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Research Article

Comparison of Conventional Hang-Back and Conventional Recession Surgery for Horizontal Strabismus

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Abstract
Introduction: *Strabismus means ocular misalignment, whether caused by abnormalities in binocular vision or by anomalies of neuromuscular control of ocular motility. A successful strabismus surgery should balance muscle forces to restore central or peripheral fusion when possible or acceptable cosmesis when fusion cannot be accepted. Weakening procedure on rectii constitute an important surgical modality for correcting various forms of strabismus.*
Material and Methods: *Study was performed in 2006-2007 on thirty patients of comitant horizontal strabismus who had undergone surgical correction for deviation in Deptt. of Ophthalmology, GGS Medical College, Faridkot. After preliminary ocular examination which included anterior segment & fundus examination, angle of deviation was measured by prism bar cover test followed by squint surgery. 15 patients had undergone conventional recession and rest of 15 patients had undergone hang-back recession surgery. Follow up was done at 1 week, 1 month & 3 months post op.*
Results: *It was observed that at third month postop 86.66% of patients with conventional recession achieve deviation less than 10 PD with respect to 80% of patients with hang-back recession.*
Conclusion: *There was no significant difference in the success rate in relation to angle of deviation for both types of surgical techniques. The results of this study suggested that conventional hang-back recession surgery is a predictable alternative to conventional recession surgery.*
Keywords: *Horizontal strabismus, conventional recession , hang-back recession.*

Introduction

The term strabismus is derived from the greek word strabismos, "to squint , to look obliquely or askance". Strabismus means ocular misalignment can be classified as below:

Apparent or pseudostrabismus in which visual axis of the two eyes are infact parallel in all positions of gaze but eyes apparently seem to have squint.

Heterophoria or latent squint in which the tendency of the eyes to deviate is overcome by fusion reflex during binocular vision.

Heterotropia or manifest squint in which there is a manifest deviation of the eyes from orthoposition that cannot be overcome by the fusion reflex.

Depending upon the direction of deviation it is further categorized into i) Esotropia ii) Exotropia iii) Hypertropia iv) Hypotropia

A successful strabismus surgery should balance muscle forces to restore central or peripheral fusion when possible or acceptable cosmesis when fusion cannot be expected. Weakening procedure on recti constitute an important surgical modality for correcting various forms of strabismus. Jameson in 1922 introduced the technique on which all conventional recessions are based. The conventional recession technique involved direct suturing of muscle to the sclera posterior to their insertion at the site of recession. However, scleral suturing alone neither guaranteed precise muscle reattachment nor perfect ocular alignment and nonmuscular variables such as variations in wound healing affected the patient's postoperative outcome. In an effort to overcome the non muscular variables affecting the post op alignment and to overcome the problems of conventional recession like inadvertent perforation of sclera , no provision for customization , hang-back muscle recession was introduced by Jampolsky[1] in 1979.

Rosenbaum AL et al[2] in 1977 evaluated the effectiveness of adjustable suture strabismus surgery. Although non-adjustable hang back muscle recession surgery undoubtedly proved to be safe and easy to perform, it carried certain disadvantage as posterior muscle bowing , to tackle later Macleod JD et al[3] in 1997 described anchored hang back muscle recession technique. Scott WE et al[4] observed an overcorrection of 4-14 PD at the initial postoperative examination resulted in best alignment one year after surgery. Lennerstrand[5] observed that immediate post operative alignment has been shown to change an average of 3-10 prism dioptres in the direction of original deviation. Wise J et al [6] reported a successful alignment was achieved in 82% of patients who had undergone adjustable hang back recession in follow up period ranged from 1 to 8 months. Keech RV[7] observed that the post operative alignment of patients following adjustable suture strabismus surgery was no more or less stable than following non adjustable surgery. Repka MX et al[8] in 1988 reported that in 49 consecutive children undergoing conventional bilateral medial rectus recession and 31 children undergoing hang back recession, the success rate was 80% in the conventional group and 74% in the hang back group at 6 weeks. Capo H et al[9] reported higher rate of over corrections in hang back group as compared to conventional recession group in late follow up. Wright KW[10] concluded that conventional fixed suture technique in uncomplicated horizontal strabismus carries a 80% chance of success. Franklin and Hiatt[11] reported a success rate of 87% who had undergone strabismus surgery with hang-back.

Material and Methods

This study in 2006-2007 was carried out on 30 pateints of comitant horizontal strabismus selected from patients attending the eye opd of Department of Ophthalmology, GGS medical college, Faridkot for the treatment of ocular deviation.

Only patients with manifest comitant squint were included in the study. Patients having corneal or lenticular opacities, vertical element of squint, nystagmus or fundus pathology were exclude from study.

Visual acuity was tested without glasses and with glasses (if worn) and for near and distant vision. Refraction was undertaken under cycloplegia wherever required & glasses prescribed. Any existing amblyopia was corrected or reconciled with before deciding for surgery. Examination of squint was performed using direct cover tests, prism bars. Angle of deviation was measured in prism dioptres.

The patients were divided into two groups with 15 patients each ie Conventional recession & Hang-back recession group. Angle of deviation was measured at 1 week, 1 month and 3 months post op. Amount of extraocular muscle surgery to be performed was decided depending upon type and angle of deviation, duration of squint, visual status. A more extensive surgery was required in older children and adults having squint of longer duration.

Results

Out of 15 cases of conventional recession group 6 cases had squint of 20-40 prism dioptres. 7 cases had a squint of 40-60 prism dioptres. Only 2 cases had angle of deviation more than 60 prism dioptres.

Out of 15 cases of Hang back recession group 8 cases had squint of 20-40 prism dioptres. 5 cases had a squint of 40-60 prism dioptres. Rest of 2 cases had angle of deviation more than 60 prism diopres.

Table: 1 Postoperative angle of deviation after one week of conventional recession surgery

Angle in Prism Dioptres	Number of cases	Convergent	Divergent
<10 PD	9	5	4
>10PD	6	3	3

Postoperative angle of deviation was less than 10 prism dioptres in 62.5% of esotropes and 57.14% of exotropes who underwent conventional recession surgery.

Table: 2 Postoperative angle of deviation after one week of Hang back recession surgery

Angle in Prism Dioptres	Number of cases	Convergent	Divergent
<10 PD	11	6	5
>10PD	4	1	3

Postoperative angle of deviation was less than 10 prism dioptres in 85.71% of esotropes and 62.5% of exotropes who underwent Hang-back recession surgery.

Table: 3 Postoperative angle of deviation after Three months of Conventional recession surgery

Angle in Prism Dioptres	Number of cases	Convergent	Divergent
<10 PD	13	7	6
>10PD	2	1	1

Postoperative angle of deviation was less than 10 prism dioptres in 87.5% of esotropes and 85.71% of exotropes who underwent conventional recession surgery.

Table 4 Postoperative angle of deviation after Three months of Hang-Back recession surgery

Angle in Prism Dioptres	Number of cases	Convergent	Divergent
<10 PD	12	6	6
>10PD	3	1	2

Postoperative angle of deviation was less than 10 prism dioptres in 85.71% of esotropes and 75% of exotropes who underwent Hang-back recession surgery.

Discussion

The muscle weakening procedures of the 19th and early 20th centuries were highly unpredictable because the detached muscle was allowed to retract and reattach randomly to the globe, Jameson introduced the sclera suture technique in 1922. Since then, the technique of conventional scleral sutures has undergone modifications such as loop recessions, hang-back recessions and adjustable sutures which became popular with Jampolsky in the 1970s. Gobin[12] described the loop recession in the 1960s. Later Repka MX et al[8] modified the adjustable suture procedure and developed the hang-back recession.

In the present study the success rate ie alignment within 10 prism dioptres was 86.66% in conventional recession group whereas the success rate in hang-back recession group was 80%. Repka MX[8] observed the success rate to be of 80% in conventional group and 74% in hang-back group.

In this study, the orthophoric rate of hang-back recession method in patients with exotropia was 75%. Rajavi Z et al[13] in their study reported the success rate for hang-back technique in exotropiv patients to be of 76%.

Conclusion

In this study there was no significant difference in the success rate ie within 10 prism dioptres of orthophoria for both types of surgical techniques which indicates that hang-back recession surgery is a predictable alternative to conventional reces-sion surgery especially in cases where chances of scleral perforations are high as in myopes.

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