RCMOS – Multidisciplinary Scientific Journal The Knowledge.
ISSN: 2675-9128. São Paulo-SP.

Year V, v.2 2025 | Submission: 11/22/2025 | Accepted: 11/24/2025 | Publication: 11/26/2025

Impact of Tonsillar Pillar Suture on Post-Tonsillectomy Hemorrhage: A Systematic Literature Review

Impact of Tonsillar Pillar Suturing on Post-Tonsillectomy Hemorrhage: A Systematic Review of the Literature

João Pedro Bregalda – Federal University of Santa Maria, joaopedrobregalda@gmail.com
Lucca Tessari Balbinott – Federal University of Santa Maria, luccatb14@gmail.com
William Uhlmann – Federal University of Santa Maria, william.uhlmann@acad.ufsm.br
Felipe Ferrari Corrêa – Federal University of Santa Maria, felipefcorrea@hotmail.com
Christhian Eduardo Lopes Gonçalves – Federal University of Santa Maria
Email: christhian.edu.goncalves@gmail.com

Summary

Tonsillectomy is one of the most established surgical procedures in otolaryngological practice. Among the inherent risks of the procedure, postoperative hemorrhage stands out due to its potential for morbidity and mortality. Suturing of the tonsillar pillars has been proposed as a complementary technique to promote hemostasis and stability of the surgical bed, although its effectiveness varies according to the population, surgical method, and surgeon's experience. This review analyzed studies that compared tonsillectomy with and without suturing, identifying a general trend of reduced bleeding and the need for reintervention for patients undergoing suturing. Despite this, methodological heterogeneity and the lack of standardization among studies limit definitive conclusions about its superiority.

Keywords: Tonsillectomy. Postoperative hemorrhage. Pillar suture. Tonsillectomy. Surgical complications

Abstract

Tonsillectomy is one of the most established surgical procedures in otolaryngologic practice. Among its inherent risks, postoperative hemorrhage stands out due to its potential for morbidity and mortality. Suturing of the tonsillar pillars has been proposed as an adjunct technique to enhance hemostasis and stabilize the surgical bed, although its effectiveness varies according to patient characteristics, operative method, and surgeon experience. This review examined studies comparing tonsillectomy with and without pillar suturing, identifying a general trend toward reduced bleeding and decreased need for reintervention among patients who underwent suturing. However, methodological heterogeneity and the lack of standardization across studies limit definitive conclusions regarding its superiority.

Keywords: Tonsillectomy. Postoperative hemorrhage. Pillar suturing. Tonsillar surgery. Surgical complications.

1. Introduction

Tonsillectomy is currently one of the most frequently performed procedures by otolaryngologists worldwide, totaling approximately 289,000 surgeries. annual outpatient visits in the United States (Cullen; Hall; Golosinskiy, 2006). Because it involves a region Highly vascularized and closely related to the airways, tonsillectomy can present Complications of varying degrees of severity. Among them, postoperative hemorrhage stands out. due to its potential for morbidity and mortality, especially when related to late bleeding (Francis *et al.,* 2017; Karaman, 2012; Mohammadpour-Maleki; Rasoulian, 2021; Say; Bilgin; Baklacÿ, 2022).

RCMOS – Multidisciplinary Scientific Journal The Knowledge.
ISSN: 2675-9128. São Paulo-SP.

Year V, v.2 2025 | Submission: 11/22/2025 | Accepted: 11/24/2025 | Publication: 11/26/2025

Postoperative hemorrhage rates reported in the literature vary according to the population. The surgical technique employed was studied. In adults, observational studies report an incidence of approximately 8% (Karaman, 2012). In pediatric populations, systematic reviews indicate Primary and secondary bleeding rates range from 1.83% to 4.2%, depending on the surgical technique. used (Francis et al., 2017; Xu et al., 2021).

Among the surgical steps described for hemostatic control after tonsil excision In palatal cases, significant divergence is observed between services regarding the use of pillar suture. tonsillar (Kim *et al.,* 2021). While some centers systematically adopt suturing as While some argue that this method aims to reduce muscle exposure and stabilize the surgical bed, others defend it. It increases operating time and does not offer consistent benefits, especially in adults (Say; Bilgin; (Baklacÿ, 2022; Senska *et al.,* 2012). Reports also suggest that the choice of surgical technique and the The surgeon's experience directly influences the risk of bleeding, with a higher incidence of bleeding among children operated on by professionals with less than five years of experience (Xu et al., 2021).

Secondary hemorrhage, characterized by bleeding occurring more than 24 hours after the operation, is identified as the main determining factor for surgical reintervention and includes risk factors. well-established factors, such as age greater than six years and a prolonged history of recurrent tonsillitis. (Xu et al., 2021). In this context, suturing of the tonsillar pillars emerges as a possible preventive strategy, although its effects remain inconsistent in contemporary literature.

Given this scenario, the present study seeks to comparatively explore the outcomes. hemostatic factors between procedures performed with and without suturing of the tonsillar pillars, summarizing The available evidence is being considered, and its effectiveness in reducing post-tonsillectomy hemorrhage is being evaluated.

2. Materials and Methods

A systematic search was conducted in the PubMed/MEDLINE databases in October. 2025. The descriptors used were “Tonsillectomy AND (Postoperative Hemorrhage OR (postoperative hemorrhage) AND (Sutures OR sutureless)”, with the filter for full text. Available for free, with no limit per year of publication. Fourteen articles were found. published between 2006 and 2025.

The following inclusion criteria were applied: 1) Studies comparing tonsillectomy 1) Studies with suture versus without suture of the tonsillar pillar. 2) Studies that presented outcomes related to postoperative hemorrhage, with or without analysis of pain, surgical time, or other factors. complications.

The exclusion criteria were: 1) Studies that addressed non-comparable techniques. 2) Articles lacking quantitative data on postoperative hemorrhage. 3) Case series, isolated reports.

Year V, v.2 2025 | Submission: 11/22/2025 | Accepted: 11/24/2025 | Publication: 11/26/2025
or duplicate publications.

After reading titles and abstracts and applying the criteria, 4 articles were selected.
to compile the review. These studies included retrospective analyses, prospective studies
comparative studies and meta-analyses, representing different age groups.

3. Results and Discussion

Four studies were included that directly compared tonsillectomy with suturing of the
Tonsillar pillars and sutureless tonsillectomy, encompassing prospective analyses, studies
Retrospective studies and meta-analyses. These studies encompass different sample sizes and populations.
allowing for a comprehensive understanding of the impact of suturing on postoperative hemorrhage, pain, and
other complications. In general, there is a tendency towards hemostatic benefit from the suture,
although with variations related to age group, methodological design and technique employed.

The prospective study conducted by Say et al. evaluated 80 adults who underwent tonsillectomy.
Comparing the suturing technique using 3-0 catgut and the sutureless technique using compression.
Hemostatic and bipolar cauterizer. No cases of primary hemorrhage were recorded in either of them.
groups, while secondary hemorrhage occurred in 5.5% of patients with sutures and in 11.3%
of patients without sutures, no statistically significant difference. (Say; Bilgin; Baklacÿ, 2022).
Postoperative pain, assessed using the Numerical Rating Scale (NRS),
presented similar values on the first day and in the second week after surgery. Similarly
In this way, dysphagia, as measured by the Eating Assessment Tool-10 (EAT-10), proved to be similar among the
groups. (Say; Bilgin; Baklacÿ, 2022)

The retrospective study conducted by Senska et al., involving 2000 patients, compared
two distinct periods: 2003 to 2005 (n = 1000) and 2007 to 2009 (n = 1000). In the first interval, it was
Only bipolar cauterization was used for homeostasis. In the second case, however, [something else] was added to the technique.
Surgical suturing of the tonsillar pillars. The incidence of hemorrhages that required a return visit.
The surgical center rate decreased from 3.6% to 2.0% after the adoption of the suture (Senska *et al.,* 2012).
The overall rate of bleeding also decreased, from 8.6% to 6.6%. In contrast,
There was an increase in the average operating time from 25 to 31 minutes (Senska *et al.,* 2012).

From a pediatric perspective, the meta-analysis conducted by Kim et al. included 1712 children.
distributed across eight comparative studies. This analysis demonstrated a substantial reduction in
Postoperative hemorrhage with the use of pillar suture, both for primary hemorrhage, with
an approximate reduction of 53%, as for secondary hemorrhage, with a reduction close to 86% (Kim
et al., 2021). On the other hand, a higher incidence of pillar edema was observed among patients
Patients underwent suturing. No relevant differences in pain were identified on the seventh day after the procedure.
surgery, nor complications such as infection, hematoma or velopharyngeal insufficiency (Kim

RCMOS – Multidisciplinary Scientific Journal The Knowledge.
ISSN: 2675-9128. São Paulo-SP.

Year V, v.2 2025 | Submission: 11/22/2025 | Accepted: 11/24/2025 | Publication: 11/26/2025

et al., 2021).

The most comprehensive meta-analysis included in this review was that conducted by Li et al., which compiled... 16,657 adult and pediatric patients from 15 comparative studies. The authors They identified a significant reduction in postoperative bleeding among individuals who underwent suturing. intraoperative, with an approximate 36% decrease in overall bleeding, as well as reductions of 56% in primary hemorrhage and 30% in secondary hemorrhage (Li et al., 2022). Subgroup analysis It was shown that adults experienced a more consistent benefit, with a reduction of approximately 69% in risk of bleeding, while the pediatric population showed no significant difference (Li *et al.,* 2022). In addition, techniques that employed more than three suture points per side presented Further reduction of bleeding, and the combined suturing of the pillars and tonsillar fossa showed superior performance, reducing the occurrence of bleeding by approximately 53%, in In comparison to isolated abutment suturing, which did not demonstrate significant benefit (Li et al., 2022).

In an integrated manner, studies indicate that suturing the pillars tends to reduce the occurrence of hemorrhage after tonsillectomy, with particularly consistent evidence in pediatric populations and in meta-analyses with a large number of participants. In adults, the Results are less concrete, with some studies indicating limited benefit. Table 1 summarizes. The main findings of each of the studies evaluated.

This review has limitations inherent to its design, including the Methodological heterogeneity among the selected studies, with significant variations in range. age, surgical technique, number of sutures used, and diagnostic criteria for hemorrhage. Furthermore, including only open access articles may have restricted the scope of the search, and The lack of standardization in the outcomes evaluated makes direct comparisons difficult. Most of the The available studies are not randomized, which limits the ability to establish causal relationships. Finally, the scarcity of studies exclusively for adults reduces the generalizability of the findings to this age group. The population may respond differently to the suturing technique.

Table 1. Key points from the studies analyzed.

Population Study Design and	Intervention	of Hemorrhage Rates	Pain	Other Findings
Say et al., 2021	Prospective comparative study; n=80 adults ÿ18 years.	Suturing of the 3-0 with catgut pillars versus hemostasis with a bipolar cauterizer.	Primary: 0% in both. Secondary: 5.5% 11.3% vs. (p=0.449).	No significant difference for the outcome early or late.	No significant difference for early or late outcome.
Senska et al., al. 2012	Retrospective study; n=2000 (1000 without suture; 1000 with suture).	Suture of the pillars + bilopar cauterization versus isolated use of	Without sutures: 8.6% total bleeding; 3.6% reoperation. With suture: 6.6% total; 2.0% reoperation.	Not rated.	Longer surgery with suturing (+6 min).

Year V, v.2 2025 | Submission: 11/22/2025 | Accepted: 11/24/2025 | Publication: 11/26/2025

	Average age 16–17 years old.	bipolar cauterizer	Absolute reduction: 1.6%.		
Kim et al., 2020 (meta-ethanol) (ise)	Meta-analysis; n=1712 children included.	Tonsillectomy with suture intraoperative versus various techniques without suture.	Primary: OR 0.47. Secondary: OR 0.14.	No significant difference on day 7.	Pillar edema in the suture technique (OR 9.55).
Li et al., 2022 (meta-ethanol) (ise)	Meta-analysis; n=16,657 (adults and children).	Tonsillectomy with Intraoperative suturing versus various techniques without suture.	Total hemorrhage: OR 0.64. Primary: OR 0.44. Secondary: OR 0.70.	Not analyzed as a primary outcome.	Greater benefit of suturing in adults (OR 0.31). Better results in adults and children when >3 points per side (OR 0.47).

Final Considerations

The reviewed literature indicates that suturing the tonsillar pillars tends to reduce the Post-tonsillectomy hemorrhage, especially secondary hemorrhage, with stronger evidence. in large-scale studies and in pediatric populations. Although further studies should be conducted. To broaden the understanding of the risks and benefits of each surgical technique, the set of Data suggests that suturing can act as an additional hemostatic safety measure, and its use should be considered. The use of these techniques should be considered on a case-by-case basis, in light of the characteristics of the population served and the techniques used. employed and the surgeon's experience.

References

CULLEN, K. A.; HALL, MJ; GOLOSINSKIY, A. *National Health Statistics Reports Number 11 January 28, 2009 – Revised September 4, 2009.* [S. l.: sn], 2006.

FRANCIS, DO et al. *Postoperative Bleeding and Associated Utilization Following Tonsillectomy in Children: A Systematic Review and Meta-analysis.* Otolaryngology–Head and Neck Surgery, [sl], v. 156, no. 3, p. 442–455, 2017. Available at: https://aao-hnsfjournals.onlinelibrary.wiley.com/doi/10.1177/0194599816683915. Accessed on:

KARAMAN, M. *Adult tonsillectomy: relationship between indications and postoperative hemorrhage.* The Turkish Journal of Ear Nose and Throat, [sl], v. 22, no. 1, p. 21–25, 2012. Available https://iupress.istanbul.edu.tr/en/journal/tr-ent/article/adult-tonsillectomy- relationship-between-indications-and-postoperative-hemorrhage. Accessed on: **(add date).**

KIM, J.-S. et al. *Efficacy of pillar suture for post-tonsillectomy morbidity in children: a meta-analysis.* Brazilian Journal of Otorhinolaryngology, [sl], v. 87, no. 5, p. 583–590, 2021. Available at: http://www.ncbi.nlm.nih.gov/pubmed/32057680. Accessed on: **(add date).**

LI, B. et al. *Can intraoperative suturing reduce the incidence of posttonsillectomy hemorrhage? THE*

Year V, v.2 2025 | Submission: 11/22/2025 | Accepted: 11/24/2025 | Publication: 11/26/2025

systematic review and meta-analysis. Laryngoscope Investigative Otolaryngology, [sl], v. 7, no. 4, p. 1206–1216, 2022. Available at: https://onlinelibrary.wiley.com/doi/10.1002/lio2.835. Accessed on: **(add date).**

MOHAMMADPOUR-MALEKI, A.; RASOULIAN, B. *Post-tonsillectomy hemorrhage: A seven-year retrospective study.* Iranian Journal of Otorhinolaryngology, [sl], v. 33, no. 5, p. 311–318, 2021.

SAY, MA; BILGIN, E.; BAKLACI, D. *Evaluation of Anterior and Posterior Pillar Suturing Following Adult Tonsillectomy in Terms of Hemorrhage, Pain, and Dysphagia Complications.* Indian Journal of Otolaryngology and Head & Neck Surgery, [sl], v. 74, no. S3, p. 5624–5629, 2022. Available at: https://link.springer.com/10.1007/s12070-021-02965-3. Accessed on: **(add date).**

SENSKA, G. et al. *Significantly Reducing Post-Tonsillectomy Haemorrhage Requiring Surgery by Suturing the Faucial Pillars: A Retrospective Analysis.* PLoS ONE, [sl], v. 7, no. 10, p. e47874, 2012. Available at: https://dx.plos.org/10.1371/journal.pone.0047874. Accessed on: **(add date).**

XU, B. et al. *Primary and secondary postoperative hemorrhage in pediatric tonsillectomy.* World Journal of Clinical Cases, [sl], v. 9, no. 7, p. 1543–1553, 2021. Available at: https://www.wjgnet.com/2307-8960/full/v9/i7/1543.htm. Accessed on: **(add date).**