

Bovine pericardium scleral patch graft associated scleritis: Ahmed valve implant for pupillary block glaucoma

Processed bovine pericardium is a lyophilised collagen sheet used as a surgical armamentarium. It renders the material antigenically inert with minimal inflammation [1]. Sclera patch pericardium graft (Tutopatch) is a collagenous membrane derived from solvent preserved, irradiated bovine pericardium [2] that has been utilised with glaucoma valve implants. To the best of our knowledge, this is the first reported case of bovine pericardial sclera patch graft-complicated anterior scleritis.

Case report

A 48-year-old lady had been referred by the optometrist in February 2012 for left eye redness (Image A). Past medical history included type-2 diabetes and ophthalmic history includes left phaco-vitrectomy with silicon oil (longstanding retinal detachment) more than 10 years ago. This was complicated by pupillary-block glaucoma, which required inferior YAG peripheral iridectomy (PI) (Image B), topical and systemic treatment. Later superior iridotomy (Image B) was performed. Intraocular pressure (IOP) kept fluctuating, while vision was stable at counting finger (CF) (6/60 pinhole (PH)). Ahmed valve implant was then undertaken with scleral bovine pericardium patch graft sutured with 9-0 nylon sutures. IOP was controlled for five months. Subsequently, Molteno implant was performed with patch graft and the patient continued to be asymptomatic for a few years until she experienced left ocular irritation. On examination, left eye showed patent inferior and superior iridotomies with two clear tubes (Image C), two scleral patch grafts; the lateral one was more swollen with a diagnosis of patch graft complicated anterior scleritis. Topical steroid drops were initiated. One week later, symptoms improved and examination showed

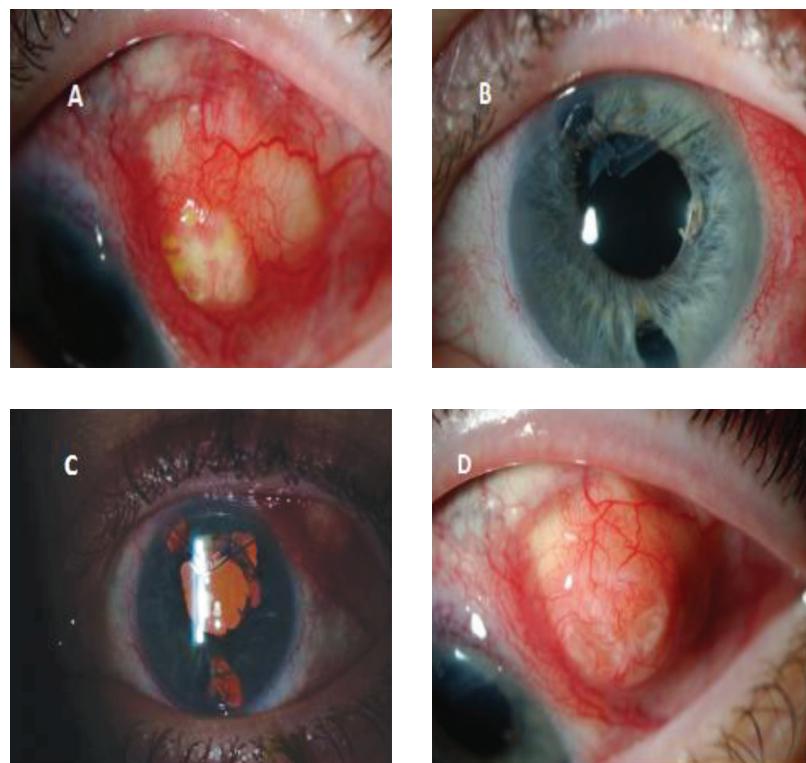


Figure 1: A shows a localised area of anterior scleritis overlying the donor pericardium scleral patch graft; B shows both the inferior and superior iridotomies; C shows both Ahmed and Molteno tubes in the anterior chamber; D shows settling of the anterior scleritis.

moderate inflammation overlying the scleral patch graft. She was then started on PO Prednisolone 10mg daily and continued to improve. Prednisolone tablets were tapered by 1mg every two weeks. Four months later, visual acuity (VA) was stable at CF (6/60 PH) with quiet eye (Image D) and IOP was 14mmhg.

Comment

Complications associated with bovine pericardium patch graft were previously reported. To the best of our knowledge, this is the first reported delayed-onset bovine pericardium scleral patch graft complicated-scleritis with Ahmed valve implant. Although researchers

have reported favourable results with pericardium, some evidence indicates that pericardial tissue may melt, resulting in conjunctival erosion and endophthalmitis [3]. Erosion of the silicone tube through the overlying conjunctiva may be associated with uveitis, scleritis, scleral necrosis, and epithelisation of the sclerostomy tract with tube hypermobility and leakage [4]. Nevertheless, our patient developed scleritis without preceding complications. The tube was in a good position with adequate conjunctival coverage and pericardial patch graft.

Surgeons usually place a layer of tissue over the anterior part of the tube. An alternative is a partial-thickness

sclera flap [5]. Covering the tube reduces the risk of erosion through the overlying conjunctiva as well as the associated risk of late intraocular infection [6].

Bovine pericardium, an extracellular matrix, is a natural choice for xenographic implantation with exceptional inherent qualities [2]. It has been described for wrapping of hydroxyapatite implants [7], perforated corneal ulcers [1] and Ahmed devices [8]. In surgery, pericardial patch implant application with the drainage implants increases resistance over the leakage area and may overcome the hypotony. However, thinning and the conjunctival erosion reported are potentially serious complications of pericardium's use; surgeons should, therefore, follow patients long-term to ensure early recognition of complications. Remarkably, in a retrospective review comparing the coverage of drainage implant tubes with donor sclera, dura, and pericardium, researchers found no difference in the rates of thinning or conjunctival erosion [4]. Moster and co-workers reported the placement of a double-thickness patch graft of pericardium and conjunctival advancement successfully addressed this complication [3]. Further, pericardium is opaque, which may be cosmetically unappealing to patients and may interfere with postoperative manipulations [9].

In 2009 King and Rotchford reported that the results of such an intervention might be unpredictable [10]; besides the use of a large patch graft has several disadvantages: it produces a bulky subconjunctival elevation, which may hinder conjunctival closure. Moreover, the use of a large patch makes it difficult to titrate flow precisely, making IOP outcomes unpredictable [10].

In conclusion, our case is unusual because of its delayed onset as well as the nature of the complication. Therefore, with the increased popularity of tube shunt surgery with grafts as a primary surgical option, an increase in the incidence of graft-related long-term postoperative complications are to be expected.

References

1. Khanna RK, Mokhtar E. Bovine pericardium in treating large corneal perforation secondary to alkali injury: a case report. *Indian J Ophthalmol* 2008;**56(5)**:429-30.
2. Tutopatch - collagen membrane. Xenogenic grafts. Med & Care. <http://www.medandcare.pl/en/products/xenogenic-grafts-/tutopatch-collagen-membrane> Last accessed February 2016.
3. Moste MR, et al. A. Pericardial Patch Melting. A complication of drainage device surgery. *Glaucoma Today* 2004:29-31.
4. Shazly TA, Latina MA. Use of processed pericardium graft to plug patent old sclerostomy track during glaucoma shunt revision for exposure. *Ophthalmic Surg Lasers Imaging* 2012;**43(1)**:72-5.
5. Aslanides IM, et al. Autologous patch graft in tube shunt surgery. *J Glaucoma* 1999;**8(5)**:306-9.
6. Krebs DB, et al. Late infectious endophthalmitis from exposed glaucoma setons. *Arch Ophthalmol* 1992;**110(2)**:174-5.
7. Wishart PK, et al. Ahmed glaucoma valves in refractory glaucoma: a 7-year audit. *Br J Ophthalmol* 2010;**94(9)**:1174-9.
8. De Vries FR, et al. Complications due to bovine pericardium used to cover acrylic implants after enucleation and tubes of aqueous devices. *Eye (Lond)* 2012;**26(2)**:336.
9. Nagi KS, et al. Short-term outcomes of keraSys patch graft for glaucoma drainage devices: a case series. *J Ophthalmol* 2013:784709.
10. King AJ, Rotchford AP. The use of a scleral micro-patch graft and fibrin glue to treat scleral flap defects following trabeculectomy. *Br J Ophthalmol* 2009;**93(9)**:1269-70.

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