

**Analysis of Improvement in Quality of Life in school going children under going Adenotonsillectomy.**

¹Dr. Prateek Shahane, Assistant Professor, Department of ENT, BKL Walawalkar Medical College and Hospital, Dervan, Tal.-Chiplun, Dist, Ratnagiri, Maharashtra 415606

²Dr. Rajiv Keni, Assistant Professor, Department of ENT, BKL Walawalkar Medical College and Hospital, Dervan, Tal.-Chiplun, Dist, Ratnagiri, Maharashtra 415606

³Dr. Avinash Nagpure, Assistant Professor, Department of ENT, BKL Walawalkar Medical College and Hospital, Dervan, Tal.-Chiplun, Dist, Ratnagiri, Maharashtra 415606

⁴Dr. Yoshita Agrawal, Junior Resident, Department of ENT, BKL Walawalkar Medical College and Hospital, Dervan, Tal.-Chiplun, Dist, Ratnagiri, Maharashtra 415606

⁵Dr. Harpreet Singh Khapra, Junior Resident, Department of ENT, BKL Walawalkar Medical College and Hospital, Dervan, Tal.-Chiplun, Dist, Ratnagiri, Maharashtra 415606

⁶Dr. Pooja Gitte, Junior Resident, Department of ENT, BKL Walawalkar Medical College and Hospital, Dervan, Tal.-Chiplun, Dist, Ratnagiri, Maharashtra 415606

Corresponding Author: Dr. Prateek Shahane, Assistant Professor, Department of ENT, BKL Walawalkar Medical College and Hospital, Dervan, Tal.-Chiplun, Dist, Ratnagiri, Maharashtra 415606

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Abstract

Background: Adenotonsillar hypertrophy is a common paediatric ENT condition causing upper airway obstruction, sleep-disordered breathing, nasal and ear symptoms, and recurrent infections. These problems may adversely affect sleep, behaviour, growth, school performance, social interaction, and health-related quality of life in school-going children.

Objectives: To assess Adenotonsillectomy effects on quality of life, sleep apnoea, recurrent tonsillitis, nasal and ear symptoms, growth, and school performance.

Methodology: This prospective observational - analytical study included 100 children aged 5–15 years undergoing Adenotonsillectomy at a hospital from October 2020 to September 2022. Preoperative and one - year postoperative quality of life was assessed using modified 24-item Glasgow Children’s Benefit Inventory

questionnaires. Adenoid and tonsillar hypertrophy were graded, and paired comparisons were performed statistically.

Results: Among 100 children, 63% were aged 6–10 years and 37% were aged 11–15 years; 62% were male and 38% female. Grade III adenoid hypertrophy predominated (59%), followed by Grade IV (25%), while Grade II tonsillar hypertrophy was most frequent (52%). The mean quality-of-life score improved significantly from -10.31 ± 11.30 preoperatively to 43.33 ± 8.77 postoperatively ($t=42.003$, $p<0.001$). Growth improved, with 35% reporting much better and 37% little better outcomes postoperatively, compared with 30% much worse and 58% little worse preoperatively ($p=0.0001$). School performance also improved, with 39% reporting much better and 51% little better outcomes compared with 25% much worse and 50% little worse preoperatively ($p=0.0001$), demonstrating clinically relevant postoperative improvement.

Conclusion: Adenotonsillectomy significantly improves quality of life, growth, and school performance in school-going children with symptomatic Adenotonsillar hypertrophy. These findings support appropriate surgical management for children with significant obstructive, infective, nasal, or ear-related manifestations, with substantial benefits in appropriately selected children.

Keywords: Adenotonsillar hypertrophy, Adenotonsillectomy, Quality of life, School performance, Paediatric otolaryngology

Introduction

Adenotonsillar hypertrophy is a common condition in childhood and represents an important cause of upper airway obstruction and sleep-disordered breathing. Enlarged adenoids and palatine tonsils may produce

persistent nasal obstruction, mouth breathing, snoring and obstructive sleep apnoea, while also contributing to recurrent throat infections and middle-ear disease¹. These symptoms can extend beyond local ear, nose and throat manifestations and adversely influence sleep, daytime behaviour, concentration, school functioning, social interaction and overall health-related quality of life (HRQoL)².

Adenotonsillectomy is one of the most frequently performed surgical procedures in paediatric otolaryngology and is undertaken for appropriately selected children with obstructive sleep-disordered breathing and recurrent throat infections³. Current clinical guidance also emphasizes assessment of associated problems such as growth retardation, poor school performance and behavioral difficulties when evaluating children with sleep-disordered breathing and tonsillar hypertrophy^{4,5}.

The benefits of surgery, however, cannot be assessed adequately by anatomical or Polysomnography improvement alone⁶. Quality of life represents a broader and clinically meaningful measure encompassing physical, emotional, social and functional consequences of chronic Adenotonsillar disease. Prospective evidence has demonstrated significant improvement in global and disease - specific quality of life following Adenotonsillectomy⁷. The Glasgow Children's Benefit Inventory (GCBI), developed specifically to evaluate health-related benefit after paediatric interventions, incorporates domains including physical health, emotional well-being, learning and vitality⁸.

Therefore, evaluating postoperative benefit across multiple domains is important, particularly in school-going children in whom disturbed sleep, recurrent infections, impaired hearing, nasal obstruction and

reduced general well-being may influence growth and educational performance⁹.

The present study evaluates the change in quality of life following Adenotonsillectomy in school-going children with Adenotonsillar hypertrophy, with specific assessment of sleep apnoea, recurrent tonsillitis, nasal symptoms, ear-related complaints, growth and school performance over one year.

Objectives

To study the effect of Adenotonsillectomy surgery on Obstructive Sleep Apnea, Recurrent attacks of acute tonsillitis, Nasal Obstruction, rhinitis, Chronic Otitis media, School Performance and Growth of the child, in patient with Adenotonsillar hypertrophy.

Material and methods

This prospective observational-analytical study was conducted on children coming to our tertiary care hospital in Miraj, who underwent Adenotonsillectomy surgery in our institute from 1st October 2020 to 30th September 2022 for 1 or more of the complaints of Snoring or Ear discharge or Decreased hearing or Nasal discharge, nasal blockage or Recurrent tonsillitis.

A total of 100 paediatric patients whose parents gave valid informed consent and who filled the questionnaire for evaluation of parameters pre and post operatively and who followed up regularly for 1 year. Patients with Immunodeficiency, Craniofacial anomaly, suspected malignancy, Coagulopathies and children in whom adenoid hypertrophy was not seen on X - ray, were excluded.

A child 5 to 15 years of age complaining of snoring, ear discharge, decreased hearing, nasal discharge, recurrent cough and cold coming to our hospital were included in our study. Complete ENT Examination was carried out and X - ray nasopharynx lateral view was done and

adenoid hypertrophy was confirmed. On the basis of history, clinical examination and radiological examination Adenotonsillar hypertrophy in patients was confirmed and then they were considered for our study. A Questionnaire A was given to parents of these patients before operation. Questionnaire A was prepared by modifying the Glasgow children benefit inventory (GCBi) for preoperative evaluation according to the preoperative parameters available in patient. The modification was mainly done so that we could compare the preoperative and postoperative study parameters.

Questionnaire A – Preoperative Assessment

Questionnaire A was administered to the parents before Adenotonsillectomy to assess the child's baseline health-related quality of life. It was prepared by modifying the Glasgow Children's Benefit Inventory according to the study's preoperative parameters. The questionnaire contained 24 items covering overall life, behaviour, sleep and snoring, growth and development, social interaction, learning, school absenteeism, concentration, nasal obstruction-related frustration, recurrent infections, doctor visits, medication requirements, daily activities, energy, appetite, self - consciousness, family relationships, embarrassment, distractibility, happiness, confidence, self-care and leisure activities.

Questionnaire B – Postoperative Assessment

Questionnaire B was administered to the parents one year after Adenotonsillectomy to evaluate the perceived benefit of surgery and changes in the child's quality of life. It was based on the Glasgow Children's Benefit Inventory and retained the same 24 domains as Questionnaire A, enabling comparison between preoperative and postoperative status.

Questions specifically assessed changes in sleep/snoring, behaviour, growth, social activities, learning and school

attendance, concentration, nasal obstruction, recurrent tonsillitis, ear-related symptoms, doctor visits, medication use, daily activities, energy, appetite, confidence, emotional well-being, family interaction, self-care and leisure activities. Responses ranged from “much better” to “much worse,” with “no change” as the neutral category.

Clinical grading of tonsil size on the basis of Brodsky grading scale was done in OPD at the time of throat examination.

Grade	Description
Grade 0	Tonsil within tonsillar fossa
Grade I	Tonsil just outside tonsillar fossa and occupy < 25 % of oropharyngeal width
Grade II	Tonsils occupy 26 – 50 % of oropharyngeal width
Grade III	Tonsils occupy 51 – 75 % of oropharyngeal width
Grade IV	Tonsils occupy >75% of oropharyngeal width

Clinical grading of adenoid size was done at the time of operation by diagnostic nasal endoscopy after giving general anesthesia.

Grade	Description
Grade I	Adenoid tissue fill-in one-third of the vertical portion of the Choanae
Grade II	Adenoid tissue filling from one-third to two-thirds of the Choanae
Grade III	From two-thirds to nearly complete obstruction of the Choanae
Grade IV	Complete choanal obstruction

After performing adenotonsillectomy in these patients, they were called up for follow-up after 1 week, 4 weeks, 12 weeks, 6 months up to 1 year. After one-year

Questionnaire B was given to parents of the patient to be filled.

Scoring

Score of questionnaires was calculated and improvement in quality of life was evaluated at end of 1 year. A gist of 24 questions was summed up according to the satisfaction of parent after Adenotonsillectomy surgery of their child under 6 headings which includes effect of Adenotonsillectomy surgery on Sleep Apnoea, Recurrent attacks of tonsillitis, Nasal blockage, rhinitis, Ear discharge, Growth of child and School performance. Whether the complaints were relieved or not were observed. Individual responses were assigned values from -2 to +2; the total was divided by 24 and multiplied by 50, producing a score from -100 (maximum harm) to +100 (maximum benefit).

Surgical Technique

All procedures were performed under general anaesthesia with endotracheal intubation. Adenoids were removed with an adenoid curette; gauze tampons were used to achieve haemostasis. Tonsillectomy was performed using a cold knife dissection technique, gauze tampons, and electrocautery to achieve homeostasis. All patients were discharged on next day after surgery and received 5 days of oral paracetamol and amoxicillin, or an equivalent antibiotic, postoperatively. Routine follow-up was performed 1 week after surgery.

Statistical analysis and methods

Data was collected by using a structured proforma. Data thus was entered in MS Excel sheet and analysed by using SPSS 24.0 version IBM USA. Qualitative data was expressed in terms of percentages and proportions. Quantitative data was expressed in terms of Mean and Standard deviation. Association between two qualitative variables was seen by using Chi square test. Comparison

of mean and SD between two groups will be done by using paired test to assess whether the mean difference between groups is significant or not. Descriptive statistics of each variable was presented in terms of

Observations and results

Table 1: Age and Sex distribution of the Children

Age and Sex distribution		No of cases	Percentage (%)
Age (in years)	6–10	63	63
	11–15	37	37
Gender	Male	62	62
	Female	38	38
Total		100	100

Among the participants, 63 (63%) were aged 6–10 years, while 37 (37%) were aged 11–15 years, indicating that children in the younger age group constituted the majority of the study population. 62 (62%) patients were male and 38 (38%) were female, demonstrating a male predominance. Overall, the study population consisted of

Mean, standard deviation, standard error of mean. A p value of <0.05 was considered as statistically significant whereas a p value <0.001 was considered as highly significant.

100 children, with a greater proportion of patients belonging to the 6–10-year age group and a higher representation of male children. This distribution indicates that Adenotonsillar hypertrophy requiring surgery was more frequently observed among younger and male children in the study population.

Table 2: Score of questionnaires A and B

Questionnaire	Mean	Std. Deviation	T Value	P Value	Inference
Pre op (A)	-10.31	11.30	42.003	<0.001	Highly significant
Post op (B)	43.33	8.77			

A summary of score of questionnaires A and B was calculated by assigning the individual question responses a numerical value from -2 to +2, then adding this up,

dividing by the no. of questions (24), and multiplying by 50 to produce a result on a scale from -100 (max. harm) to +100 (max benefit).

Table 3: Effect of Adenotonsillectomy surgery on Growth of child

Growth of child	Pre op		Postop		Total	P
Much better	3	3.0	35	35.0	38	0.0001, highly significant
Little better	4	4.0	37	37.0	41	
No complaint/ change	5	5.0	5	5.0	10	
Little worse	58	58.0	23	23.0	81	
Much worse	30	30.0	0	0.0	30	
Total	100	100.0	100	100.0	200	

It has been observed that preoperatively Growth of child was much worse in 30% patient and little worse in 58%

patient. After Adenotonsillectomy surgery growth of child was improved and 35% patients felt much better

and 37% patients felt little better. In our study 5 % patient had no complaint preoperatively and there were 5% in whom there was no change in complaints postoperatively. There is statistically significant

difference in the no. of patients showing the responses at preoperative and postoperative stage. After Adenotonsillectomy, surgery growth of child improved and quality of life of child is improved.

Table 4: Effect of Adenotonsillectomy surgery on school performance

School performance	Pre op		Postop		Total	P
Much better	5	5.0	39	39.0	44	0.0001, highly significant
Little better	18	18.0	51	51.0	69	
No complaint/change	2	2.0	2	2.0	4	
Little worse	50	50.0	8	8.0	58	
Much worse	25	25.0	0	0.0	25	
Total	100	100.0	100	100.0	200	

It has been observed that preoperatively school performance of patients was much worse in 25% patient and little worse in 50 % patient. After Adenotonsillectomy surgery school performance of patients improved and 39 % patients felt much better and 51 % patients felt little better. In our study 2% patient had no complaint preoperatively and there were 2 % in whom there was no change in complaints post operatively. However, in 8% patients school performance remained little worse, it could be because

of certain external factors which includes awareness among parents regarding schooling, socio economic factors, extreme weather conditions that leads to recurrent URTI, travelling long distance for school etc.

There is statistically significant difference in the no. of patients showing the responses at preoperative and postoperative stage. This shows that after Adenotonsillectomy surgery school performance of patients improved and quality of life of child is improved.

Table 5: Grade of Adenoid Hypertrophy

Grades		No of cases	Percentage (%)
Adenoid Hypertrophy	Grade I	8	8
	Grade II	8	8
	Grade III	59	59
	Grade IV	25	25
Tonsillar Hypertrophy	Grade 0	12	12
	Grade I	20	20
	Grade II	52	52
	Grade III	8	8
	Grade IV	8	8
Total		100	100

In the present study, Grade III adenoid hypertrophy was most common (59%), followed by Grade IV (25%). Among tonsillar hypertrophy, Grade II was predominant (52%), followed by Grade I (20%), while Grade III and IV accounted for 8% each.

Discussion

In the present study most of the cases were aged from 6 to 10 years of age. 63 % cases were aged from 6 to 10 years of age, 37 % cases were aged from 11 to 15 years of age. Mean Age in our study is 9.5. In study conducted by Swain SK et al (2020)¹⁰ they observed, mean age of patients was 6.8. In study conducted by Putra AE et al (2016)¹¹ they observed, mean age of patients was 8.5.

In the present study 62 % were male cases and 38 % were female cases. In study conducted by Swain SK et al (2020)⁷⁵ they observed, 55.45% were male child and 44.55% were female child. In study conducted by Putra A Eet al (2016)¹¹ they observed 62.5% were male child and 37.5% were female child. In the present study after Adenotonsillectomy surgery 43 was mean Score of Questionnaire B (prepared on the basis of GCBI).

In the present study, 50% patients had little worse while 25% had much worse school performance which improved postoperatively to 51% little better and 39 % much better school performance. In Silu Metal.¹² study of 50 patients, when parents of our patients were asked regarding work performance in school and time off school, preoperatively 44% had fairly bad problem and 36% patients responded that they had severe problem. During postoperative follow up at the end of six months 68% of parents responded that their child had very mild problem, while 28% said they had no problem with school work at all, which was again statistically significant. In study conducted by Putra AE et al (2016)¹¹ they observed significant change in children

behavior, activities and school performance which is similar to our study.

In the present study 59 % children were observed with Grade III, 25 % cases with Grade IV, and 8% children observed with Grade I and II respectively adenoid hypertrophy. In present study more than 50 % children had grade II, III, IV hypertrophied tonsil. In study conducted by Swain SK et al (2020)¹⁰ they observed, more than 50% children were with Grade - III and IV adenoid hypertrophy and Grade- II, III, and IV hypertrophied tonsils present.

Limitations

The study has a limited sample size and includes only children who completed one-year follow-up, potentially introducing selection bias. Assessment was predominantly subjective and parent-reported, without objective measures such as Polysomnography, rhino manometry or postoperative endoscopy. External factors, including allergies, socioeconomic conditions and the COVID-19 pandemic, may have influenced postoperative outcomes.

Conclusion

Adenotonsillectomy significantly improves health-related quality of life in school-going children with Adenotonsillar hypertrophy. The procedure is associated with marked improvement in sleep-related symptoms, recurrent tonsillitis, nasal and ear-related complaints, growth, and school performance. The significant increase in mean quality-of-life score from -10.31 preoperatively to 43.33 postoperatively demonstrates substantial overall benefit.

These findings support Adenotonsillectomy as an effective intervention for appropriately selected children with symptomatic Adenotonsillar hypertrophy. Early recognition and appropriate surgical management of

symptomatic Adenotonsillar hypertrophy is recommended, with long-term objective assessment of growth and school performance.

References

1. Kubba H, Swan IRC, Gatehouse S. The Glasgow Children's Benefit Inventory: a new instrument for assessing health-related benefit after an intervention. *Ann Otol Rhinol Laryngol*. 2004; 113(12):980-986.
2. Schwentner I, Schmutzhard J, Schwentner C, Abraham I, Höfer S, Sprinzel GM. The impact of Adenotonsillectomy on children's quality of life. *Clin Otolaryngol*. 2008; 33(1):56-59.
3. Mitchell RB, Archer SM, Ishman SL, Rosenfeld RM, Coles S, Fine stone SA, et al. Clinical practice guideline: tonsillectomy in children (update). *Otolaryngol Head Neck Surg*. 2019; 160 (1_suppl):S1-S42.
4. Marcus CL, Moore RH, Rosen CL, Giordani B, Garetz SL, Taylor HG, et al. A randomized trial of Adenotonsillectomy for childhood sleep apnea. *N Engl J Med*. 2013;368(25):2366-2376.
5. Naiboğlu B, Külekçi S, Kalaycık C, Sheidaei S, Toros SZ, Egeli E. Improvement in quality of life by Adenotonsillectomy in children with Adenotonsillar disease. *Clin Otolaryngol*. 2010;35(5):383-389.
6. Gozal D. Sleep-disordered breathing and school performance in children. *Pediatrics*. 1998; 102 (3 Pt 1): 616-620.
7. Marcus CL, Moore RH, Rosen CL, Giordani B, Garetz SL, Taylor HG, et al. A randomized trial of Adenotonsillectomy for childhood sleep apnea. *N Engl J Med*. 2013;368(25):2366-2376.
8. Todd CA, Bareiss AK, McCoul ED, Rodriguez KH. Adenotonsillectomy for obstructive sleep apnea and quality of life: systematic review and meta-analysis. *Otolaryngol Head Neck Surg*. 2017; 157(5):767-773.
9. Katz ES, Moore RH, Rosen CL, Mitchell RB, Amin R, Arens R, et al. Growth after Adenotonsillectomy for obstructive sleep apnea: an RCT. *Pediatrics*. 2014;134(2):282-289.
10. Swain SK, Sahu MC, Choudhury J, Ananda N. Adenotonsillectomy affecting quality of life in pediatric patients: Our experiences at a tertiary care teaching hospital of Eastern India. *Annals of Indian Academy of Otorhinolaryngology Head and Neck Surgery*. 2020 Jan1;4(1):1.
11. Putra AE, Rahayu L, Limantara E. Differences in Pediatrics Quality of Life (Peds-QI) Test in Children Before and After Adenotonsillectomy in 2016. *Bio medical and Pharmacology Journal*. 2017 Jun 20; 10 (2): 959-67.
12. Silu M, Deep hand, Samor V, Gupta G. Impact on Quality of Life After Adenotonsillectomy in Pediatric Patients. *Int J Med Res Prof*. 2018 Mar; 4(2):175-80.