

# POST-TONSILLECTOMY HEMORRHAGE INCIDENCE: COMPARISON BETWEEN DAY CASE AND INPATIENT SURGERY

Muhammad Ismail Khan, Amir Amanullah, Sadaf Rasheed

Department of ENT Mufti Mahmood Hospital, Department of Anatomy,  
Gomal Medical College, D.I.Khan, Pakistan

## ABSTRACT

**Background:** Day-case tonsillectomy is getting popularity these days because of low risk of nosocomial infections and low cost. The aim of this study was to evaluate the incidence of post-tonsillectomy hemorrhage in day-case compared to conventional in-patient surgery. **Methods:** This comparative study was conducted at Department of ENT, DHQ Teaching Hospital, D.I.Khan, from January 2008 to December 2010. Patients with history of recurrent episodes of tonsillitis were included. Exclusion criteria included children less than 5 years, any nasal pathology, history of acute tonsillitis within six weeks and bleeding diathesis. The sample consisted of 450 patients divided into two groups. One group was kept in the hospital for 8 hours after surgery and labeled as the day case group while other kept for 24 hours and labeled as in-patient group. Tonsillectomy was performed by dissection method. Statistical analysis concerning comparison of incidence of hemorrhage between the two groups was performed with student t-test. **Results:** Post-tonsillectomy hemorrhage was seen in 12(2.65%) patients; 5(2.2%) in the inpatient group while 7(3.1%) in day-case group ( $p=0.18$ ). Incidence of primary hemorrhage was 2/12 (16.65%) and secondary hemorrhage 10/12 (83.35%). **Conclusion:** Tonsillectomy can safely be performed as day-case procedure as there is no significant difference of post-tonsillectomy hemorrhage between day-case and inpatient procedures.

**KEY WORDS:** Tonsillectomy, Day case surgery, Hemorrhage.

## INTRODUCTION

Tonsillectomy is one of the commonest otolaryngological procedures performed, representing approximately 20 to 40% of surgical procedures performed in this field.<sup>1</sup> Generally tonsillectomy is considered simple but in comparison with other similar operations, it implies a common and sometimes serious complication.<sup>2</sup> Post-tonsillectomy hemorrhage remains the most serious complication of tonsillectomy. Hemorrhage can be divided into two broad categories; primary occurring <24 hour after surgery and secondary occurring at 24 hour, commonly 5-10 days after operation. Post-tonsillectomy secondary hemorrhage has a reported rate of 3-5% leading to re-admission to hospital. Primary bleeding is generally considered to be related to surgical technique whereas factors that influence oropharyngeal healing contribute to delayed (secondary) hemorrhage.<sup>3</sup> Mortality from bleeding is 2 in 10,000 tonsillectomies. Most cases of fatal postoperative bleeding occur within the first 24 hours after surgery.<sup>4</sup>

Day-case tonsillectomy is getting popularity these days because of low risk of nosocomial infections, low cost and patients demand for early

discharge. The primary reservation with choosing day-case tonsillectomy over the conventional in-patient approach is the risk of postoperative hemorrhage and this study was conducted to evaluate the incidence of post-tonsillectomy hemorrhage in patients undergoing day case surgery compared to conventional inpatient surgery.

## MATERIAL AND METHODS

This comparative study was conducted at Department of ENT, DHQ Teaching Hospital, D.I.Khan, from January 2008 to December 2010. The sample consisted of 450 patients divided into two groups, each containing 225 patients. The method of randomization was block randomization. The exclusion criteria for day case tonsillectomy were medical problems such as sleep apnea, diabetes, epilepsy and orofacial malformations. Patients included having history of recurrent episodes of tonsillitis that have required medical treatment. These episodes occurred 5-7 times in two years or 3-5 in a year. Exclusion criteria included children less than 5 years age, any nasal pathology, history of acute tonsillitis within 6 weeks and bleeding diathesis. Patients were admitted on

the morning of the scheduled operation day. Complete blood count, hemoglobin level, bleeding time, clotting time, HBsAg and Anti-HCV was done in all the patients preoperatively. All patients or their guardians/parents signed the informed consent term regarding the admission, operation, discharge procedures and also possible risks and complications of the surgical procedure.

Tonsillectomy was performed by dissection method in all the patients by the same surgeons under general anesthesia. Boyel Davis mouth gag with a blade was installed, and the tonsils exposed. The tonsils were grasped with a forceps, the anterior pillars and superior poles were incised with scissors, and the surrounding mucosa carefully dissected. The plane lateral to the tonsils was dissected, and the forceps reapplied to grasp the medial and lateral surfaces of the tonsils. The tonsils were bluntly dissected, and the inferior poles snared. Any bleeding that occurred after pressure had been applied with gauze was controlled by suture ligation (Silk 1 or Catgut 2-0) and electrocautery techniques. One group was kept in the hospital for 8 hours after surgery and labeled as day-case group while other kept admitted for 24 hours and labeled as in-patient group. Following each operation, the surgeon made at least two rounds on the ward before discharging day-case patients, and the nursing staff provided continual monitoring which made possible the early recognition of postoperative hemorrhage. Post-operatively all the patients were given same oral broad spectrum antibiotics and analgesics. Patients were instructed to report any bleeding from the mouth or any episode of blood stained saliva after discharge. They were also advised to take soft diet for one week. Follow-up visits were scheduled on 7<sup>th</sup> and 14<sup>th</sup> post-operative day. On each visit ton-

sillar fossae were examined for any bleeding point, blood clot and granulation tissues.

Statistical analysis concerning the comparison of incidence of hemorrhage between the two groups was conducted with the t-test.

## RESULTS

In Day-case group the mean age was 13.8±5.6 years while in the in-patient group the mean age was 13.9±5.3 years. Males (61.1%) outnumbered the females (38.9%). (Table 1)

Post-tonsillectomy hemorrhage was seen in 12 (2.65%) patients; 5 (2.2%) in the in-patient group while 7 (3.1%) in the day-case group.

Incidence of primary hemorrhage was 2/12 (16.65%) and secondary hemorrhage 10/12 (83.35%). The hemorrhage rate was significantly higher among the adults (78.6%) and males (64.3%). Secondary hemorrhage occurred most frequently on the 7<sup>th</sup>, 8<sup>th</sup> and 9<sup>th</sup> post-operative day. (Table 2)

Out of these, 3/12 (25%) patients had to return to the operation theater to secure hemostasis. In day-case group 5 cases were treated conservatively with local measures and intravenous antibiotics and settled with no requirement for surgical intervention. But ligation of bleeders was done in 2 cases under general anesthesia in operation theater. One patient needed blood transfusion as well.

In the in-patient group conservative management was done for 4 cases in the hospital course. But only one required a return to theater for arrest of hemorrhage. This patient experienced a significant amount of bleeding during surgery and required an unusually large numbers of sutures to

**Table 1: Age and Gender wise distribution of the patients.**

Age (years)	Number (%)	Gender	Number (%)
<b>Day-case Group (n=225)</b>			
6-10	71 (21.80%)	Male	143 (63.55%)
11-15	88 (48.90%)		
16-20	40 (17.75%)	Female	82 (36.45%)
21-25	11 (04.90%)		
26-30	15 (06.65%)		
<b>Out-Patient Group (n=225)</b>			
6-10	62 (27.55%)	Male	132 (58.65%)
11-15	98 (43.55%)		
16-20	38 (16.90%)	Female	93 (41.35%)
21-25	17 (07.55%)		
26-30	10 (04.45%)		

**Table 2: Post-operative bleeding frequencies between the two groups.**

Group	Primary Haemorrhage Number (%)	Secondary Haemorrhage Number (%)	Total Number (%)
In-patient Group (n=225)	1 (0.45%)	4 (1.8%)	5 (2.2%)
Day-case Group (n=225)	1 (0.45%)	6 (2.65%)	7 (3.1%)
Total	2 (0.45%)	10 (2.2%)	12 (2.65%)

control it. None of the patient needed blood transfusion in this group.

**DISCUSSION**

One of the major driving forces for day case tonsillectomy is to reduce the health care cost, decreased risk of hospital acquired infections and the waiting time for inpatient operating list. It requires minimum postoperative care which can be given at home with appropriate instructions and does not require overnight stay in the hospital. The benefits of day case surgery include less trauma and increased sense of safety to patients; the life style is minimally affected and can return to usual environment on earlier basis while avoiding hospital routine. Tonsillectomy has been traditionally performed as an in-patient procedure but it has also gained popularity as a day-case procedure because of already aforementioned benefits. Usually it is the surgeon’s decision whether to keep the patient for one day or more post operatively or discharge him on the same day of surgery. Bleeding, followed by hypovolemic shock, is the most common cause of morbidity (1.5% to 14%) and mortality (1 in 10,000 to 1 in 35,000) among patients undergoing tonsillectomy.<sup>5</sup>

The age range of our patients is similar to that in the study by Ikram et al though the eldest patient in their study was 49 years old.<sup>6</sup> On the other hand in the study by Hotchkiss et al all of the patients were from pediatric age group.<sup>7</sup> They also had male preponderance like our study but more females had been reported in another study.<sup>8</sup>

The overall rate of postoperative hemorrhage in our study was 2.65%, with primary hemorrhage in 2.2% and secondary hemorrhage in 3.1% cases. Other studies have also reported a higher incidence of secondary hemorrhage like ours.<sup>9,10</sup> While some other studies report that primary hemorrhage is more common than secondary hemorrhage.<sup>11,12</sup>

In our study we found that primary hemorrhage was seen in one (0.45%) patient in each group with no difference between them. While the risk of primary hemorrhage was 4.2% and 3.4% after day case and inpatient tonsillectomy respectively reported by Theilgaard and his colleagues, which are higher to our findings.<sup>13</sup> No case of pri-

mary hemorrhage was reported in day case tonsillectomy in a local study.<sup>14</sup>

We found 2.65% cases of secondary hemorrhage in day-case group and 1.8% cases in inpatient group. Almost similar results of 2% and 2.7% of secondary hemorrhage in day-case group and inpatient group respectively are reported in a study from Iran.<sup>15</sup> Similar results (2.5%) are also reported after day case tonsillectomy in a local study.<sup>14</sup> But Windfurh reported a secondary hemorrhage rate of only 1% that was lower to our results.<sup>3</sup> However, in a number of previous studies the secondary hemorrhage rate was much higher in comparison with ours. Raut found 16.9% secondary hemorrhage rate in 200 patients while assessing 15-17 days postoperatively.<sup>16</sup> Blogmren found that 32.8% of a mixed adult and pediatric population had experienced some secondary hemorrhage following tonsillectomy.<sup>17</sup> Ghufoor found a secondary hemorrhage rate of 26%.<sup>18</sup> Some researchers showed post-tonsillectomy bleeding rates of 5.1% in adults and 6.75% in pediatric patients. In a literature based study by Blakely, he concluded that post-tonsillectomy bleeding rates of about 5% are typical.<sup>19</sup>

There was a significantly higher incidence of post-operative hemorrhage in adults as compared to children in this study. This finding is in agreement with the study by Zafar et al.<sup>20</sup> It is known that adults with recurrent tonsillitis develop adhesions and neovascularization in the peritonsillar plane. The tonsillar bed incurs more trauma during dissection hence increasing the likelihood of developing infection of the tonsillar fossa, which is believed to be the cause of secondary hemorrhage.

The onset of primary bleeding in our study usually occurred within 6 hours. This finding is consistent with those of Kalantar et al.<sup>21</sup> Some authors suggest that duration of postoperative observation of 6-8 hours should be safe, and others recommended an even shorter duration.<sup>22</sup>

The onset of secondary bleeding in one patient was both abrupt and excessive, while rest of the patients presented with spitting out of blood stained saliva mainly on days 7, 8 and 9. Almost similar results are published in both in national and international literature.<sup>20,23,24</sup>

In our series, 0.65% of the patients had bleeds severe enough to warrant hemostasis under general anaesthesia. The ratio was similar to that reported in another study,<sup>25</sup> but lower than the results reported from Iran.<sup>26</sup>

## CONCLUSION

Tonsillectomy can safely be done as day-case procedure as there is no significant difference of post-tonsillectomy hemorrhage between day-case and in-patient procedure.

## REFERENCES

1. Ahsan F, Rashid H, Eng C, Bennett DM, Ah-see KW. Is secondary hemorrhage after tonsillectomy in adults an infective condition? Objective measures of infection in a prospective cohort. *Clin Otolaryngol* 2007; 32: 24-7.
2. D,Agostino R, Taro V, Calevo MG. Post-tonsillectomy late hemorrhage: Is it a preferably night-time event? *Int J Pediatr Otorhinolaryngol* 2009; 73: 713-6.
3. Windfurh JP, Schloendorff G, Baburi D, Kremer B. Life-threatening post-tonsillectomy hemorrhage. *Laryngoscope* 2008; 118: 1389-94.
4. Alexander RI, Kukreja R, Ford GR. Secondary post-tonsillectomy hemorrhage and informed consent. *J Laryngol Otol* 2004; 118: 937-40.
5. Cohen D, Dor M. Morbidity and mortality of post-tonsillectomy bleeding: analysis of cases. *J Laryngol Otol* 2008; 122: 88-92.
6. Ikram M, Khan M, Ahmad M, Siddiqui T, Mian MY. The histopathology of routine tonsillectomy specimens. Results of a study and review of literature. *Ear Nose Throat J* 2000; 79: 880-2.
7. Hotchkiss KS and Tunkel DE. Effectiveness of adenotonsillectomy in children with mild symptoms of throat infections or adenotonsillar hypertrophy: open randomized controlled trial. *Pediatrics* 2005; 116: 552-5.
8. Adoga AS, Danle N, Maan, Nuhu SI, Embu HY. Safe day case tonsillectomy: experience from a private hospitals in Jos. *J Med Tropics* 2011; 13: 86-9.
9. Al-Kinday SA. Do antibiotics decrease post-tonsillectomy morbidity? *Saudi Med J* 2002; 23: 705-7.
10. Sheahan P, Miller I, Colreavy M, Sheahan JN, McShane D, Curran A. The ultrasonically activated scalpel versus bipolar diathermy for tonsillectomy. *Clin Otolaryng Allied Sci* 2004; 29: 530-4.
11. Schroeder WA. Post-tonsillectomy hemorrhage: a ten-year retrospective study. *Mo Med* 1995; 92: 592-5.
12. Lee WC, Duignan MC, Walsh RM, McRae-Moore JR. An audit of prophylactic antibiotic treatment following tonsillectomy in children. *J Laryngol Otol* 1996; 110: 357-13.
13. Theilgaard SA, Nielsen HU, Sim C. Risk of hemorrhage after outpatient versus inpatient tonsillectomy. *Ugeskr Laeger* 2001; 163: 5022-5.
14. Rabbani MZ, Iqbal Z. Post-tonsillectomy hemorrhage: is day care surgery safe? *J Pak Med Assoc* 2009; 59: 709-12.
15. Farnarzi A and Heydari ST. Prevalence of post-tonsillectomy bleeding as day-case surgery with combination method: cold dissection tonsillectomy and bipolar diathermy hemostasis. *Iran J Pediatr* 2020; 20: 187-92.
16. Raut V. Bipolar scissors versus cold dissection tonsillectomy: a prospective, randomized, multi-unit study. *Laryngoscope* 2001; 111: 2178-82.
17. Blomgren K. A prospective study on pros and cons of electro-dissection tonsillectomy. *Laryngoscope* 2001; 111: 478-82.
18. Ghufloor K. Post-tonsillectomy patient care in the community. *Int J Clin Pract* 2000; 54: 420-3.
19. Blakely BW. Post-tonsillectomy bleeding: How much is too much? *Otolaryngol Head Neck Surg* 2009; 140: 288-90.
20. Iqbal Z, Rabbani MZ, Zafar MJ. Post-tonsillectomy hemorrhage incidence: a comparison between dissection and bipolar diathermy techniques. *Rawal Med J* 2009; 34: 23-5.
21. Kalantar N, Christopher S, Takenhana, Nina L. Outcomes of reduced postoperative stay following outpatient pediatric tonsillectomy. *Int Pediatric Otorhinolaryngol* 2006; 70: 2103-7.
22. Nader Kalantar, Chritopher S, Takehana, Nina L. Outcomes of reduced postoperative stay following outpatient pediatric tonsillectomy. *J Pediatric Otorhinolaryngology* 2006; 70: 2103-7.
23. Qureshi S, Tirmizi S, Sulehri A. Occurrence of post-tonsillectomy hemorrhage in pediatric age group. *Pak J Otolaryngol* 2010; 26: 56-7.
24. Mark F, Hermann BX, Mario S. Occurrence of post-tonsillectomy hemorrhage in Malta: Do pre/peri/post-operative antibiotics influence outcome? *Int J Otorhinolaryngology* 2006; 5:
25. Chee NW, Chan KO. Clinical audit on tonsils and adenoid surgery: is day surgery a reasonable option. *Ann Acad Med Singapore* 1996; 25: 245-50.
26. Naini AS, Bafghi AF, Fatholoomi MR. Incidence of tonsillectomy complications: a 10 year study of 4042 cases. *Tanaffos* 2004; 3: 65-9.

### Corresponding author:

Dr. Muhammad Ismail Khan  
Senior Registrar ENT  
Mufti Mahmood Hospital  
D.I.Khan, Pakistan  
E-mail: drmuhammadismail1976@yahoo.com