Intraocular Intrusion of a Scleral Sponge Implant

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Abstract. A patient with intrusion of a scleral sponge implant after retinal reattachment surgery is described. Retinal incarceration occurred during primary retinal reattachment surgery and the patient underwent additional cryopexy and radial sponge implant. However, the retina remained detached and pars plana vitrectomy was performed with silicone oil endotamponade to reattach the retina. The interval between placement of the scleral buckle and development of intrusion was 3 months. The buckle was sutured to the sclera with mattress sutures. During the postoperative follow-up period, the intraocular pressure was elevated and controlled with topical antiglaucomatous medication. The encircling band was cut but left in place to avoid perforation, and the retina remained attached. Intrusion of a buckle after retinal reattachment surgery is a rare complication that usually does not require surgical intervention. Cutting the silicone band without removing it may be a treatment option. [Ophthamlic Surg Lasers Imaging 2003;34:223-225.]

INTRODUCTION

Scleral buckling remains an effective method of repair for rhegmatogenous retinal detachments. One of the major and rare complications of a tight encircling band is its intrusion through the sclera, choroid, retinal pigment epithelium, and retina into the vitreous cavity. This condition is usually insidious and can lead to subretinal and vitreous hemorrhage, retinal detachment, and phthisis bulbi. Risk factors associated with intrusion include high myopia, thin sclera, multiple operations, glaucoma, and infection.1-3 To our knowledge, this is the first case of sponge implant intrusion reported in the current English literature.

CASE REPORT

A 40-year-old man had undergone extracapsular cataract extraction without intraocular lens implantation in his right eye 5 years earlier in another clinic. There was no history of any underlying systemic or ocular disease. It was not possible to obtain the surgical records of the first operation, so the reason the patient remained aphakic was unclear. The patient was doing well until 1 month before his presentation to our clinic, when he developed an aphakic retinal detachment with a horseshoe tear in the upper temporal quadrant. At the time of presentation, his visual acuity was 5/200 and the intraocular pressure (IOP) was 15 mm Hg in the right eye.

The patient underwent retinal reattachment surgery. A 4-mm round radial sponge implant was placed in the upper temporal quadrant following cryopexy with mattress sutures, using a 5-0 polyester suture. The sponge was placed under the encircling band (#240; MIRA, Inc., Uxbridge, MA). During external drainage from the lower temporal quadrant, retinal incarceration occurred and the patient underwent additional cryopexy and a radial sponge implant (3 × 5 mm). The retina remained detached and pars plana vitrectomy was performed; the retinal incarceration was released with circumferential retinotomy. Fluid–air exchange with internal drainage was followed by silicone oil injection with inferior iridectomy.

One month later, the IOP had increased to 27 mm Hg, and was controlled with topical timolol maleate 0.5% twice a day and dorzolamide 3 times a
day. Buckle intrusion under the retina in the upper temporal quadrant was observed 3 months after pars plana vitrectomy (Fig. 1). Almost the entire sponge was intruded (Fig. 2). The patient was asymptomatic; no complications such as retinal detachment or hemorrhage were observed. The silicone oil was removed 7 months later, and the encircling band was cut but left in place to avoid perforation. During the 36-month follow-up period, vision improved to 20/60 (+10.0 + 1.0 × 90), IOP remained below 16 mm Hg with timolol maleate 0.5% twice a day, and the retina remained attached. There was no further erosion or intrusion of the buckle or retraction of the band.

**DISCUSSION**

Postoperative complications of the scleral buckling procedure include glaucoma, anterior ischemia, infections, secondary extrusions of the buckle, choroidal detachment, diplopia, changes in refractive errors, and, rarely, erosion or intrusion of the buckle or sutures. Yoshizumi and Friberg found that erosion of intrascleral implants occurred in 62.3% of eyes with intrascleral polyethylene tubes, but in only 3.8% of eyes with intrascleral silicone bands. The incidence of erosion and intrusion has decreased substantially with the use of soft silicone rubber implants and soft silicone encircling elements. This low incidence is explained by the greater softness of the implants and the longer radius of the inverse curvature they create in the globe. In previous series, intrusion of the solid silicone implant and encircling band was reported. To our knowledge, this is the first case of sponge implant intrusion reported in the current English literature.

Precipitating factors that may contribute to the development of intrusion of a scleral buckle include thin sclera, which may be secondary to underlying disease or be weakened by intensive treatment such as cryotherapy, severe tightening of the encircling band, and the presence of glaucoma, which increases the crushing effect in the area of intrusion. In our case, there was neither excessive cryotherapy nor tight sutures around the sponge. The patient did not have myopia, but suffered from elevated IOP following vitrectomy. Glaucoma may be a prominent contributor to precipitating erosion because of pressure on the retina, retinal pigment epithelium, and choroid against the explant and encircling element. The corners and edges of the implants are common sites of erosion, which is attributed to the localized pressure exerted by the surfaces. In the process of trimming a buckle, the surgeon should avoid creating sharp edges that could potentially contact the sclera. In our case, we did not trim the buckle.

Erosion is usually an insidious process. It can be recognized early by indirect ophthalmoscopy as a sharp, prominent ridge of implant surface in the fundus. Atrophy of the retinal pigment epithelium can be seen over these areas. As erosion progresses through the choroid, localized subretinal hemorrhage can occur. In the last stage of erosion, bare implant may be visible in the vitreous cavity. Vitreous hemorrhage and retinal detachment may occur. In our case, no such complication was seen at the 36-month follow-up.

In our patient, sponge intrusion under the retina was first observed 3 months after retinal detachment surgery. We did not know why the buckle intrusion...
was in the upper temporal quadrant rather than the lower temporal quadrant. The secondary complications may have contributed to the intrusion. Intraocular surgical procedures may alter the composition and structure of vitreous, allowing the intrusion to take place. Nguyen et al.\(^1\) found that the interval between placement of the scleral buckle and development of intrusion ranged from 1 to 20 years, with a median of 9 years. Weinberger et al.\(^7\) reported suture intrusion 8 years after retinal detachment surgery. In our case, the intrusion occurred only 3 months after surgery. The short interval may be related to the initial complications associated with the primary buckling surgery.

The management of intrusion of scleral buckle varies depending on its extent. It is not always necessary to remove the intruding buckle. Observation or division of the encircling band or its partial removal may be sufficient.\(^1,7\) Total removal of the encircling band or eroded sponge may cause perforation. Therefore, simply cutting the circular element and reducing the pressure may be safer. Complete removal of the implant is recommended only if the procedure can be performed safely. If erosion progresses, complete removal may be necessary. In our case, it was unclear why the superior sponge rather than the sponge implant intruded over the incarceration area. During silicone oil removal, the encircling band was cut but left in place. Neither retinal redetachment nor vitreous hemorrhage was observed, and intrusion of the sponge and band remained unchanged during the 36-month follow-up period. Because complications can occur years after the intrusion, regular follow-up examinations are recommended to monitor any signs of erosion.

REFERENCES