



Severe Conjunctival Foreign Body Reaction Caused by Polyglactin 910 (Vicryl) Suture Material Following Strabismus Surgery

Şaşılık Cerrahisi Sonrası Poliglaktin 910 (Viktil) Sütür Materyali Nedenli Oluşan Şiddetli Konjonktival Yabancı Cisim Reaksiyonu

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Summary

Absorbable suture materials, such as polyglactin 910 (vicryl) sutures, can cause a mild foreign body reaction in the eyes that can last up to 45 days. However, these absorbable suture ties can infrequently cause a severe foreign body reaction that can only heal by removal of the sutures. In this report, we present a case of severe conjunctival foreign body reaction in both eyes of a patient and filamentary keratitis in the patient's left eye caused by the vicryl suture ties after surgery for esotropia. (Turk J Ophthalmol 2014; 44: 252-5)

Key Words: Filamentary keratitis, foreign body reaction, polyglactin 910, strabismus surgery

Özet

Eriyebilen sütür materyalleri, örneğin poliglaktin 910 (vikril), 45 gün kadar sürebilen hafif şiddetli yabancı cisim reaksiyonuna neden olabilirler. Bu sütürlere bağlı ancak sütür alınması ile iyileşebilen şiddetli yabancı cisim reaksiyonu ise çok nadiren görülebilir. Bu olgu sunumunda biz şaşılık cerrahisi sonrası vikril sütüre bağlı her iki gözünde şiddetli yabancı cisim reaksiyonu ve sol gözünde filamenter keratit gelişen bir olgunun sunumunu amaçladık. (Turk J Ophthalmol 2014; 44: 252-5)

Anahtar Kelimeler: Filamenter keratit, yabancı cisim reaksiyonu, poliglaktin 910, şaşılık cerrahisi

Introduction

A vicryl suture (polyglactin 910) has excellent handling properties and knot security, retaining 50% tensile strength at approximately 7 days with complete absorption by 42 days.¹ This suture material is more preferable to reduce the formation of infection and effective in the healing of tissue.² It has gained particular favor among pediatric surgeons because of its fast absorption rate, which makes suture removal either unnecessary or very simple.³ In addition, vicryl sutures are often preferred for closure of the conjunctiva in many ocular procedures, such as pterygium, vitrectomy, or strabismus surgery.⁴⁻⁶

Although suture removal is unnecessary for absorbable sutures, foreign body reactions caused by the sutures may occur when used for ocular surgery. In this case report, we aimed to show ophthalmic manifestation of an unusual case of a child with severe foreign body reaction associated with vicryl suture material.

Case Report

A healthy 7-year-old boy presented with congenital esotropia. His best-corrected visual acuity was 1.0 in the right eye and 0.6 in the left eye. There were no significant refractive errors in both eyes. There was no significant change in the refractive status of both eyes after using at least 30 min cycloplegia. His strabismic angle was measured by the Krimsky method during distant vision of 6 m and near vision of 30 cm. On examination, he had 45 PD esotropia with distance and near measurement. Despite the application of occlusion therapy for at least 6 months, no correction of strabismus and vision was observed. A 6-mm left medial rectus muscle recession, 8-mm left lateral rectus muscle resection, and 6-mm right medial rectus recession were performed using a fornix-based approach that is preferred for surgical procedures. 6-0 absorbable sutures (Vicryl Rapide, Ethicon Inc., Somerville, NJ, USA) were used as the sutures for conjunctiva and muscles. Prophylactic 5% povidone iodine solution was instilled into the fornix before surgery. The patient

was discharged one day after surgery and prescribed a topical 0.3% ofloxacin ophthalmic ointment (Exocin®; Allergan, Westport, Ireland) four times per day and 1% prednisolone acetate ophthalmic solution (Pred Forte®; Allergan, Irvine, CA, USA) six times per day for the first week. There was no evidence of local inflammation at the time of discharge.

Three days later, he was readmitted to the hospital with conjunctival hyperemia, followed by stinging, photophobia, and eyelid edema in both eyes. There was no sign of preauricular lymphadenopathy and no rhinitis or sinusitis. The sutures at the conjunctival incision site were intact, but slit-lamp examination showed conjunctival granulomas around the sutures. There was papillary reaction on the upper tarsal conjunctiva. There was focal intense hyperemia of the conjunctiva around conjunctival sutures. The other conjunctival area had a mild hyperemia. The left eye of the patient had more severe conjunctival hyperemia than the right eye. Multiple, small, yellow-white membranes on the lower tarsal conjunctiva were seen in his both eyes (Figure 1) and filamentary keratitis was present in his left eye (Figure 2). There was no anterior chamber reaction and no hypopyon or hyphema in either eye. Fundus examinations were normal, and no vitreous haze was detected.

The patient was hospitalized, and three different conjunctival cultures (blood, chocolate, and Sabouraud agar) were obtained at his bedside. His antibiotic eye drop was replaced by 0.5% moxifloxacin hydrochloride ophthalmic solution (Vigamox®; Alcon, Fort Worth, TX, USA) and applied 12 times per day. No changes were made to the application of topical steroid. Despite this treatment, there was no clinical improvement after 3 days (Figure 3). All of the cultures taken from the conjunctiva were negative after 3 days. Therefore, we thought it was conjunctival foreign body reaction due to vicryl sutures. For this reason, the vicryl sutures were removed from the conjunctiva but none of the muscular sutures. Topical antibiotic was prescribed four times per day and topical steroid application every hour. Clinical improvement after 7 days of follow-up was minimal; the patient's symptoms persisted.

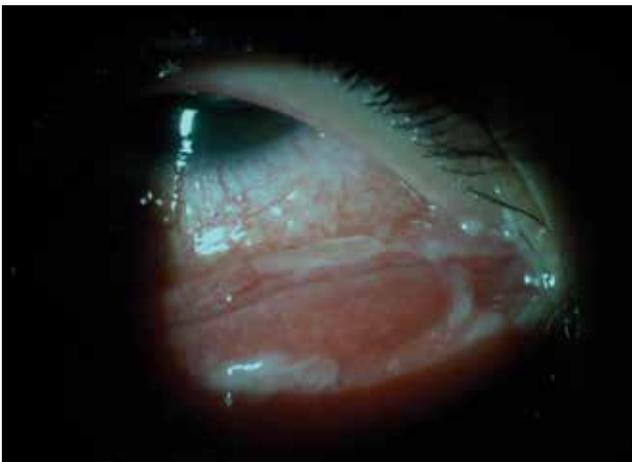


Figure 1. There were small yellow-white color membranes on the lower eyelid tarsal conjunctiva of the left eye. The membranes resemble mucopurulent secretion. There was moderate conjunctival hyperemia on the tarsal and bulbar conjunctiva



Figure 2. The filamentary keratitis was seen on the left eye cornea



Figure 3. An elevated conjunctival granuloma on the bulbar conjunctiva at the area of vicryl suture removal. The surrounding conjunctiva was moderately injected. The opening of the patient's eye was difficult because of photophobia



Figure 4. One week after initiation of CsA, there was significant improvement in the clinical findings. But it was not a complete recovery. There were very small conjunctival granulomas that had been seen at the suture removal areas

Thirteen days after surgery, 0.05% cyclosporine A (CsA) ophthalmic emulsion (Restasis®; Allergan, Waco, TX, USA) was initiated four times per day. Significant clinical improvement was obtained within 7 days but not complete clinical recovery (Figure 4). The patient was discharged with the same medications. Follow-up 4 weeks later showed that he had almost recovered from filamentary keratitis in his left eye and conjunctival inflammation in both eyes, and he was prescribed Pred Forte 4x1 and Restasis 2x1. Complete clinical remission was achieved after 5 weeks of CsA use in both eyes (Figure 5). The CsA was stopped at the end of 3 months. There was no recurrence after 6 months with no medication.

Discussion

Severe foreign body reactions caused by sutures after ocular surgery in the eyes are often associated with nonabsorbable sutures. Foster et al.⁷ described two severe foreign body reactions after ptosis repair using 6-0 polypropylene sutures. Both of the surgeries were uncomplicated, but approximately 3 months after surgery, the patients presented with eyelid edema, pain, and persistent red eye. Despite systemic prednisone treatment, the symptoms were not completely resolved; symptoms improved only with suture removal. Chung et al.⁸ reported an occult polypropylene suture reaction after ptosis surgery. A polypropylene suture fragment was removed, but an area of conjunctival ulceration remained despite frequent application of topical 1% prednisolone acetate and 4 weeks of oral prednisone at 40-60 mg per day. Conjunctival exploration showed that there was another prolene suture near the cul-de-sac; symptoms were reduced only by removing the suture. Severe foreign body reaction caused by polyglactin 910 material in the tissue is not expected.⁹ When a vicryl suture is used for the closure of conjunctiva in humans after pterygium surgery, it may cause a mild foreign body granulation tissue reaction from days 15 to 45 after surgery.⁵ Management of the foreign body reaction consists of the removal of the foreign body. Complete improvement of



Figure 5. There was almost complete recovery after 5 weeks of the initiation of CsA. Bulbar and tarsal conjunctival hyperemia and the tarsal conjunctival membranes resolved completely

symptoms of a foreign body reaction caused by suture can be possible only with suture removal.^{7,8}

Severe conjunctival reaction after strabismus surgery occurs usually caused by bacterial agents. Mucopurulent secretion, photophobia, and eye lid edema may be seen as a sign of bacterial conjunctivitis. But it is often helpful to perform conjunctival culture. The patient was not considered to be a bacterial conjunctivitis because no bacteria was isolated from conjunctiva cultures and the symptom did not respond to broad-spectrum topical antibiotic therapy. Another possible reason for conjunctival inflammation was that this event was caused by viral agents. The finding of membranous conjunctivitis which did not respond to any topical treatment were evidence to support the diagnosis of viral conjunctivitis. In such cases, some clinical findings such as follicular conjunctival reaction and preauricular lymphadenopathy should be present, but they were not observed in our patient. Membranous formation is not a specific finding of infection conjunctivitis. It can also be seen in some immune-complex-mediated hypersensitivity reactions such as Stevens-Johnson syndrome.¹⁰ We think that the most likely diagnosis of this case was conjunctival foreign body reaction caused by vicryl sutures. There were some findings such as asymmetric involvement, focal granulomatous reaction around the sutures, and papillary reaction to support our diagnosis.

Several clinic situations, such as prolonged eyelid closure, causes hypoxia, and the reduced tear volume may cause filamentary keratopathy.¹¹ Filamentary keratitis also can be caused by a wide-angle strabismus itself.¹² Moreover, filamentary keratitis can develop after strabismus surgery because of disruption of the tears circulation across the ocular surface. While the surgical intervention was made on two different muscles in the left eye, it was made on only one muscle in the right eye. We presumed that filamentary keratopathy was caused by the occlusion of the left cornea as well as by the disrupted normal flow of tears across the corneal surface after extraocular muscle surgery.

In this case report, we present an interesting case of severe inflammation in both eyes and filamentary keratitis in the left eye caused by vicryl suture ties after strabismus surgery. By 1 week after surgery, we had ruled out infection by conjunctiva cultures. In order to address the foreign body reaction, we removed the sutures of the conjunctiva and prescribed intense topical prednisolone acetate for 1 week. However, no change was seen in symptoms or clinical findings. We then added topical CsA and the clinical signs significantly, but not completely, improved. We continued with these topical medications (CsA and steroid ointment) for 3 weeks. The symptoms and clinical findings were completely resolved 7 weeks after surgery. We suggest that foreign body reaction in the patient may be associated with the muscular sutures and response to the vicryl suture absorption time of 6 weeks.¹ We showed that severe foreign body reaction may be caused by vicryl sutures as well as nonabsorbable sutures. We also suggest that CsA may be helpful in the management of severe foreign body reaction caused by vicryl suture in strabismus cases.

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