



## IMPACT OF STRABISMUS SURGICAL CORRECTION ON QUALITY OF LIFE IN THE PATIENTS ADMITTED IN DR. M.K. SHAH MEDICAL COLLEGE AND RESEARCH CENTRE, AHMEDABAD

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### ABSTRACT

**Background:** Patients with strabismus often suffer from several psychosocial and emotional consequences. Strabismus surgery address both the functional and psychosocial complaints as both these parameters affect patients' quality of health.

**Aims & objectives:** To assess change in quality of life after surgical correction

**Methodology:** This prospective study was conducted among 50 patients who underwent strabismus surgery at the Ophthalmology Department of Dr. M.K. Shah Medical College and Research Centre, Ahmedabad. Information regarding self-esteem, self-confidence, self-assessment of intelligence, effect on employment options, and interpersonal relationships. Quality of life was measured through SF-8 questionnaire. Assessment was done preoperatively and at three months after surgery for any change in these parameters.

**Results:** Mean age of  $37.2 \pm 10.2$  years were enrolled. About 58.0% were female. Only 5 out of 50 (10.0%) experienced preoperative diplopia. Majority of the patients responded that strabismus caused embarrassment (86.0%), trouble in eye contact (86.0%), negative self-esteem (80.0%), camouflage (70.0%). After surgery, 49 (98.0%) patients were satisfied. Improvement in self-esteem, ability to meet new people, relationship and employment, were reported by 43 (86.0%), 31 (62.0%), 12 (24.0%) and 5 (10.0%) and patients. SF-8 scores subscales (except bodily pain, vitality, role emotional subscales) were statistically significant differences ( $P < 0.05$ ). The average postoperative utility value was  $0.86 \pm 0.23$  with gain of  $0.12 \pm 0.14$  gain.

**Conclusion:** Patients with strabismus have psychosocial difficulties. Strabismus corrective surgery causes significant psychosocial and functional benefits and improve the quality of life.

**KEYWORDS :** Strabismus, surgery, quality of life, SF-8

### INTRODUCTION:

Adult strabismus is effecting approximately 4% of the adult population<sup>[1]</sup>. Acquired causes are cranial nerve palsies, thyroid disease, orbital trauma, autoimmune disease, and other neurologic diseases. The symptoms of strabismus can be classified as functional or psychosocial complaints. Functional complaints are diplopia, visual confusion, reduced visual fields, and torticollis<sup>[2,3]</sup>. Patients with strabismus often suffer from several psychosocial and emotional consequences viz. poor self confidence, difficulty in interpersonal relationships, reduced employment opportunities, and poor nonverbal communications, increased social anxiety, depression, anger and outrage<sup>[4-6]</sup>.

Several strabismologists use of the term cosmetic in the treatment of strabismus. By definition, cosmetic surgery is one that is performed to enhance or beautify. However, strabismus is a pathological state and associated with abnormal binocular vision and leads to an objective deviation from the normal appearance that affects the quality of life<sup>[7]</sup>. Strabismus surgery address both the functional and psychosocial complaints as both these parameters affect patients' quality of health. **Advantages of surgery** are binocular single vision, improvement of abnormal head posture<sup>[8]</sup>, visual field<sup>[9]</sup>, ocular motility<sup>[10]</sup>, and psychomotor development<sup>[11]</sup> and restoration of normal appearance.

Quality-of-life issues and psychosocial difficulties are difficult to approach from an objective standpoint. The individual's perceptions, although subjective, must be specifically considered when evaluating these topics.<sup>[12]</sup>

### AIM & OBJECTIVE:

1) To assess psychosocial consequences of strabismus 2) To assess change in quality of life after surgical correction

### MATERIALS & METHODS:

This prospective study was conducted among 50 patients who underwent strabismus surgery at the Ophthalmology Department of Dr. M.K. Shah Medical College and Research Centre, Ahmedabad during November 2016 to October 2017 after getting permission from institutional ethics committee. Informed consent was obtained from each patient. Patients with following criteria were included: (1) Age  $\geq 15$  years (2) strabismus defined as  $\geq 12^\circ$  (3) surgical correction of strabismus. Subjects with cosmetic deformity, neurological disease, ametropia, nystagmus, significant disease which interfere to respond to the questionnaire were excluded.

Information regarding demography, duration of the misalignment, associated comorbidities, and type of strabismus were collected. The questions were asked regarding self-esteem, self-confidence, self-assessment of intelligence, effect on employment options, and interpersonal relationships. Responses to questions were assigned the numeric value, 1 for an affirmative response and 0 for a negative response. For each respondent, psychosocial issues were evaluated by coding responses into the predetermined formulas, which rated their answers on a 0 to 10 scale.

Quality of life was measured through SF-8 questionnaire. Utility is assessed on a continuous scale of 0 to 1, where 0 is the worst possible QOL weight (equal to death) and 1 is the best possible QOL weight (equal to perfect health). The time trade-off method was used consisted of 2 questions [19, 24]. In the first question, the patient was asked to estimate own life expectancy. The patient was then asked if he/she would be willing to trade a certain portion of the remaining life from the estimated life expectancy (off the end of his/her life) in return for being free from strabismus and all its associated effects under these hypothetical conditions. Time trade-off utility was

calculated with the following equation: Utility = 1 - x/t (where x = years of life he/she would be willing to give up and t = his/her own life expectancy). The number of QALYs gained was calculated by multiplying the measured utility gain (difference in utility before and after surgery) and the patient's life expectancy, together with an assumed annual discount rate of 3%. Assessment was done preoperatively and at three months after surgery for any change in these parameters.

**Statistical Analysis:**

The data was collected with predesigned proforma and entered in Microsoft Excel 2010 and analyzed with Epi info version 7.1. Continuous data was presented with mean and standard deviation while categorical data was presented with frequency and percentage. Comparison of continuous data were analysed with Z test. P value less than 0.05 was considered as significant.

**RESULT:**

Total 50 patients with strabismus with mean age of 37.2 ± 10.2 years were enrolled. Their demographic characteristics are shown in table 1. Out of 50, 29 (58.0%) were female. Twenty nine patients (58.0%) had adult onset of strabismus. Ten patients (20.0%) had previous strabismus surgery. Only 5 out of 50 (10.0%) experienced preoperative diplopia. Out of 50 patients, 38 patients (76.0%) were diagnosed having concomitant type strabismus. About 31 patients (62.0%) had exotropia and 7 patients (14.0%) had esotropia. Paralytic squint and restrictive squint were observed in 4 (8.0%) and 7 patients (14.0%) respectively.

**Table 1: Characteristics Of Patients**

| Characteristics                      | Frequency (%) |
|--------------------------------------|---------------|
| Age (Mean ± SD)                      | 37.2 ± 13.4   |
| Gender                               |               |
| - Male                               | 21 (42.0%)    |
| - Female                             | 29 (58.0%)    |
| Onset                                |               |
| - Childhood                          | 21 (42.0%)    |
| - Adult                              | 29 (58.0%)    |
| Previous strabismus surgery          | 10 (20.0%)    |
| Diplopia                             | 5 (10.0%)     |
| Type of strabismus                   |               |
| Concomitant                          |               |
| - Exotropia                          | 31 (62.0%)    |
| - Esotropia                          | 7 (14.0%)     |
| Non-concomitant                      |               |
| - Paralytic strabismus               | 4 (8.0%)      |
| - Restrictive                        | 7 (14.0%)     |
| - Unknown etiology                   | 1 (2.0%)      |
| Complication                         | 0 (0.0%)      |
| Cure status                          |               |
| - Grade 4: excellent                 | 10 (20.0%)    |
| - Grade 3: good                      | 11 (22.0%)    |
| - Grade 2: Fair                      | 4 (8.0%)      |
| - Grade 1: Cosmetically satisfactory | 23 (46.0%)    |
| - Grade 0 Not improved               | 2 (4.0%)      |

There were no major complications associated with surgery. Not improvement of condition was reported by only 2 patients.

Majority of the patients responded that strabismus caused embarrassment (86.0%), trouble in eye contact (86.0%), negative self-esteem (80.0%), camouflage (70.0%).

After surgery, 49 (98.0%) patients were satisfied.

Improvement in self-esteem, ability to meet new people, relationship and employment, were reported by 43 (86.0%), 31 (62.0%), 12 (24.0%) and 5 (10.0%) and patients.

**Table 2: Psychological Assessment Of Strabismus Patients**

| Pre-operative response     | Frequency (%) | Improvement at Post operative 3 month | Frequency (%) |
|----------------------------|---------------|---------------------------------------|---------------|
| Embarrassed                | 43 (86.0%)    | Improve self-esteem                   | 43 (86.0%)    |
| Perceived less sincere     | 16 (32.0%)    |                                       |               |
| Underestimate intelligence | 13 (26.0%)    | Improve relationships                 | 12 (24.0%)    |
| Alter career               | 5 (10.0%)     | Improve employment                    | 5 (10.0%)     |
| Discriminated              | 5 (10.0%)     | Improvement in activities             | 9 (18.0%)     |
| Problem adjusting          | 11 (22.0%)    | Work better                           | 12 (24.0%)    |
| Trouble eye contact        | 43 (86.0%)    | Improve diplopia                      | 10 (20.0%)    |
| Negative self-esteem       | 40 (80.0%)    | Satisfaction                          | 49 (98.0%)    |
| Avoid activities           | 15 (30.0%)    |                                       |               |
| Camouflage                 | 35 (70.0%)    |                                       |               |

**Table 3: Preoperative And Postoperative SF-8 Subscale Scores Of The Participants**

| SF -8 sub scale            | Mean ± SD  | Mean ± SD  | p value |
|----------------------------|------------|------------|---------|
| General health             | 47.3 ± 5.8 | 52.3 ± 5.6 | < 0.05  |
| Physical functioning       | 48.6 ± 6.1 | 51 ± 4.3   | < 0.05  |
| Role physical              | 47.3 ± 7.8 | 50.2 ± 6.4 | < 0.05  |
| Bodily pain                | 53.1 ± 5.8 | 53.4 ± 6.5 | > 0.05  |
| Vitality                   | 49.7 ± 7.1 | 50.2 ± 7.2 | > 0.05  |
| Social functioning         | 47 ± 7.8   | 50.2 ± 8.1 | < 0.05  |
| Mental health              | 47.9 ± 6.7 | 51.2 ± 7.8 | < 0.05  |
| Role emotional             | 47.8 ± 8.2 | 50.1 ± 6.6 | > 0.05  |
| Physical component summary | 49.3 ± 6.5 | 52.3 ± 6.6 | < 0.05  |
| Mental component summary   | 46.7 ± 7.7 | 50.2 ± 6.6 | < 0.05  |

**Table 4: Preoperative And Postoperative Utility Values, Quality-adjusted Life Years (QALY) Gained By The Surgical Intervention**

| Utility        | Mean ± SD   |
|----------------|-------------|
| Preoperative   | 0.74 ± 0.34 |
| Post operative | 0.86 ± 0.23 |
| Utility gained | 0.12 ± 0.14 |
| QALY gained    | 0.94 ± 2.45 |

The SF-8 scores of the patients are shown in Table 3. The SF-8 scores includes the physical and mental component summary scores. When the preoperative and postoperative subscale SF-8 scores of all participants were compared, most of the scores subscales (except bodily pain, vitality, role emotional subscales) were statistically significant differences (P<0.05). The average preoperative utility value was 0.74 ± 0.34. The average postoperative utility value was 0.86 ± 0.23 with gain of 0.12 ± 0.14 gain. This difference was statistically significant (P > 0.05). The gaining of QALYs was calculated by multiplying the utility gain with the patient's life expectancy with an assumed yearly 3% discount rate. It was 0.94 ± 2.45.

**DISCUSSION**

In the present study, mean age of patients was 37.2 ± 10.2 years. Proportion of female was higher (58.0%). Only 10.0% had preoperative diplopia. More than 3/4th patients (76.0%) had concomitant type strabismus (31 patients - exotropia and 7 patients - esotropia).

In the study of Jackson S et al.<sup>[13]</sup> patients with age ranged from 16 to 54 were enrolled, 57.0% were female, childhood onset in 90.4% patients, diplopia in 52.0% esotropia in 38.0% patients. About 45.0% in the study of Hertle's et al.<sup>[14]</sup> had history of prior surgical correction of strabismus.

Various studies reported that there are significant psychological problems in patients with strabismus.<sup>[15,16]</sup> In the present study, more than 3/4<sup>th</sup> patients had embarrassment (86.0%), trouble in eye contact (86.0%), negative self-esteem (80.0 %). Nelson et al.<sup>[17]</sup> demonstrated that many patients were embarrassed (86.0%), low self esteem (84.0%), and trouble making eye contact (89.0%).

Various studies demonstrated strabismus surgical correction improves the psychosocial functioning as well as functional deficits.<sup>[18,19]</sup> In the present study, 98.0% patients were satisfied after surgery. Majority patients reported improvement in self-esteem (86.0%), ability to meet new people (62.0%), relationship (24.0%) and employment (10.0%). Archer et al.<sup>[20]</sup> has shown significant improvements in the emotional, social and functional component of the patient's health status. There is positive change the way others interact, relate and react with them, helping to socialize and adapt to the world around them. In the study of Menon et al.<sup>[21]</sup>, more than 90% patients had significant improvement in appearance, self-confidence relationships, and able to perform activities that they had previously avoided. Jackson et al.<sup>[22]</sup> demonstrated that surgery resulted in psychosocial benefit. Patients with diplopia had poorer psychosocial adjustment than patients without diplopia.

## CONCLUSION

Results from this study suggest that patients with strabismus have psychosocial difficulties. Strabismus corrective surgery causes significant psychosocial and functional benefits and improve the quality of life.

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