Peritonsillar Abscess Status Post Prior Tonsillotomy: A Potential Long-Term Risk

Brandon Lee, Michael J. Cunningham MD[1], Sara C. Gallant, MD[1]
[1]Department of Otolaryngology, Boston Children's Hospital, Boston, MA.

Introduction

Peritonsillar abscess (PTA) after surgical tonsil removal is an infrequent complication.[1] However, residual lymphoid tissue after tonsillotomy/intracapsular tonsillectomy may increase this risk compared to extracapsular tonsillectomy.[2] Case reports of PTA following extracapsular tonsillectomy have been published,[1,3,4] but only two prior studies describe PTA in the specific context of prior tonsillotomy.[5,6] Awareness of this risk is important for surgeons who perform intracapsular tonsillotomy. This retrospective study identifies cases of PTA following tonsillotomy or tonsillectomy at a freestanding tertiary children's hospital and compares the incidence and case details.

Methods and Materials

Patients were identified by keyword search of our institutional medical record system and subsequent manual chart review. Inclusion criteria required tonsil surgery between 2010 and 2025 at 18 years of age or younger and documentation of subsequent PTA in their electronic medical record (Figure 1).

Results

From 2010-2025, 5,576 tonsillotomies and 19,834 tonsillectomies were performed at our institution. Statistically significant differences in patient characteristics between the tonsillectomy and tonsillotomy cohorts were present but modest, and likely attributable to the large sample size (Table 1). After review, 13 patients fit the criteria of having developed PTA following tonsillotomy or tonsillectomy with surgery having occurred at our institution. Three patients were excluded due to insufficient data to confirm the relevant case details. The remaining 10 patients constitute the study group (Table 2).

Five patients were male, and five were female. All tonsillotomies in this case series were performed using a powered microdebrider (Medtronic, Jacksonville, FL) to remove tonsillar tissue from medial to lateral to just superficial to the capsule, leaving a minimal portion of lymphoid tissue which was then cauterized using suction monopolar cautery to achieve hemostasis and ablate residual tissue. Nine patients had prior tonsillotomy and one patient had prior tonsillectomy. Nine patients had solely an obstructive indication for initial tonsil surgery; one had both infectious and obstructive indication. The mean time interval (± SD) between primary tonsillotomy/tonsillectomy and PTA diagnosis was 8.2 ± 3.0 years, with a range of 1 to 12 years. The mean age and standard deviation at the time of PTA diagnosis was 13.7 ± 2.3 (range 10–18) years of age.

The observed rates of re-presentation to our institution for PTA following tonsillotomy and tonsillectomy were 0.16% and 0.0050%, respectively. Nine of ten occurred on the left side. Three of the ten patients reported a history of interim postoperative PTA prior to definitive presentation to our institution. Clinically apparent residual lymphoid tissue was noted in seven patients on examination.

Six patients had incision and drainage of a PTA in an office or emergency department setting. Three patients underwent operative incision and drainage. Three patients were treated with antibiotic therapy alone during their initial presentation; one of these reported a likely experience of auto-drainage of abscess into the throat. Five patients ultimately underwent revision tonsillectomy.

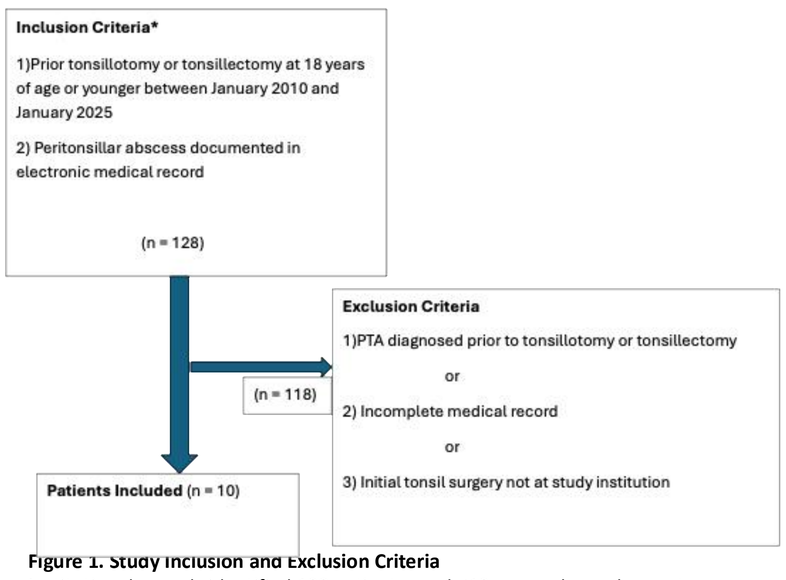


Figure 1. Study Inclusion and Exclusion Criteria
Institutional records identified 128 patients aged ≤18 years who underwent tonsillotomy or tonsillectomy and developed PTA over 15 years. Excluding preoperative PTA, incomplete records, or outside surgery yielded 10 patients.

Patient characteristic	Tonsillectomy (n = 19,834)	Tonsillotomy (n = 5,576)	P value
Age at surgery, y, mean (SD)	6.7 (4.4)	5.0 (3.2)	<.001
Female sex, n (%)	9261 (46.7%)	2508 (45.0%)	<.001
ASA Class ≥ III, n (%)*	2274/18833 (12.1%)	466/5295 (8.8%)	<.001
Scheduled for same day discharge at time of booking, n (%)	8211 (41.4%)	2238 (40.1%)	<.001
Surgery year, median (IQR)	2017 (2013-2021)	2017 (2015-2021)	<.001

Table 1: Characteristics of Overall Tonsillectomy and Tonsillotomy Cohorts

ID	Age (years)	Sex	Indication for tonsillectomy	Procedure	Tonsil surgery to PTA interval (years)	Interval infection	Side	Management	Remnant tonsil tissue reported	Revision tonsillectomy
1	10	F	Obstruction	Tonsillotomy	6	N/A	Left	I&D - OR	No	No
2	14	M	Obstruction	Tonsillectomy	12	N/A	Left	I&D - ER	Yes	No
3	15	M	Obstruction	Tonsillotomy	8	N/A	Left	I&D - ER	Yes	No
4	14	M	Obstruction	Tonsillotomy	10	N/A	Left	I&D - OR	Yes	Yes
5	15	F	Infection, obstruction	Tonsillotomy	11	N/A	Left	I&D - ER	No	No
6	16	F	Obstructive	Tonsillotomy	6	N/A	Left	I&D - OR	Yes	Yes
7	18	F	Obstruction	Tonsillotomy	8	2x PTA	Left	Needle aspiration	Yes	Yes
8	14	F	Obstruction	Tonsillotomy	8	1x PTA	Left	Augmentin	Yes	Yes
9	12	M	Obstruction	Tonsillotomy	1	N/A	Left	I&D - ER	No	No
10	14	M	Obstruction	Tonsillotomy	8	1x PTA	Right	I&D - ER	Yes	Yes

Table 2: Patient Characteristics by Case

Discussion

Current literature indicates PTA following extracapsular tonsillectomy is rare.[1] Our institutional experience supports this observation, with only one confirmed case in a setting of almost 20,000 tonsillectomies performed over a 15-year period. Although PTA after tonsillotomy (intracapsular tonsillectomy) was still infrequent at 0.16% (approximately 1 in 625 tonsillotomies), the incidence exceeded that following extracapsular tonsillectomy.

Nine of ten patients in this case series had a left-sided PTA. This predominance of left-sided PTA may be related to the right-hand dominance of all the surgeons performing this procedure at our institution, perhaps altering the degree of lymphoid tissue removal on the left side. Further investigation is necessary to assess this hypothesis.

Seven of ten PTA patients had remnant lymphoid tissue on outpatient or operative examination; five underwent revision tonsillectomy. Lymphoid tissue remnants following tonsillotomy are a matter of concern due to the possibility of regrowth resulting in recurrent obstruction.[2] These remnants could also be a site of recurrent inflammation predisposing to abscess formation, particularly if the lymphoid remnants are submucosal.

The question arises whether this increased occurrence of PTA following tonsillotomy compared to tonsillectomy is cause enough to alter clinical decision-making. Given the established benefits of tonsillotomy over tonsillectomy with respect to postoperative morbidity,[6] PTA poses a relatively insignificant risk. Prior research has shown a decrease in postoperative pain and hemorrhage following tonsillotomy compared to tonsillectomy.[2,6] We therefore recommend the continued use of tonsillotomy for obstructive indication in pediatric patients. However, surgeons should be cognizant of the potential (albeit small) risk for the development of tonsillar or peritonsillar abscess years after surgery.

This study has evident limitations as a single-institution, retrospective, limited case number series. The lack of distinct ICD codes for tonsillotomy and tonsillectomy, and for primary and secondary tonsillotomy or tonsillectomy, ruled out the possibility of a manual search of all tonsillotomy and tonsillectomy cases. A keyword search of patient charts was necessary, raising the possibility a small proportion of cases were not captured by the search query. Children who underwent surgery at our institution may have also moved or sought care elsewhere, so the rates of PTA after tonsillotomy or tonsillectomy reported here may be underestimated.

Conclusions

Tonsillotomy (intracapsular tonsillectomy) is characterized by residual remnants of lymphoid tissue within the tonsillar fossa. Such remnants, superficially or submucosally, may be a potential site of future infection predisposing to abscess formation. Although the risk of subsequent tonsillar or peritonsillar abscess is infrequent, it warrants consideration as a possible long-term complication of tonsillotomy in the pediatric population.



Figure 2. MRI Appearance of Abscess After Tonsillotomy
MRI (patient 4) showing 1.2×1.5×2.4 cm lobulated, possibly septated fluid collection in the left tonsillar fossa with peripheral enhancement and central diffusion restriction. (A) Coronal; (B) axial T1-weighted fat-suppressed images.

Contact

Sara C. Gallant, MD
Boston Children's Hospital
Department of Otolaryngology
333 Longwood Ave., Boston, MA 02215
Sara.Gallant@childrens.harvard.edu

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