

## Intermittent Exotropia: Our Experience in Surgical Outcomes

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### Abstract

**Introduction:** Exotropia is ocular misalignment with outward deviation of eyes. Exodeviation is about 25% of all deviations. Incidence is about 32.1/1,00,000 under 19 years of age. Exotropia can be divided into comittant or incomittant.

**Aim:** To compare the surgical outcomes of unilateral recession resection versus bilateral recession in intermittent exotropia.

**Methodology:** Inclusion criteria: Patients age >5 years, Exotropia between 25-45 Prism Diopters. Exclusion criteria: Vertical squint, Paralytic squint, Previous history of squint surgery, Ocular diseases corneal, lenticular and fundal pathology, Patient not willing for surgery, not coming for follow up. After complete examination randomized age group were selected and were grouped in two groups. **Group A** underwent unilateral lateral rectus recession and medial rectus resection. **Group B** underwent bilateral lateral rectus recession. Surgery was performed by a single surgeon.

**Results:** Total 66 patients were included in the study. Maximum patient were in 21-25 years in both groups. Female preponderance was present. Cosmetic symptoms were present in all age group. Maximum patients were having 30 PD in both groups. There was no statistical difference in both group. Surgical outcomes were approximately equal in both groups.

**Conclusion:** Outcome of unilateral recession of lateral rectus and resection of medial rectus versus bilateral lateral rectus recession were found to be equal with no significant statistics.

**Keywords:** Exotropia; Recession; Resection

### Introduction

In 1897, Duane classified exotropic deviations based on distance/near differences. Subsequently, Burian modified Duane's classification and developed the system that is considered the accepted standard. Burian categorized patients in whom the distance exotropia exceeded the near deviation by more than  $10\Delta$  as having an excess of divergence [1-3]. Intermittent Exotropia present from 18 months to 4 years of age. Various risk factor found in study showed that low birth weight and maternal smoking are major risk factors. This condition is characterized by an outward deviation of eyes with free alteration. Varying degrees of control over the deviation. Deviation is more when child see distant objects. Amblyopia occurs in this cases due to anisometropia. Diplopia in such cases is eliminated by normal vision with normal stereopsis and retinal correspondence. Some adults complaints of asthenopia, diplopia, headaches.

They have habitual eye closure in sunlight. It is a phase when suppression has yet to occur. Wang et al explained this by mentioning that bright light may cause fusion disruption causing deviation to manifest [4,5]. Burian classified it into: Basic intermittent exotropia, Divergence excess, Convergence insufficiency, Simulated or Pseudo-divergence excess. Treatment includes surgical as well as non surgical approaches. Primary goal of non surgical is to decrease the frequency

of exotropia thus increasing the amount of time in which the child has bifoveal fixation. Non surgical approaches includes Glasses, Occlusion therapy, Orthoptic exercises. Surgical approach indication: Poor control exotropia, deterioration of control of exotropia, deterioration of stereoacuity, increase in deviation, development of suppression, Factors which affects surgical outcomes are: age, degree of control, sensory destabilizing factors. Study was conducted with aim to compare the surgical outcomes of unilateral recession resection versus bilateral recession in intermittent exotropia.

### Material and Methods

Study was conducted in department of ophthalmology in Acharya Vinobha Bhawe Rural Hospital. It was conducted for a period of two years (2015-2017). Type of study was prospective, interventional. Inclusion criteria: Patients age >5 years, Exotropia between 25-45 Prism Diopters. Exclusion criteria: Vertical squint, Paralytic squint, Previous history of squint surgery, Ocular diseases corneal, lenticular and fundal pathology, Patient not willing for surgery, not coming for follow up. Informed and written consent were taken from all patients after explained them the nature and complication of surgery. Those willing were included in study [5-7].

A complete ocular examinations was performed before posting a patient for surgery. Detailed history, any visual complaints, any past surgery history were noted. Visual acuity was noted by Snellen's chart,

Illiterate E chart, Landof chart and full correction was given in patients. Degree of prism were assessed on Prism Bar Cover Test (PBCT) for near and distance. Anterior segment detailed examination was performed by slit lamp examination. Posterior segment was assessed with the help of slit lamp biomicroscopy and indirect ophthalmoscopy. After complete examination randomized age group were selected and grouped in two groups. **Group A** underwent unilateral lateral rectus recession and medial rectus resection. **Group B** underwent bilateral lateral rectus recession. Surgery was performed by a single surgeon. Local anesthesia was used in adult whereas general anesthesia was used in children. Amount of muscle resection or recession was decided on basis on Prism Bar Cover Test. Patients were evaluated on first postoperative day, 1 week, 6 weeks and 12 weeks. Any postoperative complications were noted. The post operative outcomes were considered satisfactory if esotropia was <10 PD, orthophoria, exotropia <10 PD. Statistical data was analyzed by SPSS version 2.2 Chi square test was used to compare data [8-10].

## Results

A total 66 patients were included in the study. These were equally divided on the basis of following in group A and group B. Group A patients underwent unilateral lateral rectus recession and medial rectus resection. Group B patients underwent bilateral lateral rectus recession. Table 1 showed maximum patient were in age 21-25 years in both groups. Table 2 showed female preponderance in both groups. All patients were operated with the complaints cosmetic problem (Table 3). Maximum patients were having 30 PD exotropia in both groups (Table 4). Table 5 shows outcome of squint surgery at the end of 12 weeks. In **group A**: 87.9% were orthophoric at end of 12 weeks while 6% had <10 PD Exotropia, 3% had <10 PD Esotropia and >10 PD Exotropia. In **group B**: 90.9% were orthophoric at end of 12 weeks, 3% had <10 PD Esotropia, >10 PD Exotropia and >10 PD Esotropia in each groups. There was no statistical difference in both group. Surgical outcomes were approximately equal in both group.

Age in years	Group A	Group B
<10	1	1
11-15	5	4
16-20	7	8
21-25	12	11
26-30	8	9
	33	33

Table 1: showing distribution of patient in both groups on basis of age

Sex	Group A	Group B
Male	10	9
Female	23	24

	33	33
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Table 2: showing distribution of patient on basis of gender.

Symptoms	Group A	Group B
Cosmetic problem	33 (100%)	33 (100%)
Asthenopic	10 (30%)	08 (24.2%)

Table 3: showing preoperative symptoms.

## Discussion

There are various surgical approaches for intermittent exotropia. We use resection and recession as an intervention to treat intermittent exotropia. All surgery are performed with the aim to restore single binocular vision and cosmetic appearance of the patient. Some study suggest that the surgical choice for excess divergence is bilateral lateral rectus recession while in basic type of exotropia it is unilateral lateral rectus recession and medial rectus resection. In our study the mean age came out to be 22.1 years. In study by Myogo [11] it was 18.7 years. All patients came with the cosmetic appearance related problems which was relief by 12 weeks.

Lack of awareness and fear to surgery would be one of the cause that patients coming so late for the treatment. There has been a lot of debate about the earliest time the patient should come for treatment. Optimal time for surgery in patients of intermittent exotropia is when patient is able to undergo orthoptic assessment or when its appearance affects the cosmetic appearance [12,13]. There was female preponderance in our study with female:male=0.4. Similar results were found by Cass and Gregerson [14]. Average preoperative deviation was 32.4 PD in group A and 34 PD in group B [15]. There was no significant difference in preoperative deviation in both groups so both the groups are comparable (p=0.25). At end of 12 weeks only one patient had >10 PD Esotropia in group B. Fiorelli and coworkers [16-19] also found insignificant difference in outcomes of surgery by different approaches. Kushner [20] and Audrey [21] found unilateral resection recession produced significant better results than bilateral recession.

Angle by PBCT	Group A	R&R(mm)	Group B	BLR Recession (mm)
25 PD	4	4&2	5	3&3
30 PD	12	4&3	11	4&3
35 PD	8	5&3	9	4&4
40 PD	6	6&3	5	5&4
45 PD	3	6&4	3	5&5
	33		33	

Table 4: showing preoperative angle of deviation by PBCT

Group A					Group B			
	Day 1	Week 1	Week 6	Week 12	Day 1	Week 1	Week 6	Week 12

Orthophoric	22 (66.6%)	25 (75.7%)	27 (81.8%)	29 (87.80%)	24 (72.70%)	27 (81.80%)	28 (84.80%)	30 (90.90%)
<10 PD Exo	4 (12.10%)	2 (6%)	4 (12.10%)	2 (6%)	4 (12.10%)	5 (15.10%)	4 (12.10%)	1 (3%)
<10 PD Eso	4 (12.10%)	2 (6%)	4 (12.10%)	1 (3%)	3 (9%)	4 (12.10%)	3 (9%)	1 (3%)
>10 PD Exo	2 (6%)	1 (3%)	0	1 (3%)	2 (6%)	3 (9%)	3 (9%)	0
>10 PD Eso	1 (3%)	1 (3%)	1 (3%)	0	2 (6%)	4 (12.10%)	2 (6%)	1 (3%)

**Table 5:** showing outcome and comparison of squint surgery by PBCT of two groups

### Conclusion

To conclude we would like to say that outcome of unilateral recession of lateral rectus and resection of medial rectus versus bilateral lateral rectus recession were found to be equal with no significant statistics. Most of surgeon prefer for unilateral recession-resection surgery as it is difficult for the surgeon to convince the patient to undergo surgery in both eyes [22]. Also it preserve other (dominant) eye which can undergo surgery in subsequent years if required.

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