

## Highly Myopic Strabismus

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### Abstract

### Case Report

A 78-year-old man presented with progressive esotropia of the left eye. He wears extremely thick eyeglasses (-12.75 diopter) because of high myopia, and the left eye was fixed in a position of extreme adduction, and ocular motility was severely restricted in all directions. Orbital magnetic resonance imaging demonstrated that the posterior portion of the elongated globe out from the muscle cone in the left eye. We performed surgery for muscle union of the superior rectus and lateral rectus muscles with recession of the medial rectus muscle. Postoperatively, esodeviation and adduction movement were improved. During surgery, it is considered that the most difficult procedure is suturing at a distance of 15 mm behind the superior rectus muscle insertion. In order to solve this problem, the initial traction suture at a distance 7 to 8 mm behind the superior rectus insertion might be effective.

**Keywords:** high myopia, esotropia.

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## INTRODUCTION

Axial high myopia sometimes gives rise to a particular type of strabismus, characterized by mechanical restriction in both abduction and sursumduction, resulting in esotropia and hypotropia [1, 2]. At the most advanced stage, the affected eye is so tightly fixed in an esotropic and hypotropic position that movement in any other direction is impossible. This condition has been called “convergent strabismus fixus” or “myopic strabismus fixus”. The posterior half of the globe is dislocated from the muscle cone. In 2010, Yamaguchi and Yokoyama [1] proposed the term “highly myopic strabismus” for this condition.

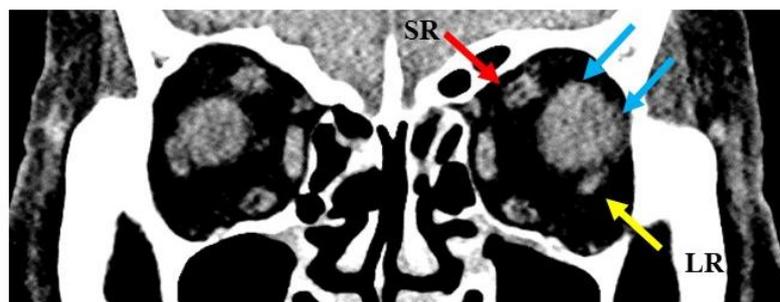
Herein, we present a case of highly myopic strabismus treated with muscle union of the superior

rectus (SR) and lateral rectus (LR) muscles with recession of the medial rectus (MR) muscle.

## CASE REPORT

A 78-year-old man presented with progressive esotropia of the left eye. Best-corrected visual acuity was 0.5 and hand motion in his right and left eyes, respectively. He wears extremely thick eyeglasses (-12.75 diopter) because of high myopia, and the left eye was fixed in a position of extreme adduction, and ocular motility was severely restricted in all directions (Figure 2).

Orbital magnetic resonance imaging demonstrated that the posterior portion of the elongated globe out from the muscle cone in the left eye (Figure 1 blue arrows).



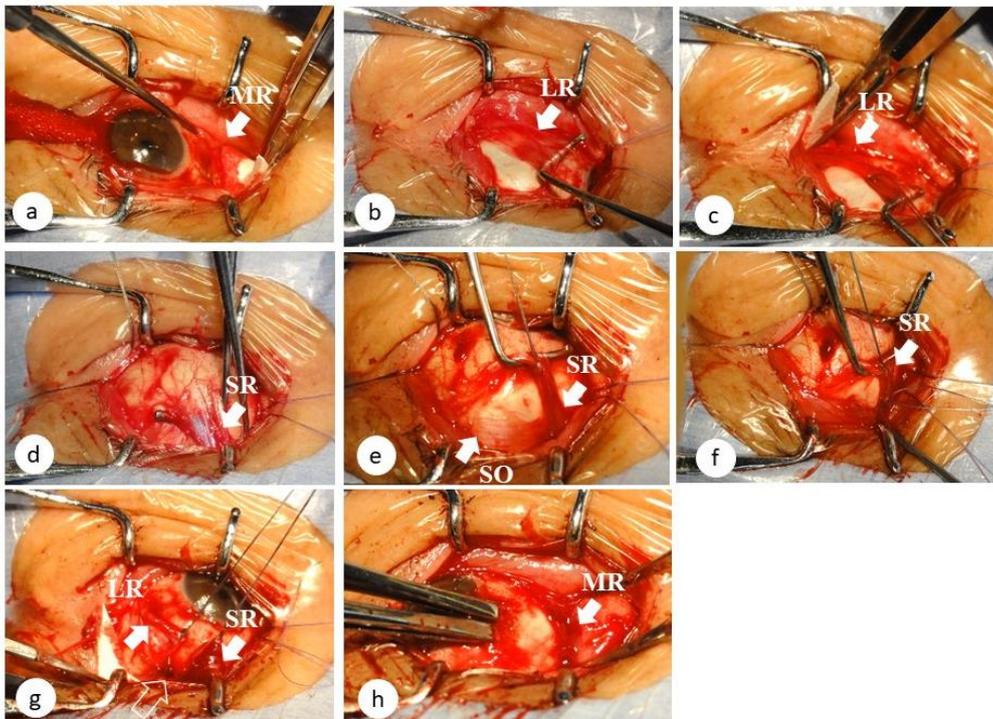
**Fig-1: Coronal MRI showed the posterior portion of the elongated globe out from the muscle cone in the left eye (blue arrows) LR, lateral rectus muscle; SR, superior rectus muscle**



**Fig-2: Preoperative ocular motility photographs of the patient in 9 gaze positions**

In accordance with the procedure described by Yamaguchi *et al.* [1], we performed surgery for muscle

union of the SR and LR muscles with recession of the MR muscle under general anesthesia (Figure 3a-h).



**Fig-3: Operative finding of surgical procedure (MR, medial rectus muscle; LR, lateral rectus muscle; SR, superior rectus muscle; SO, superior oblique muscle)**

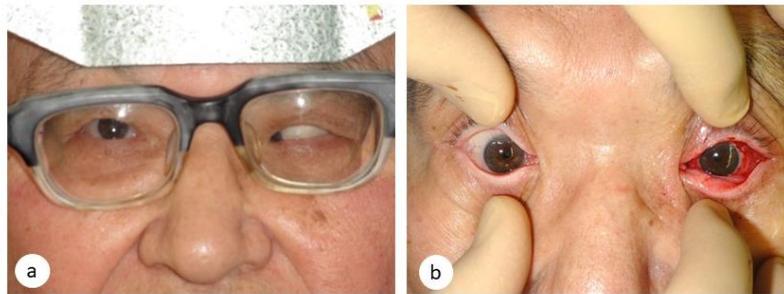
During surgery, forced duction test showed no abduction above the midline in the left eye. After a

fornix-based conjunctival incision, the MR muscle was explored (Figure 3a). The LR muscle was isolated and

cleared of the surrounding intermuscular septum (Figure 3b), and a double-armed 5-0 polyester suture was placed by passing a needle through the superior half of the LR at a distance of 15 mm behind the LR insertion point (Figure 3c). Next, the SR muscle was also isolated and cleared of the surrounding intermuscular septum (Figure 3d). After the traction suture at a distance of 8 mm behind the SR insertion (Figure 3e), a double-armed 5-0 polyester suture was placed by passing a needle through the lateral half of

the SR at a distance of 15 mm behind the SR insertion point (Figure 3f). The suture was then tied to pull the two muscles (LR and SR) together (Figure 3g hollow white arrow). Finally, MR muscle recession was also performed 7 mm from the insertion point (Figure 3h).

Postoperatively, esodeviation and adduction movement were improved (Figure 4b). The patient was satisfied with the surgical outcome and no postoperative anterior segment ischemia was detected.



**Fig-4: Preoperative (a) and postoperative (b) ocular photographs**

## DISCUSSION

Yamaguchi and Yokoyama [1] performed a surgical procedure involving the muscle union of the SR and LR muscles with or without MR recession in 23 eyes of 14 patients who had a diagnosis of highly myopic strabismus. They reported that the angle of ocular deviation of 58.8 prism diopters (PD) decreased to 0.7 PD postoperatively. They revealed that this procedure was effective for restoring the dislocated globe into the muscle cone and for improving both ocular motility and deviation. We consider that the most difficult procedure of this operation is suturing at a distance of 15 mm behind the SR insertion. In order to solve this problem, the initial traction suture at a distance 7 to 8 mm behind the SR insertion might be effective.

## CONCLUSIONS

Muscle union of the SR and LR muscles with MR muscle recession represents an effective procedure for highly myopic strabismus. During surgery, the initial traction suture at a distance 7 to 8 mm behind the SR insertion before suturing at a distance of 15 mm from the SR insertion might be effective.

**Disclosure:** The author declares no conflict of interest.

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