Tonsillectomy – Hemorrhage complication

DR Tran Quoc Huy

ENT department

Topic Outline

- **INTRODUCTION**
- **OVERVIEW OF INDICATIONS**
- **CONTRAINDICATIONS**
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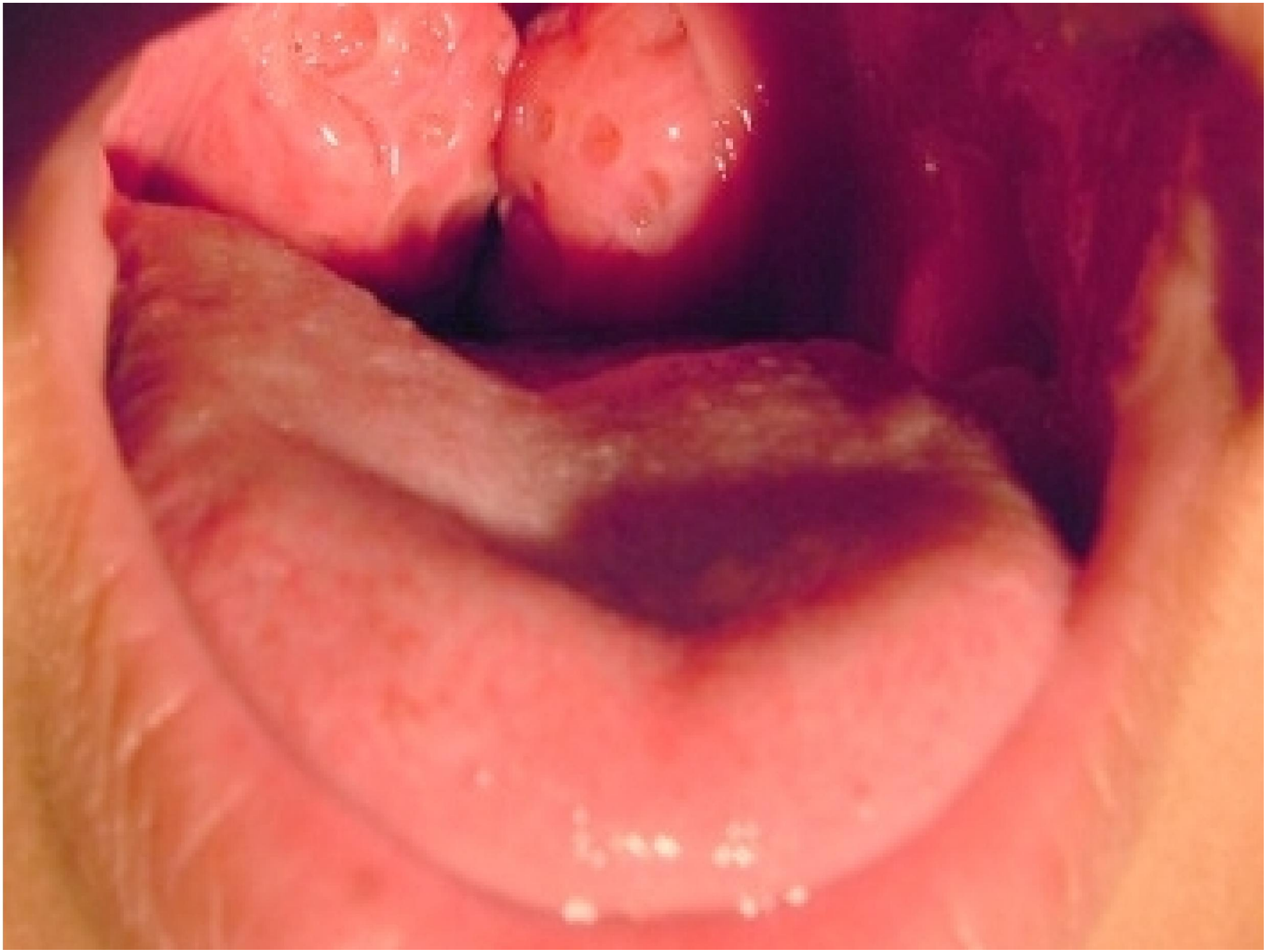


INTRODUCTION

- Tonsillectomy is among the most commonly performed operations in children.
- Tonsillectomy alone is performed infrequently in children younger than three years of age.
- The rate of tonsillectomy is about one-third higher in girls than in boys.

OVERVIEW OF INDICATIONS

- Tonsil surgery may be classified as obligatory (absolute) or elective (conditional), depending upon the nature and severity of the underlying problem.
- Obstruction and infection constitute the two major categories of indications for excision of the tonsils.

ABSOLUTE INDICATIONS

- Extreme obstruction of the nasopharyngeal or oropharyngeal airways by adenoids, tonsils, or both
- Tonsillar obstruction of the oropharynx that interferes with swallowing
- Malignant tumor of the tonsil (or suspicion of malignancy)
- Uncontrollable hemorrhage from tonsillar blood vessels

CONDITIONAL INDICATIONS

- Recurrent acute throat infections.
- Chronic tonsillitis unresponsive to antimicrobial treatment.
- Tonsillar obstruction that alters voice quality.
- Halitosis, refractory to other measures.
- More than one episode of peritonsillar abscess or peritonsillar abscess in a child with substantial history of recurrent throat infection.
- Chronic pharyngeal carriage of group A beta-hemolytic Streptococci if the carrier is in close contact with a person who has had rheumatic fever or lives in a household in which infection occurs frequently and eradication has been refractory to other measures.
- Syndrome of periodic fever, aphthous stomatitis, pharyngitis, and cervical adenitis (PFAPA syndrome) unresponsive to conservative treatment.

CONTRAINDICATIONS

- **Hematologic**
- **Infectious**

COMMON POSTOPERATIVE ISSUES AND GENERAL MANAGEMENT

- Most tonsillectomies (with or without adenoidectomy), are performed in an outpatient setting and children are discharged a few hours after surgery
- Children who are at higher risk for complications may be admitted overnight for observation after tonsillectomy. General issues in postoperative care include pain relief, return to normal diet and activity, and management of nausea and vomiting.

Inpatient admission

- Indications for overnight hospitalization after tonsillectomy include age <3 years, a complex medical history, and/or a history of severe obstructive sleep apnea (OSA) (as diagnosed on preoperative polysomnogram with an apnea-hypopnea index of >10, oxygen saturation nadir less than 80 percent, or both)

COMMON POSTOPERATIVE ISSUES

- Pain
- Nausea and vomiting
- Diet
- Halitosis
- Activity
- Emotional upset
- Antimicrobial prophylaxis

COMPLICATIONS

- Anesthesia-related
- Hemorrhage
- Upper airway obstruction and/or central apnea
- Dehydration
- Infection
- Burn injuries
- Temporomandibular joint dysfunction
- Mortality

Hemorrhage

- Postoperative hemorrhage following tonsillectomy can be classified as either primary/early(within 24 hours of surgery) or secondary/delayed (greater than 24 hours after surgery)

References

- Lowe D, van der Meulen J, Cromwell D, et al. Key messages from the National Prospective Tonsillectomy Audit. Laryngoscope 2007; 117:717.
- Sarny S, Ossimitz G, Habermann W, Stammberger H. Hemorrhage following tonsil surgery: a multicenter prospective study. Laryngoscope 2011; 121:2553.
- Liu JH, Anderson KE, Willging JP, et al. Posttonsillectomy hemorrhage: what is it and what should be recorded? Arch Otolaryngol Head Neck Surg 2001; 127:1271.
- Perkins JN, Liang C, Gao D, et al. Risk of post-tonsillectomy hemorrhage by clinical diagnosis. Laryngoscope 2012; 122:2311.

Key messages from the National Prospective Tonsillectomy Audit.

- AU Lowe D, van der Meulen J, Cromwell D, Lewsey J, Copley L, Browne J, Yung M, Brown P
- The Audit received data from 277 hospitals in England and Northern Ireland on 40,514 patients. Analysis was conducted on 33,921 (84%) who gave consent.
- 1,197 (3.5%) postoperative hemorrhages were recorded. One hundred eighty-eight (0.6%) patients sustained a primary hemorrhage and 1,033 (3%) a secondary hemorrhage (24 had both)

Key messages from the National Prospective Tonsillectomy Audit.

- Elevated hemorrhage rates were observed in tonsillectomies performed using diathermy for dissection and hemostasis compared with cold steel dissection and ties for hemostasis
- Compared with the cold steel group, bipolar diathermy tonsillectomy had an odds ratio of 2.47 (1.81-3.36), P<.0001, and bipolar diathermy scissors tonsillectomy an odds ratio of 3.20 (2.09-4.90), P<.0001. Use of bipolar diathermy for hemostasis only after cold steel dissection carried an intermediate risk, odds ratio 1.57 (1.16-2.13), P = .004

Key messages from the National Prospective Tonsillectomy Audit.

- CONCLUSIONS: The results confirm that **"hot" tonsillectomy techniques** carry a substantially elevated risk of postoperative hemorrhage when diathermy is used as a dissection tool in tonsillectomy.

Hemorrhage following tonsil surgery: a multicenter prospective study.

- AU Sarny S, Ossimitz G, Habermann W, Stammberger H
- Laryngoscope. 2011 Dec;121(12):2553-60.
- STUDY DESIGN: Prospective, multicenter cohort study
- from October 1, 2009, to June 30, 2010
- Postoperative hemorrhage, classified as any bleeding episode after extubation according to severity, were collected

Hemorrhage following tonsil surgery: a multicenter prospective study

- A total of 9,405 patients were included. Hemorrhage rate for TE±AE was 15.0%, for TO±AE was 2.3%, and for AE was 0.8%
- Rate of return to the operating room for TE±AE was 4.6%, for TO±AE was 0.9%, and for AE was 0.3%
- Minor bleeding episodes increased the risk of a subsequent severe bleeding episode ($P<.001$)

Hemorrhage following tonsil surgery: a multicenter prospective study

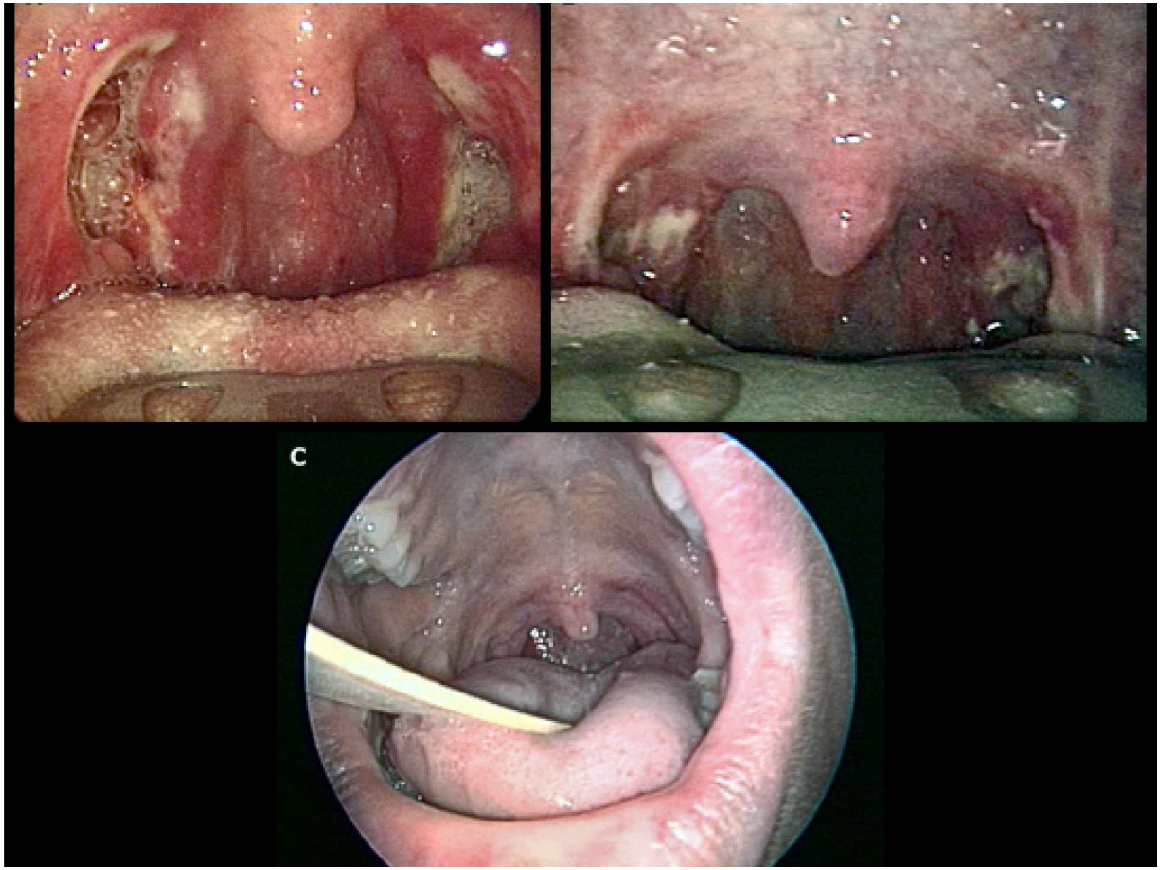
- Elevated hemorrhage rates were observed for adults ($P<.001$), TE±AE ($P<.001$), and cold steel dissection combined with bipolar diathermy ($P = .05$)
- A significantly higher risk of severe bleeding episodes for children aged 6-15 years ($P = .007$), males ($P = .02$), and all bipolar operation techniques ($P = .005$).

Posttonsillectomy hemorrhage: what is it and what should be recorded?

- AU Liu JH, Anderson KE, Willging JP, Myer CM 3rd, Shott SR, Bratcher GO, Cotton RT
- DESIGN: Retrospective study.
- A series of 1438 consecutive patients who had undergone either tonsillectomy or adenotonsillectomy between January 1, 1999, and December 31, 1999.

Posttonsillectomy hemorrhage: what is it and what should be recorded?

- A total of 112 patients underwent evaluation 134 times. Of these patients, 96 required only 1 evaluation and 16 required more than 1 evaluation. All patients who had more than 1 evaluation required intervention. The total number of children requiring intervention for posttonsillectomy hemorrhage was 51 (3.5%) of the 1438 patients. Female patients were more likely than male patients to return for evaluation. Patients who were 12 years and older were the most likely and those 3 years and younger were the least likely to have posttonsillectomy hemorrhage. The most common time from surgery to initial evaluation for hemorrhage was 6 days.



Posterior pharynx after tonsillectomy

A: D6
B: D14
C: after 1 year

Risk of post-tonsillectomy hemorrhage by clinical diagnosis.

- AU Perkins JN, Liang C, Gao D, Shultz L, Friedman NR
- STUDY DESIGN: Seven-year retrospective case-control study.

Risk of post-tonsillectomy hemorrhage by clinical diagnosis

- RESULTS: A total of 9,023 tonsillectomy patients were identified (52.0% male, 48.0% female; mean age, 6.9 years). Of these, 2.4% (n = 212) presented with hemorrhage. There were 48 (22.6%) primary and 164 (77.4%) secondary hemorrhages. The control group consisted of 1,488 nonhemorrhage patients. A multivariate logistic regression analysis compared the twogroups controlling for age, sex, and clinical diagnosis. OSA patients were half as likely to hemorrhage compared to chronic tonsillitis patients (P = .04). SDB patients also had a lower chance of hemorrhage compared to chronic tonsillitis patients; this result was not significant (P = .09). Patients older than 6 years had a higher hemorrhage rate (P<.001).

Risk of post-tonsillectomy hemorrhage by clinical diagnosis

- CONCLUSIONS: This study demonstrates that patients with OSA may be less likely to have postoperative hemorrhage than patients with chronic tonsillitis. Younger age was associated with fewer hemorrhages.

Conclusion

- Primary hemorrhage typically ranges from 0.2 to 2.2 percent and secondary hemorrhage between 0.1 and 3 percent
- "hot" tonsillectomy techniques carry a substantially elevated risk of postoperative hemorrhage when diathermy is used as a dissection tool in tonsillectomy
- patients with OSA may be less likely to have postoperative hemorrhage than patients with chronic tonsillitis

Thanks for your attention