

What Are the Post-Operative Complication Rates and Quality of Life Improvements Following Tonsillectomy in Children With Chronic Tonsillitis?: a Systematic Review

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ABSTRACT

Chronic tonsillitis is a significant health issue in children, characterized by recurrent throat infections that diminish their quality of life. Tonsillectomy is a common surgical solution, but a comprehensive analysis balancing its benefits against post-operative risks is needed. The purpose of this study was to evaluate post-operative complication rates and quality of life improvements following tonsillectomy in children with chronic tonsillitis. This review followed PRISMA 2020 guidelines. A systematic search was conducted across PubMed, Semantic Scholar, Springer, Google Scholar, and Wiley Online Library for studies published in the last decade. Eleven studies were included. The findings consistently showed significant improvements in quality of life post-tonsillectomy, as measured by validated instruments like the Pediatric Throat Disorders Outcome Test (T-14) and the Pediatric Quality of Life Inventory (PedsQL-P). Post-operative complication reporting was heterogeneous. The most frequently quantified complication was post-tonsillectomy hemorrhage, with rates varying from 2.7% to 7.9%, depending on the surgical technique. Other reported complications included pain, halitosis, and uvula edema. Long-term follow-up (5 years) in two studies showed sustained quality of life benefits.

Keywords: Tonsillectomy, Chronic Tonsillitis, Quality of Life, Post-Operative Complications,

INTRODUCTION

Chronic tonsillitis is a persistent inflammatory condition of the palatine tonsils, representing a significant health concern in the pediatric population (Kilinc, Cingi, & Jovancevic, 2025; Koutrouveli et al., 2025). This condition is characterized by recurrent episodes of throat infections, which can lead to considerable discomfort, frequent school absenteeism, and a diminished quality of life for affected children. The diagnostic criteria for *chronic tonsillitis* are often based on the frequency of these episodes, such as experiencing seven or more episodes in a single year, five or more episodes annually for two consecutive years, or three or more episodes per year over three years. The burden of this condition extends beyond physical symptoms, impacting daily activities and overall well-being, which necessitates a thorough evaluation of effective treatment strategies (Alhashim et al., 2025; Magomedova & Fatima, 2025).

Tonsillectomy, the surgical removal of the tonsils, stands as a primary intervention for children diagnosed with severe *chronic* or recurrent *tonsillitis* (Ertugay & Toros, 2025; Yakovets & Chornenka, 2025). This procedure is one of the most common surgical operations performed in the pediatric age group. The decision to proceed with surgery is often made when conservative management options, such as antibiotic therapy or watchful waiting, fail to provide adequate relief, or when the frequency and severity of infections meet established clinical guidelines (Payne et al., 2025b, 2025a). The patient population for this intervention typically includes children from early childhood through adolescence, with studies encompassing age ranges from 2 to 18 years (Dieu Yin, Low, & Mishu, 2025; Nafees et al., 2025).

Previous research has explored the outcomes of tonsillectomy from various perspectives

(Wikner et al., 2025). Multiple studies have documented significant improvements in quality of life following the procedure (Maudsley, Clifford, Aziz, & Sutton, 2025; Patel et al., 2025). For instance, studies utilizing validated assessment tools like the Pediatric Throat Disorders Outcome Test (T-14) and the Pediatric Quality of Life Inventory (PedsQL-P) have consistently reported statistically significant enhancements in both physical and psychosocial health scores post-surgery. However, the procedure is not without risks. Post-operative complications, although not universally reported in all studies, are a critical aspect of patient outcomes. The most frequently cited complications include post-tonsillectomy hemorrhage, pain, halitosis, and bleeding, which typically occur in the immediate post-operative period (Alenezi et al., 2025; Bhatti, Tarar, Ashraf, & Tahir, 2025).

Despite the volume of research on tonsillectomy, a gap exists in synthesizing the dual outcomes of post-operative complications and quality of life improvements in a single, comprehensive analysis (Istika & Palmendha, 2025; Wiench, Fiegler-Rudol, Zięba, & Misiołek, 2025). While some studies focus heavily on symptomatic relief and quality of life benefits others are more centered on the incidence of adverse events like hemorrhage, comparing different surgical techniques such as cold steel dissection versus intracapsular tonsillectomy. Furthermore, the duration of follow-up varies considerably across studies, with many providing only short-term data (less than 12 months), which limits the understanding of long-term efficacy and safety (Yan, Asemani, Jamilian, & Yang, 2025; Youssef, Weddle, Zimmerman, & Palmer, 2025). This variability highlights the need for a systematic review to consolidate existing evidence and provide a clearer picture of the overall risk-benefit profile of tonsillectomy for children with *chronic tonsillitis* (Rhodes & Henson, n.d.).

This systematic review aims to comprehensively evaluate the post-operative complication rates and the improvements in quality of life following tonsillectomy in children suffering from chronic tonsillitis. By adhering to the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) guidelines, this study seeks to synthesize evidence from recent cohort studies, randomized controlled trials, and other relevant research published within the last decade. The objective is to provide a balanced and methodologically rigorous overview that can inform clinical practice and guide decision-making for healthcare providers, patients, and their families by weighing the therapeutic benefits against the potential post-surgical risks. The findings of this review are expected to provide clinicians, including otolaryngologists, pediatricians, and general practitioners, with a contemporary and comprehensive evidence base on the risk-benefit profile of tonsillectomy, thereby supporting enhanced patient and parent counseling and shared decisionmaking. Furthermore, by identifying the consistencies and heterogeneities in outcome reporting, particularly concerning post-operative complications, this study can serve as a foundation for future research to develop more standardized reporting guidelines. Ultimately, the synthesized evidence can inform hospital management and healthcare policymakers in evaluating and refining clinical practice guidelines related to the indications and management of tonsillectomy in the pediatric population.

METHOD

This systematic review adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidelines. A comprehensive literature search was conducted across five databases, including PubMed, Semantic Scholar, Springer, Google Scholar, and Wiley Online Library, focusing on studies published from 2015 onward.

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Search terms were constructed from PICO elements and implemented as Boolean and MeSH queries tailored to each database. The exact search string used in the manuscript was: ("Children with Chronic Tonsillitis" OR "Pediatric Patients with Chronic Tonsillitis" OR "Children with Recurrent Throat Infection" OR "Pediatric Population with Throat Infections") AND ("Tonsillectomy" OR "Adenotonsillectomy" OR "Partial Tonsillectomy" OR "Surgical Removal of Tonsils") AND ("Watchful Waiting" OR "Non-Surgical Management" OR "Antibiotic Therapy" OR "Conservative Management") AND ("Quality of Life Improvement" OR "Post-Operative Complication Rates" OR "Symptom Improvement" OR "Post-Operative Hemorrhage").

After removal of duplicate records (n=12) and exclusion of ineligible records identified by automation tools (n=46), 295 search results remained for screening. Full texts were retrieved, and 11 studies met the final inclusion criteria.

Titles and abstracts were screened against predefined eligibility criteria: pediatric population aged 2–18 years, documented chronic tonsillitis (such as at least seven episodes in one year or equivalent definitions), chronic tonsillitis as the primary surgical indication, evaluation of complete tonsillectomy with or without adenoidectomy, acceptable study designs (systematic review, randomized controlled trial, or cohort study), sample size of at least 20, minimum follow-up of three months, reporting of post-operative complications within 30 days, and use of validated quality-of-life measures pre- and post-operatively. Screening questions were considered collectively, and inclusion decisions were based on these assessments.

Data extraction was performed using a standardized template. Extracted variables included study design, participant characteristics (age range, sample size, gender, inclusion criteria), intervention details (type of tonsillectomy or technique), reported complication types and frequencies with time frames, quality-of-life instruments, and baseline and follow-up scores with statistical significance when available, study setting or geographic location, and follow-up duration. Fields not reported in a study were recorded as "Not reported."

Study-level risk of bias was evaluated using a JBI-style critical appraisal checklist (domains included temporal precedence, selection/allocation, confounding, outcome measurement, follow-up, and statistical validity). Authors independently assessed eligibility and study quality; final inclusion decisions and the presentation of results were based on these assessments.

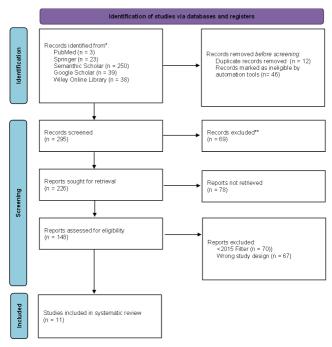


Figure 1. Prisma Flow Chart

RESULTS AND DISCUSSION

Nissen et al., 2023

From this 11 included studies, sample sizes ranged from fewer than 50 to more than 200 participants, with one study including fewer than 50, two enrolling 50–99, six enrolling 100–199, and two enrolling 200 or more participants. Reported age ranges from 2 to 16 years across seven studies. Follow-up durations varied, with six studies conducting short-term follow-up of less than 12 months (one at 3 months and five at 6 months), one study extending to 12 months, and three studies reporting long-term outcomes over 5 years.

Study Population Size Follow-up Duration Age Range Morad et al., 2017 Short term (<12 months) Kisser et al., 2024 111 5 years El Hennawi and Ahmed, 2016 184 5-12 years 5 years Huynh et al., 2022 167 2–16 years 6 months Gupta et al., 2019 100 5–15 years 6 months Singh and Bhansali 60 5–16 years 6 months Hopkins et al., 2015 276 12 months Türkoğlu et al., 2017 64 6 months Kumar and Kumari, 2019 100 4–15 years 6 months Sureshkumar et al., 2022 40 2–14 years 3 months

Table 1. Study Characteristics.

Source: Data extracted from primary studies (2015-2024)

1,250

Complications were described in five studies, most commonly hemorrhage, halitosis, blood-stained saliva, pain, and bleeding, while less frequent events such as uvula edema, adenoid regrowth, talking difficulty, and ear pain were each reported once. Two studies reported no complications. Quantified complication rates were available in four studies, which included hemorrhage in 5 of 184 cases, uvula edema (5%), adenoid regrowth (5%), and post-tonsillectomy hemorrhage rates of 7.9% following cold steel tonsillectomy compared with 4.5% after Jurnal Health Sains, Vol. 6, No. 11, November 2025

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intracapsular dissection; two additional studies explicitly reported zero complications. The timing of onset was noted in three studies, with two identifying complications immediately postoperatively and one reporting both immediate and delayed onset at 3 months.

Table 2. Complications.

Study	Complication Type	Frequency Range	Time of Onset	
Morad et al., 2017	-	-	-	
Kisser et al., 2024	Less pain, reduced bleeding (partial vs. total)	-	-	
El Hennawi and Ahmed, 2016	Reactionary hemorrhage, halitosis, blood-stained saliva	5/184 (hemorrhage); others	Immediate post-operative	
Huynh et al., 2022	-	-	-	
Gupta et al., 2019	-	-	-	
Singh and Bhansali	-	-	-	
Hopkins et al., 2015	None reported	0	Not applicable	
Türkoğlu et al., 2017	None reported	0	Not applicable	
Kumar and Kumari, 2019	-	-	-	
Sureshkumar et al., 2022	Intraoperative bleeding, pain, talking difficulty, ear pain, uvula edema, adenoid regrowth	5% uvula edema (both groups), 5% adenoid regrowth (microdebrider group)	Immediate and 3 months	
El Hennawi and Ahmed, "Quality of Life after Tonsillectomy"	Reactionary hemorrhage, halitosis, blood-stained saliva	5/184 (hemorrhage); others	Immediate post-operative	
Nissen et al., 2023	Post-tonsillectomy hemorrhage (cold steel vs. intracapsular dissection tonsillectomy)	7.9% (cold steel), 4.5% (intracapsular dissection)	-	

Source: Data extracted from primary studies (2015-2024)

Quality of life and symptom outcomes were assessed using validated tools in four studies, including the Glasgow Benefit Inventory, Paediatric Throat Disorders Outcome Test (T-14), and Pediatric Quality of Life Inventory (PedsQL-P). Three studies demonstrated significant improvements, while one reported a positive impact without providing statistical details. Studies employing an unnamed 4-point, 23-item scale found significant improvement in both groups, though no differences were observed between groups at 5-year follow-up. One study reported no significant difference between groups, and another found comparable outcomes at 6 months. Overall, studies using validated or named assessment tools consistently showed significant or positive improvements in quality of life following intervention.

Table 3. Quality of Life

Study	Assessment Tool	Pre-operative Score	Post-operative Score	Improvement Measure		
Kisser et al., 2024	Glasgow Benefit Inventory	-	-	Positive impact (no scores/statistics)		
El Hennawi and Ahmed, 2016	4-point, 23- item scale (unnamed)	-	Improved in both groups	Significant improvement in both; no difference between groups at 5 years		
Huynh et al., 2022	Paediatric Throat Disorders Outcome Test (T-14)	33.5 (interquartile range 22–42)	2 (interquartile range 0–5) at 6 weeks, 0 (interquartile range 0–2) at 6 months	Significant (p<0.001)		
Singh and Bhansali	-	-	-	Similar at 6 months		
Hopkins et al., 2015	Paediatric Throat Disorders Outcome Test (T-14)	Non-surgical: 23; Tonsillectomy: 31; Adenotonsillectomy: 35	Improved in all groups	Significant improvement; effect size 1.3–2.1 standard deviations		
Türkoğlu et al., 2017	Pediatric Quality of Life Inventory (PedsQL-P)	Physical: 64.2→69.8; Psychosocial: 67.8→75.6; Total: 66.6→73.6	Improved	Significant (p<0.001)		

Source: Data extracted from primary studies (2015-2024)

Long-term outcomes were less frequently reported. Kisser et al. (2024) found partial tonsillectomy to be noninferior to total tonsillectomy over 5 years, with sustained improvements in quality of life and fewer complications, although specific complication rates were not provided. Similarly, El Hennawi and Ahmed (2016) and its duplicate report presented 5-year follow-up data demonstrating maintained quality of life improvements in both surgical and azithromycin groups, with no significant differences between them. However, the majority of studies were limited to follow-up durations of 6 to 12 months, restricting conclusions regarding the long-term effects of intervention.

Table 4. JBI Critical Appraisal

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Table IV.	JBI Crit	ical App	oraisal						
	Bias	Bias	Bias	Bias related to				Bias	Statistic
	related	related	related to	the				related	al
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	tempora	selecti	ing	of the				particip	on
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Stud	Is it	Was	Were	Were the	Were there	Were	Were	Was	Was an
\mathbf{y}	clear in	there a	participa	participants	multiple	the	outco	the	appropr
	the	control	nts	included in	measurements	outcom	mes	follow	iate
	study	group?	included	any	of the	es of	meas	-up	statistic
	what		in any	comparisons	outcome, both	particip	ured	compl	al
	the		similar	receiving	pre- and post	ants	reliab	ete,	analysi
	"cause"			similar	the	include	ly?	and if	s used?

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	is and what the "effect" (ie, there is no confusi on about which variable comes first)?		comparis ons?	treatment/car e, other than the exposure or intervention of interest?	intervention/exposure?	d in any compari sons measur ed in the same way?		not, were differ ences betwe en group s in terms of their follow -up adequ ately described and analyz ed?	
Morad et al., 2017	⊘	⊘	⊘	×		×	⊘	⊘	⊘
Kisser et al., 2024		~		×		×			✓
El Hennawi and Ahmed, 2016	Ø	⊘	⊘	8	Ø	8	⊘	Ø	Ø
Huynh et al., 2022		⊘	Ø	×	Ø	×	Ø		
Gupta et al., 2019	⊘	~	✓	×		×	~	~	
Singh and Bhansali	⊘	⊘	⊘	×		×	⊘	⊘	⊘
Hopkins et al., 2015			⊘	×	Ø	×			
Türkoğl u et al., 2017		⊘		×		×	⊘		⊘
Kumar and Kumari, 2019		⊘		×		×	⊘		
Sureshk umar et al., 2022	⊘	⊘	⊘	×	⊘	×	Ø	✓	✓
Nissen et al., 2023	✓	⊘	⊘	×	Ø	×	Ø	⊘	⊘

Source: Authors' analysis using JBI appraisal tools

This systematic review combines evidence on the dual outcomes of post-operative complication rates and quality of life improvements following tonsillectomy in children with chronic tonsillitis. Chronic Tonsillitis refers to the condition in which there is enlargement of the tonsils with repeated attacks of infection. The principal finding is a robust and consistent improvement in quality of life reported across multiple studies, affirming the procedure's significant therapeutic benefit. However, this benefit is set against a backdrop of varied and often inadequately reported post-operative complications.1,2,3

The most compelling evidence presented by the included studies relates to the profound improvement in quality of life (QoL) following tonsillectomy. Studies that employed validated assessment tools, such as the Paediatric Throat Disorders Outcome Test (T-14) and the Pediatric Quality of Life Inventory (PedsQL-P), consistently demonstrated statistically significant enhancements in patient well-being. For instance, research by Huynh et al. (2022) and Hopkins et al. (2015) documented major improvements, with effect sizes indicating a substantial clinical impact.1,5 This reinforces the primary justification for performing tonsillectomy in children heavily burdened by recurrent throat infections.

The clinical significance of these QoL improvements cannot be overstated. A dramatic reduction in the T-14 score, as observed by Huynh et al. (2022), from a median of 33.5 preoperatively to near zero at six months, reflects a near-complete resolution of disease-related symptoms and lifestyle disruptions.1 Similarly, the work of Türkoğlu et al. (2017) showed significant gains in both physical and psychosocial health domains.2 These findings suggest that the benefits of surgery extend beyond the mere absence of infection to encompass broader aspects of a child's daily life, including school attendance, sleep, and social interaction.

In blunt contrast to the consistent QoL data, the reporting of post-operative complications was markedly heterogeneous. A significant portion of the reviewed literature failed to provide detailed complication rates, and two studies explicitly reported an absence of any complications.2,5 This variability could stem from genuine differences in patient outcomes, surgical techniques, or, more likely, a lack of standardized reporting protocols. This inconsistency presents a major challenge in establishing a precise risk profile for the procedure based on the available evidence.

Among the complications that were reported, post-tonsillectomy hemorrhage (PTH) emerged as the most significant and frequently quantified adverse event. The incidence of post-tonsillectomy hemorrhage (PTH) occurs within the first 24 hours as primary PTH, the secondary PTH typically begins 5-10 days post operatively.10 Nissen et al. reported PTH varied between 4.5% and 7.9% depending on the surgical technique, and by El Hennawi and Ahmed (2016), at approximately 2.7%, highlight that PTH is a non-trivial risk. This finding is consistent with the broader medical literature and confirms that bleeding remains a primary concern that necessitates careful surgical technique and post-operative monitoring.3,6

Other, less severe complications such as halitosis, blood-stained saliva, pain, and uvula edema were also identified in the review. Postoperative pain assessment and management should be conducted alongside the caregiver, who is responsible for the recovery period. Pain due to surgical trauma to the peritonsillar tissues post-tonsillectomy is reported as a major complication within the first day after surgery, mainly in the first 2 days postoperative. As observed from Eladi IA et al (2019), intravenous ketorolac is effective in reducing pain intensity. However, these Jurnal Health Sains, Vol. 6, No. 11, November 2025

issues contribute to the post-operative recovery and can be distressing for both the child and their caregivers. 3,7,11, 13,20

Enlarged tonsils and adenoids are the most common causes of Obstructive sleep apnea in children, and the most common surgical treatment is to remove the tonsils, with or without the adenoids. Tonsillectomy (TE) has earlier been the treatment of choice regardless of tonsil surgery. However, data from Fehrm J et al. (2020) suggest that children, 2 to 4 years of age, with mild OSA and a mild effect on QoL may benefit from a period of watchful waiting, while children with moderate OSA should be considered for surgical intervention. 13,14,15

The positive QoL outcomes identified in this review align strongly with previous systematic reviews and large-scale studies. Studies have also shown that children with OSAS have significantly improved QoL and health-related quality of life after surgeries. 18,19 The consensus in the field has long been that for appropriately selected patients, tonsillectomy is highly effective at resolving the symptoms of recurrent tonsillitis. 16 This review strengthens that conclusion by incorporating recent evidence, confirming that the benefits reported in earlier research continue to be observed in contemporary clinical practice.

Similarly, the complication findings, particularly the risk of hemorrhage, are consistent with established literature. The rates identified in this review fall within the range commonly cited for pediatric tonsillectomy, reinforcing the understanding that while the procedure is generally safe, it carries inherent risks that have not been eliminated by modern surgical advancements. The data from Nissen et al. (2023) comparing different techniques further illustrates the ongoing effort to mitigate these risks.6

The few studies that did provide long-term, five-year follow-up data offer invaluable insights. The findings from Kisser et al. (2024), suggesting that partial tonsillectomy provides sustained QoL benefits comparable to total tonsillectomy but with fewer complications, are particularly noteworthy. Additionally, the work of El Hennawi and Ahmed (2016) demonstrated that QoL improvements were sustained at five years, providing crucial evidence of the procedure's long-lasting efficacy.3,8

The comparison between surgical and non-surgical management warrants special attention. The finding by El Hennawi and Ahmed (2016) that tonsillectomy and a long-term azithromycin regimen resulted in similar QoL improvements at five years is thought-provoking.3 It suggests that for some patients, a structured medical management plan could be a viable alternative to surgery, challenging the default assumption that surgery is always the superior option for recurrent infections. Kumar et al (2019) showed that tonsillectomy is the first line of treatment for recurrent chronic tonsillitis.

The evolving landscape of surgical techniques is another key theme. The comparison of partial versus total tonsillectomy, coblation versus microdebrider techniques, and cold steel versus sealer-based methods all point toward a concerted effort to refine the procedure. The goal is to preserve the therapeutic benefits of tonsil removal while minimizing tissue trauma, pain, and the risk of bleeding, which remains a central focus of surgical innovation in this field.6,7,8,17

This systematic review possesses several methodological strengths, including its adherence to PRISMA guidelines and a clearly defined search strategy executed across five major databases. The use of specific, multi-term Boolean search strings based on the PICO framework ensured a comprehensive and targeted retrieval of relevant literature. These rigorous methods enhance the validity and reliability of the review's conclusions.1

For clinical practice, the implications of this review are clear. Clinicians can confidently counsel parents that tonsillectomy is highly likely to improve their child's quality of life. However, this must be balanced with a transparent discussion of the risks, especially post-operative hemorrhage. Using concrete data, such as the rates reported by Nissen et al. (2023), can help frame this risk realistically and understandably.6

This review highlights the necessity of a nuanced and individualized approach to patient and parent counseling. The decision to proceed with surgery should be a shared one, based on the family's values, the severity of the child's symptoms, and a full understanding of the potential benefits and harms. The evidence suggests that while the benefits are substantial, the risks are real and cannot be dismissed.8

Tonsillectomy remains a highly effective intervention for improving the quality of life in children with a significant burden of chronic tonsillitis. The benefits are substantial and consistently reported in the literature. Nevertheless, the decision to operate must be made with careful consideration of the associated post-operative risks, most notably hemorrhage. The existing gaps in the evidence, particularly regarding long-term outcomes and standardized complication reporting, underscore the need for continued research to optimize the safety and efficacy of this common pediatric procedure.16

CONCLUSION

This systematic review confirms that tonsillectomy significantly improves quality of life in children with chronic tonsillitis by reducing disease-specific symptoms and enhancing daily functioning and school attendance, supported by multiple validated assessment tools. However, this benefit is tempered by post-operative risks, with hemorrhage being the most common and serious complication, though reporting inconsistencies make it difficult to define a precise risk profile. The decision to operate requires careful, individualized consideration between clinicians and families to balance therapeutic gains against surgical risks. Future research should focus on long-term, prospective studies with standardized adverse event reporting to better clarify the extended risk-benefit profile of tonsillectomy and to refine clinical practice guidelines for managing pediatric chronic tonsillitis effectively. This approach would help optimize patient outcomes by guiding safer and more evidence-based clinical decisions.

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