• Letter to the Editor •

Successful scleral buckling for long-standing retinal detachment with subretinal proliferation 4-year after strabismus surgery

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Dear Editor,

We would like to report the case of a patient with long-standing retinal detachment (RD) with subretinal proliferation after strabismus surgery who was successfully treated by scleral buckling. Globe perforation is a potentially dangerous complication of strabismus surgery that may result in vision loss or even complete blindness and pthisis bulbi[1-2]. Because most cases of scleral perforation occurred with handling ocular muscles are limited in superficial in depth and short in length, and produce no complications—its true incidence is not always apparent. Older studies have reported an incidence rate of 8%-12.1% of cases[3], whereas more recent studies have reported the rate as 0.13%-2.8%[4]. This decrease in the incidence has resulted from improved surgical techniques and the introduction of spatula needles. Increased awareness among surgeons may have also contributed to this decrease. Possible treatment options recommended for globe perforation include observation alone, cryopexy, diathermy, and laser retinopexy[5], however, treatment is still under debate. An iatrogenic scleral perforation typically causes damage to the immediate adjacent choroid, and there may or may not be damage to the underlying retina, depending on the depth of the needle pass[6]. Most cases with perforation are asymptomatic, however, visual loss with RD may occur several years later. In this study, we obtained the written informed consent from the patient, and this case study is in accordance with the tenets of the Declaration of Helsinki.

An 8-year-old male was referred to our hospital for decreased visual acuity 2 days ago in his right eye. Upon examination, his visual acuity was hand motion in the right eye, 1.0 in the left eye. A wide shallow RD, including macula with multiple subretinal bands, was identified under dilated detailed fundus examination (Figures 1B, 1D, 2A, 2B). He underwent 6.0-mm bilateral lateral rectus muscle recessions 4 years ago in our institute, and his right-eye visual acuity was 0.8 with normal fundus examination the day after that surgery (Figure 1A). After surgery, he did not notice any visual symptom, such as floaters, visual field defects, or ocular discomfort, until a recent abrupt decrease in the visual acuity in his right eye. He did not visit our clinic after surgery but regularly visited the local eye clinic for vision checks.

During the surgery, we identified small atrophic linear scar underneath the recessed lateral rectus muscle, which suspected the estimated perforation site during prior strabismus surgery. We performed scleral buckling and encircling with subretinal fluid drainage. Following conjunctival incision and four rectus muscle guiding sutures for isolation, sclerotomy was performed at the inferotemporal area to drain the subretinal fluid. Segmental buckling procedure using 506 G band sponge was tried at the estimated perforation site, which was located adjacent to the recessed lateral rectus muscle, but it was impossible to place the sponge underneath the rectus muscle. Therefore, the sponge was sutured 12-mm posterior from the limbus, 7-11 o'clock range, directly over the new insertion of the recessed lateral rectus muscle (Figure 3). Additionally, a 360-degree encircling procedure with 240 silicone band was performed. One week after surgery, the detached retina was completely attached with elevation at the buckling site, without any limitation of eye movement or diplopia. Visual acuity was restored up to finger count at 50 cm, and the attached retina without fluid collection or additional subretinal proliferation was maintained until the 1-year follow-up visit (Figures 1C, 1E, 2C, 2D).

Not all retinal breaks progress to true detachment. Vitreous changes, such as the detachment of the vitreous and

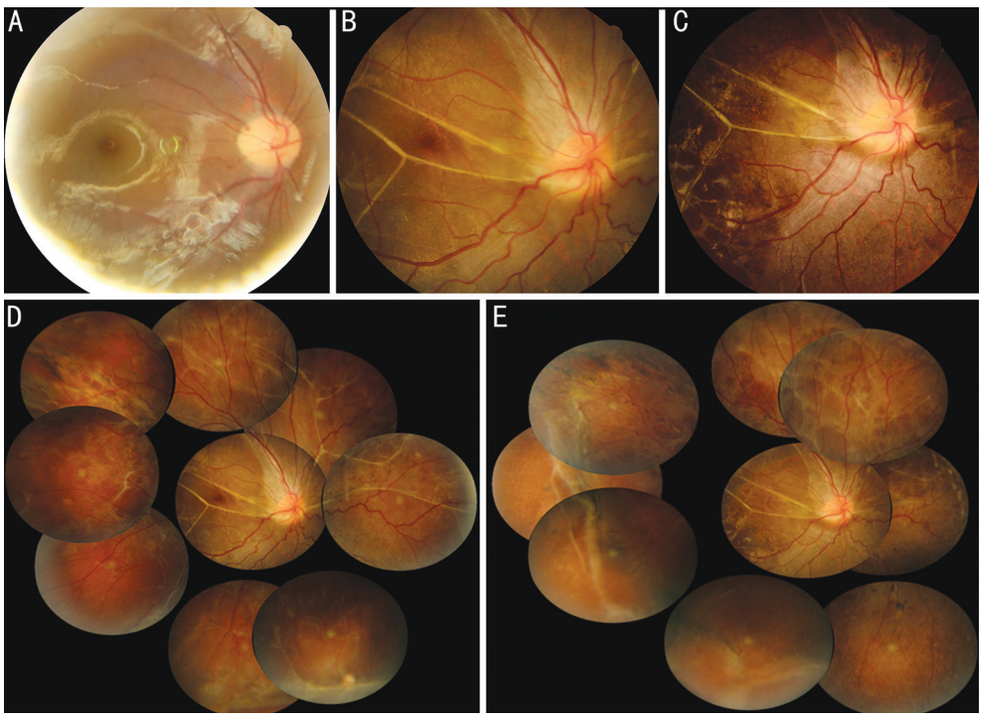

Figure 1 Fundus of the right eye Obtained at the day after previous surgery (A), at initial visit (B, D), and at last follow-up (C, E). A: Normal fundus and optic disc configuration; B, D: Wide shallow RD with multiple subretinal bands; C, E: Attached retina after scleral buckling.

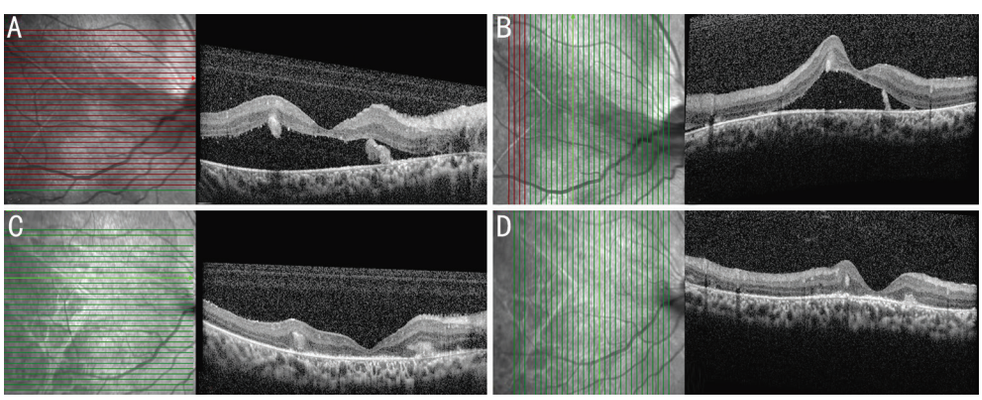

Figure 2 Optical coherence tomography of the right eye A, B: RD including macula. Intraretinal cystic lesion with peripapillary fibrous proliferation with band. C, D: Attached retina after scleral buckling. Whole retinal layers were thinned, and photoreceptor layer was disrupted. Some intraretinal cysts still existed.

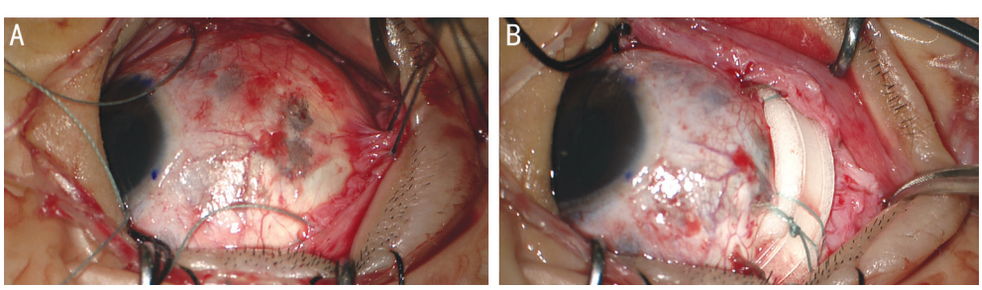

Figure 3 Intraoperative findings A: The estimated perforation site was exposed after conjunctival incision and guiding sutures, located adjacent to the new insertion of the recessed lateral rectus muscle. B: Segmental buckling procedure using 506 G band sponge directly over the recessed lateral rectus muscle.

vitreoretinal adhesions at the location of the break, contribute to the production of RD. The fibrous tissue emanating from the perforation site is one of the common findings in cases with retinal breaks progressed to RD. Although there is no consensus regarding prophylactic treatment, laser treatment or cryopexy is likely warranted for some cases with risks. Patients who have disturbed vitreous, including aphakia, high myopia, systemic collagen disorders such as Marfan syndrome, older

age, extensive retinal damage, or fluid cuffs around the retinal perforation, or those unavailable for follow-up are considered to have predisposing factors for RD. However, our patient was an 8-year-old male who had a firm vitreous base and was unaware of the perforation during surgery. In the one of previous report, in nearly every case, the surgeon was aware of all subsequently identified perforations during surgery[7]. By the retrospective review with routine funduscopic examination after strabismus surgery, they detected 10 scleral perforations in 513 patients (1121 procedures). They reported that most perforations were not detected at the time of the surgery and were incidental findings at the time of screening[8]. Some authors have recommended routine funduscopy after surgery. In our case, a patient without any risk factor who was unaware of the perforation during surgery presented with true RD with severe visual loss after 4 years. During surgery, good exposure, maintaining a dry operative field, using adequate magnification and illumination, manipulation of the needle tangential to sclera, use of blunt-tipped scissor, and providing special attention to fibrotic muscles are important. Long-term follow-up is also essential. In our case, a progression of chronic RD was not detected despite of regular visual acuity check-up in local eye clinic. The patient was only 8-year-old, the peripheral visual field occlusion and minor floater was not recognized by him or disregarded by doctor. Also, the central visual acuity may be remained well until the macular-off detachment development.

Retinal thinning resulting in atrophy is a characteristic finding in long-standing RD[9]. Secondary intraretinal cysts may develop if RD has been present for approximately 1y, and these disappear after retinal reattachment. In this case, scleral buckling surgery was performed to treat long-standing RD with subretinal proliferations. Scleral buckling is highly successful in eyes with rhegmatogenous RD associated with subretinal proliferations and no or minimal epiretinal proliferations[10]. An additional 360-degree encircling was performed in order not to miss all retinal holes and tears in long-standing RD. Because of the location of the perforation site, the buckling sponge was applied upon the new insertion of the recessed lateral rectus muscle, but there was no adverse effect to muscle action.

In this case, a patient without any predisposing factor who was unaware of perforation during surgery progressed to true RD with severe visual loss after 4y. After surgery, a regular examination, including dilated funduscopy, should be followed. Scleral buckling surgery on recessed muscle is a good treatment option.

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Conflicts of Interest: Kim H, None; **Chung IY,** None.

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