Necrotizing scleritis following uncomplicated strabismus surgery

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A 5-year-old child having infantile esotropia with bilateral inferior oblique over action underwent uncomplicated strabismus surgery. On the first postoperative day, the child was orthophoric but on day 10, the child was brought with the complaints of severe pain and redness along the original insertion of left medial rectus muscle. Immediate medical management was initiated after appropriate microbiological sampling. Subsequently, on day 13, patient developed sudden discomfort after a bout of violent cough followed by severe pain and discomfort. Slit-lamp examination confirmed the scleral wound dehiscence with vitreous prolapse for which early scleral patch graft within 6 h was performed to achieve optimal visual and cosmetic outcomes.

Key words: Necrotizing scleritis, scleral patch graft, strabismus surgery complications

Surgically induced necrotizing scleritis (SINS) is a serious complication following any form of ocular surgery. It has been observed following cataract surgery, pterygium excision, and rarely following strabismus surgery.[1] The surgical intervention is an inciting event for the necrotizing inflammation of an underlying autoimmune or infectious disease process.[1,2] In strabismus surgery, necrotizing scleritis has been encountered rarely but in unfortunate circumstances of its occurrence, surgeons to be on the toes to manage the case in a systematic manner so as to achieve optimal visual, cosmetic, and ocular alignment outcomes. Here, we discuss the clinical course, comprehensive evaluation, and timely management of a case with necrotizing scleritis following uncomplicated strabismus surgery.

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Case Report

A 5-year-old girl was brought with the history of inward deviation of either eye since early childhood. Past medical history was insignificant with a best-corrected visual acuity of 20/20 in each eye. The prism bar cover test revealed an eso-deviation of 30 prisms with bilateral inferior oblique over-action of 2+ and dissociated vertical deviation. A diagnosis of infantile esotropia was made and under general anesthesia, bilateral medial rectus recession of 4.5 mm and inferior oblique recession with anterior positioning was performed. On first postoperative day, patient was orthophoric in primary gaze with minimal ocular congestion and hemorrhage. In presence of normal postoperative course, the patient was discharged with topical medications [topical antibiotic and steroid combinations (ofloxacin 0.3% W/V in combination with dexamethasone 0.1% W/V six times a day) along with surface lubrication].

Postoperative day 7 was uneventful; however, parents returned on postoperative day 10 with the chief concerns of congestion, continuous watery discharge, severe pain, and progressive discomfort in the left eye. Slit-lamp examination revealed localized conjunctival and scleral thinning with visible underlying uveal tissue along the premises of original medial rectus muscle insertion. Immediately, parents were counselled for in-patient care and further management. First, left eye conjunctival swab was sent for culture and sensitivity before initiating any antibiotics. Then, the patient was started empirically on concentrated eye drops (cefazoline sodium 5%, every 2 hourly and tobramycin sulphate 1.3%, every 2 hourly). This same treatment was continued for 3 days, with very minimal benefits; however, on day 13, the child experienced a sudden increase in the discomfort level following an episode of severe cough. In addition, from the site of previous conjunctival congestion, mother noticed a clear jelly-like swelling.

The patient was again examined under a slit lamp and probable wound dehiscence was concluded. Anterior segment surgeon agreed with the same and suggested for early scleral patch graft. After confirming the availability of scleral graft from the eye bank, wound exploration was planned. Under general anesthesia, conjunctival dissection confirmed an underlying active scleral defect of 5 × 5 mm with necrosed scleral margins all around. Primarily, a shave excision of the prolapsed vitreous tissue was performed with minimal traction on the underlying tissues. Then, the necrosed scleral margins were freshened till a clear scleral tissue was noted. As the wound was in its early stage, a final defect of 6 × 6 mm was covered with scleral patch. The graft was sutured to the surrounding healthy scleral tissue using 10-0 monofilament nylon stay sutures [Fig. 1a-c]. The overlying conjunctival defect was then sealed with an auto

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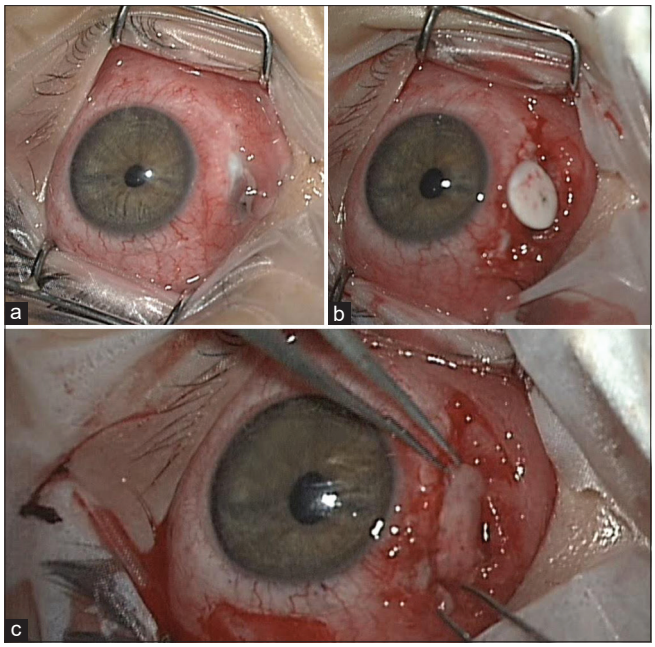

Figure 1: (a) Intraoperative picture showing conjunctival chemosis, scleral melt along with uveal tissue dehiscence and vitreous prolapse. The scleral defect measured around 5 × 5 mm. (b) After the placement of a 6 × 6 mm scleral patch graft, it was secured to the surrounding sclera with multiple 10-0 monofilament nylon sutures. (c) Surface was grafted with conjunctival autograft

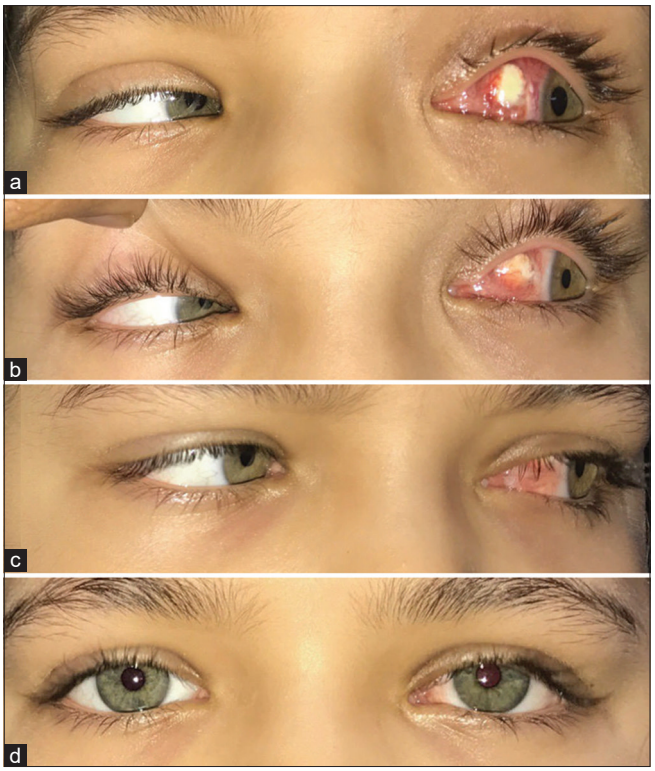

Figure 2: (a) At the end of 1 month, there was better graft positioning with conjunctivalization of the surface. (b and c) Clinical profile at the end of 2 and 3 months. (d) At the end of 8 months, there was complete healing of the wound site with absence of any residual ocular deviation

conjunctival graft from the superotemporal bulbar conjunctiva of the same eye using fibrin glue.

The dissected necrosed tissue was sent for histopathological and microbiology assessment to look for any bacteria, fungus, or protozoa. Postoperatively the patient received broad-spectrum oral antibiotics for a week along with oral steroids in a tapering manner over a period of 1 month. Topically antibiotics and lubricating eye drops were continued for 12 weeks till the healing process was complete. The underlying sclera was the grafted scleral tissue with irregular fibrosis along the margins, and the conjunctiva over the sclera was thin and transparent, but it possessed a good continuity with vascularization [Fig. 2a-c]. The healed anatomical site may not resemble the normal anatomical contour but it definitely possessed the required ocular coat integrity. At the end of 8 months, the patient remained symptom-free with a best-corrected visual acuity of 20/20 in each eye with no residual deviation or motility restriction [Fig. 2d]. Other relevant immunological investigations were negative after obtaining rheumatological consultation.

Discussion

SINS is a type III immune reaction, triggered by immune complex deposition at the site of trauma with increased HLA-DR expression by scleral fibroblasts and increased T lymphocytic infiltration.[1] In these patients, commonly encountered immune diseases include rheumatoid arthritis, systemic lupus erythematosus, juvenile rheumatoid arthritis, and other variants of vasculitis. Sainz *et al*. discussed the clinicopathological findings of necrotizing scleritis following ocular surgery in ten adult patients; amongst them, nine had an underlying autoimmune vasculitis who underwent nonstrabismus surgery, whereas one patient who underwent strabismus surgery had an infection with *Proteus* species at the wound site.[1] In clinical practice, where a significant number of strabismus surgeries are being performed on a daily basis, it is difficult for a clinician to ascertain which individual is at the risk of SINS. However, individuals with a definite history of systemic autoimmune diseases should be considered for surgery with caution and utmost care to avoid unnecessary morbidities.[1] Based on the review of literature of the diagnosed cases of SINS, it is evident that the cases occurred in their fifth to sixth decades of life.[1-10] In addition, necrotizing scleritis was more frequent following pterygium and cataract surgery than strabismus surgery.[3-7]

The usual duration between surgical insult and the development of scleritis may vary from few weeks to months but it can occur even after years.[8,9] Following strabismus surgery, scleritis developed after an average time period of 21.7 years (6.5 to 40 years), whereas following other surgeries, it was seen after 5.7 months (1 day to 3.5 years).[10] In an isolated instance of pediatric necrotizing scleritis following strabismus surgery, the reason was attributed to coexisting *Giardia lamblia* intestinal infection as the infection has been thought to up-regulate the immune system leading to exaggerated inflammation at the wound site.[3]

Conclusion

To conclude, complications following strabismus surgery are uncommon;[11,12] in our present case, we did not find any definite

cause for the same with the available evidences. However, timely assessment and call for medical followed surgical intervention helped in mitigating the vision-threatening complications. Therefore, necrotizing scleritis following strabismus surgery needs a case-based customized approach for better outcomes.

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Conflicts of interest

There are no conflicts of interest.

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