



Original Article

Evaluating the Benefits of Tonsillectomy in Adults with Obstructive Sleep Apnea

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ABSTRACT

Background: Obstructive sleep apnoea (OSA) is characterized by recurrent upper airway obstruction during sleep, leading to disturbed sleep, excessive daytime somnolence, and impaired daily functioning. In adults with tonsillar hypertrophy, tonsillectomy may reduce airway obstruction and improve both subjective and objective outcomes.

Objective: To evaluate the effect of tonsillectomy on sleep-related symptoms, daytime functioning, and apnea-hypopnea index (AHI) in adults with obstructive sleep apnoea and tonsillar hypertrophy.

Methods: This prospective observational study included 100 adults with obstructive sleep apnoea and tonsillar hypertrophy. Preoperative assessment included demographic and clinical details, sleep-related symptom scoring, daytime functioning evaluation, and AHI measurement. Sleep-related symptoms assessed were snoring, witnessed apnoea, restless sleep, morning headache, dry mouth on waking, and excessive daytime sleepiness. Daytime functioning parameters included daytime sleepiness, fatigue, poor concentration, irritability, and reduced work performance. Patients were followed at 1, 3, and 6 months after tonsillectomy. Data were analyzed using appropriate descriptive and inferential statistical tests, and a p value of less than 0.05 was considered statistically significant.

Results: The mean total symptom score decreased significantly from 12.88 ± 2.74 preoperatively to 2.24 ± 1.42 at 6 months postoperatively ($p < 0.001$). The mean total daytime functioning score also improved significantly, declining from 7.44 ± 2.43 at baseline to 1.94 ± 1.16 at 6 months ($p < 0.001$). Mean AHI decreased from 28.02 ± 12.26 events/hour preoperatively to 10.41 ± 5.56 events/hour at 6 months ($p < 0.001$). Overall, 78.0% of patients achieved the predefined surgical response criterion. Although patients with severe OSA had greater residual symptom burden than those with mild or moderate disease, improvement was observed across all severity groups. Postoperative complications were infrequent, with an overall complication rate of 6.0%.

Conclusion: Tonsillectomy is an effective treatment option in selected adults with obstructive sleep apnoea and tonsillar hypertrophy. It is associated with significant improvement in sleep-related symptoms, daytime functioning, and objective disease severity, with a low complication rate.

Keywords: obstructive sleep apnoea, tonsillectomy, tonsillar hypertrophy, apnea-hypopnea index, daytime sleepiness.

INTRODUCTION

Obstructive sleep apnoea (OSA) is a common disorder characterized by recurrent episodes of upper airway obstruction during sleep, leading to intermittent hypoxia, sleep fragmentation, and impaired daytime functioning. In adults, OSA is

an important public health problem because of its association with excessive daytime sleepiness, reduced quality of life, cardiovascular morbidity, and metabolic consequences [1].

The pathophysiology of OSA is multifactorial and involves anatomical as well as neuromuscular factors that contribute to upper airway collapse during sleep. Among the anatomical causes, tonsillar hypertrophy is a well-recognized factor that may contribute significantly to airway obstruction in selected adult patients. Although tonsillar enlargement is more commonly emphasized in children, it can also play a major role in adults with OSA [2].

Treatment of adult OSA includes lifestyle modification, continuous positive airway pressure therapy, oral appliances, and surgery in carefully selected cases. Surgical treatment is generally considered when there is a clear anatomical site of obstruction or when patients are unable to tolerate non-surgical therapy. In adults with prominent tonsillar hypertrophy, tonsillectomy has been proposed as a targeted intervention that may reduce upper airway obstruction and improve sleep-disordered breathing [3,6,7].

Several studies have reported favorable outcomes following tonsillectomy in adults with OSA. Improvement has been demonstrated in objective parameters such as the apnoea-hypopnoea index as well as in subjective outcomes including snoring, daytime sleepiness, and sleep-related quality of life [3-5]. A systematic review and meta-analysis by **Camacho et al.** also supported the role of tonsillectomy as an effective treatment option in selected adults with OSA, particularly in those with enlarged tonsils and mild to moderate disease [5].

Holmlund et al. reported beneficial results of tonsillectomy in adults with OSA, further supporting the role of this procedure in appropriately selected patients [4]. Similarly, earlier work by Verse et al. showed that tonsillectomy could be an effective treatment in adults with tonsillar hypertrophy and obstructive sleep apnoea [7]. More recent evidence from a randomized controlled clinical trial has also added support to the potential benefit of tonsillectomy in adult OSA [8].

Despite these encouraging findings, the role of tonsillectomy alone in adults with obstructive sleep apnoea remains less extensively studied than other treatment modalities. Outcomes may vary according to patient selection, tonsil size, severity of disease, and associated upper airway factors. Therefore, further clinical studies are useful to evaluate the symptomatic and functional benefits of tonsillectomy in adult patients with OSA in routine practice.

The present study was undertaken to evaluate the benefits of tonsillectomy in adults with obstructive sleep apnoea at a tertiary care teaching hospital.

AIM

To evaluate the benefits of tonsillectomy in adults with obstructive sleep apnoea.

OBJECTIVES

To assess the improvement in sleep-related symptoms following tonsillectomy in adults with obstructive sleep apnoea.

To evaluate the change in daytime functioning and quality of life after tonsillectomy.

To determine the overall clinical outcome of tonsillectomy in terms of postoperative improvement and complications.

MATERIALS AND METHODS

Study design and setting

This prospective observational study was conducted in the Department of Otorhinolaryngology of a tertiary care teaching hospital over the study period approved by the institutional protocol. The study was designed to evaluate the effect of tonsillectomy on sleep-related symptoms, daytime functioning, and objective sleep parameters in adults with obstructive sleep apnoea (OSA) associated with tonsillar hypertrophy.

Study population

A total of 100 adult patients diagnosed with obstructive sleep apnoea and tonsillar hypertrophy were included in the study. Patients were recruited consecutively after fulfilling the eligibility criteria and providing informed consent.

Inclusion criteria

Patients were included if they:

- were aged 18 years or above
- had symptoms suggestive of obstructive sleep apnoea
- had tonsillar hypertrophy on clinical examination
- underwent tonsillectomy as part of management
- completed preoperative and postoperative clinical evaluation, including sleep-related symptom assessment, daytime functioning assessment, and apnea-hypopnea index (AHI) measurement

Exclusion criteria

Patients were excluded if they:

- had craniofacial abnormalities or other major upper airway pathologies requiring additional primary surgical procedures
- had previous upper airway surgery for OSA
- had serious systemic illness precluding surgery
- were unwilling for follow-up
- had incomplete preoperative or postoperative data

Preoperative assessment

All patients underwent detailed clinical evaluation before surgery. Demographic data including age and sex were recorded. Clinical history included snoring, witnessed apnoea, restless sleep, morning headache, dry mouth on waking, and excessive daytime sleepiness. Relevant examination findings, including tonsil size and general upper airway assessment, were documented. Baseline daytime functioning was also assessed. Objective sleep assessment was performed using apnea-hypopnea index (AHI), which was recorded for all patients before surgery.

Symptom assessment

Sleep-related symptom severity was assessed using a structured symptom score based on the following six parameters:

- snoring
- witnessed apnoea
- restless sleep
- morning headache
- dry mouth on waking
- excessive daytime sleepiness

Each parameter was graded on a 0–3 scale:

- 0 = absent
- 1 = mild
- 2 = moderate
- 3 = severe

A total symptom score was calculated by summing the scores of all six parameters. Higher scores indicated greater symptom burden.

Assessment of daytime functioning

Daytime functioning was assessed using a structured clinical questionnaire. The following domains were evaluated:

- daytime sleepiness
- fatigue
- poor concentration
- irritability
- reduced work or daily activity performance

Each parameter was graded on a 0–3 scale:

- 0 = absent
- 1 = mild
- 2 = moderate
- 3 = severe

A total daytime functioning score was calculated by summing the individual domain scores. Higher scores indicated greater impairment in daytime functioning.

Surgical procedure

All patients underwent tonsillectomy under standard operative protocol. Surgery was performed under general anaesthesia using routine institutional technique. Postoperative care was provided as per departmental protocol, and patients were monitored for pain, bleeding, dehydration, infection, and other complications.

Follow-up assessment

Patients were followed up at 1 month, 3 months, and 6 months after tonsillectomy. At each follow-up visit, sleep-related symptoms and daytime functioning were reassessed using the same scoring system employed preoperatively. Objective reassessment of OSA severity was performed using postoperative AHI. Clinical outcome and postoperative complications were documented during follow-up.

Outcome measures

The primary outcome measures were:

1. change in total sleep-related symptom score after tonsillectomy
2. change in total daytime functioning score after tonsillectomy
3. change in apnea-hypopnea index after tonsillectomy

Secondary outcome measures included:

1. overall surgical response
2. subgroup outcome according to baseline OSA severity
3. postoperative complications

Surgical response was defined according to the study protocol using postoperative AHI improvement criteria.

Classification of OSA severity

Baseline OSA severity was classified using preoperative AHI into:

- mild
- moderate
- severe

This classification was used for subgroup comparison of postoperative symptom improvement, daytime functioning, and objective response.

Statistical analysis

Data were entered into Microsoft Excel and analyzed using appropriate statistical software. Quantitative variables were expressed as mean \pm standard deviation, and qualitative variables were presented as frequency and percentage. Comparison of mean scores across repeated follow-up visits was performed using appropriate repeated-measures statistical tests. Categorical variables were compared using the chi-square test or Fisher's exact test, as appropriate. A p value of less than 0.05 was considered statistically significant.

RESULTS

1. Study population and baseline characteristics

A total of 100 adults with obstructive sleep apnea who underwent tonsillectomy were included in the analysis. The cohort had a mean age of 38.78 ± 9.12 years and a mean body mass index of 28.28 ± 3.70 kg/m². Men constituted 64.0% of the study population. Baseline disease severity was mild in 16.0%, moderate in 47.0%, and severe in 37.0% of participants. The mean preoperative apnea-hypopnea index (AHI) was 28.02 ± 12.26 events per hour. Additional demographic and clinical characteristics are shown in Table 1.

Table 1. Baseline demographic and clinical characteristics of the study cohort (N = 100).

Characteristic	Value	Median (IQR)
Age, years	38.78 ± 9.12	38.0 (32.8–45.0)
Body mass index, kg/m ²	28.28 ± 3.70	28.2 (25.4–31.1)
Duration of symptoms, months	34.17 ± 14.02	32.0 (23.0–46.0)
Preoperative AHI	28.02 ± 12.26	26.3 (18.9–39.1)
Sex: Male	64 (64.0%)	
Female	36 (36.0%)	
Obesity: No	68 (68.0%)	
Yes	32 (32.0%)	
Smoking status: Never	61 (61.0%)	
Former	22 (22.0%)	
Current	17 (17.0%)	
Hypertension: No	76 (76.0%)	
Yes	24 (24.0%)	
Diabetes mellitus: No	91 (91.0%)	
Yes	9 (9.0%)	
Tonsil grade:		
3	56 (56.0%)	
4	23 (23.0%)	
2	21 (21.0%)	
Baseline OSA severity: Moderate	47 (47.0%)	
Severe	37 (37.0%)	
Mild	16 (16.0%)	

2. Change in symptom burden during follow-up

There was a marked and progressive reduction in postoperative symptom burden across follow-up. The mean total symptom score decreased from 12.88 ± 2.74 preoperatively to 5.52 ± 1.67 at 1 month, 3.35 ± 1.55 at 3 months, and 2.24 ± 1.42 at 6 months. The overall change across visits was statistically significant (Friedman test, $\chi^2 = 289.69$, $p < 0.001$). Pairwise comparisons showed significant improvement from baseline to each postoperative visit (all Wilcoxon signed-rank $p < 0.001$), with further improvement between 1 and 3 months and between 3 and 6 months. All individual symptom domains, including snoring, witnessed apnoea, restless sleep, morning headache, dry mouth on waking, and excessive daytime sleepiness, showed consistent downward trends over time (Table 2 and Figure 1).

Table 2. Longitudinal change in symptom scores following tonsillectomy.

Variable	Pre-op	1 month	3 months	6 months	Overall value	p
Snoring	2.63 ± 0.54	1.07 ± 0.48	0.72 ± 0.45	0.46 ± 0.50		
Witnessed Apnoea	2.31 ± 0.72	0.97 ± 0.54	0.61 ± 0.49	0.40 ± 0.49		
Restless Sleep	2.13 ± 0.86	0.92 ± 0.60	0.59 ± 0.51	0.43 ± 0.50		
Morning Headache	1.70 ± 0.92	0.67 ± 0.60	0.41 ± 0.49	0.29 ± 0.46		
Dry Mouth On Waking	2.00 ± 0.84	0.88 ± 0.61	0.48 ± 0.50	0.30 ± 0.46		
Excessive Daytime Sleepiness	2.11 ± 0.82	1.01 ± 0.58	0.54 ± 0.50	0.36 ± 0.48		
Total score	12.88 ± 2.74	5.52 ± 1.67	3.35 ± 1.55	2.24 ± 1.42	<0.001	

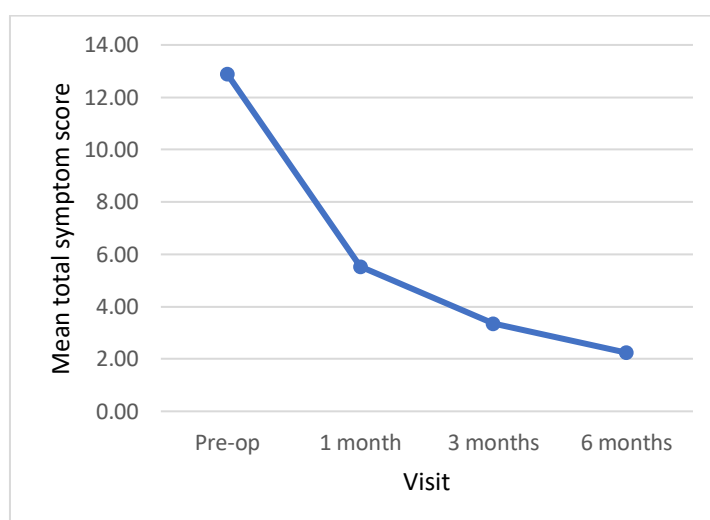


Figure 1. Trend in mean total symptom score during follow-up after tonsillectomy in adults with obstructive sleep apnea.

3. Change in daytime functioning during follow-up

Daytime functioning also improved substantially after surgery. The mean total daytime functioning score fell from 7.44 ± 2.43 preoperatively to 4.52 ± 1.60 at 1 month, 2.79 ± 1.57 at 3 months, and 1.94 ± 1.16 at 6 months. This reduction was statistically significant across the follow-up period (Friedman test, $\chi^2 = 281.07$, $p < 0.001$). Pairwise comparisons demonstrated significant improvement from baseline to each postoperative time point (all $p < 0.001$), with further improvement between 1 and 3 months and between 3 and 6 months. Improvements were seen across all daytime domains, including daytime sleepiness, fatigue, poor concentration, irritability, and reduced work or daily activity (Table 3 and Figure 2).

Table 3. Longitudinal change in daytime functioning scores following tonsillectomy.

Variable	Pre-op	1 month	3 months	6 months	p value for total score
Daytime Sleepiness	1.71 ± 0.88	1.05 ± 0.61	0.69 ± 0.58	0.41 ± 0.49	
Fatigue	1.70 ± 0.82	1.06 ± 0.57	0.63 ± 0.54	0.47 ± 0.50	
Poor Concentration	1.45 ± 0.76	0.88 ± 0.62	0.51 ± 0.52	0.41 ± 0.49	
Irritability	1.23 ± 0.81	0.70 ± 0.59	0.39 ± 0.49	0.22 ± 0.42	
Reduced Work Daily Activity	1.35 ± 0.82	0.83 ± 0.59	0.57 ± 0.54	0.43 ± 0.50	
Total score	7.44 ± 2.43	4.52 ± 1.60	2.79 ± 1.57	1.94 ± 1.16	<0.001

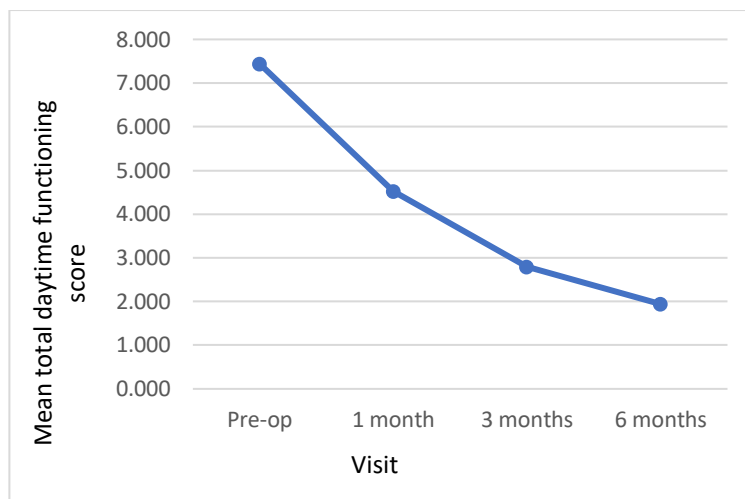


Figure 2. Trend in mean total daytime functioning score during follow-up after tonsillectomy in adults with obstructive sleep apnea.

4. Objective sleep apnea outcome and postoperative course

Objective sleep study parameters improved in parallel with symptom-based outcomes. The mean AHI declined from 28.02 ± 12.26 preoperatively to 10.41 ± 5.56 at 6 months, corresponding to a mean reduction of 17.61 ± 8.31 events per hour. This change was statistically significant on paired analysis (Wilcoxon signed-rank test, $p < 0.001$). At 6 months, 78.0% of patients met the response criterion, while 22.0% were classified as non-responders. Overall outcome was rated as good in 75.0%, partial in 22.0%, and poor in 3.0%. Postoperative complications were uncommon, occurring in 6.0% of participants overall; postoperative bleeding occurred in 1.0%, dehydration in 3.0%, and severe pain in 2.0%, with no cases of infection. Most participants reported at least moderate improvement in sleep quality, daytime alertness, and daily functioning (Table 4).

Table 4. Objective outcome, postoperative course, and patient-reported improvement.

Outcome	Value	Median (IQR)
AHI, preoperative	28.02 ± 12.26	26.3 (18.9–39.1)
AHI, 6 months	10.41 ± 5.56	9.8 (6.0–13.8)
AHI change	17.61 ± 8.31	17.4 (12.1–22.4)
AHI response:		
Responder	78 (78.0%)	
Non-responder	22 (22.0%)	
Overall outcome:		
Good	75 (75.0%)	
Partial	22 (22.0%)	
Poor	3 (3.0%)	
Any complication:		
No	94 (94.0%)	
Yes	6 (6.0%)	
Postoperative bleeding		
No	99 (99.0%)	
Yes	1 (1.0%)	
Infection: No	100 (100.0%)	
Dehydration:		
No	97 (97.0%)	
Yes	3 (3.0%)	
Severe pain		
No	98 (98.0%)	
Yes	2 (2.0%)	
Sleep quality improvement:		
Markedly improved	40 (40.0%)	
Moderately improved	32 (32.0%)	
Mildly improved	19 (19.0%)	
No improvement	9 (9.0%)	
Daytime alertness improvement:	34 (34.0%)	

Markedly improved		
Moderately improved	32 (32.0%)	
Mildly improved	26 (26.0%)	
No improvement	8 (8.0%)	
Daily functioning improvement: Moderately improved	39 (39.0%)	
Markedly improved	33 (33.0%)	
Mildly improved	23 (23.0%)	
No improvement	5 (5.0%)	

5. Subgroup analysis according to baseline OSA severity

Baseline OSA severity was strongly associated with preoperative disease burden. Patients with severe OSA had significantly higher preoperative AHI and higher baseline total symptom scores than those with moderate or mild disease (both $p < 0.001$). Baseline daytime functioning impairment also differed across severity groups ($p = 0.012$). Although all severity groups improved after surgery, residual symptom burden at 6 months remained greater among patients with severe OSA than among those with mild or moderate disease ($p < 0.001$). In contrast, 6-month daytime functioning scores did not differ significantly by baseline severity ($p = 0.170$). The proportions of AHI responders and overall outcome categories varied numerically across severity groups, but these differences did not reach statistical significance (AHI response, $p = 0.071$; overall outcome, $p = 0.054$) (Table 5).

Table 5. Subgroup analysis according to baseline obstructive sleep apnea severity.

Variable	Mild	Moderate	Severe	p value
Preoperative AHI	11.39 ± 2.25	23.17 ± 4.51	41.38 ± 6.96	<0.001
Preoperative total symptom score	9.25 ± 1.69	12.15 ± 1.83	15.38 ± 1.48	<0.001
6-month total symptom score	0.75 ± 0.68	2.00 ± 1.16	3.19 ± 1.27	<0.001
Preoperative total daytime score	6.62 ± 2.73	6.96 ± 2.08	8.41 ± 2.45	0.012
6-month total daytime score	1.94 ± 1.24	1.72 ± 1.04	2.22 ± 1.25	0.170
AHI response:				
Responder	9 (56.2%)	39 (83.0%)	30 (81.1%)	0.071
Non-responder	7 (43.8%)	8 (17.0%)	7 (18.9%)	0.071
Overall outcome:				
Good	8 (50.0%)	38 (80.9%)	29 (78.4%)	0.054
Partial	8 (50.0%)	7 (14.9%)	7 (18.9%)	0.054
Poor	0 (0.0%)	2 (4.3%)	1 (2.7%)	0.054

Abbreviations: AHI, apnoea-hypopnoea index; OSA, obstructive sleep apnea; IQR, interquartile range.

DISCUSSION

The present study evaluated the benefits of tonsillectomy in adults with obstructive sleep apnoea and demonstrated significant postoperative improvement in sleep-related symptoms, daytime functioning, and objective disease severity over 6 months of follow-up. The reduction in total symptom score from 12.88 ± 2.74 preoperatively to 2.24 ± 1.42 at 6 months, together with the fall in total daytime functioning score from 7.44 ± 2.43 to 1.94 ± 1.16 , indicates that tonsillectomy was associated with meaningful symptomatic and functional recovery in this cohort. Objective improvement was also evident, with mean AHI decreasing from 28.02 ± 12.26 preoperatively to 10.41 ± 5.56 at 6 months, and 78.0% of patients meeting the predefined response criterion.

Improvement in sleep-related symptoms was one of the major findings of the present study. All principal symptom domains, including snoring, witnessed apnoea, restless sleep, morning headache, dry mouth on waking, and excessive daytime sleepiness, improved progressively across follow-up, with the greatest decline occurring in the early postoperative period and further gains continuing up to 6 months. This pattern is in agreement with previous adult literature showing that removal of hypertrophied tonsillar tissue can substantially reduce upper airway obstruction and improve both nocturnal symptoms and sleep-disordered breathing [4,5]. Holmlund et al. reported a marked reduction in AHI from 40 to 7 events/hour 6 months after tonsillectomy in adults with large tonsils, along with significant improvement in Epworth Sleepiness Scale scores [4]. Likewise, Camacho et al., in their systematic review and meta-analysis, demonstrated a 65.2% reduction in AHI and significant improvement in daytime sleepiness after isolated tonsillectomy, particularly in adults with enlarged tonsils and mild-to-moderate OSA [5]. The symptomatic improvement observed in the present study therefore adds support to the growing evidence that tonsillectomy can be an effective site-directed procedure in appropriately selected adult patients [4,5].

The present study also demonstrated significant improvement in daytime functioning after tonsillectomy. There was a marked reduction in daytime sleepiness, fatigue, poor concentration, irritability, and reduced work or activity

performance. These findings are clinically important because the burden of adult OSA extends beyond nocturnal breathing disturbance and commonly manifests as impaired daytime productivity, cognitive inefficiency, and reduced quality of life. Our findings are comparable to those of Smith et al., who found that tonsillectomy alone significantly improved not only AHI but also patient-reported quality-of-life measures, including insomnia severity, daytime sleepiness, and functional outcomes of sleep [10]. Similarly, Tschopp and Tschopp reported that postoperative daytime sleepiness improved significantly after surgery, although the degree of improvement was not necessarily proportional to tonsil size [14]. Taken together, these studies suggest that the benefits of tonsillectomy in adult OSA are not confined to polysomnographic parameters alone, but extend to domains that are directly relevant to daily living and patient well-being [10,14].

A further important finding in the present study was the significant improvement in objective OSA severity, with a mean AHI reduction of 17.61 ± 8.31 and an overall response rate of 78.0%. This response rate is very similar to that reported by Smith et al., who observed a 78% surgical response in adults with tonsillar hypertrophy [10]. The present findings are also broadly consistent with the meta-analytic estimates reported by Camacho et al., who found an 85.2% success rate and 57.4% cure rate among individual patient data, with better results in those with preoperative AHI below 30/hour [5]. Although the response rate in our cohort was slightly lower than the pooled success reported in that review, this may reflect the inclusion of a broader clinical severity spectrum, including a substantial proportion of severe OSA cases. Nevertheless, the consistent direction of benefit across studies strengthens the role of tonsillectomy as a useful therapeutic option in selected adults [5,10].

The subgroup analysis according to baseline OSA severity provides further insight into patient selection and expected outcomes. Patients with severe OSA had significantly higher preoperative symptom burden and greater preoperative daytime impairment than those with mild or moderate disease, and they continued to have greater residual symptom burden at 6 months. However, postoperative improvement was still observed across all severity groups. This pattern is comparable to the conclusions of Camacho et al., who identified preoperative AHI below 30/hour as a predictor of higher success and cure rates [5]. In the present study, although differences in AHI response and overall outcome across severity categories did not reach statistical significance, the trend suggests that patients with lower baseline disease burden may derive more complete symptomatic resolution, whereas patients with severe OSA may improve substantially but still retain residual symptoms. This is clinically relevant in preoperative counselling, as it supports the view that tonsillectomy may be particularly effective in mild-to-moderate OSA, while in severe cases it may function as part of a broader multimodal strategy rather than as a definitive standalone treatment [5].

The role of tonsil size in adult OSA deserves particular attention. Jara and Weaver showed that subjective palatine tonsil grade was significantly associated with AHI, whereas objective tonsil volume was not, suggesting that the proportion of oropharyngeal space occupied by the tonsils may be more important than absolute tissue volume [11]. Tschopp and Tschopp similarly observed that larger tonsils were associated with higher preoperative AHI and greater AHI reduction after surgery, although postoperative daytime sleepiness and snoring improvement were not strongly correlated with tonsil size [14]. These findings support the clinical rationale of the present study, which focused on adults with tonsillar hypertrophy. They also emphasize that careful anatomical selection remains central when considering tonsillectomy for adult OSA [11,14]. In this regard, the prediction model proposed by Lin et al. is also relevant, as it identified sex, tonsil size grading, upper airway findings, and BMI grade as useful predictors of OSA severity [16]. Such observations underscore that adult OSA is multifactorial, and while tonsillectomy may be highly beneficial in selected patients, outcomes are likely influenced by overall upper airway anatomy and patient phenotype [11,14,16].

The low rate of postoperative complications in the present study is reassuring. Overall complications occurred in only 6.0% of patients, with postoperative bleeding in 1.0%, dehydration in 3.0%, severe pain in 2.0%, and no cases of infection. These findings suggest that tonsillectomy was generally safe in this cohort when performed under standard protocol and followed by routine postoperative care. Although the adult literature on isolated tonsillectomy for OSA has focused mainly on efficacy, available reviews also indicate that the procedure is reasonably well tolerated in selected patients [12]. At the same time, surgical morbidity in adults is not negligible, especially when compared with nonsurgical therapies, and this must be balanced against the expected benefits. The long-term quality-of-life study by Wireklint and Ericsson, although conducted in young adults with obstructive symptoms rather than strictly an adult OSA surgical cohort, also suggested sustained symptomatic benefit after tonsil surgery, supporting the broader functional value of intervention in appropriately selected patients [13].

The broader significance of the present findings lies in their support for a selective surgical approach in adult OSA. Continuous positive airway pressure remains the standard treatment for many patients, but its effectiveness is often limited by poor adherence. In individuals with prominent tonsillar hypertrophy and clinically relevant symptoms, tonsillectomy offers a targeted intervention that addresses a major anatomical site of obstruction. The favourable results seen here are in keeping with prior reviews showing improvement in respiratory events and daytime sleepiness after pharyngeal surgery with or without tonsillectomy [9]. However, the overall evidence base in adult sleep surgery is still

less robust than desirable. The Cochrane review emphasized the need for better quality randomized trials and more standardized methods of identifying obstruction sites and measuring outcomes [15]. Thus, while the present study adds useful clinical evidence, it also highlights the ongoing need for well-designed prospective comparative studies [9,15].

The present findings also have practical clinical implications. First, they support tonsillectomy as an effective option for adults with OSA and tonsillar hypertrophy, particularly when symptom burden and daytime dysfunction are prominent. Second, they highlight that meaningful improvement may be seen across all severity categories, even if complete normalization is less likely in severe OSA. Third, they suggest that postoperative assessment should include not only objective sleep-study variables but also symptom and daytime functioning measures, as these more directly reflect patient-centered benefit. Such a multidimensional assessment is important because surgery may improve quality of life even in patients who do not meet strict cure criteria on polysomnography [10,12,14].

LIMITATIONS

The study was observational and lacked a comparison group, so causal inference is inherently limited. The follow-up period of 6 months was sufficient to detect short-term and intermediate-term benefit, but not long-term durability. Although objective AHI outcomes were available, broader polysomnographic variables such as oxygen desaturation metrics and sleep architecture were not emphasized in the main analysis. In addition, adult OSA is influenced by several anatomical and metabolic factors, including BMI, tongue position, neck circumference, and multilevel airway collapse, which were not explored in depth here [16]. Future studies should incorporate longer follow-up, standardized sleep-related quality-of-life instruments, and multivariable predictors of outcome to refine patient selection further.

CONCLUSION

The present study demonstrates that tonsillectomy in adults with obstructive sleep apnoea and tonsillar hypertrophy is associated with significant improvement in sleep-related symptoms, daytime functioning, and objective OSA severity, with a good overall response rate and low complication profile. The findings are consistent with existing literature supporting the role of isolated tonsillectomy in carefully selected adult patients, particularly those with enlarged tonsils and less advanced disease [4,5,10]. At the same time, the persistence of residual symptom burden in more severe OSA highlights the need for individualized treatment planning and realistic preoperative counselling.

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