Association Between Incision and Drainage of Peritonsillar Abscess and Subsequent Tonsillectomy

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Introduction

- Peritonsillar abscess (PTA) is a common deep neck space infection, yet the impact of initial management on the likelihood of subsequent tonsillectomy remains unclear.
- Specifically, whether incision and drainage (I&D) influences long-term surgical outcomes has not been well characterized at a population level.

Hypothesis

- Patients with peritonsillar abscess who undergo incision and drainage have a significantly higher risk of subsequent tonsillectomy compared with patients managed without drainage.

Methods

- Study Design: Retrospective cohort study performed in January 2026.
- Data Source: TriNetX large federated healthcare database (multiple institutions).
- Cohort Stratification:
- I&D Group: Patients diagnosed with PTA requiring incision and drainage.
- Non-Drainage Group: Patients diagnosed with PTA managed conservatively without drainage.
- Primary Outcome: Subsequent tonsillectomy evaluated across five post-diagnosis timeframes:
  - 1–30 days, 31–90 days, 91–180 days, 181–365 days, 1 year
- Statistical Analysis: Relative risks (RRs) with 95% confidence intervals (CIs) were calculated to compare tonsillectomy rates between groups (p<0.0001).

Limitations

- Administrative Coding: Dependent on accurate diagnostic (ICD) and procedural (CPT) coding across federated institutions.
- Confounding Factors: Unmeasured clinical variables, such as baseline tonsillitis severity or frequency prior to presentation, may influence surgical decision-making.

RESULTS

1. Acute Window (1–30 Days): Initial Surgical Risk

- Demonstrates a modest 25.5% increase in immediate/early tonsillectomy risk for the I&D group.
- Reflects early surgical interventions driven by treatment failure, persistent phlegmon/abscess, or immediate interval planning.
- The lower relative risk in this initial period compared to later windows aligns with standard clinical practice, where elective tonsillectomy is typically deferred during acute inflammation to minimize bleeding and tissue fragility risks

2. Subacute Window (31–90 Days): The Peak Surgical Horizon

- Represents the highest relative risk window across the entire study duration, showing a 138.9% increase in tonsillectomy rate following I&D.
- Corresponds directly with the traditional 4-to-12-week elective interval tonsillectomy window following resolution of acute deep space infection.
- Suggests that undergoing a bedside or operative procedure (I&D) significantly increases physician and patient inclination toward definitive surgical management once acute symptoms resolve.

3. Extended & Long-Term Horizons (91 Days to >1 Year): Sustained Elevation

- The risk profile achieves a remarkable long-term plateau, maintaining a consistent ~123% higher risk (RR of 2.23-2.25) beyond 3 months and persisting past 1 year.
- Demonstrates that the need for initial I&D serves as a strong clinical marker for underlying chronic tonsillar pathology or recurrent tonsillitis trajectories.
- Confirms that the risk elevation is not merely an artifact of short-term follow-up care, but a long-lasting baseline shift in surgical candidacy.

THE VERDICT: I&D SIGNIFICANTLY ELEVATES TONSILLECTOMY RISK

PTA patients requiring incision and drainage demonstrate a statistically significant, multi-fold increased risk of subsequent tonsillectomy across all short- and long-term timeframes p$p < 0.0001$).

Follow-up Period	Relative Risk (RR)	95% Confidence Interval	p-value
1–30 Days	1.255	1.084 – 1.453	< 0.0001
31–90 Days (Peak)	2.389	2.126 – 2.685	< 0.0001
91–180 Days	2.256	1.928 – 2.640	< 0.0001
181–365 Days	2.236	1.865 – 2.682	< 0.0001
> 1 Year	2.234	1.913 – 2.609	< 0.0001

Conclusion

- Incision and drainage of peritonsillar abscess is associated with a significantly increased risk of subsequent tonsillectomy.
- Increased risk is particularly pronounced within the first three months following diagnosis (peaking at RR = 2.389), with sustained elevation persisting beyond one year (RR = 2.234).

Major Trends

- Longitudinal Stability: Beyond 90 days, the relative risk exhibits high consistency, staying within a narrow band of 2.23 to 2.26 out past 12 months.
- Statistical Robustness: The large federated sample size provided high statistical power, yielding extremely narrow confidence intervals and uniform statistical significance ($p < 0.0001$) across all 5 discrete follow-up intervals.

Clinical Implications and Next Steps

- Patient Counseling: Empirical relative risk data can directly inform clinician-patient discussions regarding the likelihood of future surgery following an acute PTA episode.
- Follow-up Timing: The dramatic risk elevation between 31–90 days highlights a critical window for post-infection otolaryngology follow-up and surgical planning.
- Shared Decision-Making: Helps clarify long-term surgical expectations for patients undergoing procedural vs. conservative management.

References

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