ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26apr818

Contemporary Tonsillectomy Techniques and Their Associated Complications: A Comprehensive Review

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Publication Date: 2026/04/18

Abstract: Tonsillectomy remains one of the most commonly performed otolaryngological procedures worldwide. Over time, multiple surgical techniques have been developed to improve patient outcomes by reducing intraoperative blood loss, postoperative pain, and complications. This review summarizes current tonsillectomy techniques and highlights their associated complications, providing evidence-based guidance for clinical practice.

How to Cite: Dr. Md Hassibul Hakam Ibn Samad (2026) Contemporary Tonsillectomy Techniques and Their Associated Complications: A Comprehensive Review. *International Journal of Innovative Science and Research Technology*, 11(4), 1059-1061. https://doi.org/10.38124/ijisrt/26apr818

I. INTRODUCTION

Tonsillectomy, the surgical removal of palatine tonsils, is primarily indicated for recurrent tonsillitis, obstructive sleep apnea (OSA), and peritonsillar abscess. Despite being a routine procedure, it carries risks that vary depending on the technique used. Advances in surgical technology have led to the development of several methods aimed at improving safety and recovery.

II. INDICATIONS FOR TONSILLECTOMY

- Recurrent acute tonsillitis (Paradise criteria)
- Obstructive sleep apnea due to tonsillar hypertrophy
- Peritonsillar abscess (quinsy)
- Suspicion of malignancy
- Chronic tonsillitis refractory to medical therapy

III. TONSILLECTOMY TECHNIQUES

A. Cold Steel (Dissection and Snare) Technique

This traditional method involves blunt dissection of the tonsil from the tonsillar fossa followed by snare excision.

➢ *Advantages:*
- Low cost
- Minimal thermal tissue injury

➢ *Disadvantages:*
- Increased intraoperative bleeding
- Longer operative time

B. Electrocautery Tonsillectomy

Uses monopolar or bipolar cautery for dissection and hemostasis.

➢ *Advantages:*
- Reduced intraoperative bleeding
- Better visualization

➢ *Disadvantages:*
- Increased postoperative pain due to thermal injury
- Risk of delayed healing

C. Coblation Tonsillectomy

Utilizes radiofrequency energy in a saline medium to create a plasma field that dissolves tissue at low temperatures.

➢ *Advantages:*
- Less thermal damage
- Reduced postoperative pain
- Faster recovery

➢ *Disadvantages:*
- Higher cost
- Risk of secondary hemorrhage

D. Harmonic Scalpel Technique

Uses ultrasonic energy to cut and coagulate simultaneously.

➢ *Advantages:*
- Minimal lateral thermal spread
- Reduced blood loss

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➢ *Disadvantages:*
- Expensive equipment
- Requires technical expertise

E. Microdebrider Intracapsular Tonsillectomy

Removes tonsillar tissue while preserving the capsule.

➢ *Advantages:*
- Less postoperative pain
- Faster recovery
- Reduced hemorrhage

➢ *Disadvantages:*
- Risk of tonsillar regrowth
- Possible need for revision surgery

F. Laser Tonsillectomy

Utilizes CO_2 or diode lasers to excise tonsillar tissue.

➢ *Advantages:*
- Precise tissue removal
- Good hemostasis

➢ *Disadvantages:*
- Expensive
- Risk of airway fire
- Requires safety precautions

IV. COMPLICATIONS OF TONSILLECTOMY

➢ *Hemorrhage*

The most significant complication.
- Primary hemorrhage: within 24 hours
- Secondary hemorrhage: after 24 hours (commonly 5–10 days post-op)

Risk factors include infection, surgical technique, and patient age.

➢ *Postoperative Pain*
- Common in all techniques
- More severe with electrocautery
- Can lead to dehydration and delayed recovery

➢ *Infection*
- Rare due to rich vascular supply
- May contribute to secondary hemorrhage

➢ *Airway Complications*
- Laryngospasm
- Airway obstruction due to edema or bleeding
- More common in pediatric OSA patients

➢ *Velopharyngeal Insufficiency*
- Especially in patients with submucous cleft palate
- Leads to hypernasal speech and nasal regurgitation

➢ *Taste Disturbance*
- Due to injury to glossopharyngeal nerve
- Usually temporary

➢ *Other Rare Complications*
- Dental injury
- Atlantoaxial subluxation (Grisel's syndrome)
- Death (very rare)

V. COMPARISON OF TECHNIQUES

Table 1 Comparison of Techniques

Technique	Bleeding	Pain	Cost	Recovery
Cold Steel	High	Moderate	Low	Moderate
Electrocautery	Low	High	Moderate	Slow
Coblation	Low	Low	High	Fast
Harmonic Scalpel	Low	Low	High	Fast
Microdebrider	Very Low	Very Low	High	Very Fast

VI. DISCUSSION

No single tonsillectomy technique is universally superior. The choice depends on surgeon expertise, patient factors, and resource availability. Coblation and microdebrider techniques show promising outcomes in reducing postoperative morbidity, although cost remains a limitation in low-resource settings.

VII. CONCLUSION

Tonsillectomy techniques continue to evolve with the aim of minimizing complications and improving patient recovery. Understanding the advantages and limitations of each method is essential for optimizing patient outcomes. Careful patient selection and surgical expertise remain key determinants of success.

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