Comparison of management options for scleral buckle exposure

Abstract:

Scleral buckling is a technique used for repair of rhegmatogenous retinal detachment in eyes with retinal breaks. This report demonstrates the complications associated with scleral buckles and the diverse treatment and management options.

Case History

Patient A

- 78 year old African-American male
- Macula-on rhegmatogenous retinal detachment left eye s/p scleral buckle x 20 years
- Extrusion first noted 15 years later
- Chief Complaint: mild discomfort and redness along inferior nasal conjunctiva of left eye
- Patient medical history: Type II DM, hyperlipidemia, nephrotic syndrome
- Patient ocular history: NTG OU and dry eye syndrome
- Ocular medication: Lumigan q hs OU, timolol bid OU, Simbrinza tid OU, erythromycin ung q hs OS, artificial tears prn OU
- Systemic medication: metformin, terbinafine, bexarotene, trimoxazole
- Allergies: iodine

Patient B

- 72 year old Caucasian male
- Macula-off rhegmatogenous retinal detachment left eye s/p scleral buckle x 1 year
- Extrusion first noted 1 month later
- s/p conjunctivoplasty with amniotic graft 4 months later
- s/p scleral buckle removal 3 months after conjunctivoplasty
- Chief Complaint: mild dryness in the left eye
- Patient medical history: Type II DM, HTN, COPD, hyperlipidemia, hypothyroidism
- Patient ocular history: POAG suspect OU
- Ocular medication: artificial tears prn OU
- Systemic medication: metformin, amlodipine, levothyroxine, simvastatin, amitriptyline
- Allergies: NKDA

Patient C

- 37 year old Caucasian female
- Macula-on rhegmatogenous retinal detachment left eye s/p scleral buckle x 6 years
- Extrusion first noted 4 years later
- Chief Complaint: minimal discomfort left eye
- Patient medical history: unremarkable
- Patient ocular history: otherwise unremarkable
- Ocular medication: none
- Systemic medication: multivitamin
- Allergies: NKDA

**Pertinent findings**

**Patient A**
- DVA cc: OD: 20/25², OS: 20/40⁻²
- CVF: FTFC OD, OS
- EOMs: Full and smooth OU
- Pupils: ERL (-)APD
- Anterior segment: OD: unremarkable; OS: scleral buckle exposure inferior nasal with moderate injection greatest nasally; superior buckle buried behind thin layer of conjunctiva; pseudophakia OU
- Goldmann tonometry: 17 mmHg OD, 16 mmHg OS
- Posterior segment: OD: flat and intact; OS: epiretinal membrane, laser scarring inferior and superior, lattice degeneration nasal and temporal

**Patient B**
- DVA cc: OD: 20/20, OS: CF @ 6 ft.
- CVF: FTFC OD, OS
- EOMs: Full and smooth OU
- Pupils: Round OD, irregular OS, responsive to light, (-)APD
- Anterior segment: OD: PC IOL with trace PCO; OS: superior temporal and superior nasal uveal show, scleral thinning 3 mm posterior to limbus, 3 intact nylon sutures at 12:00, minimal injection, aphakia
- Goldmann tonometry: 14 mmHg OD, 13 mmHg OS
- Posterior segment: OD: flat and intact; OS: macula appears flat with overlying fibrovascular membrane and pigmentary changes, vessel tortuosity; retina appears flat with extensive atrophy and scleral show; laser scarring 360 degrees

**Patient C**
- DVA cc: OD: 20/20, OS: 20/20⁻¹
- CVF: FTFC OD, OS
- EOMs: Full and smooth OU
  - Irritation was noted in left gaze OD
- Pupils: ERL (-)APD
• Anterior segment: OD: scleral buckle exposure inferior nasal 3 mm X 1 mm and superior temporal, otherwise unremarkable; OS: unremarkable
• Goldmann tonometry: 10 mmHg OD, 09 mmHg OS
• Posterior segment: OD: flat and intact; OS: scleral buckle with inferior chorioretinal scarring

Risk factors for removal of buckle
• A subsequent ocular procedure
• Concurrent globe trauma at time of detachment
• Prior PPV

Complications of buckle removal
• Scleral perforation
• Endophthalmitis
• Recurrent retinal detachment in 0-34% of eyes

Treatment and management

Patient A:
• Conservative observation and monitoring with follow-up appointment every 3-4 months
• Continue use of erythromycin ointment q hs OS

Patient B:
• s/p scleral buckle removal X 7 months
• Follow-up every 3-4 months for dilated fundus examination

Patient C:
• Conjunctivoplasty with pig pericardium as graft tissue
• Procedure scheduled in 2 months

Discussion

A scleral buckling procedure is used in rhegmatogenous retinal detachments to create an inward indentation by placing a silicone implant at the location of the break with the use of non-dissolvable sutures. The management options of scleral buckle removal are challenging due to the potential complications associated with the different treatment approaches outlined in this case report. Potential risk factors associated with exposure of the scleral buckle have been noted in the literature and include concurrent globe trauma at the time of detachment, a subsequent ocular procedure, prior PPV, long term topical ocular therapy, and diabetes.
Scleral buckle exposure with infection is the most common indication for buckle removal, followed by pain from the extruding buckle. However, not all exposed buckles must be treated as indicated from patient A, whose exposed buckle is longstanding, not causing any pain, with minimal discomfort, and only mild injection. Conservative monitoring with routine follow-up examinations is indicated to assess for the potential of an infection, which can occur several after the initial exposure.

If careful, repeated follow-up examinations of the exposed buckle are not sufficient, the next practical option would be conjunctivoplasty of the exposed buckle as indicated in both patients B and C. Patient B’s extruded buckle was causing pain and irritation and the use of artificial tears and ointment did not reduce the symptoms and therefore further intervention is necessary. Since removal of the buckle has the potential for re-detachment, which can occur in 0-34% of patients, and infection, this treatment option is reserved for when other treatments options fail or if sight-threatening complications occur. With conjunctivoplasty, the potential for buckle extrusion through the graft is a probable outcome, as it was for Patient B. Since Patient B had a macula-off retinal detachment and vision is significantly reduced, surgical removal of the buckle was indicated. After a buckle is removed, careful posterior segment examination is indicated to ensure the retina does not re-detach.

With Patient C, the exposed buckle is not causing significant pain or irritation but since the patient is a young female who wears makeup, monitoring the buckle would not come without the increased risk of infection. This moderately high myopic patient is at risk for re-detachment if the buckle were to be removed; therefore, conjunctivoplasty using pig pericardium is the treatment of choice. However, this procedure does not come without the potential for exposure through the graft, but the benefits of conjunctivoplasty outweigh the risks.

These case reports exhibit the complex treatment and management options of scleral buckle exposure and the importance of regular follow-up examinations.

**Bibliography**


Take Away Points

- Individuals with a scleral buckle must have regular ocular examinations to monitor for exposure
- Not all exposed buckles warrant removal
- As primary eye care physicians who routinely examine patients with scleral buckles, awareness of key signs for potential exposure is essential for proper patient care