Allergic Reaction to Corneal Sutures on a Background of Eyelid Eczema

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Introduction:

The case under consideration depicts that of a patient who underwent routine penetrating keratoplasty (PKP) on a background of keratoconus, making an initially unremarkable recovery. However upon weaning topical steroids, corneal inflammatory changes became apparent at the suture sites. The clinical signs did not appear to be in keeping with infection or rejection, and on a background of periorbital atopic disease, in this case eczema, a concern for a corneal allergic reaction to suture material was raised, and the treatment for allergy management was initiated. This resulted in prompt resolution of the patient's corneal signs, and the patient remains on this treatment until an appropriate time has elapsed since the PKP for removal of sutures.

Allergic reaction to suture material is a rare occurrence, with some reports across surgical specialties relating to various suture materials or suture anchors, and while anecdotal cases have been described, ophthalmic cases specifically remain uncommon. The majority of reports implicate silk and catgut sutures to an IgE mediated immune response inducing a delayed eosinophilic reaction sometimes many years after surgery. Furthermore, reports of unexpected infection and localised inflammatory reaction have been reported in patients with wounds closed using vicryl and vicryl rapide. Indeed, allergic reaction to polyglactin 910, present in vicryl rapide, has been documented in gingival graft surgery in the setting of which unexpected oral inflammation was observed, and the affected patients made a prompt and full recovery with introduction of oral antihistamines and removal of sutures. Such inflammatory reactions related to suture material use have also been documented in orthopaedic, ear nose and throat, vascular and general surgical patients,.

Regarding ophthalmology patients, few cases have been reported relating to postoperative allergic reaction to sutures. Prior to self-sealing corneal wounds constructed during cataract, the silk sutures used had been reported to induce post-operative complications such as scleritis, corneal wound ulceration and wound dehiscence. In the case series described by Soong HK et al, histopathological assessment of these patients confirmed local allergic reaction. Furthermore, allergic reaction to polyglactin 910 sutures used in squint surgery has been described in a paediatric patient, in whom removal of sutures resulted in immediate resolution of symptoms, after failed trial of management with antimicrobials for suspected underlying infection rather than allergic process.

In the case under consideration, the development of stromal inflammation at the site of suture insertion affecting the corneal graft indicated a local inflammatory process. In the setting of the patient suffering from periocular eczema, an atopic process was considered. Sterile swabs results and a lack of response to antimicrobial therapy supported the suspicion of an atopic corneal process at the site of the sutures. High frequency topical prednisolone drops were initiated with a prompt resolution of the patient's corneal signs.

This case highlights the importance of complete examination of the patient with importance to signs which could indicate predisposition to further disease, such as other indications of atopy in a patient. Indeed, this patient's presentation and management highlight the importance of recognition of allergic reaction to sutures, as intensive topical steroid management has been utilised until the sutures can safely be removed.

Case presentation:

A 21 year old female was referred by her optometrist with complaints of a sudden drop of visual acuity in the right eye. The patient was known to have keratoconus, allergic rhinitis and facial eczema, and was not on any systemic or topical therapy for these conditions.

On initial presentation in July 2023 to the ophthalmology outpatient department (OPD) her uncorrected visual acuity was counting fingers in the right eye with no improvement on pinhole and 6/24 improving to 6/18 on pinhole in left eye. A diagnosis of right acute hydrops and left advanced was keratoconus made. She was thus scheduled for left corneal cross-linking (CXL) and right penetrating keratoplasty.

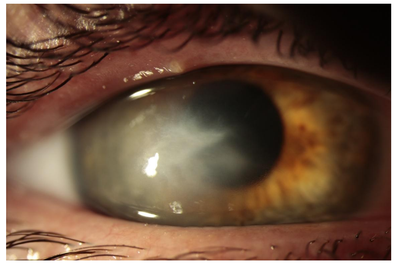


Image 1. Right eye prior to PKP

The patient underwent left CXL in August 2023 which was uneventful and following which she made a full post operative recovery. The patient then underwent right PKP in December 2023. The procedure was uncomplicated and her initial examination the day following surgery depicted signs as expected for a patient 24 hours following PKP. The patient was then reviewed in the OPD at 2 and 6 weeks post PKP, during which time she made an initial expected recovery. When presenting to the OPD at 3 months post PKP however, she reported right eye foreign body sensation and epiphora, while clinical examination revealed no signs of postoperative infection, and a clear central corneal graft. A bandage contact lens was fitted for comfort. The patient remained on topical g. prednisolone 2 hourly and topical g. ketofall was added. The patient was followed fortnightly in the setting of unexplained photophobia and epiphora.

At review 4 months post PKP, the patient was reporting ongoing right photophobia and epiphora. Uncorrected right visual acuity was hand movements and left was 6/36, right anterior segment examination depicted superior conjunctival injection, stromal oedema and neovascularisation developing along the graft sutures, while all suture knots were buried and tight. A provisional diagnosis of allergic reaction to 10-0 nylon was made. She was started on high dose topical g. prednisolone, as well as oral prednisolone tapering from 60mg daily, and was scheduled for subtarsal triamcinolone which was performed in May 2024

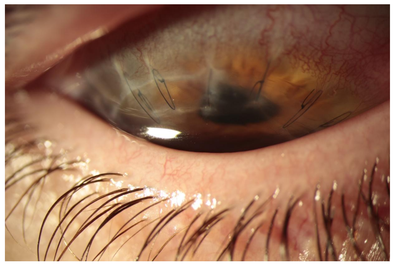


Image 2. Right eye depicting inflammatory changes along corneal sutures

Subsequent to this treatment initiation, the patient has been assessed in the OPD on multiple occasion, and the patient has reported that the photophobia and foreign body sensation have resolved. 3 weeks after initiating treatment, ocular examination revealed stromal fibrosis and neovascularisation along the suture material. At present, the patient remains on an oral dose of 7.5mg prednisolone.

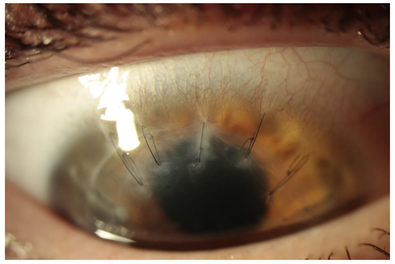


Image 3. Right eye following initiation of high dose prednisolone

Discussion:

After making an initially good postoperative recovery, while on high dose topical prednisolone as is usual in the immediate postoperative period, this case demonstrates that a high index of suspicion for allergic reactions in patients with underlying periocular atopy should be maintained. Intensive treatment with subtarsal and oral steroids induced resolution of the patient's ocular signs and symptoms, and could have been administered sooner had a concern been raised for possible allergy to suture material.

Conclusion:

This case presentation highlights that while allergic reaction to suture materials is rare, notably in the ophthalmic setting, a high index of suspicion is warranted for patients presenting with unexpected inflammatory changes at the site of corneal nylon sutures, in whom a background of atopy is known. While a rare occurrence, prompt administration of high dose steroids can allow for remission of symptoms until an adequate time period has passed to allow corneal sutures removal.

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