A Simple "Lasso" for Intraocular Foreign Bodies

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Abstract. Three patients had foreign bodies in their anterior chambers following penetrating ocular injuries. These foreign bodies were removed by a closed chamber technique using a simple loop. The loop was created by a 22-gauge intravenous cannula and a 7-0 polypropylene suture. Retained cilia in one patient and metallic foreign bodies in two patients were removed using this intraocular "lasso." Sutures were not placed at the incision sites at the end of the surgery. This is an inexpensive and easy to prepare technique that introduces minimal surgical trauma. In addition, two hands are not needed for loop manipulation. This technique may be an excellent alternative for removal of small intraocular foreign bodies.

[Surgical Technique]

Case 1. A 48-year-old man presented to our emergency department for evaluation of his painful, red left eye, which had been injured by a nail 1 day earlier. His uncorrected visual acuity was 2/10. A biomicroscopic examination revealed a self-sealed penetrating para-central corneal wound and two cilia in the anterior chamber slightly adhered to the iris with a minimal inflammatory reaction (Fig. 1).

On the day of surgery, pilocarpine hydrochloride 2% drops were administered to constrict the pupil to protect the lens from damage during removal. While the patient was under general anesthesia, the anterior chamber was entered through two 1.15-mm, limbal, side-port incisions that had been made with a Stilek knife (Visitec, Sarasota, FL) at the 2- and 10-o'clock meridians. The anterior chamber was filled with viscoelastic material to maintain anterior chamber depth during surgery. The "lasso" was inserted through the 10-o'clock side-port incision to remove cilia, and an iris spatula was inserted through the other incision to maintain control over the eyelashes. Cilia attached to the iris were gently peeled using the iris spatula and grasped by the loop of the lasso (Fig. 2). The viscoelastic material was removed from the eye at the end of the surgery to avoid a postoperative rise in intraocular pressure. Sutures were not used to close the limbal incisions.

The uncorrected visual acuity was 6/10 on the first postoperative day, and a minimal inflammatory reaction was seen (Fig. 3). Follow-up at the first month revealed uncorrected visual acuity of 10/10, with no inflammatory reaction.

Case 2. A 37-year-old industry worker was
referred for management of a corneal perforating injury in his left eye. In 1983, after a perforating ocular injury without an IOFB, he had undergone a primary corneal suturing at the wound site and lens extraction. On initial examination, his uncorrected visual acuity was hand motions in the left eye. A slit-lamp examination showed a large sutured and fibrosed corneal laceration with a reperforation at the scar. A 1 × 3.5-mm metallic foreign body was observed under the wound site.

While the patient was under general anesthesia, the previously mentioned surgical technique of lassoing under viscoelastic material through limbal side-port incisions was applied to remove the metallic foreign body (Fig. 4). Minimal leakage from the wound site was seen. Sutures were not used to close the surgical limbal incisions or the wound.

On the third postoperative day, the perforation site had self-sealed without any leakage. The visual acuity in the left eye was counts fingers, and no inflammatory reaction was seen.

Case 3. A 31-year-old auto repairer was referred for management of corneal perforating trauma in his left eye. On initial examination, his uncorrected visual acuity was 4/10. A slit-lamp examination showed a 3-mm corneal laceration and a 3 × 3-mm metallic foreign body in the anterior chamber.

While the patient was under general anesthesia, a 3.2-mm clear corneal tunnel incision was performed on the 12-o’clock meridian and the foreign body was removed from this site using the intraocular lasso. The wound was closed with one radial 10-0 monofilament suture and the tunnel incision was left open.

On the first postoperative day, the visual acuity remained 4/10. The anterior chamber was deep with no inflammatory reaction, and no leakage was seen from the wound sites.

Construction of the Instrument. The intraocular lasso is simply constructed of a 22-gauge intravenous...
cannula (Vialon) (composed of a needle, a plastic sleeve, and a plastic plug) and a 7-0 polypropylene suture (Ethicon) (Fig. 5). The 7-0 polypropylene suture is cut free and each end of it is threaded through the lumen of the 22-gauge cannula. A simple 2- to 3-mm loop is then made (Fig. 6, top). The plastic plug at the end of the cannula is put into place to squeeze the suture (Fig. 6, bottom). When the plastic sleeve of the cannula is advanced forward by sliding one’s index finger, the polypropylene loop shortens. When it is retracted, the loop extends. Although the polypropylene suture has no forward or backward motion, the forward motion of the sleeve provides a “snare action” of the loop. The sharp point of the needle is always kept within the sleeve to prevent tissue damage.

DISCUSSION

Although intraocular eyelashes are not found frequently following penetrating trauma, many reports exist of anterior segment cilia that have been well tolerated for a long period with minimal or no reaction. Delayed inflammatory reactions have also been reported.26 When the potential complications of retained cilia, such as infection, acute inflammation, cyst and granuloma formation, or corneal endothelium cell loss, are considered, their early removal seems reasonable.

Surgical removal of anterior segment foreign bodies generally requires a limbal incision 180° from the foreign body. It is necessary to fill the anterior chamber with viscoelastic material or balanced salt solution to prevent damage to the corneal endothelium during intracameral maneuvers. Several methods and instruments are used to remove foreign material from the anterior chamber. A 19- or 20-gauge rare earth magnet can be used if the IOFB is magnetic.9 If the foreign body is not magnetic, foreign body forceps or fine forceps can be effective for removing it. The size of the incision depends on the size of the IOFB and associated tissue damage.

In our case 3, the metallic IOFB was removed using the intraocular lasso through the clear corneal tunnel incision, which was left unsutured to self-seal. The foreign body also could have been removed by a simple forceps. However, the total width of the forceps’ arms when grasping the 3 × 3-mm IOFB would have required a larger incision and could have caused inadvertent damage to the 3.2-mm surgical tunnel. Because the diameter of the polypropylene suture was negligible, the foreign body was easily removed using the intraocular lasso without enlarging the incision. On the first postoperative day, we did not observe any leakage from the surgical wound site.

Malbran et al. first described a snare to retrieve posteriorly dislocated lenses for a safer implantation.10 Others have also described some instruments and techniques for removing IOFBs and grasping intraocular lenses.11 Intraocular snares and loops manufactured by different companies are still in use. Instruments with the snare mechanism have also been
suggested for other intraocular surgical procedures, including intraocular lens dislocations\textsuperscript{12-14} and silicone intraocular lens bisecting for lens removal.\textsuperscript{15}

The instrument that we have described is inexpensive, is easy to prepare, does not induce astigmatism (because of the small incision size), and maintains control with one hand as a result of sliding the index finger to retrieve the foreign material. We think that this simple lasso can also be used to retrieve and secure posteriorly dislocated intraocular lenses.

REFERENCES