

Research Article**Surgical Outcomes of Sensory Strabismus****Shinji Makino¹, Kozue Hozawa¹, Reiko Kondo¹, Mika Kanai¹, Haruko Suto¹, Kanako Ito¹, Go Mawatari¹**¹Department of Ophthalmology, Jichi Medical University, Shimotsuke, Tochigi, Japan***Corresponding author**

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Abstract: The purpose of current study to evaluate the surgical outcomes of sensory strabismus. We retrospectively studied 7 consecutive patients who had undergone strabismus surgery for sensory strabismus. Patient age ranged from 14 to 48 years. Initial diagnoses were exotropia (n = 6) and esotropia (n = 1). In all patients, surgery was performed only on the affected eye. Initial types of operative procedures were muscle recession and muscle resection (n = 5) and muscle recession only (n = 2). Results obtained with initial surgery were good in all cases (85.7%) except one. All patients achieved successful postoperative results by their final visit. Our study results suggest that surgery for sensory strabismus achieves good cosmetic appearance.**Keywords:** Sensory strabismus; strabismus surgery.

INTRODUCTION

Sensory strabismus has been defined as a deviation secondary to diminished vision in one or both eyes [1-6]. Prevalence of sensory strabismus has been estimated to be between 5% and 9% of patients with unilateral low visual acuity [4,5]. However, there are few reports regarding surgical results of sensory strabismus [2-6]. Herein, we report surgical results of sensory strabismus.

MATERIALS AND METHODS

We retrospectively studied 7 consecutive patients who had undergone strabismus surgery for sensory strabismus between 2010 and 2011. Visual acuity of the affected eye was <0.2. Patient age ranged from 14 to 48 years. Initial diagnoses were exotropia (n = 6) and esotropia (n = 1). All surgeries were performed at an outpatient facility and local anesthesia was used. One of the authors (S.M.) operated on all patients. In all patients, surgery was performed on only the affected eye. Initial types of operative procedures performed were muscle recession and muscle resection (REC+RES; n = 5) and muscle recession only (REC; n = 2).

RESULTS

Results of all 7 cases are listed in Table 1.

Visual acuity of the worst eye varied between 0.15 and no light perception. Probable causes of vision loss were congenital in 5 cases (Cases 1, 3, 5, and 7) and acquired in 2 cases (Cases 2 and 4). The following sections provide descriptions of 2 typical patients.

CASE 3

A 33-year-old man presented with >30° exotropia in the right eye (Figure 1, top). He had a surgical history of Coats disease at 3 years of age. Visual acuity was no light perception in the right eye. A 9 mm lateral rectus REC and a 7 mm medial rectus RES were performed on the right eye. One-month postoperative, his ocular alignment improved within 5° of exotropia (Figure 1, bottom). The patient was satisfied with this condition.

Exotropia was observed in the right eye (top). After 3 months of surgery, eye position was improved cosmetically (bottom).

CASE 7

A 48-year-old woman presented with >50° esotropia in the left eye (Figure 2, top). Visual acuity was 0.01 in the left eye. A 10 mm medial rectus REC and an 8 mm lateral rectus RES were performed on the left eye. One-month postoperative, her ocular alignment improved and achieved orthophoria (Figure 2, middle); however, she was not satisfied with this condition because there was too much improvement. Eye position was gradually re-adjusted back to exotropia. Six months after initial surgery, a 6 mm lateral rectus REC was performed on the left eye. Although her eye position was slightly esotropic, she was satisfied with her corrected eye position (Figure 2, bottom).

Esotropia was observed in the left eye (top). After 1 month of surgery, eye position was improved and orthophoria was achieved (middle). After the re-adjustment operation, the eye position was slightly

esotropic and she was satisfied with this corrected eye position (bottom).

Result obtained with initial surgery was good in all cases (85.7%) except for 1 (Case 7). All patients achieved successful postoperative results by their final visit.

Table-1: Sensory strabismus cases

Case	Age (years)	Sex (M/F)	Cause (onset)	Visual acuity (right/left)	Initial deviation	Type of surgery	Final deviation
1	14	M	mac dege (2 yr)	0.05/1.2	RXT 35PD	RLR REC	RXT 5°
2	28	M	Trauma (20 yr)	0.01/1.2	RXT 45PD	RLR REC RMR RES	Ortho
3	33	M	Coats (2 yr)	0/1.2	RXT 30°	RLR REC RMR RES	RXT 5°
4	41	M	Trauma (6 yr)	0.04/1.2	RXT 20°	RLR REC RMR RES	Ortho
5	43	F	RP (12 yr)	0.02/1.2	RXT 50PD	RLR REC RMR RES	RXT 5°
6	45	M	RD (40 yr)	1.2/0.15	LXT 20°	LLR REC	Ortho
7	48	F	Unknown (3 mo)	1.2/0.01	LET 50°	LMR REC LLR RES (LLR REC)	Ortho LET 10°

F = female; M = male; mac dege = macular degeneration; RP = retinitis pigmentosa; RD = retinal detachment; PD = prism diopters; R = right; L = left; R(L)XT = right (left) exotropia; LET = left esotropia; MR = medial rectus muscle; LR = lateral rectus muscle; REC = recession; RES = resection; Ortho = orthophoria



Fig-1. Case 3 pre- and post-operative ocular motility photographs in 9 positions of gaze



Fig-2: Case 7 ocular motility photographs in 9 positions of gaze

DISCUSSION

In the largest series of sensory strabismus patients to date, Maruo *et al.* [3] reported that 165 (14.9%) out of 1,105 patients with sensory strabismus had undergone strabismus surgery. According to their report, initial diagnoses were exotropia (n = 151) and esotropia (n = 14). Initial types of operative procedures performed were REC+RES (n = 135), RES (n = 9), and REC (n = 7) in exotropic patients, and REC+RES (n = 7) and REC (n = 7) in esotropic patients. Maruo *et al.* [3] reported that all 165 patients achieved successful results with a total of 173 surgeries. In our present study, surgery for sensory strabismus achieved good cosmetic appearance.

The main objective of strabismus surgery is to achieve parallelism of eyes in order to establish or improve binocularity. It has always been believed that moderate or severe amblyopia was a poor prognostic factor for achieving stability, in short- and long-term results, in both children and adults. For this reason, many present-day patients with sensory strabismus still have the false impression that their deviation cannot be corrected [4]. We emphasize that sensory strabismus surgery has achieved good cosmetic appearance.

CONCLUSION

Although we obtained successful results in patients with sensory strabismus, we recommend that careful consideration should be made when operating on patients with esotropia to avoid future exotropic changes [6]. Further investigation in a larger cohort of patients is needed to confirm our results.

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