

PREVALENCE OF POST TONSILLECTOMY HAEMORRHAGE IN UNIVERSAL COLLEGE OF MEDICAL SCIENCES TEACHING HOSPITAL

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ABSTRACT

INTRODUCTION

Tonsillectomy is one of the common surgeries for different indications performed by the otolaryngologists globally. Despite enriched with the several techniques and new equipments, the patients are still not free of major complications like haemorrhage post surgery. Hence, the study is aimed to determine the prevalence of haemorrhage following tonsillectomy.

MATERIAL AND METHODS

A retrospective study was carried out reviewing the medical records of all tonsillectomy patients operated in Universal College of Medical Sciences-Teaching Hospital (UCMS-TH) from July 2019 to January 2025. 200 patients files were reviewed but only 187 were included due to lack of information. All cases were done under general anaesthesia. Cold dissection plus bipolar diathermy and bipolar diathermy only were used during the surgery. Number of post tonsillectomy haemorrhage were noted irrespective of the duration. Data were entered in MS-Excel 2007 and analyzed in rate and percentage.

RESULTS

Six (3.2%) out of 187 patients had post tonsillectomy haemorrhage (PTH). It was seen in 16-55 years age groups (2 males and 4 female) and were operated for recurrent tonsillitis. It occurred between fifth-tenth post operative day.

CONCLUSION

The prevalence of post tonsillectomy haemorrhage (3.2%) was low compared to other centers. Both the genders were affected and principally seen on recurrent tonsillitis cases. Although a life threatening condition, it can be managed safely.

KEYWORDS

Tonsillectomy, Otolaryngologists, Haemorrhage

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INTRODUCTION

Tonsillectomy refers to the complete removal of the tonsil from its capsule and is derived from the Latin word “*tonsilla*” which means a stake to which boats are tied, and the Greek word “*ektome*” which means excision. It is one of the most common surgeries performed by an Otolaryngologist.¹⁻³ Surgical indications include chronic or recurrent tonsillitis, recurrent peritonsillar abscess, gross tonsillar hypertrophy, suspected malignancy and can be the only surgery or part of other surgeries like adenotonsillectomy in obstructive sleep apnoea syndrome (OSAS), uvulopalatopharyngoplasty, excision of styloid process. The aim in both adult and pediatric cases is better life quality, to decrease antibiotic use, reduce leave from work or studies.³⁻⁵

Different tonsillectomy techniques like guillotine excision, cold steel dissection, electrodissection (monopolar/bipolar), cryosurgery, coblation, ultrasonic removal, laser removal have different impact on postoperative morbidity.^{4,6} The principal complications post tonsillectomy are pain and haemorrhage.^{3,7,8}

The following factors have already been stated in the literature as risks for post-tonsillectomy haemorrhage (PTH) including older age, sex, chronic tonsillitis, surgical indication, type of operation, surgeon's skill, excessive intraoperative blood loss and high postoperative mean arterial pressure.^{3,5,9-12} PTH has been divided into primary, occurring <24 hour after surgery and secondary, occurring >24 hour, commonly 5–10 days after the operation.⁵ Post-tonsillectomy hemorrhage remains the most serious complication of tonsillectomy despite improvements in surgical and anaesthetic techniques.⁵

The objective of the present study was to determine the prevalence of haemorrhage following tonsillectomy at UCMS-TH.

MATERIAL AND METHODS

This retrospective study was carried out reviewing the medical records of all tonsillectomy patients operated for different indications at Universal College of Medical Sciences-Teaching Hospital (UCMS-TH) from July 2019 to Januray 2025. About 200 patients files were reviewed from hospital record section but only 187 were included due to lack of informations as the notes were incomplete. Ethical approval (UCMS/IRC/105/24) was obtained from institutional review committee of the UCMS. Both the children and adults and all genders were included. Indications for tonsillectomy were recurrent tonsillitis, tonsillar hypertrophy, recurrent attacks of peritonsillar abscess, adenotonsillary hypertrophy leading to obstructive sleep apnoea syndrome (OSAS), asymmetrical tonsils (to rule out malignancy) and Eagle's syndrome. Patients with a bleeding disorder and those on anti-coagulants and with past pharyngeal surgery were excluded.

The variables like patient's particulars, indication for tonsillectomy, method of surgery, surgeon's experience (resident or faculty), time of haemorrhage, gender specific differences, and control method administered for haemorrhage were recorded in the performa. Data were

entered in the MS Excel and analyzed with rate and percentage.

PTH was considered as bleeding post surgery from the tonsils bed in all the indicated cases in our study. The haemorrhage occurring within the 24 hours of surgery was taken as primary and past 24 hours as secondary.^{13,14} As per Windfurhr's study, PTH was classified into five grades as 1st grade: bleeding that stopped spontaneously or without any invasive intervention. 2nd grade: bleeding ceased under local or topical anesthesia. 3rd grade: bleeding stopped under general anesthesia. 4th grade: bleeding ceased by ligation of the external carotid artery or embolization and 5th grade: bleeding that leads to death of the patient.^{14,15}

RESULTS

In this study, out of 187 post tonsillectomy cases, 6 (3.2%) patients had secondary PTH and none of them had primary PTH. All secondary PTH were seen in adult groups (2 male and 4 female) as shown in Table 1. The PTH occurred between 5 to 10 days. 3 female and 1 male patients had grade 1 PTH whereas 1 male and 1 female had grade 3 PTH. Grade 1 PTH cases were controlled with conservative measures like admission, IV fluids, keeping nil per oral, IV antibiotics and betadine with hydrogen peroxide gargles. Grade 3 PTH cases were controlled in the operating room (OR). A big clot with oozing was found at the left upper tonsillar fossa. Silk ligature along with bipolar diathermy was used for haemostasis. None of the patients in paediatric groups had PTH. Neither of the PTH patients received blood transfusion.

Table 1. PTH in different age groups

Age group (years)	Number (n=187)	Primary PTH (%)	Secondary PTH (%)
5-16	83	0	0
16-55	104	0	6 (5.76%)

Out of 187, 104 were in the age range of 16-55 years (63 femlae and male 41) and the mean age was 24.6 years. There were 83 patients in the age range of 5-16 years (51 male and 32 female) and the mean age was 7.2 years. 2.17% of male and 4.21% of females had secondary haemorrhage (table 1 & 2). The youngest operated one was 6 years old female and the oldest operated was 55 years old male patient.

Table 2. PTH in different genders

Gender	Number (n=187)	Primary PTH (%)	Secondary PTH (%)
Male	92	0	2 (2.17%)
Female	95	0	4 (4.21%)

In the adult group, 90 patients underwent tonsillectomy for recurrent tonsillitis, 7 for recurrent peritonsillar abscess, 3 for asymmetrical tonsils and 4 for a part of excision of elongated styloid process (Eagle's syndrome). In the paediatric group, 51 underwent tonsillectomy for recurrent tonsillitis, 27 for adenotonsillary hypertrophy causing obstructive sleep apnoea and 5 for gross tonsillar hypertrophy only. PTH was seen in 16-55 years old group and mainly those operated for recurrent tonsillitis, table 3.

Table 3. PTH as per different indications of tonsillectomy

Indications	Number (n=187)	PTH (%)
Recurrent tonsillitis	141	6 (4.25%)
Others (recurrent peritonsillar abscess, asymmetrical tonsils, adenotonsillar hypertrophy causing OSA, Eagle's syndrome, gross tonsillar hypertrophy)	46	0

About 155 tonsillectomies were done solely by faculties using bipolar diathermy whereas 32 cases were done by residents in care of faculties using combined approach i.e., cold dissection and bipolar cautery. Two cases in the faculties group had secondary PTH and had to control in OR whereas 4 cases had secondary PTH in residents group and were managed conservatively (Table 4).

Table 4. PTH carried out by surgeons with different levels of experience and as per tonsillectomy methods

Surgeon	Method used	No. of operations (n=187)	PTH (%)
Faculties	Bipolar diathermy	155	2 (1.29%)
Residents	Combined (cold dissection+ bipolar cautery)	32	4 (12.5%)

DISCUSSION

Tonsillectomy solely or as a part of other procedures like adenotonsillectomy for OSA is a routinely done procedure. PTH has been found to be a common and significant complication requiring redo surgery under general anaesthesia and blood transfusion too.^{4,16} There's a variation in PTH prevalence as per different studies all over the world quoted between 0.1 and 40.0%.⁵ Primary bleeding is generally thought to be related to surgical technique whereas environmental factors that influence oropharyngeal healing causal to delayed (secondary) hemorrhage.⁶

Our study as well as other studies done within the country and abroad have differences in PTH rates but within the range mentioned in the literature 0.1-40%.

In a study by Raza HB et al,⁴ the prevalence of secondary PTH rate was 15.2 %. Eight (12.2%) were managed conservatively while 2 (3.0%) required surgical intervention for haemostasis and blood transfusion was required by 1 (1.5%) patient. Tripathi P et al³ study had secondary PTH prevalence rate of 5.12%, all were managed conservatively without surgical intervention and blood transfusion. Rajbhandari P et al study had PTH rate in 12.6% cases.¹⁷ One patient had redo surgery for haemostatis and 14 cases were managed conservatively. Our study showed secondary PTH in 3.2%, two cases had surgical intervention for haemostatis whereas 4 cases were managed conservatively. Post discharge those 2 patients had excessive throat irritation and cough and that could be the cause for PTH.

Several factors have already been mentioned in the literature as risks for PTH like sex, age, surgical indication, type of operation, surgeon's skill and even body mass index (BMI).⁵ However, there's no uniformity regarding the fixed predominance among the risk factors of PTH as per several studies.

In our study, female has a slight predominance regarding the PTH rate of 4.21%. in contrast to male predominance of PTH by several studies by Jonathan CL et al,¹⁸ Tripathi P et

al,³ Susaman N et al.⁷ Higher testosterone levels in male have been found to be one of the risk factors for increased PTH.¹⁸ However, Raza TH et al.⁴ and Kshirsagar R et al¹⁹ study found that the gender doesn't have much impact as a risk to PTH.

Our study showed higher prevalence of PTH in older age groups (>17 years old) which is in consistency with other studies.^{3,11,18,20} The reason why there is such a difference between adults and children when using bipolar diathermy is unclear. The difference might be due mostly to overall slower wound healing in adults, which is more negatively influenced by techniques associated with more tissue trauma.²¹ possibility of puberty and increased risk of PTH has been shown by the previous study.¹⁸

Recurrent tonsillitis and obstructive sleep apnoea has been shown as a principal indication for tonsillectomy in many studies with higher frequency of PTH.^{3,22} In our study also we noted PTH mainly in patients who underwent surgery for recurrent tonsillitis. It might be consequences to greater intra-operative trauma due to scarring from recurrent tonsillitis resulting in subsequent clot sloughing postoperative period.^{3,12}

PTH has been seen more frequently with diathermy use as per several studies.^{3,4,6,13,18,20} These techniques are thought to create greater thermal tissue damage, charred tonsillar fossa with the potential for necrosis and delayed wound healing and that can be a greater risk of infection leading to secondary bleed as the result of excessively high power settings or excessively frequent or prolonged application of diathermy.^{3,6,20} However some studies are in favour of it as they are fast and less expertise requirement and also dual role of tissue dissection and coagulation meantime making less bleeding in operative field as compared to conventional cold dissection methods and even a meta-analysis didn't find any differences in PTH rate between these two methods.^{4,23}

Linkage between the surgical experience and PTH rates has been shown by some studies, however, several others have shown statistical insignificance in context to the surgeon's experience.^{3,8,10} It could be due to surgeon's inexperience and dissection in the wrong plane resulting in high rate of PTH and also the prolonged surgery time leading to a greater loss of blood.²⁴

The limitation of the study is its retrospective nature. Follow up notes can be missing or under reported. Patients could have gone to other health centers for the mild bleeding symptoms. Also the small sample size, hospital-based data with no comparison or control group are its other limitations. However, one of the strength of this study is that it's the first of its kind on the issue of post-tonsillectomy haemorrhage in this institute. Thus, it may serve as a baseline for further investigation into the issue of post-tonsillectomy bleeding.

CONCLUSION

The prevalence of post tonsillectomy bleeding (3.2%) in our center was low compared to other centers. There weren't much difference regarding the genders however merely recurrent tonsillitis cases had PTH. Cases with sole use of bipolar diathermy had to undergo relook at OR for haemostatis. Majority of PTH could be managed

conservatively. Further prospective comparative studies with a larger sample size and multi-centric study would provide more accurate and better results.

CONFLICT OF INTEREST

None

REFERENCES

1. Rob MI, Westbrook JI, Taylor R, Rushworth R. Increased rates of ENT surgery among young children: have clinical guidelines made a difference? *Journal of Paediatrics and Child Health*. 2004; 40: 627-32
2. Betancourt AR, López C, Zerpa V, Carrasco M, Dalmau J. Does surgical technique influence post-tonsillectomy haemorrhage? Our experience. *Acta Otorrinolaringologica (English Edition)*. 2015;66(4):218-23
3. Tripathi et al. Prevalence of Post-tonsillectomy Haemorrhage at a Tertiary Care Centre in Nepal: A Descriptive Cross-sectional Study. *J Nepal Med Assoc* 2021;59(234):165-9
4. Raza TH, Hakim A, Ali M, Anjum B, Mushahid U. Incidence of Post-Tonsillectomy Hemorrhage in Tonsillectomy with Bipolar Diathermy. 2023; 4(2): 136-39.
5. Susaman N et al. Risk Factors For Post-Tonsillectomy Hemorrhage. *ENT Updates* 2018;8(2): 114-19.
6. Faramarzi A, Heydari ST. Prevalence of Posttonsillectomy Bleeding as Daycase Surgery with Combination Method; Cold Dissection Tonsillectomy and Bipolar Diathermy Hemostasis. *Iran J Pediatr Jun* 2010; Vol 20 (No 2), Pp:187-92
7. Kaygusuz I, Susaman N. The effects of dexamethasone, bupivacaine and topical lidocaine spray on pain after tonsillectomy. *Int J Pediatr Otorhinolaryngol* 2003;67:737-42.
8. Myssiorek D, Alvi A. Post-tonsillectomy hemorrhage: An assessment of risk factors. *Int J pediatr Otorhinolaryngol*. 1996;37(1):35-43.
9. Kaan MN, Odabasi O, Gezer E, Daldal A. The effect of preoperative dexamethasone on early oral intake, vomiting and pain after tonsillectomy. *Int J Pediatr Otorhinolaryngol* 2006;70:73-9.
10. Windfuhr JP, Chen YS, Remmert S. Hemorrhage following tonsillectomy and adenoidectomy in 15,218 patients. *Otolaryngol Head Neck Surg* 2005;132:281-6.
11. Tolska HK, Takala A, Pitkaniemi J, Jero J. Post-tonsillectomy hemorrhage more common than previously described-an institutional chart review. *Acta Otolaryngol* 2013;133:181-6.
12. Perkins JN, Liang C, Gao D, Shultz L, Friedman NR. Risk of post-tonsillectomy hemorrhage by clinical diagnosis. *The Laryngoscope*. 2012 Oct;122(10):2311-5.
13. Jaber MR. A descriptive study of post-tonsillectomy bleeding. *JOURNAL OF POPULATION THERAPEUTICS AND CLINICAL PHARMACOLOGY*. 2021;28(1):56-62
14. Bin X, Hai-YJ, Ke W, Cao C, Li L, Yang Z, et al. Primary and secondary postoperative hemorrhage in pediatric tonsillectomy. *World J Clin Cases* 2021; 9(7):1543- 53.
15. Windfuhr, Seehafer. Classification of haemorrhage following tonsillectomy. *J Laryngol Otol*. 2001;115: 457-61.
16. Windfuhr JP, Verspohl BC, Chen YS, Dahm JD, Werner JA. Post-tonsillectomy hemorrhage--some facts will neverchange. *European Archives of Oto-Rhino-Laryngology*. 2015; 272: 1211-8.
17. Rajbhandari P, Shrestha BL, Dhakal A. Frequency of post tonsillectomy hemorrhage at Dhulikhel hospital-Kathmandu university hospital. *Galore International Journal of Health Sciences & Research*. 2018;3(1):11-4.
18. Jonathan C L, Forer M, Veivers D. Reference rate for post-tonsillectomy haemorrhage in Australia—A 2000–2020 national hospital morbidity database analysis. *PLoS ONE*. 2022; 17(8): e0273320.
19. Kshirsagar R, Mahboubi H, Moriyama D, Ajose-Popoola O, Pham NS, Ahuja GS. Increased immediate postoperative hemorrhage in older and obese children after outpatient tonsillectomy. *Int J Pediatr Otorhinolaryngol*. 2016;84:119-23.
20. Walker P, Gilles D BN. Post-tonsillectomy hemorrhage rates: Are they technique-dependent? *Otolaryngology–Head and Neck Surgery* (2007) 136, S27-S31.
21. Lee MSL et al. Post-tonsillectomy hemorrhage: Cold versus hot dissection. *Otolaryngol Head Neck Surg* 2004;131:833-6.
22. Khalid AA et al., Post-tonsillectomy hemorrhage risk factors: a cross sectional study at Al-Jaber Hospital, AlHasa, Saudi Arabia. *International Journal of Medicine in Developing Countries*. 2021;5(2):428–32.
23. Vithayathil AA et al.: Comparison between Cold Dissection Snare Method and Bipolar Electrodissection Method in Tonsillectomy. *Research in Otolaryngology* 2017, 6(2): 17-22.
24. Aldrees T et al. Evaluation of Secondary Post-Tonsillectomy Bleeding among Children in Saudi Arabia: Risk Factor Analysis. *Ear, Nose & Throat Journal* 2022, Vol. 101(3) NP135– NP42.