



Unilateral Medial Rectus Recession Can Produce Incomitance in Patients with Acute Acquired Comitant Esotropia: A Case Series

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Dear Editor,

Unilateral medial rectus (MR) recession is sometimes considered in acute acquired comitant esotropia (AACE), especially when the deviation is small. However, we observed lateral incomitance and persistent diplopia in lateral gaze following unilateral surgery, even in small-angle esotropia. This correspondence summarizes our findings in five consecutive AACE patients who underwent unilateral MR recession with a minimum follow-up of 6 months.

This study was approved by the Institutional Review Board of Severance Hospital (No. 4-2015-0179) and followed the tenets of the Declaration of Helsinki. Written informed consent for publication was obtained from all patients included in this study.

All five patients (mean age, 36.1 ± 20.3 years; range, 18.5–70.9 years) presented with comitant esotropia less than 20 prism diopters (PD). The mean preoperative deviation was 14.8 PD at distance and 14.0 PD at near. Symptom duration ranged from 1 to 6 years (mean, 3.0 ± 2.0 years), and best-corrected visual acuity was $\geq 20 / 25$ in all eyes. Initial surgeries consisted of unilateral MR recession with

intraoperative adjustment, under topical anesthesia. The amount of recession ranged from 4.0 to 6.5 mm. Two patients received left MR recession and three received right MR recession, depending on laterality and deviation. Forced duction tests were negative in all cases, and preoperative neuroimaging showed no intracranial or orbital abnormalities in the examined patients (Supplementary Table 1).

Despite achieving orthotropia in primary gaze immediately after surgery, all patients developed residual esotropia or diplopia in lateral gaze. For example, an 18-year-old female patient showed 14 PD esotropia preoperatively and underwent 5.0 mm left MR recession. Although she was orthotropic at 6 months in primary gaze, 4 PD esotropia persisted in left gaze, associated with diplopia. Similarly, a 71-year-old female patient presented with 10 PD esotropia, underwent right MR recession of 4.5 mm, and developed persistent esotropia in lateral gaze up to 16 PD, which improved only after contralateral MR recession.

Three of the five patients required a second surgery on the contralateral MR muscle due to residual incomitance and symptomatic diplopia. In these patients, follow-up periods ranged from 11 to 59 months (mean, 20.8 ± 22.2 months). Final outcomes demonstrated orthotropia in all gaze positions in four of the five patients, with one patient having mild esophoria (2 PD) in lateral gaze. Final stereopsis was measurable in all available cases, with improvement in fusion.

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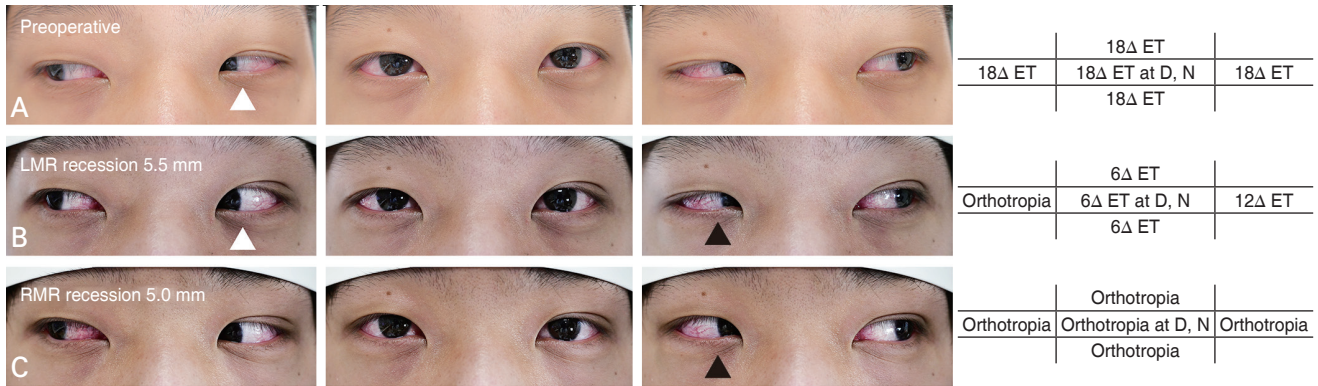


Fig. 1. A 26-year-old male patient presented with acute diplopia and esotropia (ET). (A) The patient had 18Δ ET at distance (D) and near (N). The angle of deviation was comitant in six cardinal positions. The excessive adduction was noted in both eyes (left eye excessive adduction: arrowhead). (B) Excessive adduction and eyelid fissure narrowing at attempted adduction were relieved after left medial rectus (LMR) recession 5.5 mm (arrowhead), but eyelid fissure narrowing was still noted in unoperated eye (black arrowhead). (C) After right medial rectus (RMR) recession 5.0 mm, he was orthophoric at primary gaze and lateral gaze. Eyelid fissure narrowing and excessive adduction was relieved in the right eye after right MR recession (black arrowhead).

These findings suggest that unilateral MR recession, even in cases with small and comitant deviation, may predispose to lateral incomitance due to uncorrected MR tonicity. Previous studies have reported supernormal MR size in AACE, indicating increased MR tonicity [1,2]. In line with this observation, we hypothesize that unopposed action of the contralateral MR contributes to gaze-dependent misalignment. Notably, excessive adduction accompanied by narrowing of the palpebral fissure was observed preoperatively in some patients and improved only after bilateral MR recession, supporting this mechanical explanation (Fig. 1A–1C).

Nonaugmented surgery may have led to incomplete correction in AACE [3]. Nevertheless, the overall pattern suggests that even stronger initial correction would not have fully resolved the deviation in side gazes. A hypothetical patient with unilateral augmented MR recession might show orthotropia in primary gaze, esotropia in the ipsilateral gaze, and exotropia in the contralateral gaze. Direct comparison with augmented unilateral surgery in AACE would be ideal but is unlikely to be feasible due to ethical limitations. While unilateral MR surgery offers potential benefits such as muscle preservation and shorter operative time, it carries the risk of residual symptoms that may necessitate additional procedures [4]. All patients in this study received less than 7.0 mm of MR recession. Although this amount is generally not considered to cause mechanical restriction, postoperative incomitance still occurred.

Webb and Lee [5] previously reported that ipsilateral MR recession and lateral rectus resection were effective for acquired distance esotropia in myopic patients, but recurrence developed in 29% of cases. Based on our observations, we postulate that persistent overaction of the unoperated MR may similarly contribute to recurrence and lateral incomitance in AACE. Although patients in our series remained orthotropic in primary gaze, most experienced diplopia in lateral gaze due to incomitance of the unoperated eye. Grin and Nelson [6] demonstrated the effectiveness of unilateral MR recession in moderate esotropia. Favorable outcomes of graded unilateral MR recession have been reported in non-AACE esotropia [7,8], but such results were not reproduced in our AACE cases. Our results suggest that unilateral surgery may not be appropriate in AACE, where bilateral muscle balance appears to be critical for restoring full binocular alignment and eliminating diplopia.

In conclusion, our case series supports that unilateral MR recession is not recommended in AACE, even for deviations under 20 PD. Lateral gaze incomitance and persistent diplopia may occur, necessitating a second surgery. We recommend initial symmetric bilateral MR recession with consideration for augmented amounts and intraoperative adjustment to ensure stable alignment in all gaze directions and minimize postoperative symptoms.

Conflicts of Interest: None.

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Supplementary Materials

Supplementary Table 1. Preoperative and postoperative data in patients with acute acquired comitant ET
Supplementary materials are available from <https://doi.org/10.3341/kjo.2025.0127>.

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Supplementary Table 1. Preoperative and postoperative data in patients with acute acquired comitant ET

Patient no.	Sex	Age (yr)	Preoperative deviation (PD)	Duration (yr)	Sensory status at initial (arcsec)	Initial surgery (mm)			Postoperative deviation (PD)			Second surgery (mm)			Final deviation (PD)			Sensory status at final visit (arcsec)	Follow-up (mon)
						Right gaze	Primary gaze	Left gaze	Right gaze	Primary gaze	Left gaze	Right gaze	Primary gaze	Left gaze	Right gaze	Primary gaze	Left gaze		
1	Male	26	18ΔET at D, N	4	200	LMR Rec 5.5	Ortho	6ΔE(T)	12ΔET	RMR Rec 5.0	Ortho	Ortho	Ortho	Ortho	Ortho	Ortho	Ortho	20	21
2	Male	35	12ΔET at D, N	1	120	RMR Rec 4.0	4ΔET	Ortho	Ortho	-	-	-	-	-	-	-	-	50	7
3	Female	18	14ΔET at D, N	6	NA	LMR Rec 5.0	Ortho	Ortho	4ΔET	-	-	-	-	-	-	-	-	NA	6
4	Female	29	20ΔET at D, 16ΔET at N	2	200	RMR Rec 6.5	10ΔET	6ΔE(T)	6ΔET	LMR Rec 4.0	2ΔET	Ortho	Ortho	2ΔET	Ortho	2ΔET	Ortho	70	11
5*	Female	71	10ΔET at D, N	2	400	RMR Rec 4.5	16ΔET	8ΔET	6ΔET	LMR Rec 4.5	Ortho	Ortho	Ortho	Ortho	Ortho	Ortho	Ortho	100	59

Orbit magnetic resonance imaging or computed tomography scans were conducted in all patients to rule out any intracranial pathology. Follow-up indicates the duration after initial surgery.

ET = esotropia; PD = prism diopters; D = distance; N = near; LMR = left medial rectus; Rec = recession; Ortho = orthotropia; E(T) = intermittent esotropia; RMR = right medial rectus; NA = not available.

*Sagging eye syndrome and heavy eye syndrome were ruled out in this patient.