Post-Tonsillectomy Hemorrhage in Adults: A Preliminary Systematic Review and Meta-Analysis

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Introduction

- Tonsillectomy is a common procedure performed by ENTs, estimated over 700,000 procedures annually
- Post-tonsillectomy hemorrhage (PTH) is one of its most serious complications.
- Pediatric PTH rates are well characterized at approximately 1–5%; adult incidence remains poorly defined, and pediatric data is primarly used in counseling

Methods & Data

- Systematic review and meta-analysis; literature search conducted July 2025.
- Population:
  - Adults at or over the age of 18 who underwent tonsillectomy were included
- Intervention:
  - Tonsillectomy using any surgical approach (e.g. cold dissection, diathermy, laser)
  - Adenotonsillectomy, tonsillotomy, palatal procedures (e.g. uvulopalatopharyngoplasty), and procedures with removal of malignancy (e.g. radical malignancies) were excluded
- Design:
  - Randomized controlled trials, prospective cohort studies, retrospective cohort studies, nonrandomized trials, case-control studies, database or registry studies with at least 100 patients, or case series with 50 or more patients
- Study Selection:
  - 84 studies eligible for data extraction; 9 low-risk-of-bias studies included in the preliminary meta-analysis
  - Two reviewers independently screened, extracted data, and assessed risk of bias.
- Outcomes:
  - PTH incidence (primary)
  - Bleeding severity class,I-V per Windfuhr criteria (secondary)

I:

Results

6,251
Adult patients

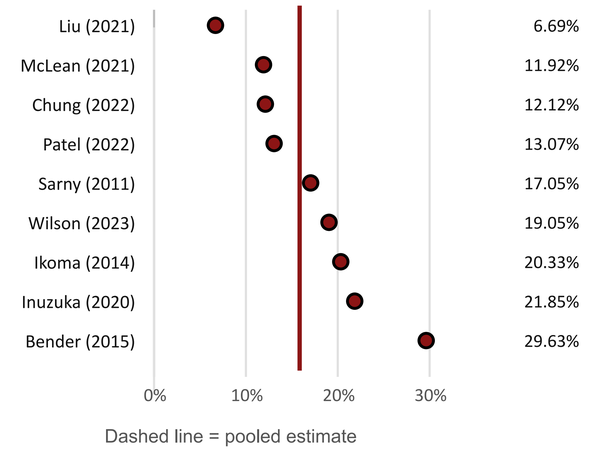
995
PTH events

Pooled adult PTH incidence

15.85%

95% CI: 12.58%–19.12% • random-effects model

Study-level PTH incidence



Dashed line = pooled estimate

Bleeding Severity

Class I	**48.8%**	476 events
Class II	**27.9%**	272 events
Class III	**23.3%**	227 events

Pooled incidence by class (random effects)
I: 7.87% II: 4.53% III: 3.19%

Heterogeneity

- **Cochran's Q = 76.48 (df = 8)**
- **Q p-value < .001**
- **I^2 = 89.54%**

Discussion

- **Higher-than-expected incidence**:
  - Adult post-tonsillectomy hemorrhage (PTH) incidence appears substantially higher than traditionally reported pediatric rates.
- **Clinically significant bleeding**
  - Over 50% of bleeding events were Class II or III, indicating a need for clinical intervention.
- **First quantitative synthesis**
  - This study provides the first quantitative meta-analysis of PTH incidence in adults.
- **Need for further research**
  - Despite substantial heterogeneity, high-quality studies are needed to clarify risk factors and optimize perioperative management.

Conclusion

- **Preliminary pooled adult PTH incidence: 15.85%**
- These findings identify PTH as a significant postoperative risk in adults and support further work to define risk factors and guide perioperative management.

References

1. Francis DO, Fonnesbeck C, Sathe N, McPheeters M, Krishnaswami S, Chinnadurai S. Postoperative bleeding and associated utilization following tonsillectomy in children. *Otolaryngol Head Neck Surg.* 2017;156(3):442-455. doi:10.1177/0194599816683915
2. Tham T, Megwalu UC. Is the risk of clinically significant hemorrhage following tonsillectomy greater in adults than children? *Laryngoscope.* 2026;136(8):3300-3301. doi:10.1002/lary.70120
3. University of Utah Health. Tonsillectomy: What to Expect. HealthFeed. Published August 1, 2023. Accessed September 25, 2026.

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