

Surgical Treatment of Sensory Cyclic Esotropia

Dear Editor,

Cyclic esotropia, also known as alternate-day esotropia, usually shows a 48-hour cycle, characterized by 24 hours of orthophoria and 24 hours of monocular suppression over 30 to 40 prism diopters (PD). However, 24- to 96-hour cycles have also been reported, and esotropia occurs irrespective of visual acuity, accommodation, fatigue, and interference with fusion [1].

Although the cause of cyclic esotropia remains unknown, it is thought to be related to a problem with circadian rhythm in humans. It may be congenital, but it is also known to be triggered by ocular surgery, abnormalities in the central nervous system, trauma, and consecutive strabismus after surgery [2]. However, cyclic strabismus related to sensory strabismus is rare. Herein, we report a case of cyclic esotropia that developed following surgery for correction of sensory esotropia.

A 49-year-old man visited our clinic with a chief complaint of cyclic esotropia that developed 4 years after strabismus surgery. He had undergone 8-mm recession of the right medial rectus muscle 8 years previous at another hospital for sensory esotropia related to anisometric amblyopia (30 PD). The esotropia showed a 48-hour cycle and appeared every other day. The patient's best corrected visual acuity was counting fingers in the right eye and 1.0 in the left eye, with refractive errors of -7.00 and -0.5 Dsph in the right and left eye, respectively. Adduction limitation was not observed in either eye. On the days strabismus was reported, the patient showed 50 PD esotropia (Fig. 1A, 1B). The patient underwent 7-mm resection of the right lateral rectus muscle and 6-mm recession of the left medial rectus muscle, and there were no specific findings on the forced duction test. After surgery, the patient did not show cyclic

esotropia and maintained orthophoria for 7 months.

The pathophysiology of cyclic esotropia is obscure and is assumed to be related to circadian rhythm. Some reports speculate that disorders of the hypothalamus, superior colliculi, or midbrain may be causative factors [3]. Additionally, the reticular formation, colliculi, and oculomotor nuclei connected to the hypothalamus are assumed to be the source of periodic stimulation. In general, good binocular function is preserved on orthophoric days, and poor binocular function with suppression is observed on strabismic days. However, cases of cyclic esotropia observed under conditions with poor binocular function have been reported as well, such as after glaucoma surgery or retinal detachment surgery [4]; our case also showed cyclic esotropia associated with poor binocular function. The relation between binocular function and cyclic esotropia should be re-considered, and the present case demonstrates that good

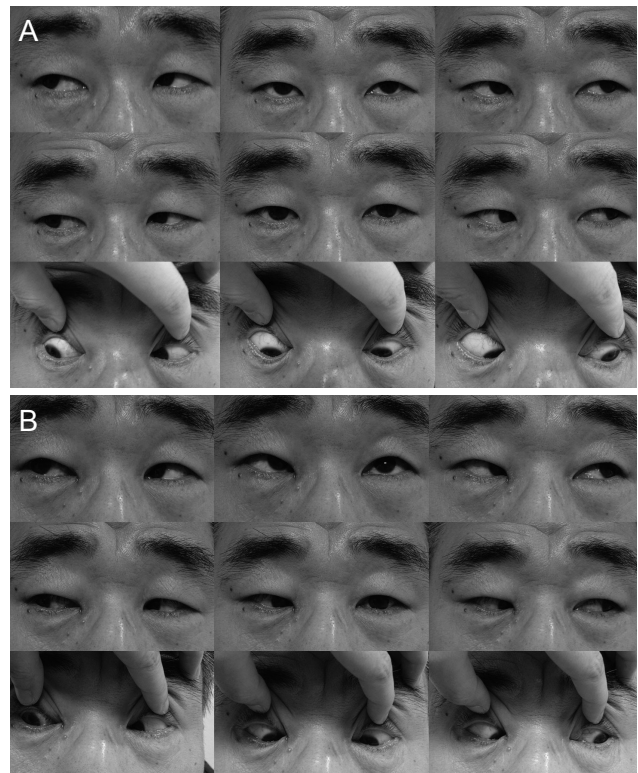


Fig. 1. Nine cardinal photographs. (A) Orthotropia is observed on a normal day. (B) A large angle of esotropia is noted in the right eye; however, no limitation in ocular movement is observed. A written consent was obtained from the patient.

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binocular function is not a prerequisite for development of cyclic esotropia.

The purpose of the treatment for this condition is good binocular function and cessation of periodicity. Surgical treatment is performed based on the maximum deviation on the day the patient presents with strabismus. Some previous reports have shown that surgical treatment generally has good outcomes, but other reports state that surgery only corrects the deviation and not the fundamental problem [5].

To the best of our knowledge, this is the first report of a case of cyclic esotropia that developed after surgery for sensory esotropia, and surgical treatment performed successfully according to the maximal deviation on the strabismic day showed good results.

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Conflict of Interest

No potential conflict of interest relevant to this article was reported.

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