

## Strabismus Surgery: Difficult Situations Simplified

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### Abstract

*Purpose:* In the present study we assessed the vertical effect of horizontal muscle transposition when performing a resection-recession procedure on a patients with moderate vertical deviation along with horizontal deviation with some additional displacement of horizontal recti i.e. 3/4th instead of 1/2 width displacement. *Material and Method:* Present study was carried out in a series of 20 cases in the age group 3-40 years of both sexes with complicated squint having both horizontal and vertical deviation of varying amount with special emphasis on sensory status. Cases were broadly divided into two groups- Group 1(12 cases): Patients with Exotropia (40-50PD) and Hypertropia of <12 PD. Group 2(8 cases): Patients with exotropia(40-50PD) and Hypertropia of 12-20 PD. *Results:* Postoperative vertical deviation corrections are graded as- Very Good :- < 2-4PD. Moderate: - 4-8PD, Fair: - 10-16 PD. In group 1-8 cases (66%) out of 12 results were very good; Rest 4 cases (34%) results were moderate. In group 2- 6 cases (75%) out of 8 results were very good; Rest 2 cases (25%) results were moderate. *Conclusion:* Vertical muscle displacement is a very good option for correction of moderate vertical deviation especially for ophthalmic surgeons not experienced in tackling oblique muscles. Present study suggests that 3/4th width muscle displacement was more effective than 1/2th width muscle displacement.

**Keywords:** Squint surgery; Strabismus Surgery; Hypertropia; Exotropia

### Introduction

Aim of squint surgery is not only to correct deviation but also to improve field of vision, binocularity and stereopsis when performed at earlier age ( up to 12 years) but when performed at later age(above 12 years) above mentioned benefits is less evident. In late age group more important benefits are correction of deviation, cosmetic improvement and gain in confidence

Vertical deviation along with horizontal deviation is not an uncommon condition, It is seen due to oblique over action, A or V phenomenon or can be present in primary position without an apparent oblique over action. Small amount of vertical deviation is common with large angle horizontal deviation.

### Materials and Method

Present study was carried out in a series of 20 cases in the age group 3-40 years of both sexes with complicated squint having both horizontal and vertical deviation of varying amount.

Detailed ophthalmic examination including Visual acuity, cycloplegic refraction and fundus examination was done.

Squint work up including - Hirschberg test , PBCT ( prism bar cover test), both for near and distant in all gazes , sensory status of BSV (binocular single vision) by using worth four dot test, type of fixation whether

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central or eccentric were assessed. Preoperative treatment for refractive error or Amblyopia was given before squint surgery.

*Cases were Broadly Divided into Two Groups*

*Group 1(12 cases)*

Patients with Exotropia(40-50PD) and Hypertropia of <12 PD.

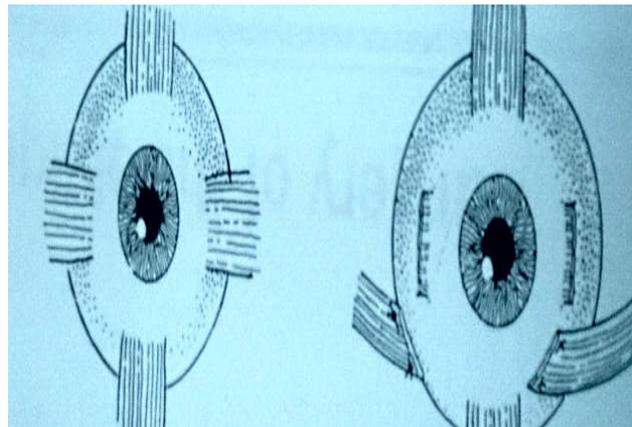
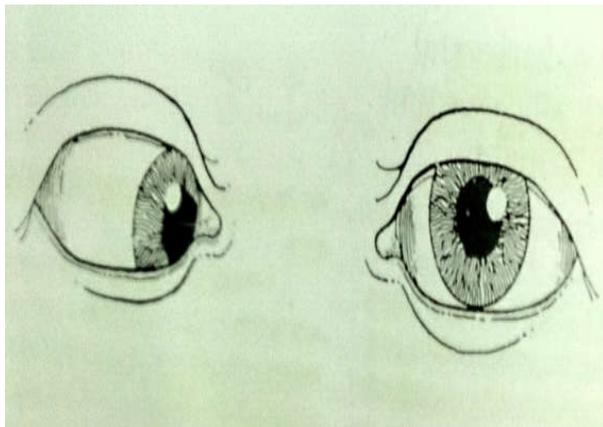
*Group 2 (8 cases)*

Patients with exotropia(40-50PD) and Hypertropia of 12-20 PD.

All these patients underwent surgery by a single Surgeon; plan executed as per squint work up for horizontal squint with addition of vertical correction.

*Surgical Procedure*

Group 1 (12 cases) underwent unilateral lateral rectus (LR) recession and medial rectus (MR)



Preoperative



Postoperative

resection for unilateral squint and bilateral LR recession for alternate squint with addition of downward displacement of half width of horizontal muscle for group 1.

In group 2 management for horizontal squint was same as group 1 with addition of downwards displacement of three fourth width of horizontal muscle for vertical squint correction.

## Results

Postoperative vertical deviation corrections are graded as-

Very Good :- <2-4PD

Moderate :- 4-8PD,

Fair :- 10-16 PD.

*In group 1-8 cases (66%) out of 12 results were very good; Rest 4 cases (34%) results were moderate.*

*In group 2- 6 cases (75%)out of 8 results were very good; Rest 2 cases (25%) results were moderate.*

## Discussion

In normal eyes with good fusion vertical deviation up to 4PD is controlled; if more than 6PD it becomes manifest as AHP( abnormal head posture ) or diplopia in vertical gaze .

A small angle of hyper deviation (<6PD) is common with large angle of horizontal deviation (>40PD)and it doesn't require any additional treatment .

Results for vertical squint were moderate(4-8PD) to fair (6-8PD)with half width displacement of the horizontal recti.

Our study shows that when some additional displacement of horizontal recti i.e. 3/4th instead of 1/2 width the results were satisfactorily very good.

In our study additional extra displacement (three fourth width displacement as compared to half width) the results were very good to moderate .

In the present study we assessed the vertical effect of horizontal muscle transposition when performing a resection-recession procedure on a patient who also has moderate vertical deviation along with horizontal deviation.

The muscles are moved upward one-half muscle width or more if the eye is hypodeviated and downward one-half muscle width or more if the eye is hyperdeviated

Both rectus muscles shifted vertically in the same direction. This approach can treat the vertical deviation without altering the effect of the procedure for the esodeviation or exodeviation.

Rationale for vertical transposition is based on the observation that strength of the horizontal rectus muscle is increased when the eye is vertically rotated in the direction opposite to the direction of its

transposed insertion.

For example, lowering the insertion of a horizontal rectus muscle improves the effect of this muscle when the eye is in elevation.

Conversely, an elevated horizontal rectus muscle produces more effect in depression.

Combined horizontal with vertical deviation should be differentiated from pattern deviation (A OR V) or oblique overaction because each condition has different management.

Vertical transpositions of horizontal muscles do not appreciably alter the horizontal alignment in primary position.

## Conclusion

Horizontal muscle surgery is much easier than oblique surgery .

This is an alternate approach and effective means for management of vertical deviation.

Many Ophthalmologists are not experienced for oblique muscles handling.

Half muscle displacement is found to be good for mild to moderate cases and 3/4th displacement should be tried for larger deviation.

This is true only if there is no significant oblique overaction; if present appropriate oblique muscle surgery must be performed

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