

Original Research Article

Impact of adenoidectomy or adenotonsillectomy on paediatric quality of life using obstructive sleep apnoea - 18 questionnaire

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ABSTRACT

Background: Recurrent adeno-tonsillitis can lead to problems of secretory otitis media/OSA/sinusitis and thus adenotonsillectomy is one of the most frequent done surgery in children. The present study aimed to evaluate the impact of adenoidectomy or adenotonsillectomy on the quality of life of children using obstructive sleep apnoea- 18 score.

Methods: A prospective study was conducted in the Department of Otorhinolaryngology, Head and Neck Surgery at Ananta Institute of Medical Science, Rajsamand between January 2017 to December 2019. A total of 60 patients of age group 4 to 15 years were included in study who were undergoing adenoidectomy or adenotonsillectomy. All patients were evaluated by using 'obstructive sleep apnea - 18' (OSA-18) preoperatively and 6 months post-operative period for impact on quality of life on children after surgery.

Results: 60 children with a mean age of 8.6 years were evaluated. The most frequent indication for surgery was recurrent adeno-tonsillitis and obstructive sleep apnoea for adenoid hypertrophy. The total mean score of initial OSA-18 was 85.34, following surgery at 6 months, the total mean score was reduced to 31.23 (p value <0.001). Similarly, there was reduction in mean score of individual domains after surgery which was statically significant (p<0.001).

Conclusions: Our study concludes that on evaluation of children with adenoid hypertrophy using OSA-18 pre-operative and 6 months post-operative period, showed adenoidectomy or adenotonsillectomy has positive impact on paediatric quality of life.

Keywords: Adenoidectomy, Adenotonsillectomy, OSA -18, Quality of life

INTRODUCTION

The adenoid (also known as nasopharyngeal tonsil or Luschka's tonsil) is a lobulated mass of lymphoid tissue found on the superior and posterior wall of the nasopharynx. The adenoids along with palatine tonsils, lingual tonsils, tubal tonsils of Gerlach and lateral pharyngeal bands make up what is called as Waldeyer's ring.¹

Recurrent infection and enlargement of adenoid and tonsil tissue can lead to problems of recurrent otitis media, sinusitis, obstructive sleep apnea disorder and

orthognathic dysfunction along with altered facial growth. Various other important consequences are behavioural disorders, day time sleepiness, poor school performance and COR pulmonale.^{2,3} As a consequence, adenotonsillectomy has become one of the most frequently performed surgeries in paediatric age group within otolaryngology speciality. Although the indications for adenotonsillectomy are well established since decades, very few studies had focused on impact of surgery on quality of life of the patients.⁴

There are various methods available to assess to quality of life in children including generic health related

questionnaires [children's quality of life questionnaire (CHQOL), child health questionnaires (CHQ), Glasgow children's benefit inventory (GCBI), short form health survey (SF-36)] and disease specific health related questionnaires [obstructive sleep apnoea-18 questionnaire (OSA-18), pediatric throat disorders outcome test (IT-14)] questionnaire.⁵⁻¹¹

Quality of life questionnaires are a useful assessment tool capable of encompassing a range of factors by reporting subjective patient-centred outcomes. These questionnaires are capable of measuring a patient's subjective assessment of the impact of an illness or treatment on their physical, psychological and general wellbeing.¹²

In our study we had used OSA-18 questionnaire to evaluate the impact of adenoidectomy or adenotonsillectomy on paediatric quality of life. The OSA-18 questionnaire, developed by Franco et al.¹³ The OSA-18 survey is a health-g geared QOL assessment tool and focuses on physical problems, functional limitations and emotional distress resulting from disease. It is a valid and reliable quality of life (QOL) measurement tool. The questionnaire includes 18 items grouped in 5 domains, where items are scored in an ordinal 7 points classification (none of the time, hardly any of the time, a little of the time, some of the time, a good bit of the time, most of the time, all of the time). The total OSA-18 score may therefore be between 18 and 126. Total OSA-18 survey scores were classified into three groups according to the impact on the QOL of children: mild (scores below 60), moderate (scores between 60 and 80) and severe (scores above 80).

The present study aims to assess quality of life in paediatric age group prior to and following adenoidectomy or adenotonsillectomy at 6 months using OSA-18 score.

METHODS

A prospective study was conducted in the Department of Otorhinolaryngology Head and Neck Surgery at Ananta Institute of Medical Science, Rajsamand between January 2017 to December 2019. A total of 60 patients of age group 4 to 15 years were included in study who were undergoing adenoidectomy or adenotonsillectomy as per the inclusion criteria.

All the patients underwent routine blood investigations, chest X-ray and a detailed ear, nose and throat examination. Clinical history was taken regarding duration and severity of symptoms in detail.

The presence of adenoid hypertrophy was confirmed by diagnostic nasal endoscopic examination and/or by taking an X-ray soft tissue nasopharynx in lateral view.

Inclusion criteria

Recurrent or chronic adenoiditis, obstructive sleep apnea due to adeno-tonsillar hypertrophy, repeat surgery for recurrent otitis media with effusion were included.

Exclusion criteria

Patients having immunodeficiency, craniofacial anomaly, suspected tonsil malignancy, coagulopathies, patients or parents refused for follow up or to give consent, previous history of adenotonsillectomy or adenoidectomy were excluded.

The caretakers of all children included in this study signed an informed consent form. Parents were applied a questionnaire 'Obstructive sleep apnea-18' (OSA -18) (Figure 1). The questionnaire referred to the symptoms and effects related to the disease prior to the surgery and 6-month postoperative follow up. The questionnaire was not necessarily applied by the same surgeon who performed surgery. Surgery (adenoidectomy or adenotonsillectomy) was performed under general anaesthesia. Adenoids were removed by endoscopic debri der method and tonsil by conventional dissection and snare method.

The OSA 18 has 18 items in 5 domains including sleep disturbances, physical suffering, emotional distress, daytime problems and caregiver concerns. The questionnaire was administered to the patients before and 6 months after the surgery. There are total 18 questions and each question scores between 1-7 where 1 indicates symptoms occurred 'none of the time' and 7 indicates symptoms occurred 'all of the time'. The total score of OSA-18 is thus 126. The impact on the quality of life is classified as mild <60, moderate 60-80 and severe >80.

Data analysis

Data were analyzed using SPSS software version 19.0. OSA -18 scores were obtained both preoperatively and postoperatively (6 months after the surgery) and the results were presented as mean \pm SD (standard deviation). Comparison was performed using unpaired t-test and significance level was set at p value <0.05.

RESULTS

A total 60 patients were included in study. The age of the patients ranged from 4 to 15 years and the mean age was 8.6 years. There were 42 (70%) male patients and 18 (30%) female patients with male to female child ratio of 2.3:1. The mean duration of symptoms was 4.1 years.

Maximum number of patients was from age group 6-10 years (56.66% cases) followed by age group 11-15 years (28.33%). 15% cases were from the age group 0-5 years of age. Minimum age of the patient in present study was 4 years (Table 1).

Table 1: Age group distribution of study participants.

Age group (in years)	Number of cases	Percentage
0-5	09	15
6-10	34	56.66
11-15	17	28.33
Total	60	100

Table 2: Total OSA-18 score in pre-operative period.

Severity of disease (OSA-18 score)	Number of cases	Percentage
Mild (<60)	05	08.33
Moderate (60-80)	13	21.66
Severe (>80)	42	70.00
Total	60	100

Table 3: Total and individual domain pre and 6 months post-operative score.

S. no.	OSA domain	Mean pre- operative score \pm SD	Mean 6 months post-operative score \pm SD	Mean difference \pm SD	P value
1	Sleep disturbances	22.09 \pm 2.08	5.18 \pm 0.58	16.91 \pm 1.50	<0.0001
2	Physical suffering	20.11 \pm 1.96	6.50 \pm 0.68	13.61 \pm 1.28	<0.0001
3	Emotional distress	10.91 \pm 1.01	6.66 \pm 0.71	4.25 \pm 0.30	<0.0001
4	Daytime disturbances	11.68 \pm 1.69	7.00 \pm 0.99	4.68 \pm 0.70	<0.0001
5	Caretaker concern	20.55 \pm 2.80	5.89 \pm 0.61	14.66 \pm 2.19	<0.0001
	Total	85.34 \pm 9.54	31.23 \pm 3.57	54.11 \pm 5.97	

In our study of 60 patients OSA-18 score in pre-operative period showed 70% of patients have more than 80 total score which was indicating severe impact on quality of life, followed by 21.66% patients having score between 60-80 with moderate impact and 8.33% patients have less than 60 score showing mild impact on quality of life (Table 2).

The mean difference of total OSA-18 score and of individual domain (sleep disturbances, physical suffering, emotional distress, daytime problems, caregiver concern) showing statically significant difference in pre and 6 months' post-operative period (Table 3).

DISCUSSION

The prospective study of 60 patients was done in the Department of Otorhinolaryngology and Head Neck Surgery at Ananta Institute of Medical Science, Rajsamand between January 2017 to December 2019 in the age group 4 to 15 years who were undergoing adenoidectomy or adenotonsillectomy.

Our study adds to other studies that showed adenoidectomy or adenotonsillectomy is effective in improving quality of life in paediatric age group. In our study there were 42 (70%) male patients and 18 (30%) female patients with male to female child ratio of 2.3:1. Silva et al also found 28 males (58.33%) and 20 female (41.66%) patients with male to female child of 1.4:1.¹⁴

Jose et al found in their study that 56.2% were males and 43.8% were females with mean age of 6.5 years.¹⁵ Ali et al studied 47 patients with 29 (61.70%) male child and 18 (38.30%) female child.¹⁶ The mean duration of symptoms was 4.1 years in our study. Silva et al found average time between the beginning of respiratory complaint and

surgery was high, especially if taken into account the mean age of sample (5.93 years).¹⁴

Maximum number of patients was from age group 6-10 years (56.66% cases) followed by age group 11-15 years (28.33%). 15% cases were from the age group 0-5 years of age. Minimum age of the patient in present study was 4 years. Ali et al found majority of patients were in age group of 5-7 years (48.94%).¹⁶

Adenoidectomy or adenotonsillectomy are the most common surgical procedures in otorhinolaryngology.¹⁷⁻²⁰ In adequately selected children, these measures can change the perception of quality of life and solve obstructive problems.²⁰

In our study OSA-18 questionnaire were applied preoperatively to the caretaker of children and 6 months postoperatively. Our study of 60 patients revealed that, following adenoidectomy or adenotonsillectomy there was reduction in mean difference of score in individual domain and in total score of OSA-18 which was reflecting improvement in quality of life after surgery.

The total mean OSA-18 score in preoperative period was 85.34, which was reduced to 31.23 at 6 months post-operative period, which was indicating positive impact on quality of life after surgery (p value <0.0001). Similarly, there was reduction in mean score of individual domains (sleep disturbances, physical suffering, emotional distress, daytime problems, caregiver concern) of OSA-18 at 6 months post-operative period which was statically significant (p value <0.0001).

Our result was comparable to Silva et al, who found significant reduction in total mean score to 34.15 from preoperative score of 82.83. Valerie et al and Sohn et al in their study used OSA-18 questionnaire pre and post operatively.^{14,20,21} OSA-18 scores showed improvement

post-operatively in all domains, which was consistent with our study. Franco et al in their study also found that there was a great improvement in quality of life in patients undergoing adeno-tonsillectomy, which was comparable with our study.¹³

In our study there is significant reduction in total score of OSA-18 and in individual domain of OSA-18 questionnaire (sleep disturbances, physical suffering, emotional distress, daytime problems, caregiver concern) after surgery, that was indicating positive impact on quality of life of children who were undergoing adenoidectomy or adeno-tonsillectomy.

CONCLUSION

Our study concluded that on evaluation of children with adenoid hypertrophy using OSA-18 questionnaire pre-operative and 6 months post-operative period, showed adenoidectomy or adenotonsillectomy has positive impact on paediatric quality of life.

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ANNEXURE







Instructions

For each question below, please circle the number that best describes how often each symptom or problem has occurred during the past 4 weeks (or since the last survey if sooner).

OSA-18 questionnaire (quality of life survey).

S. no	OSA-18 questionnaires	None of the time	Hardly any of the time	A little of the time	Some of the time	A good bit of the time	Most of the time	All the time
1.	Sleep disturbances							
a.	Loud snoring?	1	2	3	4	5	6	7
b.	Breath holding spells or pauses in breathing at night?	1	2	3	4	5	6	7
c.	Choking or gasping sounds while asleep?	1	2	3	4	5	6	7
d.	Restless sleep or frequent awakenings from sleep?	1	2	3	4	5	6	7
2.	Physical sufferings							
a.	Mouth breathing because of nasal obstruction?	1	2	3	4	5	6	7
b.	Frequent colds or upper respiratory infections?	1	2	3	4	5	6	7
c.	Nasal discharge or runny nose?	1	2	3	4	5	6	7
d.	Difficulty in swallowing foods?	1	2	3	4	5	6	7
3.	Emotional distress							
a.	Mood swings or temper tantrums?	1	2	3	4	5	6	7
b.	Aggressive or hyperactive behavior?	1	2	3	4	5	6	7
c.	Discipline problems?	1	2	3	4	5	6	7
4.	Daytime problems							
a.	Excessive daytime drowsiness or sleepiness?	1	2	3	4	5	6	7
b.	Poor attention span or concentration?	1	2	3	4	5	6	7
c.	Difficulty getting out of bed in the morning?	1	2	3	4	5	6	7
5.	Caretakers concerns							
a.	Caused you to worry about your child's general health?	1	2	3	4	5	6	7
b.	Created concern that your child is not getting enough air?	1	2	3	4	5	6	7
c.	Interfered with your ability to perform daily activities?	1	2	3	4	5	6	7
d.	Made you frustrated?	1	2	3	4	5	6	7
Total score OSA (18-126)								

Overall, how would you rate your child's quality of life as a result of the above problems? (Circle one number)

										
0	1	2	3	4	5	6	7	8	9	10
Worse Possible		Half-way Between				Best Possible				
Quality-of-Life		Worst and Best				Quality-of-Life				