

Inferior Oblique Myectomy versus Anterior and Nasal Transposition for Superior Oblique Muscle Palsy (preliminary report)

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Abstract

Background: Objective: To evaluate the effect of inferior oblique Anterior and Nasal transposition procedure and myectomy as treatment options for superior oblique palsy. **Methods and Analysis:** 20 patients were classified into two groups. Group A included 10 patients underwent anterior and nasal transposition (ANT) of inferior oblique muscle (2mm × 2mm nasal and posterior to inferior rectus insertion). Group B 10 patients who underwent inferior oblique myectomy. **Results:** In ANT group, the vertical deviation improved in primary position postoperative versus 16.7 ± 1.6 in right eye/ 18 ± 2 in left eye preoperative. In myectomy group, the vertical deviation improved in primary position versus 13.3 ± 3.5 in right eye/ 12 ± 2 in left eye preoperative. **Conclusion:** The results of both groups are satisfactory as surgical treatment options to SOP with accepted success rates.

Key words : Inferior Oblique Myectomy, Nasal Transposition, Superior Oblique Muscle Palsy

INTRODUCTION

Superior oblique palsy (SOP) is one of the most common causes of vertical ocular muscle palsy with over-elevation of the affected eye in primary position that increases in contralateral gaze and with ipsilateral head tilt. Torsional and vertical diplopia may occur resulting in compensatory head tilt.^[1]

Inferior oblique anterior transposition was first described at (1980) to correct both hypertropia and excyclotorsion in superior oblique palsy presenting with inferior oblique over action but this may be cause post-operative limited elevation. In 1992 -2001 antero-nasal transposition of inferior oblique was described to overcome this problem by converting inferior oblique muscle to depressor in adduction and intorted muscle. This makes it one of the surgical options for superior oblique palsy with reduction of antielevation complications.^[2] This procedure can be used as the first surgical procedure in hyperdeviation 20-25 PD with marked inferior oblique overaction .^[3] Fundus was examined using an indirect ophthalmoscope to detect extorsion of the affected eye.^[4]

Surgical options for superior oblique palsy treatment included inferior oblique weakening by myectomy, and recession with or without anterior transposition [5].

MATERIALS AND METHODS

Participants

Research participants were recruited from Research Institute of Ophthalmology and Department of Ophthalmology Beni-Suef University from 2019 through 2021. This study was approved by Research Ethical Committee of the Faculty of Medicine, Beni-Suef University under Registration NO: 03112 019 in 2019.

This study was done in accordance with guidelines of the Declaration of Helsinki; all participants signed an informed consent before inclusion in the study.

This study is a prospective randomized comparative study of 20 patients with superior oblique palsy.

Statistical Analysis

Data were collected throughout history and basic clinical examination; outcome measures were coded, entered, and analyzed using Microsoft Excel software. Data were then imported into the Statistical Package for the Social Sciences (SPSS version 20.0) (Statistical Package for the Social Sciences) software for analysis.

RESULTS

Postoperative three months follow-up was done to 20 patients who underwent unilateral surgery in 8 patients and bilateral surgery in 2 patients as operation in only right eye in 3 patients ,operation in only left eye in 2 patients and operation in both eyes in 5 patients in group A versus unilateral surgery in 7 patients and bilateral surgery in 3 patients as operation in only right eye in 3 patients ,operation in only left eye in 1 patients and operation in both eyes in 6 patients in group B (Table 1) , Vertical deviation range preoperative in right eye 14-18 PD and in left eye 16-20PD in primary position in group A, Vertical deviation range preoperative in right eye 8-16 PD and in left eye 10-14PD in primary position in group B (Table 2). Post-operative lower lid fullness in 1 patients and no lower lid fullness in 9 patients postoperative , variable postoperative complications in both groups (Table 3) . palpebral fissure range in right eye was 8-11mm pre-and post-operative ,in left eye range was 7-12 mm pre-and post-operative group A, palpebral fissure range in right eye was 8-11mm pre-and 8-12mm post-operative ,in left eye range was 7-12 mm pre-and 8-12mm post-operative group B (Table 4)

Table (1) : Bilaterality of surgery and operated eye in both groups :

Variable	Group A N=15		Group B N=15		χ^2	P-value
	N	%	N	%		
Bilaterality:					0.136	1
• Unilateral	8	53.3	7	60		
• Bilateral	2	46.7	3	40		
Operated eye:					0.682	0.711
• Right	3	33.3	3	40		
• Left	2	33.3	1	20		
• Bilateral	5	33.3	6	40		

Table (2): Hyper-deviation in primary position in both eyes :

Variable	Group A N=15	Group B N=15	t-test	P-value
Right:				0.061
• Mean \pm SD	16.7 \pm 1.6	13.3 \pm 3.5	2.1	
• Range	14-18 PD	8-16 PD		
Left:			3.7	0.021* (S)
• Mean \pm SD	18 \pm 2	12 \pm 2		
• Range	16-20 PD	10-14 PD		

SD (standard deviation) ; PD (prism diopter)

Table (3) : lower lid fullness and complications postoperative in both groups:

Variable	Group A N=15		Group B N=15		χ^2	P-value
	N	%	N	%		
Complications:					4.1	0.518
• No	10	66.7	8	53.3		
• Puffiness	2	13.3	1	6.7		
• Sub conjunctival hge	2	13.3	4	26.7		
• LL retraction	1	6.7	0	0		
	0	0	1	6.7		
	0	0	1	6.7		

<ul style="list-style-type: none"> ● Wound cyst ● Exposed tendon 						
LL fullness:					-----	-----
<ul style="list-style-type: none"> ● No ● Present 	9 1	66.7 33.3				

Table (4): Palpebral fissure range Pre and post-operative among the studied groups:

Variable	Group A N=15	Group B N=15	t-test	P-value
Pre Palpebral fissure 1(Mm):			1.5	0.137
<ul style="list-style-type: none"> ● Range 	8-11	8-12		
Pre Palpebral fissure 2 (Mm):			0.425	0.674
<ul style="list-style-type: none"> ● Range 	7-12	8-12		
Post Palpebral fissure 1 (Mm):			1.1	0.301
<ul style="list-style-type: none"> ● Range 	8-11	8-12		
Post Palpebral fissure 2 (Mm):			0.129	0.898
<ul style="list-style-type: none"> ● Range 	7-12	8-12		

Mm(Milimeter)

DISCUSSION

Symptomatic superior oblique palsy needs intervention to minimize vertical ocular misalignment, vertical or torsional diplopia, and abnormal head posture [5].

The aim of our study is comparing the efficacy of myectomy versus anterior and nasal transposition of inferior oblique 2-mm nasal and 2-mm posterior to the nasal edge of the inferior rectus muscle insertion as treatment options for SOP.

In our study, after 3 months of postoperative follow-up, there was an improvement observed in vertical deviation in both groups.

Conclusion

The results of both groups in our study are satisfactory with accepted success rates .

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