



Pictorial Essay Retina

Suture removal-related endophthalmitis

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ABSTRACT

A 12-year-old male patient presented with a sudden loss of vision, pain, and redness in the left eye (LE). He gave a history of suture removal in LE, 1 day before at another hospital. He gave a history of iridodialysis repair in LE 6 months back. Slit-lamp examination showed ciliary congestion hypopyon; ultrasound scan showed hyperechoic debris in mid and posterior vitreous suggestive of suture removal-related endophthalmitis. Pars plana vitrectomy, vitreous biopsy, and intravitreal antibiotics were done, but the patient's eye could not be salvaged. This case emphasizes that endophthalmitis can occur as early as 24 h after a minor procedure like suture removal. Care should be taken while cutting sutures in outdoor settings and must be done under cover of 5% povidone iodine.

Keywords: Endophthalmitis, Povidone iodine, Suture removal

INTRODUCTION

A 12-year-old male patient was referred to our center with sudden loss of vision, pain, and redness in the left eye (LE). He gave a history of suture removal in LE, 1 day before at another hospital. On inquiring further, he reported that his LE was injured 6 months back, for which he was operated. His discharge slip showed iridodialysis repair (LE) under local anesthesia. On examination, his vision was perception of light (PL) in LE. The anterior segment showed ciliary congestion, hazy cornea, hypopyon, and seclusio pupillae [Figure 1a]. The fundal glow was not visible. Intraocular pressure was normal. Ultrasound (B scan) showed hyperechoic debris in the mid and posterior vitreous and attached retina [Figure 1b and c]. Diagnosis of suture removal-related endophthalmitis was made. Pars plana vitrectomy with vitreous biopsy was done on the day of presentation. Intravitreal vancomycin (1 mg/0.1 mL), ceftazidime (2.25 mg/0.1 mL), and dexamethasone (400 µg/0.1 mL) were injected. The vitreous smear did not show any organism on the Gram stain and potassium hydroxide mount. On the first follow-up, fibrin in the anterior chamber was contracting, and the pupil was semi-dilated [Figure 1d]. Vision in LE was hand motions (HM). He was put on topical 1% prednisolone eye drop, 1% atropine eye drop, and 0.5% moxifloxacin eye drop. On 3rd post-operative day, vitreous culture did not show any growth. The anterior chamber was devoid of hypopyon, and the cornea was clear [Figure 1e], but the view to the fundus was still obscured due to vitreous exudate. Vision further deteriorated to PL on the 7th post-operative day. He was planned for repeat vitrectomy with intravitreal antibiotic. The patient returned after 2 weeks, and repeat vitrectomy and intravitreal antibiotic were injected. On the last follow-up (6 weeks later), his vision was PL negative. Infection was controlled, intraocular pressure (IOP) was 02 mmHg, and the LE was pre-phthisical.

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DISCUSSION

This case underscores that endophthalmitis can occur as early as 24 h after a minor procedure like suture removal. Suture removal by the referring surgeon was done at slit-lamp with a sterile 26-gauge needle and plain forceps (present case). 5% Povidone-iodine was not used before suture removal. Antibiotic drop was used after suture removal.

Risk factors for suture removal-related endophthalmitis:^[1,2,3]

- Wound leakage or dehiscence
- Premature suture removal or loose suture
- Lack of antimicrobial prophylaxis
- Immunosuppression
- Infection of surrounding adnexa.

Suture removal-related endophthalmitis, though rare, is encountered commonly in the pediatric age group and runs a fulminant course. Panchal *et al.*, have reported the single largest series of endophthalmitis following suture removal consisting of 11 patients. 8 of them belonged to the pediatric population. The most commonly implicated organism was *Streptococcus pneumoniae*. Visual outcome was poor in spite of early diagnosis and prompt treatment. Only 3 eyes had a visual outcome of 20/200 or better; 1 had a vision of HM, 6 eyes became phthisical, and 1 eye was eviscerated.^[1]

Forstot *et al.* reported 3 cases in whom the primary procedure done was penetrating keratoplasty (PK). 2 of the 3 cases ended

up in evisceration/phthisis bulbi.^[2] Weiss *et al.*, reported one case of endophthalmitis after suture removal in PK, wherein the final visual acuity was $\geq 20/200$.^[4] Culbert and Devenyi reported that 3 cases of endophthalmitis after suture removal were done for cataract extraction with intraocular lens (IOL) implantation. One of them had final visual acuity $\geq 20/200$.^[5] Lim *et al.* reported one case of endophthalmitis after suture removal was done for cataract extraction with IOL implantation; the patient attained 6/18 in the final follow-up.^[6] Staropoli *et al.* reported two similar cases following suture removal, where the primary procedure was IOL exchange.^[3]

Mean duration from the removal of the suture to the diagnosis of endophthalmitis in Panchal *et al.*, study group was 5.3 days; in the other reported studies, it ranged from 2 to 15 days.^[1,2,4-6] Our case is unique in this regard as the patient developed endophthalmitis within 24 h of suture removal. This is the first such report of suture removal-related endophthalmitis, where the duration from suture removal to diagnosis is < 24 h.

We have also analyzed the preparation of the eye before suture removal in all cases reported in the literature. In the study by Panchal *et al.*, all patients received 5% povidone-iodine before and after suture removal; removal was done with sterile forceps, and patients received topical antibiotics for 1 week post-suture removal.^[1] Forstot *et al.*, have advocated the use of topical antibiotics before and after suture removal.^[2] In

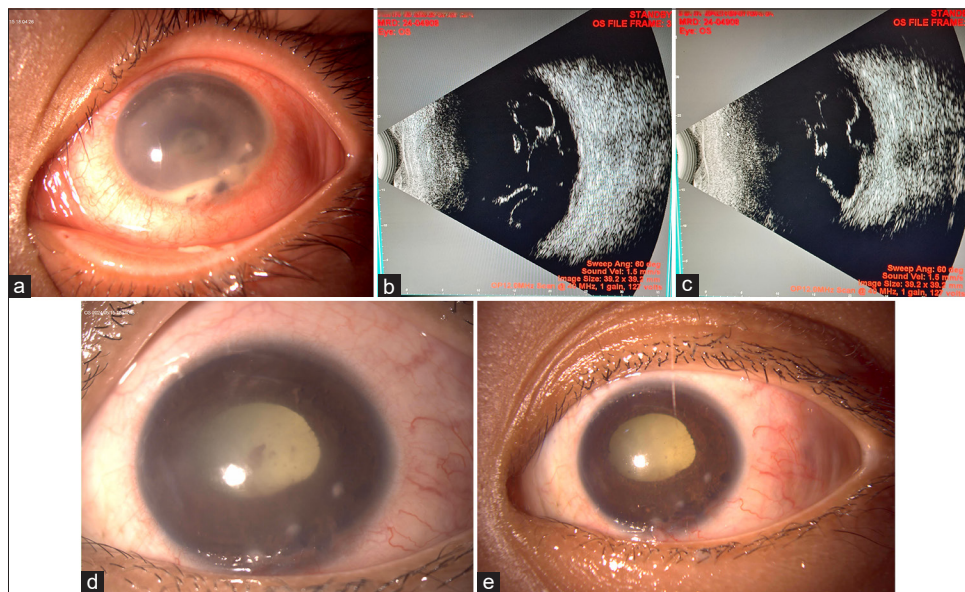


Figure 1: (a) 12-year-old male presented with sudden loss of vision, pain, and redness in the left eye. Anterior segment showed ciliary congestion, hazy cornea, hypopyon, and seclusio pupillae. (b) Ultrasound scan showed hyperechoic debris in mid vitreous and attached retina. (c) Ultrasound scan showed hyperechoic debris in posterior vitreous and attached retina. (d) On the first follow-up after pars plana vitrectomy and intravitreal injection, fibrin in anterior chamber contracted and pupil was semi-dilated. (e) On 3rd post-operative day, anterior chamber was devoid of hypopyon and the cornea was clear. View to fundus was still obscured due to vitreous exudate.

the 3 cases reported by Culbert and Devenyi, prophylactic antibiotics were used, but povidone-iodine was not used.^[5] Lim *et al.*, did not use antibiotic coverage while suture removal. Mention of povidone-iodine is not done, which suggests that it was not used.^[6] Staropoli *et al.* did not use either povidone iodine or topical antibiotic during suture removal.^[3]

As is evident, despite all prophylactic measures (as in Panchal *et al.*, study),^[1] endophthalmitis can still occur after suture removal. We recommend certain measures as prophylaxis of suture removal-related endophthalmitis.

- Care should be taken while cutting suture at the slit lamp
- 5% povidone-iodine application before and after suture removal
- Suture should be cut with a sterile 26-gauge needle, either at the entry or exit point of the loop; not in the center which is in common practice
- Cut suture should be pulled out with a sterile plain forceps
- This should be followed by putting a 5% povidone-iodine eye drop
- Antibiotic eye drops for 1 week post-suture removal.

Kokolakis *et al.* have rightly pointed out the suture removal technique. The cut should be in one of the external corners of the loop so that the exposed part does not gain entry into the eye and thus cannot carry microorganism through the suture track.^[7]

CONCLUSION

Suture removal following any intraocular surgery must be handled with care and caution. Although it is a minor procedure, it can be complicated by visually devastating condition like endophthalmitis. Owing to the fulminant nature of the disease, prompt diagnosis and aggressive management often fail to deliver favorable visual outcome. 5% povidone-iodine must be included in the eye preparation before and after suture removal.

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