Delayed suprachoroidal hemorrhage after cataract surgery
A case report and brief review of literature
Wei Song, MD, PhD, Yongjie Zhang, MM, Hongming Chen, BM, Cheng Du, BM

Abstract
Rationale: To report a case of 44-year-old man with delayed suprachoroidal hemorrhage (DSCH) 2 days after cataract surgery.

Patient concerns: The patient developed sudden onset of ocular pain and reduction of visual acuity on his left eye 2 days after receiving conventional cataract operation.

Diagnoses: The ocular conditions were accessed by best-corrected visual acuity, intraocular pressure, slit lamp examination, fundus photography, and B-scan ultrasound. Fundus color photograph revealed a raised choroidal mass and extensive subretinal hemorrhage. B-scan ultrasound also confirmed features of choroidal hemorrhage. Thus, he was diagnosed as DSCH.

Interventions: He received conservative treatments for 1 month.

Outcomes: The involved eye recovered well.

Lessons: DSCH is a rare but dreaded complication occurring in intraocular operations. Conservative managements or surgeries may be beneficial for the recovery of visual acuity.

Abbreviations: BCVA = best-corrected visual acuity, DSCH = delayed suprachoroidal hemorrhage, IOP = intraocular pressure, PPV = pars plana vitrectomy, SCH = suprachoroidal hemorrhage.

Keywords: cataract surgery, delayed suprachoroidal hemorrhage, steroid

1. Introduction
Suprachoroidal hemorrhage (SCH) is a rare but a vision-threatening complication in intraocular surgeries, including trabeculectomy, cataract surgery, pars plana vitrectomy (PPV), and keratoplasty, and so on.[1–3] SCH is caused by rupture of posterior ciliary arteries or vortex veins and characterized by blood in suprachoroidal space.[4] It is thought to be a result of acute hypotony or large fluctuation of intraocular pressure (IOP) during surgeries.[5] There are 2 types of SCH, the 1 of which occurs during surgery is termed as “acute expulsive SCH,” and the other develops hours or days postoperatively is “delayed SCH (DSCH).[6,7] DSCH is an ocular emergency condition characterized by sudden onset of severe eye ocular pain, sharp reduction of visual acuity, development of shallow anterior chamber, and elevation of IOP.[8] As reported, most of DSCH occurred after antiglaucoma surgeries,[8–11] with the incidence varies from 1.6% to 6.1% by different the surgery types and diagnostic criteria.[12,13] DSCH is also a rare but serious complication of PPV[3] and keratoplasty.[14,15] However, only a very few cases were reported after cataract surgery[1,16] with no prevalence currently available. In presented case study, a high myopia patient with DSCH 2 days after cataract surgery was reported. We also provided a brief literature review on this ocular condition.

2. Case presentation
The study was approved by the Institutional Review Board for the Protection of Human Subjects of Jiaxing Traditional Chinese Medicine Hospital and adhered to the tenets of the Declaration of Helsinki. Informed consent was obtained from the patient.

A 44-year-old man with visually significant cataract received a phacoemulsification with in the bag intraocular lens placement on his left eye on July 10, 2017. The patient had a history of high myopia with axial length of 35.24 mm. The postoperative best-corrected visual acuity (BCVA) was 0.60 (LogMAR) and the IOP was 3.1 mm Hg on the 1st day of follow-up. The slit lamp...
examination indicated shallow anterior chamber with mild wound leakage. The corneal incision was sutured with 10-0 nylon. The BCVA of the 2nd day follow-up improved to 0.40 (LogMAR) and the IOP raised to 12.3 mm Hg. Slit lamp revealed no leakage from the incision.

However, the patient developed sudden onset of eye pain and acute reduction of visual acuity on the 3rd day postsurgery. The BCVA decreased to 1.00 (LogMAR), whereas the IOP jumped to 38.0 mm Hg. Slit lamp examination showed a moderate corneal edema and a shallow anterior chamber. Fundus color photography showed a typical peripapillary and chorioretinal atrophy. Notably, a choroidal mass and extensive subretinal hemorrhage was found, which encompassed almost 360° (Fig. 1). B-scan confirmed the choroidal hemorrhage on this eye (Fig. 2A). The patient was then diagnosed with DSCH.

Intravenous injection of 20% mannitol (250 mL) was given to reduce the IOP. He also received systemic (dexamethasone, 15 mg intravenously daily for 5 days, followed by 10 mg daily for 5 days, and 5 mg daily for another 5 days) and topical corticosteroids (tobramycin/dexamethasone, Tobradex, Novartis, Switzerland). Other treatments included 1% atropine eye drop twice a day and brinzolamide eye drop combined with brimonidine tartrate eye drop 3 times a day. He was closely followed up daily with routine BCVA and IOP measurements. Within the next 2 weeks, there was a gradual reduction in the anterior inflammation. By the meantime, the eye pain on his left eye gradually relieved daily. At the most recent visit (1 month after surgery on August 10, 2017), his BCVA improved to 0.50 (LogMAR) while the IOP was also stabilized at 15.5 mm Hg. B-scan confirmed the hemorrhage in the suprachoroidal space was completely absorbed (Fig. 2B).

3. Discussion

DSCH shared similar pathogenic mechanisms with acute expulsive SCH, but the risk factors of them are somehow different. Studies have been performed in glaucoma surgeries and PPV, trying to determine the risk factors. In glaucoma surgeries, low postoperative IOP, aphakia, hypertension, and anticoagulation increased the incidence of DSCH.[9] Old age, longer axial length, presence of rhegmatogenous retinal detachment, extensive intraoperative photoagulation, and emesis postoperatively are closely related to the development of DSCH in PPV.[3] In the current case, the patient has a history of high myopia that might contribute to the occurrence of DSCH. In addition, low postoperative IOP resulted from wound leaking may be also relevant.

Therapies for DSCH include conservative managements and surgeries. Sclerotomy is widely used to drain the blood from suprachoroidal space for such patients.[1,17] Sclerotomy combined with vitrectomy is also an option in some cases.[15,16] It is usually recommended to proceed with drainage within 1 to 2 weeks after diagnosis to allow blood liquefaction.[18] Pakravan et al.[19] reported that surgical drainage of SCH immediately after diagnosis might be an alternative approach with a better visual outcome. Conservative management using systemic steroids together with topical application of intensive steroids is also beneficial for visual acuity improvement.[20,21] In the present study, the systemic and topical steroids instead of SCH surgical drainage were administrated for 2 weeks and the BCVA got recovered.
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