

Migration of reticulated hyaluronic acid implant [SK-GEL] following deep sclerectomy

Saleh A. Al Obeidan

Received: 2 June 2009 / Accepted: 24 September 2009 / Published online: 22 October 2009
© Springer Science+Business Media B.V. 2009

Abstract A new complication after deep sclerectomy with implant is presented as a case report. A 42-year-old male with uncontrolled primary open-angle glaucoma underwent nonpenetrating deep sclerectomy (NPDS) with an SK-GEL implant in his left eye. Two months after surgery the implant was noted to migrate into the subconjunctival space. Seven months later the implant was stable in the new position without complication. Implant migration into the subconjunctival space is a possible complication of NPDS.

Keywords Nonpenetrating deep sclerectomy · Laser goniopuncture · Reticulated hyaluronic acid implants

Introduction

NPDS is an evolving procedure in the surgical management of open-angle glaucomas. Its superior safety to that of conventional filtration surgery has been shown in multiple reports [1–3]. New modifications in NPDS including implants, laser goniopuncture, and antimetabolites have improved long-term

intraocular pressure (IOP) control [4, 5]. However, these modifications may lead to new complications. In this report, migration of the SK-GEL implant to the subconjunctival space is described.

Case report

A 42-year-old male was referred to the glaucoma clinic at King Abdulaziz University Hospital in late December 2007 with a diagnosis of uncontrolled end-stage primary open-angle glaucoma in both eyes that went uncontrolled despite use of two topical anti glaucoma medications in both eyes. Our evaluation confirmed the diagnosis with uncorrected visual acuity of 20/20 in both eyes, IOP was 29 and 26 mmHg in the right and left eyes, respectively. Optic nerve head evaluation showed advanced cupping, with a cup-to-disc ratio of 0.9 in both eyes, and with severely damaged visual field in both eyes. In early January 2008 the patient underwent a deep sclerectomy with mitomycin C 0.2 mg/ml for 2 min which was converted to trabeculectomy because of inadvertent perforation of the trabeculo-Descemet's membrane in his right eye, with uneventful postoperative course. In late January, deep sclerectomy with mitomycin C 0.2 mg/ml for 2 min and SK-GEL implant (Corneal, France) was performed in his left eye.

The technique has been described in a previous report [6]. But, in brief, after a fixation suture had

S. A. Al Obeidan (✉)
Department of Ophthalmology, College of Medicine,
King Saud University, Airport Road, P.O. Box 245,
Riyadh 11411, Saudi Arabia
e-mail: alobeidan@yahoo.com

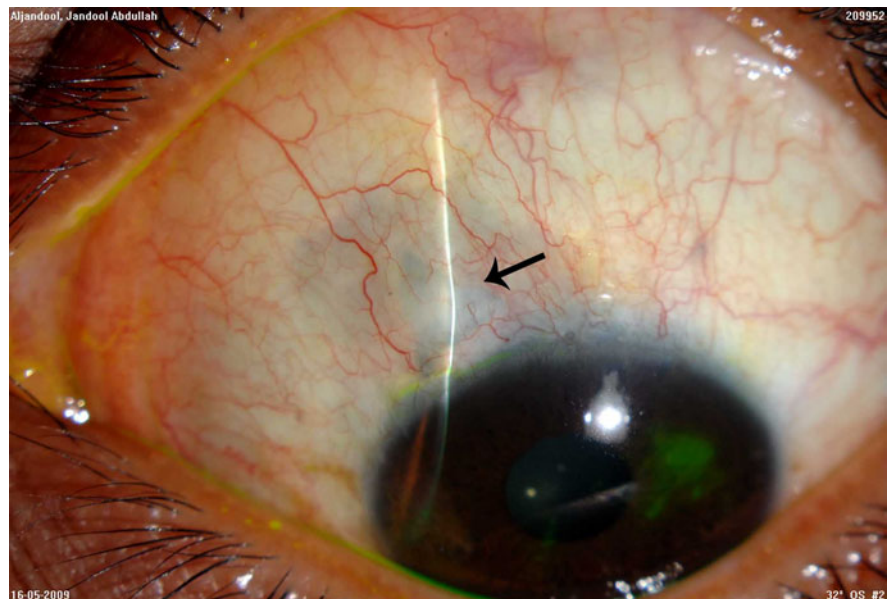
been placed in the superior cornea using 6.0 vicryl thread, a fornix-based conjunctival flap was fashioned, and a 5×5 mm one-third sclera thickness superficial sclera flap was created which extended 1.5 mm into the clear cornea. A sponge soaked in mitomycin C solution 0.2 mg/ml was placed under the superficial scleral flap and Tenon's capsule for 2 min, then thorough irrigation with 20 cm³ balanced salt solution was performed to wash the surgical site. A 4 mm \times 4 mm deep scleral flap was created leaving only a very thin layer (50–70 μ m) of scleral tissue over the uvea. Dissection was carried out from the posterior part of the flap and extended anteriorly to deroof *Schlem's* canal spontaneously. Dissection continued anteriorly to create the trabeculo-Descemet's membrane. The floor of *Schlem's* canal was peeled off with fine-toothed forceps and the deep flap was excised. SK-GEL was placed in the floor of the excised deep flap and the superficial scleral flap was then secured with 10-0 Nylon sutures at the posterior corners. The conjunctival flap was closed in a water-tight fashion. The intraocular pressure during the first postoperative day was 10 mmHg, the anterior chamber was deep, and the uncorrected visual acuity was 20/25. Six weeks after surgery the IOP in the left eye was 22 mmHg, for which laser goniopuncture was performed. Four weeks later, the SK-GEL implant was noted to have migrated and was now located between the conjunctiva and scleral flap (Fig. 1) with

an IOP of 19 mmHg. At last follow-up, 10 months after surgery, the implant was still in the new location without complications and the IOP was 11 mmHg on one topical medication.

Discussion

Kozlov et al. [7] in 1990 were the first to introduce a space-maintaining device in NPDS using a highly purified collagen implant; this was then followed by different, absorbable and nonabsorbable, expensive and low-cost implants. Most implants are usually sutured on to the decompression space (bed of the excised deep scleral flap), but the SK-GEL implant, because of its crispy nature, cannot be sutured. Despite their beneficial effect on final outcome, use of implants may lead to complications. Dahan et al. [8] described migration of an unsutured T-flux implant (nonabsorbable) in NPDS to the anterior chamber (A/C); the implant was removed without sequelae. Wevill et al. [9] reported migration of chromic suture material used as an implant in NPDS to the anterior chamber after a blunt trauma to the eye. The implant was removed because of corneal edema and the anterior chamber reaction induced by its presence. Qing and Wang [10] reported migration of an SK-GEL implant in the anterior chamber after laser goniopuncture. The implant remained in the

Fig. 1 Picture of the SK-GEL in the subconjunctival space (arrow)



anterior chamber for 10 months without sequelae. In our case, migration of the implant from the decompression space changed the procedure to deep sclerectomy without implant that probably led to the suboptimal final outcome. When an implant with a crispy nature that cannot be fixed is used, adding safety sutures to the superficial flap might prevent this complication. To the best of my knowledge, this is the first report of migration of an SK-GEL implant to the subconjunctival space after NPDS. Rubbing of the eye by a patient with a loosely sutured scleral flap can lead to migration of an unsutured implant; this is probably the case in our patient. From this case and the case reported by Qing and Wang [10], it seems that an SK-GEL implant can be tolerated by the eye in anterior chamber or in subconjunctival space. However, long term follow-up is needed.

Acknowledgments The author thanks Ms Connie B. Unisa-Marfil for secretarial assistance. This work was supported by the Glaucoma Research Chair in Ophthalmology.

References

1. Bissing A, Rivier D, Zaninetti M et al (2008) Ten years follow-up after deep sclerectomy with collagen implant. *J Glaucoma* 17:680–686
2. Al-Obeidan SA (2009) Deep sclerectomy in uveitic glaucoma. In: Grieshaber MC (ed) *Glaucoma therapy. State of the art. Association for Continuing Education in Ophthalmology*, Basel, Switzerland, pp 105–112
3. Ambresin A, Shaarawy T, Mermoud A (2002) Deep sclerectomy with collagen implant in one eye compared with trabeculectomy in the other eye of the same patient. *J Glaucoma* 11:214–220
4. Kozobolis VP, Christodoulakis EV, Tzanakis N et al (2002) Primary deep sclerectomy versus primary deep sclerectomy with the use of mitomycin c in primary open-angle glaucoma. *J Glaucoma* 11:287–293
5. Shaarawy T, Nguyen C, Schnyder C, Mermoud A (2004) Comparative study between deep sclerectomy with and without collagen implant: long term follow up. *Br J Ophthalmol* 88:95–98
6. Al-Obeidan SA (2009) Nonpenetrating deep sclerectomy. *Expert Rev Ophthalmol* 4:299–315
7. Kozlov VI, Bagrov SN, Anisimova SY et al (1990) Deep sclerectomy with collagen. *Oftalmokhirurgiya* 3:44–46
8. Dahan E, Ravinet E, Ben-Simon GJ, Mermoud A (2003) Comparison of the efficacy and longevity of nonpenetrating glaucoma surgery with and without a new, non absorbable hydrophilic implant. *Ophthalmic Surg Laser Imaging* 34: 457–463
9. Wevill MT, Meyer D, Van Aswegen E (2005) A pilot study of deep sclerectomy with implantation of chromic suture material as a collagen implant: medium-term results. *Eye* 19:549–554
10. Qing G, Wang N (2009) Reticulated hyaluronic acid implant (SK-GEL) dislocated into anterior chamber for 10 months. *Eye* 23:1230