• Letter to the Editor •

Long-term chorioretinal changes following strabismus surgery—possible occult needle penetration

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Dear Editor,

Scleral penetration during strabismus surgery was first reported over 50 years ago[1]. Early manuscripts reported the incidence of this complication around 10%[1]. However, more recent studies suggest that this rate may have decreased[2-3]. Myopia, posterior fixation, and recession surgery have been associated with higher rates of scleral penetration during surgery[3-4]. Photographic documentation of the far peripheral fundus in the area of the scleral pass following strabismus surgery is scarce in the medical literature.

We report three asymptomatic patients with peripheral chorioretinal scars many years following strabismus surgery, suspected to represent inadvertent globe penetration. An Institutional review board (IRB)-approved study was performed according to the Declaration of Helsinki. Informed consent was waived by the IRB.

CASE 1

A healthy, asymptomatic 15-year-old female with a history of strabismus surgery and exotropia was referred due to far peripheral retinal changes. Attempts to obtain the surgical records were unsuccessful. Best-corrected visual acuity (BCVA) was 20/20 in each eye (OU). Anterior segment examination was remarkable for bitemporal conjunctival scars. Intraocular examination was normal except for a chorioretinal scar in the temporal periphery of the left eye (OS) associated with a localized retinal pigment epithelial (RPE) change (Figure 1). No tears or vitreoretinal interface abnormalities were present clinically.

CASE 2

A healthy, asymptomatic 12-year-old female with a history of strabismus surgery at 10 years of age returned for routine follow up examination. The patient had a history of poorly controlled intermittent exotropia and bilateral recession of the lateral rectus muscles (6.5 mm OU) with 6-0 polyglactin 910 suture with S29 needles (Vicryl, Ethicon, Somerville, NJ, USA). No complications were reported during surgery. BCVA was 20/20 OU. The examination was normal except for two far temporal localized hypopigmented round lesions and a linear RPE anomaly (OD; Figure 2). No tears or vitreoretinal interface abnormalities were present clinically.

CASE 3

A healthy, asymptomatic 43-year-old female with a history of multiple strabismus surgeries during childhood was evaluated due to consecutive exotropia and amblyopia OS. The patient had a history of esotropia and bilateral recession of the medial rectus muscles at another institution. No complications were reported during surgery. BCVA was 20/20 OD and 20/200 OS. The examination was normal except for a localized nasal hyperpigmented oval retinochoroidal lesion OS (Figure 3). No tears or vitreoretinal interface abnormalities were present clinically.

DISCUSSION

Complications of scleral penetration during strabismus surgery are rare but potentially severe. Previous reports have described vitreous hemorrhage, retinal detachment, endophthalmitis, and other adverse events following scleral penetration[4-6].

The largest study to date evaluating the incidence, risk factors, and sequela of recognized globe penetration during strabismus surgery was published in 2000 by Awad *et al*[6]. The retrospective study reviewed over 4886 procedures and found an overall incidence of 3/1000. Scleral penetration was 3 times more common in myopic eyes and 2 times more common in eyes with previous extraocular muscle surgery. Complications included transient hyphema, uveal prolapse, and retinal detachment. Most patients with clinically recognized penetrations did not lose visual acuity.

A recent prospective study that evaluated 144 subjects with indirect ophthalmoscopy following strabismus surgery reported rates of scleral “penetrations” (5.1%) and “perforations” (2.8%)[7]. This study used nonstandard terminology and defined scleral “penetration” as a full thickness scleral needle pass with the presence of retinal hemorrhage or edema in the

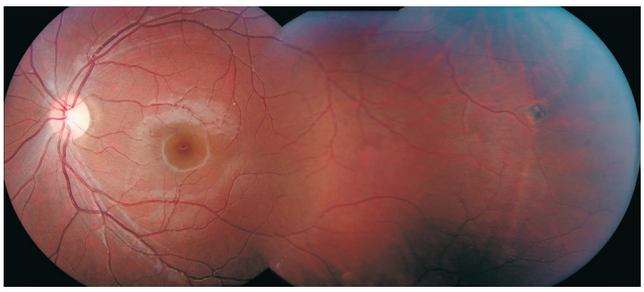

Figure 1 Color photograph of temporal far peripheral changes in the left eye.

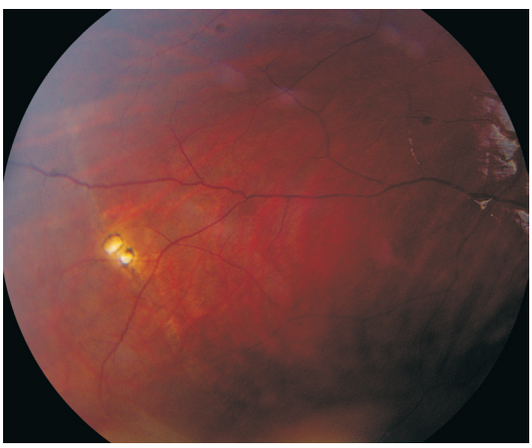

Figure 2 Color photograph of temporal far peripheral changes in the right eye.

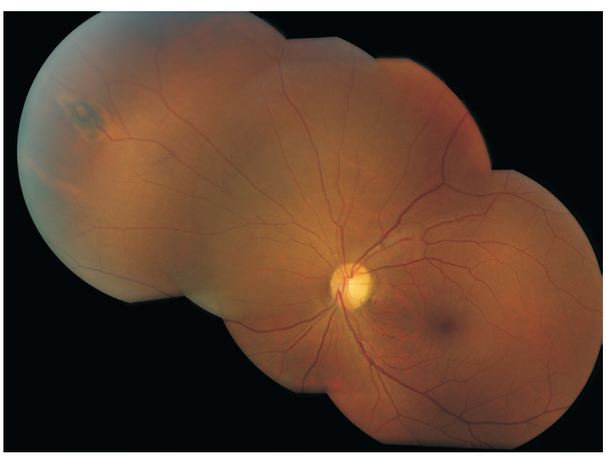

Figure 3 Color photograph of nasal far peripheral changes in the left eye.

area of muscle surgery without the presence of a retinal break. A scleral "perforation" was defined as full thickness scleral needle pass with a retinal break. The disparity between recent retrospective and prospective studies may be because occult perforations may be asymptomatic and may go unnoticed postoperatively.

The current series shows three illustrative examples of suspected scleral penetrations. The sites of these chorioretinal changes potentially matched the sites of the needle pass during strabismus surgery and given the site of the changes were at site of muscle surgery and that these patients had no other chorioretinal changes or pathology, it may be plausible that a needle pass was indeed responsible for the chorioretinal pathology. However, the case series is limited by the ability to unequivocally associate the needle pass to the development of postoperative changes. It remains uncertain whether these changes may represent an intraoperative penetration (without obvious hemorrhage or visible suture pass on indirect ophthalmoscopy) or delayed chorioretinal changes following surgery, perhaps related to postoperative suture migration or inflammation[8-10]. It is possible that these chronic changes have a combined etiology.

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