

# Practice Patterns in the Management of Strabismus in Pakistan

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## ABSTRACT

**Purpose:** To study the current practice patterns of pediatric ophthalmologists in the management of strabismus in Punjab.

**Study Design:** Questionnaire based Practice pattern survey.

**Place and Duration of Study:** Teaching hospitals of Punjab from July 2018 to July 2019.

**Material and Methods:** This study was conducted at ophthalmology departments of various teaching hospitals of Punjab. A questionnaire was designed to find out the current practice pattern for management of strabismus. Ophthalmologists who were members of Ophthalmological Society of Pakistan (OSP), having their expertise in strabismus surgery for more than 5 years and practicing pediatric ophthalmology were selected. Discussion was also held regarding questionnaire and practices being performed after filling the proforma. This data was compiled, analyzed and was converted to a summary in points.

**Results:** We contacted 90 ophthalmologists out of whom 76 responded to our Questionnaire. Complete Orthoptic Assessment was performed by only 46% (35) of the ophthalmologists. Prism cover test was used as a diagnostic tool by 70 (92%) ophthalmologists. Rest of the ophthalmologists used Synoptophore with it. Percentage of ophthalmologists performing cycloplegic refraction was very low. Only 5 (6.57%) surgeons used adjustable sutures. Only 46% of surgeons used to explain the complications of Anesthesia. More than 90% of surgeons explained the surgical procedures being done, its complications, post-operative care and need to use glasses or need for orthoptic exercises. All the surgeons kept follow up of the patients on 1<sup>st</sup> post-operative day.

**Conclusion:** The current practices in strabismus need to be standardized and a consensus should be developed at a national level.

**Key Words:** Strabismus, Prisms, Refraction, Orthoptic assessment.

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## INTRODUCTION

Strabismus is a fairly common problem having multi directional impacts affecting different populations with a prevalence varying from 0.5 to 5 %<sup>1,2,3,4</sup>. Strabismus is associated with amblyopia, strange cosmetic look, decreased social esteem and emotional discouragement disturbing quality of life of the patient<sup>5</sup>. Stereotypical

myths often considering a strabismic person to be of low Intelligent Quotient and sign of bad destiny has also contributed in affecting the life of these patients<sup>6</sup>. Symptoms include disturbed vision, double vision, headache, eye strain, abnormal posturing of head and easy fatigability after reading<sup>7</sup>. Newborns often have misalignment that resolves spontaneously. However most of the time it remains even in the adult life<sup>8</sup>. The main purpose of treatment is restoration of binocular vision, normal alignment of eyes, stereoacuity and correction of abnormal head posture<sup>9</sup>. Treatment modalities to achieve the targets are; use of patches,

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glasses, optometric vision therapy including orthoptic exercises, injecting Botulinum toxin and surgery including recession and resection procedures<sup>10,11,12</sup>.

Strabismus is both a social and pathological problem. It needs to be addressed and practiced in an organized and established manner. The main goal of our effort is to find out the current practice of management of strabismus and highlight the shortcomings being practiced. This will help in better management of strabismus. It is the need of hour to establish a consensual protocol for strabismus to be followed in the light of experiences of renowned ophthalmologist of the country.

## MATERIAL AND METHODS

In order to design this study an extensive literature was reviewed regarding standard guidelines being followed in the best centers of the World. After having reviewed the current practices prevailing in different centers, a questionnaire was designed. This focused on common shortcomings and on standards being followed differently by different ophthalmologists. Ophthalmologists who were members of Ophthalmological Society of Pakistan (OSP), having their expertise in strabismus surgery for more than 5 years and practicing Pediatric ophthalmology were selected. Those having less than 5 years' experience was excluded from the study. This was sent through email and online to 90 renowned selected Ophthalmologists. This data was compiled, analyzed and was converted to a summary in points. Each point of that summary was discussed with 10 renowned ophthalmologists having their expertise in strabismus at one to one meetings held at conference of Ophthalmological Society of Pakistan (OSP).

## RESULTS

We contacted 90 ophthalmologists, out of whom 76 responded to our Questionnaire. More than 90% (69) surgeons had an experience of more than ten years in squint surgery. Almost all the surgeons were also performing cataract surgery regularly. Oculoplastics was performed by 19 (25%) of them. Complete Orthoptic Assessment (sensory and Motor) was performed by only 46% (35) of the ophthalmologists. Prism cover test was used as a diagnostic tool by 70 (92%) ophthalmologists. Rest of the ophthalmologists used Synoptophore with it. A single assessment was

never considered reliable and more than one assessment was performed before surgery. Fundoscopy was performed by almost all the ophthalmologists. Percentage of ophthalmologists performing cycloplegic refraction was very low. Non surgical techniques used and their relative distribution is shown in Figure 1. Only 5 (6.57%) surgeons used

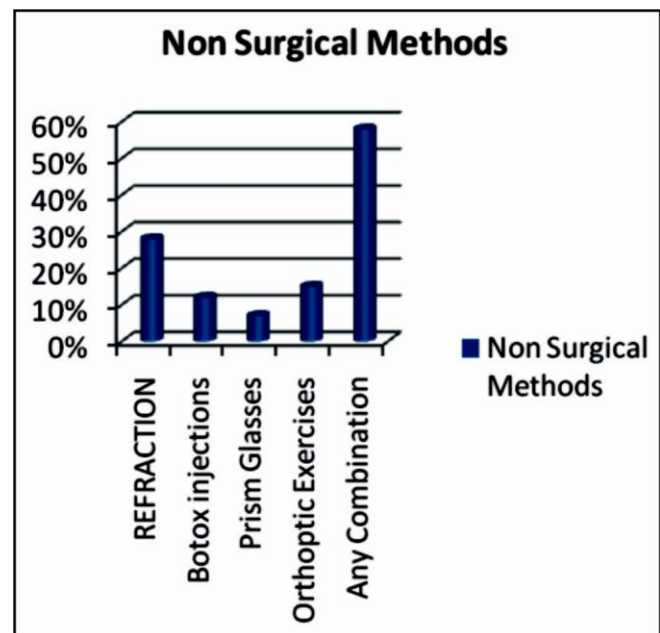


Fig. 1: Non-surgical Methods.

adjustable sutures. Rest of 71 used non adjustable sutures in strabismus surgery (Figure 2). Almost all the

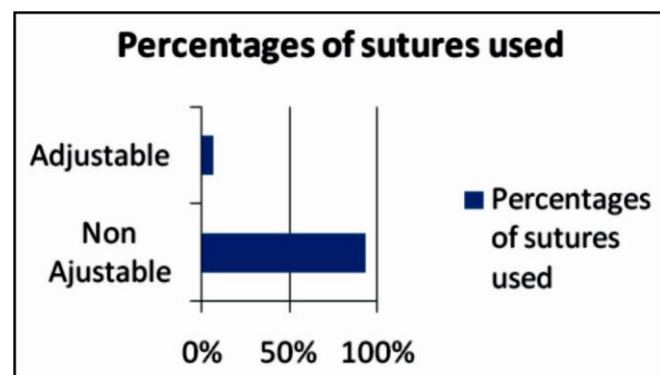


Fig. 2: Types of Sutures Used by the Surgeons.

surgeons used to counsel about need for redo surgery. 85% of surgeons were of the view that redo surgery was needed in almost 10 – 15% cases. Consecutive

strabismus surgery was performed in less than 20% according to view of expert ophthalmologist. There were 96% ophthalmologists who performed surgery under general Anesthesia but only 46% of them explained the complications of Anesthesia (Figure 3). More than 90% of surgeons explained the surgical procedures being done, its complications, post-operative care and need to use glasses or need for orthoptic exercises. However only 30 (39.47%) of them also explained per-operative complications. All the surgeons kept follow up of the patients on 1<sup>st</sup> post-operative day.

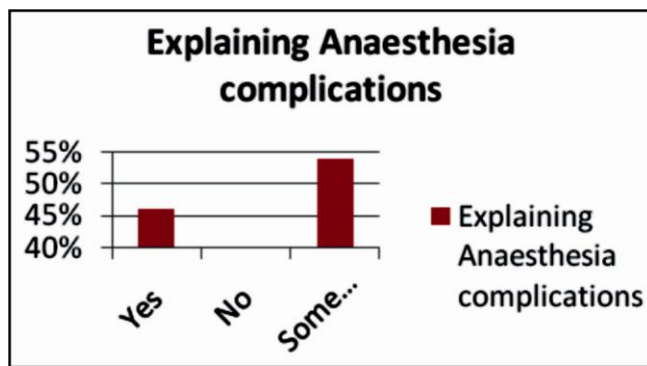


Fig. 3: Patient Counselling.

## DISCUSSION

Strabismus is actually a condition in which two eyes are not in accord with each other, setting a stage for developing amblyopia, double vision, abnormal head posture. There are various treatment modalities for its management, which include; use of patches, prism glasses, orthoptic exercises and botulinum toxin injection. Yilmaz et al<sup>13</sup> studied the effect of prism cover test on the post-operative outcomes in patients of strabismus. They found that the surgical outcomes with and without prism cover test lead to a successful motor alignment in 80% of cases. However, they were of the opinion that prism cover test may lead to a better functional result<sup>13</sup>. Hatt SR and colleagues studied the importance of deviation measurement in patients of intermittent exotropia and they urged upon the repeatability of prism cover test measurement in order to get an accurate measurement and detect any significant change in deviation<sup>14</sup>. In our study, most common symptom of Strabismus, which was encountered by more than 90% of the ophthalmologists was misalignment of eyes and was confirmed with prism cover test. Our panel recommended this test for diagnostic purposes to be

performed in every patient of suspected strabismus. Tejedor J et al assessed the applicability of prism cover test in quantifying the horizontal deviation and found it to be useful in measuring the deviation<sup>15</sup>. De Jongh<sup>16</sup> E et al compared the difference of prism cover test measurement between four examiners and found that a difference of more than 10 prism diopter is due to inter-observer variability. However, they emphasized upon the importance of orthoptic assessment for accurate measurement of deviation. Complete orthoptic assessment was performed by only 46% of the experts. Our panel discussed it and finalized the recommendation of complete Orthoptic assessment in all the patients. Half of the ophthalmologists had the assessment done by both the surgeon and the orthoptist.

Cycloplegic refraction was a neglected step, not being taken by the surgeons participating in the study. Only 18% of our study participants had incorporated it into their practice. Leffler CT<sup>17</sup> and associates studied the success rates of strabismus surgery comparing adjustable versus conventional suture techniques. They concluded that adjustable suture technique was associated with less re-operation rate than conventional suture technique in cases of horizontal strabismus while the converse was true for vertical strabismus surgery. Kamal AM et al compared the adjustable versus non-adjustable sutures in paediatric horizontal strabismus surgery. While finding no significant difference in maneuvering the two techniques, they concluded that adjustable suture technique was associated with better success rates<sup>18</sup>.

Goerg TVKG<sup>19</sup> published a case series about the use of botulinum toxin in patients diagnosed with cyclic strabismus. They recommended the use of botulinum toxin in those patients of alternate strabismus who have undergone at least one-month trial of prismatic correction for phoric angle. Saunte JP<sup>20</sup> et al administered botulinum toxin in patients of intermittent exotropia and after one-month post injection, they found a significant reduction in the deviation and an improvement in the reading symptoms.

Other methods to correct strabismus were orthoptic exercises, refraction, botulinum injection and glasses. Most of the surgeons used combination of these treatments. Our Panel suggested an amalgam of these measures to be taken before progressing to surgery. A huge percentage of the surgeons (more than 90%) explained redo surgery and its post-operative

complications including under correction and over correction in detail to the patient. The percentage of redo surgery was found almost 10-15%, which is still a higher percentage. Better pre-operative assessment, pre-operative use of non-surgical measures and education of patients can reduce the incidence of redo strabismus surgery. In our study, less than 50% surgeons explain complications of anesthesia. We lay a great stress to educate the patients about complications of general anesthesia.

The limitation of our study was it only included those ophthalmologists who were members of Ophthalmological Society of Pakistan. In future a study involving more ophthalmologists and further aspects related to strabismus need to be studied in order to improve standard of care provided by health professionals.

## CONCLUSION

The current practices in strabismus need to be standardized and a consensus should be developed at a national level.

## Ethical Approval

The study was approved by the Institutional review board/Ethical review board.

## Conflict of Interest

Authors declared no conflict of interest

## Author's Designation and Contribution

Ch Nasir Ahmed; Associate Professor: *Research idea conception, data collection and analysis, article writing.*

Muhammad Shaheer; Assistant Professor: *Literature search and data analysis, editing article draft.*

Sarmad Zahoor; *Data collection and analysis.*

Salman Hamza; Assistant Professor: *Data collection and analysis.*

Samran Asim; Post graduate Resident: *Literature search, Final review*

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