

Evaluating Risk of Postoperative Complications in Lingual Versus Palatine Tonsillectomies: Is there a Difference?

Chloe Cottone BA¹, Erin Gawel BS¹, Alexandra Corbin BS¹, David Riccio BS¹, Mattie Rosi-Schumacher MD², Michele Carr DDS MD PhD²

¹Jacobs School of Medicine and Biomedical Sciences at the University at Buffalo, ²Department of Otolaryngology, Jacobs School of Medicine and Biomedical Sciences at the University at Buffalo



Introduction

- Palatine tonsillectomy (PT) is considered first line treatment for surgically managing pediatric obstructive sleep apnea (OSA), however lingual tonsillectomy (LT) is becoming an increasingly common procedure for management of OSA¹
- While the risks and postoperative complications of PT have been widely studied, research into the risks and postoperative complications of LT is not well established
- Our aim is to compare post-operative risks and complications between LT and PT in a large cohort

Methods and Materials

- A retrospective study was conducted utilizing deidentified patient records within TriNetX, a global EHR database
- LT group was defined using CPT 42870 and PT using 42820, 42821, 42825, 42826
- Tonsillectomy cohorts within pediatric and adult groups were matched by age, sex, race, and ethnicity using propensity score matching
- Complications were tabulated if they occurred within 14 days following a LT or PT procedure using ICD-10 and CPT codes:
 - Post operative bleeding** – ICD10; J95.83, K91.84
 - Dehydration** – ICD-10; E86.0
 - Dysphagia** – ICD10; R13.10
 - Critical care evaluation and management** – CPT; 99291
 - Emergency room visit** – CPT; 99282, 99283, 99284, 99285
 - Subsequent hospital care** – CPT; 99231, 99232, 99233
- Chi-square tests for independence were conducted and p<.05 was considered significant

Table 2: Statistical Analyses of Post-operative Complications in Adult Palatine and Lingual Tonsillectomies

	N	Postoperative bleeding N (%)	Dehydration N (%)	Dysphagia N (%)	ER visits N (%)	Initiation of ICU care N (%)	Subsequent hospital care N (%)
Adult palatine tonsillectomy	1375	63 (4.4)	20 (1.5)	39 (2.8)	121 (8.8)	10 (0.7)	31 (2.3)
Adult lingual tonsillectomy	1375	57 (4.1)	28 (2.0)	97 (7.1)	117 (8.5)	59 (4.3)	123 (8.9)
p-value		.6407	.3081	<.0001	.8388	<.0001	<.0001

- In the adult cohort, dysphagia occurred **2.5x** more frequently (p<.001), initiation of ICU care occurred **5.9x** more frequently (p<.001), and subsequent hospital care occurred **4.0x** more frequently (p<.0001) in the LT group (Table 2)

Table 3: Statistical Analyses of Post-operative Outcomes in Pediatric Palatine and Lingual Tonsillectomies

	N	Postoperative bleeding N(%)	Dehydration N(%)	Dysphagia N(%)	ER visits N(%)	Initiation of ICU care N(%)	Subsequent hospital care N(%)
Pediatric palatine tonsillectomy	863	28 (3.2)	20 (2.3)	10 (1.6)	70 (8.1)	10 (1.6)	10 (1.6)
Pediatric lingual tonsillectomy	863	12 (1.4)	22 (2.5)	25 (2.9)	70 (8.1)	26 (3.0)	76 (8.8)
p-value		.0164	.8759	.0168	1.0000	.0115	<.0001

- In the pediatric cohort, subsequent hospital care occurred **2.6x** more frequently (p=.0168) in the LT group, however postoperative bleeding occurred **2.3x** more frequently (p=.0164) in the PT group (Table 3)

Discussion

- Variable rates of PT hemorrhagic complications are reported in children, ranging from 0.3% to 6.1%, however rates of dysphagia and initiation of ICU care are unknown and therefore investigated here^{2,3}
- Literature on pediatric LT shows low complication and adverse event rates comparable to those of adenotonsillectomy, however limited data exists for adults^{1,4}
- Understanding the nature of postoperative complications between PT and LT is imperative to patient counseling and planning

Conclusion

Lingual tonsillectomy appears to have higher rates of postoperative complications compared to palatine tonsillectomy in both children and adults, aside from higher rates of PTH in pediatric palatine tonsillectomy

References

- Merna C, Lin HW, Bhattacharyya N. Clinical characteristics, complications, and reasons for readmission following lingual tonsillectomy. *Otolaryngology-Head and Neck Surgery*. 2019 Apr;160(4):619-21.
- Williams RG. Haemorrhage following tonsillectomy and adenoidectomy. (A review of 18,184 operations). *J Laryngol Otol*. 1967;81(7):805-808. doi:10.1017/s0022215100067712
- Carmody D, Vamadevan T, Cooper SM. Post tonsillectomy haemorrhage. *J Laryngol Otol*. 1982;96:635-638. doi:10.1017/s0022215100092926
- DeMarcantonio MA, Senser E, Meitzen-Derr J, Roetting N, Shott S, Ishman SL. The safety and efficacy of pediatric lingual tonsillectomy. *Int J Pediatr Otorhinolaryngol*. 2016;91:6-10. doi:10.1016/j.ijporl.2016.09.037

Table 1: Propensity Score Matching Results

	Pediatric			Adult		
	PT	LT	p - Value	PT	LT	p - Value
N	863 (M=535, F=328)	863 (M=535, F=328)	1	1,375 (M=737, F= 638)	1,375 (M=736, F=639)	.970
Age (Years)	8.06 (SD=3.7)	8.06 (SD=3.7)	1	43.0 (SD=19.0)	42.8 (SD=19.3)	.882