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Clinicians, Consumers, Evidence
Centre for Clinical Effectiveness

Rapid Review

Paediatric Tonsillectomy – Secondary Bleeding Rates

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Background

Monash Health enquired about the rate of secondary bleeding, post tonsillectomy, in the paediatric population. A rapid review of the literature was requested from The Centre for Clinical Effectiveness.

Objective

What are the secondary bleeding percentages/rates post tonsillectomy in the paediatric population (age 0-14 years) in Australia, UK, USA and Europe?

Search Strategy

A scoping search of Google, The Cochrane Library and BMJ Best Practice using terms "Paediatric and secondary bleeding and tonsillectomy."

Results

The scoping search identified a high quality systematic review conducted by Francis et al[1] published in 2017 that assessed post-tonsillectomy hemorrhage (PTH), associated nonoperative readmissions/revisits, and reoperations in children.

Francis et al (2017) A Systematic Review: Postoperative Bleeding and Associated Utilization following Tonsillectomy in Children

Francis et al[1] searched the literature including Medline, EMBASE and the Cochrane Library from January 1980 to June 2016 using appropriate search terminology. Hand searching and multidisciplinary consultation was also undertaken to identify relevant studies.

A total of 133 studies (RCTs, non-randomised trials, cohort studies, unique database or registry studies or case series with ≥1000 children) addressing PTH were included. These studies were deemed to be of low to moderate risk of bias[2]. The number of studies included in this review indicates that a diverse range of research from multiple sites and jurisdictions are represented. Some included studies contain data from the US, UK, Canada, Thailand, Europe and Japan.

Francis et al (2017) inclusion criteria

Category	Criteria
Population	Children with obstructive sleep-disordered breathing (OSDB) or recurrent throat infection undergoing tonsillectomy, aged 3-18 y, inclusive
Intervention	Tonsillectomy, adenotonsillectomy, or tonsillotomy (partial removal of tonsil) with any surgical approach (eg, coblation, laser, cold dissection)
Outcome	1. Post-tonsillectomy hemorrhage (including the entire of range of bleeding as reported in each study, from bloody sputum to frank bleeding requiring readmission or reoperation). Post-tonsillectomy hemorrhage may be reported as primary (generally defined as occurring within 24 hours of surgery), secondary (generally defined as occurring >24 hours postoperatively), or at an undefined or unspecified time. 2. associated nonoperative readmissions/revisits 3. reoperations in children
Design	Comparative studies (randomized controlled trials, prospective or retrospective cohort studies with comparison groups, nonrandomized trials, case-control studies); database or registry studies or case series with at least 1000 participants
Other	Original research, Publication language: English, Publication year: January 1980–June 2016 Risk of bias: low or moderate (high risk of bias included in meta-analyses after sensitivity analyses) Sufficiently detailed methods and results to enable data extraction Reports outcome data by target population or intervention

Francis et al (2017) results

The following tables represent the overall results presented in the systematic review. More detailed findings are available in the full text version of the review provided to the requestors.

Unadjusted PTH-Related Outcome Rates in Study Arms Evaluating Total Tonsillectomy

Technique (Arms, n)	n	PTH	Primary PTH	Secondary PTH	Unspecified PTH	Revisit/ readmissions for PTH	Reoperations for PTH
All arms** (105)	6299	265 (4.2)	33 (1.3)	166 (4.8)	66 (2.7)	80 (3)	68 (2.2)

** Values are presented as n (%)*

*** All arms (or techniques) includes (Electrocautery, Cold dissection, Coblation, Unspecified/ other, Molecular resonance, Harmonic scalpel, Thermal welding, Laser). Individual rates for each arm are available in the full text of the review Table 2.*

Unadjusted PTH-Related Outcome Rates in Study Arms Evaluating Partial Tonsillectomy

Technique (Arms, n)	n	PTH	Primary PTH	Secondary PTH	Unspecified PTH	Revisit/ readmissions for PTH	Reoperations for PTH
All arms** (18)	599	8 (1.5)	0 (0)	2 (1.6)	6 (1.4)	5 (1.8)	1 (0.64)

** Values are presented as n (%)*

*** All arms includes (Microdebrider, Cold dissection, Coblation, and Laser). Individual rates for each arm are available in the full text of the review Table 3.*

Unadjusted PTH-Related Outcome Rates by Indication in Study Arms Evaluating Total or Partial Tonsillectomy

Indication (Arms, n)	n	PTH	Primary PTH	Secondary PTH	Unspecified PTH	Revisit/ readmissions for PTH	Reoperations for PTH
OSDB (28)	1219	22 (1.9)	2 (0.41)	11 (2.1)	9 (1.1)	8 (1.4)	3 (0.85)
Throat infection	1764	88 (5)	12 (1.8)	64 (6.2)	12 (2.3)	29 (3.4)	10 (1.6)

** Values are presented as n (%)*

Rates of PTH and PTH-Associated Readmissions or Revisits after Total Tonsillectomy

Technique	Primary PTH	Secondary PTH	Readmission	Reoperation
Overall (across all techniques)	0.5 (0.1-1)	2.9 (1.5-4.3)	1.8 (0.4-3.3)	1.6 (0.9-2.3)

**Values are presented as % (95% Bayesian credible interval)*

***All techniques include (Cold, Electrocautery, Coblation, Harmonic scalpel, Laser, Molecular resonance, Thermal welding) Individual rates for each arm are available in the full text of the review Table 5.*

Rates of PTH and PTH-Associated Readmissions or Revisits after Partial Tonsillectomy

Technique	Primary PTH	Secondary PTH	Readmission	Reoperation
Overall (across all techniques)	1.7 (0-4.6)	0.4 (0-1.2)	0.7 (0-1.9)	0.7 (0-1.7)

**Values are presented as % (95% Bayesian credible interval)*

***All techniques include (Cold, Electrocautery, Coblation, Harmonic scalpel, Laser, Molecular resonance, Thermal welding) Individual rates for each arm are available in the full text of the review Table 6.*

Rates of PTH and PTH-Associated Readmissions or Revisits by Indication and Approach

Technique	Primary PTH	Secondary PTH	Readmission	Reoperation
Total tonsillectomy				
OSDB	0.3 (0-1.0)	2.2 (0.3-4.8)	0.1 (0-2.7)	1.3 (0.3-2.7)
Recurrent throat infection	1.7 (0-5.6)	3.7 (0.9-7.1)	2.1 (0-6.6)	1.6 (0.2-4)
Partial tonsillectomy				
OSDB	1.3 (0-4.3)	0.3 (0-1.2)	0.4 (0-1.4)	0.6 (0-1.6)
Recurrent throat infection	7.8 (0-28.7)	0.6 (0 -2.1)	1.0 (0-3.5)	0.9 (0-2.8)

**Values are presented as % (95% Bayesian credible interval)*

Rates of PTH Reported in Case Series or Database Studies

Technique or Indication (Arms, n)	n	Total PTH, n (%)	Primary PTH, n (%)	Secondary PTH, n (%)	Unspecified PTH, n (%)	Non-operative visit, revisit/ readmissions for PTH, n (%)	Reoperations for PTH, n (%)
All studies	1,154,686	23,661 (2.1)	1005 (1.2)	1586 (2.1)	21,070 (1.97)	8451 (1.3)	4797 (0.78)

Conclusions

This rapid review identified an up to date, high quality, systematic review published in 2017 assessing post-tonsillectomy hemorrhage (PTH), associated nonoperative readmissions/revisits, and reoperations in children.

No additional searching was undertaken after identifying this review.

The review includes evidence from diverse settings reporting an unadjusted PTH-related outcome rates in study arms evaluating total tonsillectomy of 4.2% and 1.2% unadjusted PTH-related outcome rates in study arms evaluating partial tonsillectomy.

References

1. Francis DO, Fonnesbeck C, Sathe NA, McPheeters ML, Krishnaswami S, Chinnadurai S. 2017. ***Postoperative Bleeding and Associated Utilization following Tonsillectomy in Children: A Systematic Review and Meta-analysis***. Otolaryngology–Head and Neck Surgery,1–14. http://journals.sagepub.com/doi/pdf/10.1177/0194599816683915
2. Francis DO, Chinnadurai S, Sathe NA, Morad A, Jordan AK, Krishnaswami S, Fonnesbeck C, McPheeters ML. ***Tonsillectomy for Obstructive Sleep-Disordered Breathing or Recurrent Throat Infection in Children***. Comparative Effectiveness Review No. 183. (Prepared by the Vanderbilt Evidence-based Practice Center under Contract No. 290-2015-00003-I.) AHRQ Publication No. 16(17)-EHC042-EF. Rockville, MD: Agency for Healthcare Research and Quality. January 2017. https://effectivehealthcare.ahrq.gov/index.cfm/search-for-guides-reviews-and-reports/?pageaction=displayproduct&productid=2423#Citation