

A Rare Complication of Phacoemulsification: Phaco Tip Fracture

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ABSTRACT

Phacoemulsification is frequently applied by ophthalmologists for the treatment of cataracts. As with all surgeries, various complications may develop during phacoemulsification. Instrument fracture, especially phaco tip fracture is one of the rare complications of phacoemulsification. We aim to report a case of phaco tip fracture during phacoemulsification surgery in the intumescent cataract and describe early signs of this condition.

Keywords: Cataract, non-translucent phaco sleeve, phacoemulsification, phaco tip fracture.

INTRODUCTION

Cataract is the commonest cause of avoidable blindness worldwide,¹ and cataract surgery is a common procedure performed in ophthalmology. Currently, phacoemulsification (phaco) with foldable IOLs is undoubtedly the gold standard in cataract surgery.² The superiority of phaco involves a small incision, minimally induced astigmatism, and fast recovery.³ As with other surgeries, complications can occur during phaco. Instrument fracture during phaco may occur and can have a harmful effect on the eye.^{4,5} To our knowledge, an intraoperative fracture of a phaco tip has been reported just two cases in the literature.^{5,6} In this case report, we present a unique case of intraoperative phaco tip fracture with a non-translucent phaco sleeve. Furthermore, the early signs of this condition are described.

Case report

An 80-year-old female patient admitted for the complaint of low vision. The best-corrected visual acuity was light perception on the right eye and 0.05 on the left eye. Anterior segment examination revealed an intumescent cataract in the right eye and cortical cataract in the left

eye. Intraocular pressure was 18 mm Hg in the right eye and 12 mm Hg in the left eye. On fundus examination, the right fundus was not enlightened, and the left retina was tigroid. B-scan USG showed no retinal detachment in the right eye. In this case, phaco surgery and intraocular lens implantation were planned for the right eye.

Surgery was performed under subconjunctival anesthesia with lidocaine 20mg/ml. A 2.4 mm superotemporal clear corneal incision was made with a keratome. Continuous curvilinear capsulorrhexis and hydrodissection were performed without complications. The quick chop technique was applied in the nucleus chop stage. Phaco was performed using XXX Hypersonic 1.1 Tips (EVA, DORC International). At this stage, due to the decrease in the efficiency of the ultrasound power and the variability of phaco tip length, the phaco handpiece was removed from the anterior chamber. In the meantime, it was observed that the phaco tip was broken and the phaco tip separated the phaco handpieces and dropped onto the surface of the eye. It has been shown in Figure 1. Phacoemulsification surgery was completed uneventfully with a new phaco tip. Intraoperative and postoperative appearances of the eye

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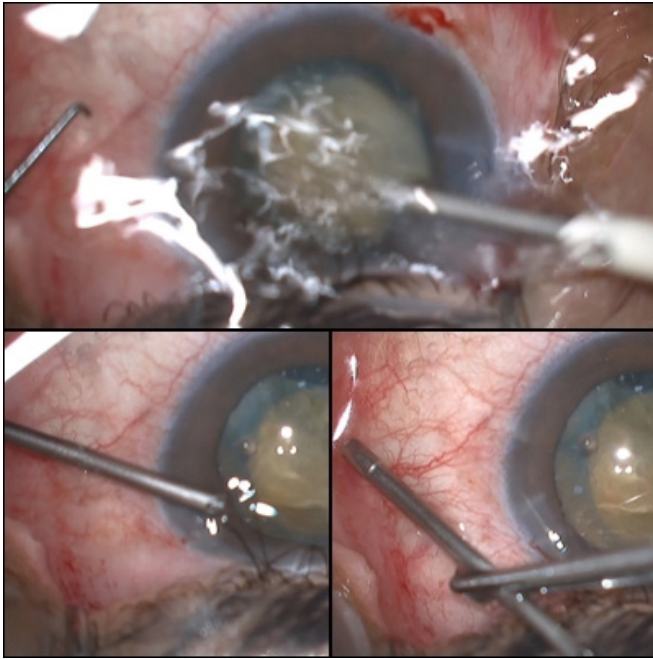


Figure 1: Fractured phaco tip which separated from phaco handpieces and dropped onto the eye surface.

have been shown in Figure 2. The patient had an uneventful recovery with a vision of 0.8 at 3rd months postoperatively.

DISCUSSION

Fracturing of instruments intraoperatively during phaco may induce damage to intraocular tissue.^{5,7} In most cases, the break is reported in the second instrument, such as chopper, sinsky hook, or spatula, which may have resulted from touch with phaco tip.^{4,8} Two cases had previously reported a phaco tip fracture in the literature.^{5,6}

Unlike the two reported previous cases, the phaco sleeve used in our case was non-translucent. Therefore, the broken phaco tip could not be diagnosed when it was the

anterior chamber. We suspected it because of the decrease in the efficiency of the ultrasound power and the variability of phaco tip length. Therefore, the phaco handpiece was removed from the anterior chamber, and phaco tip fracture was observed. We suggest that principally surgeons who use non-translucent phaco sleeve should keep these findings in mind.

In the previous two cases of phaco tip fracture, the fracture line was more distal than our case. In both cases, electron microscopy showed that the fracture line was associated with the Aspiration Bypass System microhole.^{5,6} These studies suggested that it is caused by the natural weakness which is created by microhole. In our case, although the lack of evaluation of fracture phaco tip with electron microscopy, the fracture of phaco tip may be resulted from this microhole or because of the patient's hardy cataract (intumescent).

Fracture of the phaco tip could cause several complications depending on the stage of the surgery. It gives rise to harm to the corneal endothelium, iris, trabecular meshwork, posterior capsule, or ciliary zonules, which may result in corneal edema, hyphema, posterior capsular or zonular dehiscence, vitreous loss, prolonged surgical time and ultimately poor visual outcome.⁵ We were fortunate that the fractured the phaco tip was about 10 mm and not result in multiple fragments. Moreover, when we removed the phaco handpiece from the anterior chamber, the broken phaco tip didn't retain inside the eye. It separated from the phaco sleeve outside of the eye and dropped onto the ocular surface. Therefore, there was no need to enlarge the corneal incision to remove the fractured phaco tip, and it did not cause further damage.

In conclusion, phaco tip fracture is one of the rare complications of phacoemulsification surgery, but it can

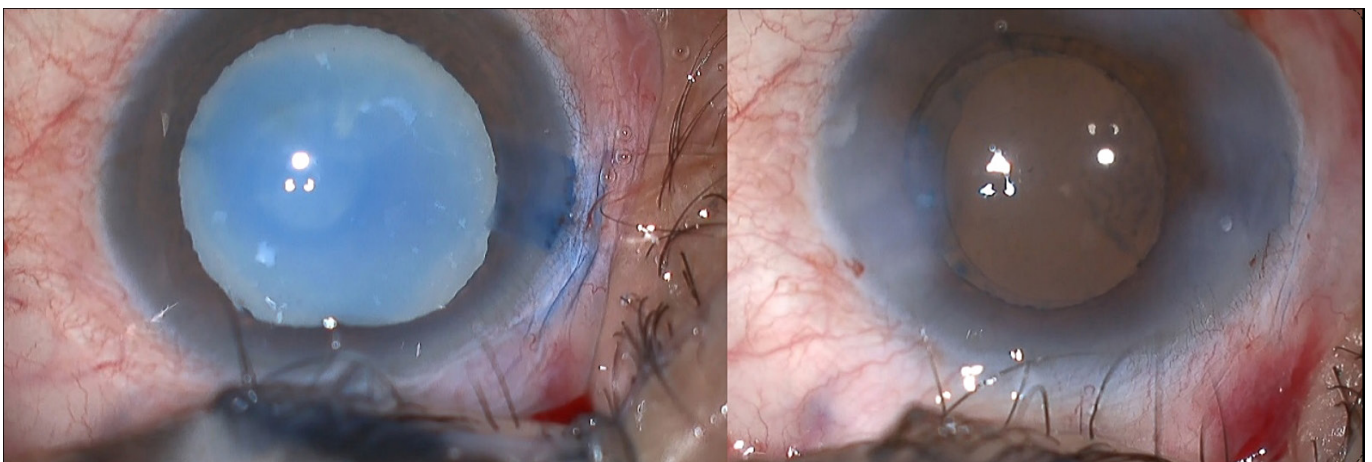


Figure 2: Intraoperative and postoperative appearances of eye.

cause many annoying complications if not noticed. The fact that ophthalmologists dealing with cataract surgery should be careful in signs of this rare complication will be valuable in terms of both the success of the operation and the protection of the patient's eye health.

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Statement of Ethics: Subject has given written informed consent to publish this case (including publication of images).

Declaration of Interest: The authors report no conflicts of interest.

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