

Improvement in the quality of life of children after adenotonsillectomy

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Summary

Enlarged palatine and pharyngeal tonsils is one of the most frequent occurrences in otorhinolaryngology, and it is the main cause of obstructive sleep apnea in children. Aim: To evaluate the impact of adenotonsillectomy in the quality of life of children with adenotonsillar hyperplasia. Study design: Clinical prospective. Material and Method: 36 parents/guardians of children who underwent adenotonsillectomy were interviewed, before and after surgery. We used a special Questionnaire about quality of life (developed by Serres et al. 2000), whose items included physical distress, sleep disorders, speech and swallowing disorders, emotional distress, limitation in activities and parent's/guardian's concern. Results: The quality of life of all children improved after surgery. There was direct association between the level of airway obstruction and sleep disorders, parent's/guardian's concern and average scores. Comparing the items, we found statistical association between emotional distress and sleep disorders; parent's/guardian's concern and sleep disorders and limitation in activities and emotional distress. Conclusion: Enlarged tonsils and obstructive sleep apnea worsen the quality of life of children, especially because of physical distress and sleep disorders. Adenotonsillectomy greatly improves the quality of life of these patients.

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INTRODUCTION

Enlarged palatine and pharyngeal tonsils is one of the most frequent occurrences in otorhinolaryngology. It is the main cause of obstructive sleep apnea in children, accounting for about 75% of the cases¹. Tonsil removal (adenotonsillectomy) is the treatment of choice², today it is the most common surgery performed by otorhinolaryngologists in the USA³.

Enlarged tonsils and resulting airway obstruction may cause orthognathic dysfunction, chewing and swallowing difficulties and dental arch abnormalities^{4,5}. Other important consequences are associated with developmental abnormalities, behavioral disorders, poor school performance and *cor pulmonale*^{6,7}. Although the indications for adenotonsillectomy are well established, there are few studies about the impact of surgery in the quality of life of

patients⁸. "Quality of life," an expression used since the 90's, is used to evaluate the impact of diseases⁹ on the patients' life.

The main purpose of this study was to compare scores of the Questionnaire about the quality of life of children with enlarged tonsils before and after adenotonsillectomy.

MATERIAL AND METHOD

We interviewed 36 parents/guardian of children who underwent adenotonsillectomy to treat obstructive sleep disorders resulting from enlarged palatine and pharyngeal tonsils. We used a special questionnaire (based on the study from Serres et al, 2000⁸) to evaluate the patients (Figure 1).

We included in the study patients aged 2 to 15 years, whose pharyngeal tonsils affected over 75% of the rhinopharynx (based on paranasal sinuses radiographic

(Questionnaire for evaluation of quality of life in children with enlarged pharyngeal and palatine tonsils.)

Name: _____ Age: _____

Race: white brown black Gender: M F

Pharyngeal Tonsil: Nasopharyngeal obstruction showed in radiography
 0-25% 25-50% 50-75% 75-100%

Palatine Tonsil: Oropharyngeal obstruction Grade I II III IV*

Legend: 0 never, 1 almost never, 2 sometimes, 3 frequent, 4 a lot, 5 it couldn't be worse

	Score: _____						
	0	1	2	3	4	5	6
1. Physical distress							
nasal obstruction	0	1	2	3	4	5	6
tiredness during the day	0	1	2	3	4	5	6
low weight	0	1	2	3	4	5	6
shortness of breath	0	1	2	3	4	5	6
2 Sleep disorder							
snores	0	1	2	3	4	5	6
gasps/choking	0	1	2	3	4	5	6
restless sleep	0	1	2	3	4	5	6
difficulty to wake up in the morning	0	1	2	3	4	5	6
deep thorax while sleeping	0	1	2	3	4	5	6
3. Speech and swallowing disorders							
difficulty in swallowing solid food	0	1	2	3	4	5	6
gasps	0	1	2	3	4	5	6
unclear speech	0	1	2	3	4	5	6
nasal speech	0	1	2	3	4	5	6
poor pronunciation	0	1	2	3	4	5	6
4. Emotional distress							
irritability	0	1	2	3	4	5	6
impatience	0	1	2	3	4	5	6
poor appetite	0	1	2	3	4	5	6
inattentive	0	1	2	3	4	5	6
others make fun of the child because he/she snores	0	1	2	3	4	5	6
5. Limitation in activities							
plays normally	0	1	2	3	4	5	6
practices sports	0	1	2	3	4	5	6
plays with friends	0	1	2	3	4	5	6
attends school or nursery	0	1	2	3	4	5	6
school performance	0	1	2	3	4	5	6
6. Parents or guardians are concerned or annoyed by the children's snore?							
	0	1	2	3	4	5	6

Figure 1. Model of questionnaire to evaluate quality of life⁸.

findings) and who also presented enlarged palatine tonsils (grade II or higher)⁷. Children presenting craniofacial abnormalities and neurological disorders were excluded from this study, as well as those patients referred to surgery to treat recurrent tonsillitis.

Parents/guardians answered the Questionnaire based on history 2 months before and 1 month after surgery. The Questionnaires were not applied by the same team who performed surgery.

RESULTS

We evaluated 36 patients, ranging from 2 to 15 years old (average 6.58 years), 14 girls and 22 boys.

Table 1 shows the average score for each item of the Questionnaire, before and after surgery. We distributed the patients into two groups according to their age (2 to 7 and 7 to 15 years old); there was no statistically significant difference between groups. All children improved after surgery. Two patients who showed less improvement after surgery (5%) also had associated rhinitis.

Comparing the level of obstruction caused by pharyngeal and palatine tonsils, we found direct and statistically significant difference between the level of obstruction and sleep disorders, parent's/guardian's concern and general average of items of the Questionnaire (Table 2).

Comparing the items, we found positive association between physical distress and sleep disorders, mother's concern and sleep disorders and limitation of activities and emotional distress (Table 3).

DISCUSSION

Generally, the greatest concern of any disease refers to its physical consequences. However, the impact of a disease on the quality of life of a patient, or his parent/guardian, should also be taken into account when choosing treatment approaches.

Adenotonsillectomy is one of the most common surgeries performed in children³. Although we still do not know all consequences of adenoid and tonsil enlargement, we believe that obstructive sleep apnea accounts for the highest morbidity¹. Other consequences, described as minor ones, include weight and height developmental disorders, craniofacial problems resulting from mouth breathing, chewing and swallowing difficulties and high susceptibility to upper airway infections^{4,6}. The disease's high morbidity and its impact over the patient's life should be considered when choosing the best treatment approach.

Quality of life has been recently used to evaluate the impact of a disease under the patient's perspective. The Questionnaire used in this study is based on Serres' study⁸, validated for children presenting obstructive sleep disorders. This Questionnaire was used to evaluate the impact of a

disease on the patient, in an attempt to include this item and address its severity and importance when evaluating children with enlarged tonsils⁹. The Questionnaire used in this study is a special tool to evaluate the impact of adenotonsillectomy on the quality of life of patients.

We found poor association between level of upper airway obstruction and its impact on quality of life of patients, corroborating Serres's findings¹⁰. However, when we evaluate each item separately, we note that sleep disorders and physical distress are directly proportional to the level of obstruction. Emotional stress, limitation of physical activities and patient's/guardian's concern do not correlate to the degree of obstruction.

Emotional stress and limitation of physical activity did not show low score, as we expected; parent's/guardian's

Table 1. Comparison among pre and postoperative average scores.

Items	Average (dp)		Average (dp)		p
	score	Pre	Post		
Physical distress	10.92	5.94	2.94	3.51	<0.001
Sleep disorders	10.14	4.92	0.92	4.92	<0.001
Speech and Swallowing	6.25	5.59	2.64	3.07	<0.001
Emotional distress	6.5	4.2	3.69	4.2	<0.001
Limitations	3.72	5.35	1.44	2.26	=0.001
Mother's concern	4.39	1.64	0.39	0.87	<0.001
Total Score	41.92	19.16	12.03	7.31	<0.001

*t Student's test for paired data with significance of $pd^*0.050$.

Table 2. Table of correlation between obstruction level and items.

	Pharyngeal Tonsil		Palatine Tonsil	
	Coefficient	p	Coefficient	p
Physical distress	0.102	0.552	0.011	0.949
Sleep disorders	0.422	0.010*	0.594	<0.001*
Speech and Swallowing	0.119	0.489	-0.250	0.14
Emotional distress	0.157	0.361	0.008	0.963
Limitations	0.213	0.212	0.185	0.279
Mother's concern	0.339	0.043*	0.444	0.007*
Total Score	0.348	0.037*	0.567	<001*

Spearman's Analysis ($pd^*0.05$) *significant.

Table 3. Comparison among items.

	Coefficient	p
Physical distress and sleep disorders	0.549	≤ 0.001
Mother's concern and sleep disorders	0.444	0.007
Limitation of activities and emotional distress	0.655	≤ 0.001

Note: Only the items with positive correlation are showed on the table.

concern was more associated with physical disorders. Other studies found different results for parent's/guardian's concern and the concept of health¹¹, probably related to cultural differences.

Speech and swallowing disorders are common in patients presenting upper airway obstruction⁴, although they did not have a comparative high score. Possibly, it shows that parents/guardians give greater importance to sleep disorders and physical distress, because they were considered to pose great risk for one's health, or because they were not associated with the problem. When we compared such scores after surgery, we noted that they were higher.

There was no difference in scores considering age of the patients. This finding showed us that parent's/guardian's perspective is the same for patients between 2 and 15 years old.

After surgery, there was significant improvement on score averages for all items, proving the success of the surgery to improve the quality of life of the patients. The improvement was greater in items related to physical distress and sleep disorders.

Children presenting rhinitis associated with enlarged palatine and pharyngeal tonsils (5%) had mild improvement on scores. This finding is similar to Serres¹⁰, who noted 6% mild improvement.

Our results, as well as other authors' results,¹⁰ suggest that adenotonsillectomy presents greater benefit to children with obstructive sleep disorders.

CONCLUSION

We concluded that enlarged pharyngeal and palatine tonsils and obstructive sleep apnea negatively affect the

quality of life of children, especially due to the physical distress and sleep disorders resulting from them. After surgery, there is great improvement in quality of life of patients.

REFERENCES

1. Nimubona L, Jokic M, Moreau S, Brouard B, Guillois B, Leacheux C. Le syndrome d'apnées obstructives du sommeil et hypertrophie amygdalienne chez le nourisson. *Arch Pédiatr* 2000; 7: 961-4.
2. McNanama F, Sullivan CE. Treatment of obstructive sleep apnea syndrome in children. *Sleep* 2000; 23 (Suppl. 4) 142-6.
3. Paradise J. Tonsillectomy and Adenoidectomy. In Bluestone C. *Pediatric Otolaryngology*. Philadelphia: W. B. Saunders; 1996.
4. Junqueira PAS, Di Francesco RC, Trezza P, Frizzarini R, Faria ME. Alterações funcionais do sistema estomatognático pré e pós adenoamigdalectomia. *Pró-fono Revista de atualização Científica*. 2002; 14:17-22.
5. DiFrancesco RB, Junqueira P, Trezza P, Faria ME, Frizzarini R, Zerati F. Improvement of Bruxism after T&A Surgery. *Int J Pediatr Otorhinolaryngol* 2002; 100-5.
6. DiFrancesco RC, Junqueira PA, Frizzarini R, Zerati F. Crescimento pondero-estatural de crianças após adenoamigdalectomia. *Rev Bras Otorrinolaringol* 2003; 193-7.
7. Guilleminault C, Pelayo R. Sleep-disordered breathing in children. *Annals of Medicine*. 1998; 30: 350-6.
8. Serres LM, Derkay C, Astley S, Deyo RA, Rosenfeld RM, Gates GA. Measuring quality of life in children with sleep disorders. *Arch Otolaryngol Head Neck Surg*. 2000; 126: 1423-9.
9. Morton RP. Quality of life assessment: integral to clinical practice. *Clin Otolaryngol*. 1996; 21(1):1-2.
10. Serres LM, Derkay C, Sie K, Biavati M, Jones J, Tunkel D, Manning S, Inglis A, Haddad Jr J, Tampakopoulou D, Weiberg AD. Impact of adenotonsillectomy on quality of life in children with sleep disorders. *Arch Otolaryngol Head Neck Surg* 2002; 128: 489-96.
11. Stewart MG, Friedman EM, Sulek M. Quality of life and health status in pediatric tonsil and adenoid disease. *Arch Otolaryngol Head Neck Surg* 2000; 126: 45-8.