Saudi Journal of Ophthalmology (2018) xxx, xxx–xxx

Original Article

The use of one muscle recession for horizontal strabismus

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Abstract

Purpose: To evaluate the outcomes of one muscle recession for horizontal comitant strabismus at a major referral hospital in the Middle East.
Method: Retrospective charts review of postoperative outcomes of 90 patients who had undergone one muscle recession for small to moderate angle esotropia or exotropia. Data were collected for age, vision, amblyopia, previous surgery or botulinum toxin injection, preoperative deviation, amount and type of one muscle surgery, and postoperative deviation at the initial and last (six months or more) postoperative visit. Successful alignment was defined as ±10 prism diopters (PD) of orthophoria.
Results: Sixty patients underwent medial rectus recession and 30 patients underwent lateral rectus recession. The average preoperative and last follow up deviation -respectively- was 24 ± 6.1 PD (15–35) PD and 14.62 ± 8.91 PD in the medial rectus recession group and 21.3 ± 5.1 PD (12–30) and 12.60 ± 8.74 in the lateral rectus recession group. The final success rates were 63.3% in both groups.
Conclusion: Single muscle strabismus surgery to correct horizontal strabismus had a variable outcome. Larger recession may help in achieving better outcomes. Properly designed prospective studies may help in identifying the factors affecting the outcomes of single muscle strabismus surgeries.

Keywords: One muscle recession, Strabismus

https://doi.org/10.1016/j.sjopt.2018.05.001

Introduction

Historically, one muscle surgery for comitant strabismus was controversial due to concerns over the high percentage of cases that were under corrected.[1] However a recent literature review found that recession of the medial and lateral rectus for small to moderate angle strabismus and resection for under corrected strabismus produced good outcomes.[1] However, our clinical experience did not always support the use of one muscle surgery. Based on our observations we evaluated the outcomes of one-muscle surgeries at a major referral hospital in the Middle East.

Methods

This is a retrospective study to evaluate the postoperative outcomes of patients who had undergone one muscle surgery at King Khaled Eye Specialist Hospital (KKESH), Riyadh, Saudi Arabia. The Institutional Review Board at KKESH approved this study. Potential cases for inclusion in the study

Received 2 April 2017; accepted 8 May 2018; available online xxxx.

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[1] The co-author reviewed the study and agreed about the conclusion and all participated sufficiently in preparing it.

Peer review under responsibility of Saudi Ophthalmological Society, King Saud University

Production and hosting by Elsevier

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Table1. Demographic data and mean follow up period for patients who underwent one muscle recession for horizontal strabismus.

		Type of Surgery			
		Medial rectus recession (n = 60 patients)		Lateral rectus recession (n = 30 patients)	
Mean age in years (range)		11.1	(5–30)	18.3	(0–39)
Gender	Male	39	(65.0%)	22	(73.3%)
	Female	21	(35.0%)	8	(26.7%)
Amblyopia in the operated eye	Yes	22	(36.7%)	15	(50.0%)
	No	38	(63.3%)	15	(50.0%)
First postoperative visit in months		1.2	(0–4)	1.1	(0–3)
Last postoperative visit in months		16.9	(6–41)	17.0	(6–33)
Mean preoperative angle (range)		24 ± 6.1 PD (15–35)		21.3 ± 5.1 PD (12–30)	
Previous surgery	Botox injection	18	(30.0%)	2	(6.7%)
	BMR resection	–	–	1	(3.3%)
Mean change in angle of deviation at last postoperative visit		14.62 ± 8.9 PD		12.6 ± 8.7 PD	
Success rate at last visit		38	(63.3%)	19	(63.3%)

PD = Prism diopters; $p < 0.05$ is statistically significant.

Table 2. Relationship of the previous strabismus surgery and success rate.

			Medial rectus recession			Lateral rectus recession		
			Status last visit			Status last visit		
			Success	Failure	Total	Success	Failure	Total
Previous strabismus surgery*	Yes	Count	9	9	18	1	2**	3
		%	50.0%	50.0%	100.0%	33.3%	66.7%	100.0%
	No	Count	27	15	42	19	8	27
		%	64.3%	35.7%	100.0%	70.4%	29.6%	100.0%
P-value			0.30			0.25		
Total		Count	36	24	60	20	10	30
		%	60.0%	40.0%	100.0%	66.7%	33.3%	100.0%

* All are Botox injections.
** Except one patient had bilateral medial rectus resection.

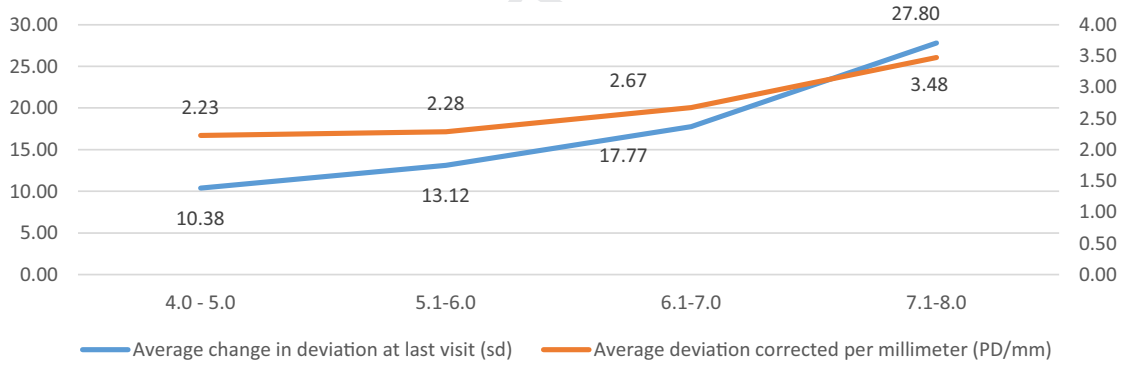

Fig. 1. The relationship between surgery dose and average change in deviation in prism diopter/millimeters for medial rectus recession.

were identified using the hospital coding system for strabismus surgery. Inclusion criteria were any patient with esotropia or exotropia who had medial rectus or lateral rectus recessions from 2009 to 2013. Patients were excluded if they had a documented A or V pattern, documented in comitant strabismus, previous surgery on the same muscle or any previous strabismus surgery without clear documentation. Data were collected on age at initial surgery, vision and amblyopia if present, as per the treating physician diagnosis, refractive errors, previous surgery or botulinum toxin injection, preoperative angle of deviation for near and distance with the appropriate refractive correction, amount and type of one muscle surgery and postoperative deviation at the initial and last postoperative visit with the appropriate refractive correction. In very young children or in patients with dense amblyopia, the Krimsky light reflex test was used only in primary gaze. Successful alignment defined as ≤10 prism diopters (PD) of orthotropia on primary gaze at distance for the patients with exotropia and near accommodative targets for esotropia patients. The angle measured at or after six months postoperatively was considered as the final outcome.

The results of each group (esotropia and exotropia) were analyzed separately. The preoperative near deviation for the ET group and distance deviation for the XT group were used for analysis. The correlation between variables was analyzed using the Chi square or Fisher's exact test as appropriate. A p value less than 0.05 is considered statistically significant.

Please cite this article in press as: Almahmoudi F.H., et al. The use of one muscle recession for horizontal strabismus. *Saudi J Ophthalmol* (2018), https://doi.org/10.1016/j.sjopt.2018.05.001