Original Article

Rectus Recessions with Rectus Resection in Pts having Large Angle Exotropia

Comparison of Bilateral Lateral Rectus Recession versus Unilateral Rectus Recession Along With Medical Rectus Resection in Patient with Large Angle Exotropia: A Randomized Controlled Trial

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ABSTRACT

Objective: To compare outcome of bilateral lateral rectus recession (BLR) versus unilateral lateral rectus recession along with medial rectus resection (RR) in patients with large angle exotropia.
Study Design: Randomized control trial
Place and Duration of Study: This study was conducted at the Department of Ophthalmology Unit, Holy Family Hospital, Rawalpindi from January 2017 to November 2017.
Materials and Methods: A total of fifty patients (25 in each group) were finally enrolled and underwent surgical correction of extropia. Patients with large angle exotropia of > 100 PD were enrolled and were randomly assigned to two treatment groups. Group A underwent BLR and Group B underwent RR procedures. Patients were followed for 6 months and successful alignment rate was estimated.
Results: At six month after surgery, 14 patients (56%) in the BLR group achieved successful alignment, while in RR group, 18 patients (72%) patients achieved successful alignments. A total of 10 patients (40%) had under correction of 10-14 PD and 1 patient (4%) had under correction of 25 PD in the BLR group; while RR group showed 4 patients (16%) had under correction of 10-14 PD; 2 patients (8%) had under correction of 25PD and 1 (45) had under correction of 40PD *(P*=0.221).
Conclusion: There is no significant difference in successful alignment rate at six month after surgery in both groups. We suggest further longitudinal studies with larger samples size and with longer duration of follow up.
Key Words: Intermittent exotropia, bilateral lateral rectus recession, Unbilateral lateral rectus recession

Citation of article: Naseem S, Khan FA, Gull R. Comparison of Bilateral Lateral Rectus Recession versus Unilateral Rectus Recession Along With Medical Rectus Resection in Patient with Large Angle Exotropia: A Randomized Controlled Trial. Med Forum 2019;30(3):75-78.

INTRODUCTION

The incidence of intermittent exotropia (IXT) is 32.1 per 100,000 children under 19 years of age and it is one of the most common type of exotropia in adolescents and children. Intermittent exotropia occurs more frequently in Asian populations and in females.[1,2] A variety of treatments have been proposed for intermittent exotropia. However, no single treatment has proven superior for all cases, and long-term follow-up demonstrates a high recurrence rate regardless of initial therapy.[3] There are no clear clinical guidelines for management of intermittent distance exotropia. The current literature is lacking large randomized prospective trial for IXT. Most of the research on this problem consists of retrospective reviews, which are difficult to analyze and compare due to variations in definition, intervention criteria and outcome measures.[4] Various Studies have been done to assess the best treatment option for intermittent exotropia. The conclusion derived from the reports showed that preoperative orthoptic/occlusion therapy followed by surgery yields superior results in comparison to surgery only.[5] there seems to be a consensus that non-surgical measures are better in small angle deviations or as an adjunct to surgery.[6] however, the controversy exists for appropriate surgical method. Two different methods have been described i.e. bilateral lateral rectus recession (BLR) and unilateral lateral rectus recession-medial canthal resection (RR). Different studies have shown different results while comparing RR with BLR

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Received: September, 2018
Accepted: December, 2018
Printed: March, 2019

procedure to improve the angle of deviation for treatment of IXT in children. The BLR success rate varies from 41% to 83%,[7-10] whereas that of RR varies from 32.3% to 85.1%.[11]

Although non-surgical options are less effective to improve angle of deviation, they have less associated adverse effects.[12] Up till now the mainstay of treatment adopted to achieve redundant ocular alignment and binocular single vision is surgery, however, there is still a debate on appropriate surgical method. As discussed earlier, there is limited clear cut evidence to prove superiority of either of procedures (BLR vs RR) for treatment of IXT in children, present study was designed to compare the two different types of surgeries for the treatment of large angle exotropia (>45PD) in our local population. Several studies have been conducted in different parts of world comparing outcomes of RR and BLR but data on this subject is minimal in our country. Our main aim was to compare outcomes of bilateral lateral rectus recession with unilateral lateral rectus recession-medial rectus resection in patients with large angle exotropia.

MATERIALS AND METHODS

It was a Randomized controlled trial conducted at Department of Ophthalmology, Holy Family Hospital, Rawalpindi between 1st January 2017 to 30th November 2017. A total of fifty (n=50) patients of all age groups irrespective of gender presented with large angle exotropia of >100PD were enrolled. All the patients were randomly assigned to two treatment groups using lottery method. Group A underwent bilateral lateral rectus recessions (BLR group) or the unilateral recess/resect procedure (RR group) based on the largest angle measured at distance or near were included. Patients were followed for 6 months. Final successful alignments rates, visual acuity, diplopia and other factors associated with under correction or over correction were evaluated. Statistical software SPSS 21 was utilized for data description and analysis.

RESULTS

At six month after surgery, 14 patients (56%) in the BLR group achieved successful alignment, while in RR group, 18 patients (72%) patients achieved successful alignments. A total of 10 patients (40%) had under correction of 10-14 PD and 1 patient (4%) had under correction of 25 PD in the BLR group; while RR group showed 4 patients (16%) had under correction of 10-14 PD; 2 patients (8%) had under correction of 25PD and 1 (45) had under correction of 40PD (table 1). The difference was not statistically significant *(P*=0.221) (Table 1).

Table No.1: Outcomes at six month post-surgery in both groups

Alignment	Group		P value
	BLR	RR	
Successful	14 (56.0%)	18 (72.0%)	0.221
Under correction of 10-14PD	10 (40.0%)	4 (16.0%)	
Under correction of 15-25PD	1(4.0%)	2 (8.0%)	
Under correction of 26-40PD	0 (.0%)	1 (4.0%)	

DISCUSSION

As clinical guidelines to manage intermittent distance exotropia were lacking, so, the present study was designed to compare outcomes of BLR vs RR procedures in patients with large angle exotopia in our population. Our study results showed at six month after surgery, 14 patients (56%) in the BLR group achieved successful alignment, while in RR group, 18 patients (72%) achieved successful alignments. A total of 10 patients (40%) had under correction of 10-14 PD and 1 patient (4%) had under correction of 25 PD in the BLR group, while RR group showed 4 patients (16%) had under correction of 10-14 PD, 2 patients (8%) had under correction of 25PD and 1 (4%) had under correction of 40PD *(P*=0.221). In a similar study, **Kim et al** aimed to evaluate the long-term results of 2-muscIe surgery in children with primary large-angle exotropia, comparing BLR with RR. They found successful alignment in 60.4% of the patients, recurrence rate of 33.3% and overcorrection in 6.3% of the patients in which bilateral lateral rectus recession was performed. On the other hand, in RR group, 68.4 % of the patients showed successful alignment, 26.3% recurrence and overcorrection in 5.3%. Recurrence rates and successful alignment were not statistically significant in both groups (P=0.640 and 0.31 respectively) however overcorrection was significant in RR group (P=0.014) until two years after surgery, but after that duration there was no significant difference (P=1.000). The patients having exodeviation of >45PD, the RR procedure showed better alignment at the final examination (P=0.006).[14] The results are similar to our study, however the difference in successful alignment between RR and BLR group was not statistically different in our study. This may be attributed to difference in the sample size, which was smaller in our study as compared to their study (50 vs 86). Moreover, they reported their findings on final examination at two years after surgery while we presented our resuIts at six months.

Choi reported that outcomes of their surgery were measured according to postoperative angle of deviation as overcorrection (esophoria/tropia >5PD), success

(esophoria/tropia <5PD to exophoria/tropia <10PD), or under correction/recurrence (exophoria/tropia >10PD). The comparative results of both groups were assessed at first post operative day, at one month, six months, one year, two years and at final examination. They found no statistical difference in both the groups with P>0.05. These results are quite similar to present study results. However, if the final results are compared between the two groups at a mean of 3.8 years after surgery, Choi J found that success rate in BLR group was significantly higher i.e. 58.2% than in the RR group 27.4% (P<0.01). The possible reason may be high recurrence rate in RR group.[8] We did not follow the patients beyond six months and did not measure the recurrence rate. In another similar study, Bang SP, et al compared long-term surgical outcomes after BLR and RR procedures for the basic-type intermittent exotropia. They enrolled patients for five years duration who underwent ≥5 years of foIIow-up. Successful outcome was defined as (esophoria/tropia ≤8PD to exophoria/tropia ≤8PD), and under correction/recurrence (exophoria/tropia >8PD). Results were compared at the end of first post operative week, at one and six months, one, two, three, four and five years. They found that the results of BLR group were statistically better than that of other group at six months after surgery (97.3% vs 82.3%, P=0.045) and at one year (91.9% vs 74.2%, P=0.040) respectively.[15] From the results, author concluded that the recurrence rate of exotropia was high in RR group as compared to BLR group, six months after surgery and lower success rate in RR group at the end of five years after procedure. We, however, in our study did not measure recurrence rates and measured final outcomes at six months. At six months our results are similar to Bang SP et al, however, the difference between both groups was not statistically significant likely due to relatively smaller sample size in our study.

In contrast to our study results, Jeoung et al[13] reported higher rate of satisfactory outcomes in RR group when compared with BLR (83.3% vs 48.3% respectively). They also reported that cumulative probability of surgical success was significantly higher in the RR group than in the BLR group (P = 0.012). These contrasting results from our study are likely due to difference in defining the satisfactory outcomes. They defined an outcome was considered satisfactory in relative terms (a difference of 10 prism diopters of exophoria/tropia and 10 prism diopters of esophoria/tropia from baseline at 6 months after surgery). On the other hand we defined successful outcome in absolute terms i.e. <10 PD. Wang L studied the results of both procedures in 85 patients aged between 3 to 15 years and did follow up for 6 months. Surgical outcomes were defined as successful (esophoria/tropia <5PD to exophoria/ tropia <8PD). Their mean follow up was of 14.8+9.5 months. They found successful results in RR group (85.1%) vs BLR group (65.8%). They found that RR is more effective than BLR procedure for basic type IXT in children.[9] The possible explanation for recurrence in patients with IXT after RR procedures was identified as age of deviation onset, was described recently by Lim et al.[16] However there was no explanation of the relevance of onset age to recurrence of problem in that study. The prognostic factor for the recurrence after BLR procedure to treat IXT were also studied by the same group.[17] They found that the onset age of deviation was not significantly predictive of recurrence therefore further studies are necessary to evaluate the predictive value of onset age with respect to deviation. We did not take into account the age of onset of deviation in the present study. However, we suggest further studies in this regard.

CONCLUSION

Present study did not show any significant difference in successful alignment rate at six month after surgery in both groups. We suggest further longitudinal studies with larger samples size and with longer duration of follow up.

Author's Contribution:

Concept & Design of Study:	Sidra Naseem
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Data Analysis:	Rehana Gull
Revisiting Critically:	Sidra Naseem, Fuad Ahmad Khan
Final Approval of version:	Sidra Naseem

Conflict of Interest: The study has no conflict of interest to declare by any author.

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