Surgically induced scleral necrosis

AHMAD M. MANSOUR, ZIAD BASHSHUR

CLINICAL STUDY

Abstract

Purpose **To present a group of patients with surgically induced scleral necrosis characterised by conjunctival retraction.**
Methods **Three case reports are presented.**
Results **The scleral melt responded to conjunctival covering of the scleral defect.**
Conclusion **Surgically induced scleral necrosis associated with conjunctival retraction is best managed by covering the exposed sclera either by stretching the retracted conjunctiva in the early post-operative period or by a conjunctival transplant.**

Key words Cataract surgery, Conjunctival retraction, Conjunctival transplant, Scleral necrosis

Scleral necrosis is a rare complication of ocular surgery with potentially devastating consequences to the eye. Scleral necrosis has been described following intracapsular or extracapsular cataract surgery, secondary intraocular lens insertion, strabotomy, scleral buckle, vitrectomy, surgical iridectomy and trabeculectomy.[1–3] The majority of such patients have an underlying systemic vasculitis. De la Maza and Foster[2] described 9 patients with non-infectious necrotising scleritis after ocular surgery, all of whom had autoimmune vasculitis. We encountered 3 healthy subjects who developed progressive melting of the sclera following cataract surgery and responded to covering of the scleral melt with conjunctiva.

Case reports

Case 1

A 58-year-old man with severe frontal bossing underwent an uneventful phacoemulsification of the left cataract using a temporal 5.2 mm scleral tunnel. Six days post-operatively visual acuity was 6/6 with a quiet eye. A 2 mm × 2 mm area of scleral melt was noted 4 mm from the limbus and 2 mm below the phacoemulsification incision with the conjunctiva retracted temporally. There was no use of forceps to grasp the sclera. The patient had adequate tears, absence of peripheral corneal thinning, and no previous systemic disease. Rheumatological consultation, radiographs of the sacroiliac joints and chest, and extensive blood testing for autoimmune vasculitis were negative. Gram stain and culture of the bed of the scleral melt were negative for bacteria. The patient was placed on artificial tear ointment and topical ofloxacin drops, while topical steroid drops were discontinued. Four days later the scleral thinning extended towards the limbal cornea. Under topical anaesthesia the retracted conjunctiva was stretched using a forceps to cover the limbal cornea. This was repeated the following day. The scleral thinning was controlled without medications, resulting in a visual acuity of 6/6 at 2½ months post-operatively.

Case 2

This 73-year-old man underwent an uneventful extracapsular cataract extraction to the right eye with insertion of an intraocular lens. On routine follow-up 4 weeks later, scleral thinning was noted nasally measuring 3 mm × 3 mm with a retracted conjunctiva nasally and a quiet eye (Fig. 1). The patient had normal tearing and a negative history of autoimmune disorders. Tight patching of the right eye did not stop the progressive scleral thinning, which reached the limbal cornea. Gram stain and culture of the scleral bed were negative for bacteria. Rheumatological consultation and investigations for autoimmune vasculitis were negative. The patient underwent a conjunctival transplant from the lower fornix to cover the bare sclera. The scleral melt was controlled without medications and the visual acuity was 6/9 at 2½ months following the conjunctival graft.

Case 3

This 63-year-old healthy woman underwent an uneventful 3 mm incision phacoemulsification for dense cataract and high myopia in the left eye and 8 months later in the right eye. Three weeks post-operatively the right eye had an asymptomatic scleral melt between the scleral incision and the cornea with conjunctival retraction. Investigation for dry eyes and vasculitis was negative. The conjunctiva was dissected, advanced and sutured to the cornea. One week later the sutures were removed. One

A.M. Mansour
Z. Bashshur
Department of Ophthalmology
American University of Beirut
Beirut, Lebanon

Ahmad Mansour, MD ✉
Department of Ophthalmology
American University of Beirut
Beirut, Lebanon
Tel: +9611 348543
Fax: +212 478 1995

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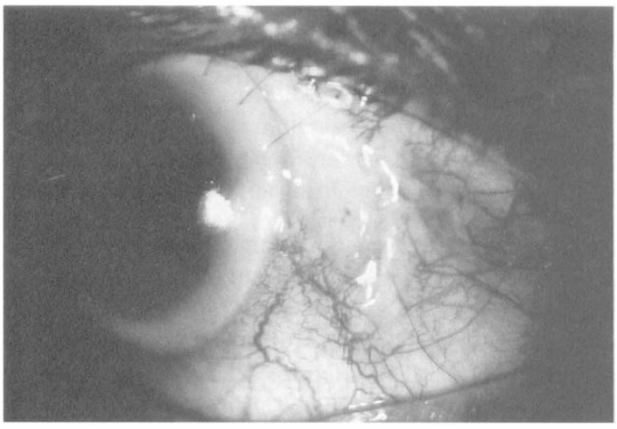

Fig. 1. *Case 2. Scleromalacia appearing 4 weeks after extracapsular surgery on the nasal side away from the cataract incision and associated with retracted conjunctiva.*

month later the scleral thinning was well covered by conjunctiva and visual acuity was 6/12 bilaterally.

Discussion

Known aetiological factors involved in scleral necrosis include infections, autoimmune vasculitis, keratoconjunctivitis sicca, excess use of cautery, and repeated scleral trauma with forceps. De la Maza and Foster[2] found all 9 patients with sterile scleral melting to suffer from autoimmune disorders, with good response to immunosuppressive therapy. The sclera in these autoimmune disorders showed perivascular infiltration by lymphocytes and plasma cells.[2,3] Gregersen and Jorgensen[4] reported 3 patients without evidence of systemic vasculitis who developed necrotic sclerokeratitis following uncomplicated intracapsular or extracapsular cataract extraction. These authors demonstrated disappearance of the vessels in the sclera by intravenous fluorescein angiography; this vascular occlusion was attributed to postsurgical vascular inflammation. The 3 patients were treated with topical and systemic corticosteroids. Two patients achieved a favourable outcome, while the third required enucleation.

We have presented 3 cases of progressive scleral melt distant from the cataract incision and associated with conjunctival retraction. The retracted conjunctiva probably created a 'dellen' in the neighbouring bare sclera, facilitating scleral melt. Possible factors leading to scleromalacia in the present cases include: exposure of the sclera, dellen formation, and ischaemia from cautery of episcleral vessels. Vascular closure of the episclera can be documented by fluorescein angiography of the anterior segment, a facility not available in our center. Stretching the conjunctiva over the exposed sclera could reverse the above factors. Resection of the conjunctiva as advocated in Mooren's ulcer[5] (on the premise of removing the source of collagenases from the conjunctiva) should be avoided in cases of non-vasculitic post-surgical scleromalacia associated with conjunctival retraction. We advise covering bare sclera with conjunctiva, especially in temporal cataract incisions.

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