelashes have been observed in the anterior and posterior chambers, and even in the iris, lens, vitreous, and retina. Intraocular entry of eyelashes is uncommon and usually occurs due to trauma [1]. The presence of an intraocular eyelash after uneventful phacoemulsification and IOL implant surgery is exceedingly rare, with 8 cases reported globally [1–8]. The presentation, findings, management, and outcomes of these cases are summarized in Table 1.

The time of presentation is variable. While most cases presented within 3 months of the cataract surgery [2–6, 8], durations of up to five [7] to 16 years [1] have been described. Most patients were asymptomatic with excellent VA, clear corneas, and no inflammation. For these patients, the eyelashes were discovered incidentally during routine follow-ups. In contrast, one patient presented with postoperative exogenous endophthalmitis [2]. The eyelash was removed from the anterior chamber after 1 week as the inflammation improved, which then afforded a better view of the anterior chamber. Another patient presented with cornea decompensation and required a penetrating keratoplasty and removal of the eyelash [1]. In another patient, the eyelash was observed over 9 weeks to have migrated from its initial position in the anterior chamber to the posterior chamber, and then to the inferior angle after having migrated anteriorly through the pupil [4].

The management of an intraocular eyelash depends on a few factors:

1. Extent of ocular inflammation. The ocular response to an intraocular eyelash is varied and unpredictable [3]. In most cases, the intraocular eyelash remains inert, and the eye remains quiescent. In contrast, uveitis and endophthalmitis may occur, which requires eyelash removal and management of the inflammation [2].

2. Time of presentation. If the eyelash has been inside the eye for a long time without inflammation – and a duration of up to 16 years has been reported [1] – it is likely that the eyelash did not introduce a significant microbiological load at the outset, and one
| Author                  | Patient | Time of discovery | Findings                                                                 | Management                                      | Follow-up period | Outcome                                                                 |
|-------------------------|---------|------------------|--------------------------------------------------------------------------|------------------------------------------------|------------------|-------------------------------------------------------------------------|
| Humayun et al. [1]      | 61 years, female | 16 years postoperation, presented with cornea decompensation | Eyelash inside AC, epithelial and stromal edema, no AC inflammation     | Eyelash removed, penetrating keratoplasty     | Not stated        | Not stated                                                              |
| Galloway et al. [2]     | 81 years, male | 1 week postoperation, presented with exogenous endophthalmitis | VA: HM, AC fibrin and hypopyon, eyelash observed in AC 1 week later after AC inflammation improved | Eyelash removed | 5 months                     | Stable eye, VA: 6/9, no cystoid macular edema                        |
| Islam and Dabbagh [3]   | 79 years, male | 3 months postoperation | Eyelash inside AC                                                          | Eyelash not removed and left alone             | 4 years           | Stable eye, VA: 6/6, clear cornea, no AC inflammation                |
| Rofail et al. [4]       | 60 years, male | 3 days postoperation | Eyelash inside AC                                                          | Eyelash not removed and left alone             | 6 months           | Stable eye, VA: 6/5, no AC inflammation                                |
| Walker et al. [5]       | 75 years, male | 6 weeks postoperation | Eyelash at main corneal wound, VA: 6/9, no AC inflammation              | Eyelash removed                                | Not stated        | Not stated                                                              |
| Etter and Kim [6]       | 83 years, female | 1 day postoperation | Eyelash at main corneal wound, VA: 6/12, minimal AC inflammation            | Eyelash removed at slit lamp on same day     | 1 month           | Stable eye, VA: 6/7.5, clear cornea, no AC inflammation              |
| Bach et al. [7]         | 75 years, female | 5 years postoperation | Eyelash in capsular bag posterior to IOL, VA: 6/7.5 with no AC inflammation   | Eyelash not removed and left alone            | Not stated        | Not stated                                                              |
| Francis [8]             | 69 years, female | 1 day postoperation | Eyelash inside AC, VA: 6/6, clear cornea, minimal AC inflammation        | Eyelash removed at operating theatre on same day | 1 month           | Stable eye, VA: 6/6, clear cornea, no AC inflammation                |

AC, anterior chamber; VA, visual acuity; HM, hand movement.
may elect to observe the patient. On the other hand, an earlier presentation will warrant a closer follow-up.

3. **Contact with cornea endothelium.** Eyelash contact with the cornea may cause cornea decompensation and endothelial cell damage. Cornea decompensation due to an intraocular eyelash that subsequently required a therapeutic cornea graft has been reported [1].

4. **Eyelash location.** This affects the ease of access [3, 8]. An eyelash at the cornea wound would be easy to remove at the slit lamp. Struggling with difficult access to an intraocular eyelash may cause damage to anterior segment structures, collapse of the anterior chamber, and infection and inflammation. In such cases, returning to the operating theatre would be preferable.

As the eyelash in this patient was trapped in the main cornea wound and was in contact with the cornea endothelium, the eyelash may act as a wick for migration of ocular surface flora, migrate further into the anterior chamber and incite uveitis, endophthalmitis [2], and cornea decompensation [1]. Therefore, the eyelash was removed. The eyelash position was fortuitous because this allowed its expedient removal at the slit lamp. Care was taken during eyelash removal to ensure asepsis, anterior chamber stability, protection of the anterior chamber structures, and not to cause a Descemet’s membrane detachment.

This begs the question of how the eyelash entered the eye initially. From the routine video recording for cataract surgeries, there is evidence of the absence of the eyelash in the anterior chamber at the conclusion of the cataract surgery. See online supplementary Material 1 (for all online suppl. material, see www.karger.com/doi/10.1159/000524687). The patient denied ocular trauma, eye rubbing, and squeezing his eyelids hard, which could have distorted the cornea wound sufficiently to permit entry of a dislodged eyelash. Other mechanisms have been proposed. A study using anterior segment optical coherence tomography has evaluated clear cornea incisions following phacoemulsification cataract surgeries and reported findings including epithelial and endothelial gaping, endothelial misalignment, local Descemet’s membrane detachment, and loss of coaptation [9]. Furthermore, given that the eyelash usually enters the eye through the main corneal wound, we postulate that a temporal incision is more likely to result in eyelash penetration compared with a superior incision, as a temporal incision would not be as protected by the eyelid or conjunctiva.

Interestingly, the orientation of the eyelash in this patient supports previous reports that the eyelash tends to migrate intraocularly through the cornea wound in one direction, i.e., with the proximal end/follicle first, purportedly due to the cellular arrangement of an eyelash [4, 8]. The cuticle layer of an eyelash comprises overlapping cells that are arranged like shingles on a roof, with the free margin oriented toward the tapered distal end (tip) [4]. In this patient, the iris movement and even aqueous movement in the anterior chamber could have eased the entry of the eyelash [4]. Presumably, if left alone, the eyelash in this patient would have eventually settled inferiorly in the anterior chamber.

This case is unique as there is evidence of an uneventful phacoemulsification cataract surgery and the eyelash entered the anterior chamber sometime in between the postoperative day 1 and week 1 visits. The position of the eyelash was fortuitous as it allowed expedient eyelash removal at the slit lamp, and it saved the patient a repeat visit to the operating theatre. To prevent similar occurrences, appropriate perioperative measures should continue to be undertaken during cataract surgeries, including draping of eyelids and eyelashes, cleaning with povidone-iodine, and scrupulous cornea wound construction. Patients should be reminded to take care and not to rub their eyes or blink too hard in the immediate postoperative period.
Statement of Ethics

This retrospective review of patient data did not require ethical approval in accordance with local/national guidelines. Written informed consent was obtained from the patient for the publication of this case report and the accompanying images.

Conflict of Interest Statement

The authors report there are no competing interests to declare.

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Author Contributions

Kai Xiong Cheong acquired the data and wrote the initial draft of the manuscript. Both Kai Xiong Cheong and Tze Lin Wee treated and reviewed the patient, critically reviewed the manuscript, and approved the final version of the manuscript.

Data Availability Statement

All available data have been included in this article. Further inquiries can be directed to the corresponding author.

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