

Day Case Tonsillectomy - is it safe? A comparison of day case tonsillectomy with in-patient tonsillectomy

RAFIQ AHMAD, KHURSHID ANWAR*, HAYAT UR REHMAN**, SAMIULLAH***

ABSTRACT

Objective: To determine and compare the frequency of primary and secondary haemorrhage in day-case and in in-patient tonsillectomies.

Methodology: This prospective study was conducted at the Department of ENT, Khalifa Gul Nawaz Teaching Hospital Bannu and District Headquarter Teaching Hospital, Bannu from July 1, 2010 to December 31, 2011. The study included 200 cases. A fitness criterion for day case tonsillectomy was formulated. Patients were divided into two groups; Day case tonsillectomy and Routine case tonsillectomy groups. Data regarding the primary and secondary hemorrhage in the two groups was collected. The results were analyzed using SPSS 16.0 for windows.

Results: A total of 200 cases were included in the study. The mean age was 12.18 years with a standard deviation of +/- 7.131. The male to female ratio was calculated as 1.3:1. In all there were 115 males and 85 females. The DCT group comprised of 90 patients whereas the RCT group consisted of 110 patients. The frequency of Primary haemorrhage in the two groups was 1.1% and 2.7% respectively. The frequency of secondary haemorrhage in the two groups respectively was 1.1% and 1.8%. Statistical analysis showed that there was no significant difference ($p>.05$) with respect to the occurrence of primary and secondary haemorrhage in the two groups.

Conclusion: Day case tonsillectomy is safe option in the carefully selected patients and the rate of complications is no more than in routine in-patient procedure.

Keywords: tonsillectomy, day case tonsillectomy, primary haemorrhage, secondary haemorrhage

INTRODUCTION

Tonsillectomy is defined as the surgical excision of the palatine tonsils and is one of the commonest otolaryngological procedures performed, representing approximately 20 to 40% of surgical procedures performed in ENT¹. Generally tonsillectomy is considered simple but in comparison with other similar operations, it may sometimes result in serious and even fatal haemorrhage². Post-tonsillectomy primary hemorrhage occurring <24 hour after surgery remains the most serious complication of tonsillectomy. Excessive pain, nausea, vomiting, pyrexia and odynophagia are other concerns during this period. Secondary haemorrhage occurs 24 hours after surgery usually during 5th -10th day. Literature reviews suggest primary hemorrhage rates of 1-3% and secondary hemorrhage rates of 0.15-6.4%³. Reported primary post operative bleeding rates for

day stay tonsillectomy vary from 0.6% to 3.5%⁴.

Primary hemorrhage is generally considered to be related to surgical technique whereas factors that influence wound healing contribute to secondary hemorrhage. Mortality from bleeding is 2 in 10,000 tonsillectomies. Most cases of fatal postoperative bleeding occur within the first 24 hours after surgery⁵. The first study describing tonsillectomy as a day case procedure in adults was published in 1968⁶. Day case surgery implies that a patient is admitted for surgical procedure as a treatment or undergoes an invasive diagnostic procedure on a planned non-resident basis but who requires facilities for recovery. All patients of day care surgery are discharged on the same day or within 24 hours after recovery⁷. Day case tonsillectomy, in general, is not considered a routine procedure due to higher risk of postoperative haemorrhage and nausea & vomiting. Many otolaryngologists would not perform this operation on an out-patient basis due to the risk of primary haemorrhage after discharge from hospital. There is an increasing popularity of day surgery these days in an attempt to decrease the risk of hospital acquired infections and lessen economic burden on the patient due to prolonged hospital stay. All over the world different procedures are being carried out as day cases and tonsillectomy has also gained popularity

Assistant Professor, Department of ENT and Head & Neck Surgery, KGNTH/BMC, Bannu.

**Senior Registrar, Department of ENT, Head & Neck Surgery, Hayatabad Medical complex, Peshawar.*

***Assistant Professor, Department of Paediatric Surgery, KGNTH/BMC, Bannu*

****Junior Registrar, Department of ENT and Head & Neck Surgery, KGNTH/BMC, Bannu.*

Correspondence to Dr. Rafiq Ahmad, Assistant Professor, Department of ENT and Head & Neck Surgery, Khalifa Gul Nawaz Teaching Hospital /Bannu Medical College, Bannu, Pakistan E-mail: rafiqahmad917@yahoo.com Cell No: 0331-9249358

as a day care procedure. The incidence of postoperative nausea and vomiting following paediatric surgical procedures is high, and up to 41% of patients may be affected. In a study examining postoperative nausea and vomiting in 16 commonly performed children's operations; adenotonsillectomy had the highest rate (54%)⁸. However, the primary concern with choosing day care tonsillectomy over the traditional approach is the risk of post operative haemorrhage. The aim of the study is to determine the relative safety of day case tonsillectomy with respect to the traditional approach.

METHODOLOGY

This study was conducted at the Department of ENT and Head & Neck Surgery, Khalifa Gul Nawaz Teaching Hospital, District Headquarter Teaching Hospital, Bannu from July 1, 2010 to December 31, 2011. Sample size was 200, and was calculated using 40% proportion of tonsillectomy, 95% confidence level and 6.8% margin of error under WHO software for sample size determination. It was a prospective and comparative study using the non-probability convenience sampling technique.

Inclusion Criteria: Patients >5 years of age and belonging to both sexes in whom indication for surgery was chronic tonsillitis.

Exclusion Criteria:

1. Patients with bleeding diathesis.
2. Patients with acute upper respiratory tract or other systemic infections.
3. Abscess tonsillectomy and patients with episode of acute tonsillitis.
4. Patients with health problems which require admission for monitoring such as diabetes, cardiovascular and pulmonary system disease.

Data Collection Procedure: Informed consent was obtained from all cases. A detailed history was taken. All patients included were having history of recurrent, acute tonsillitis, with more than 6–7 episodes in one year, 5 episodes per year for two years, or 3 episodes per year for three years. Patients were divided into categories based on their suitability and willingness into (1). Day Case Tonsillectomy group (DCT) and (2). Routine Case Tonsillectomy group (RCT). The following criteria were observed while assigning patients to the DCT;

Pre-operative:

- Willingness on part of the patient or parents (in case of children) to undergo day case surgery.
- Patients with no bleeding disorder, co-existing cardiovascular disease or intercurrent fever or sickle cell trait and thalassemia in the family. No history of vomiting, diarrhoeal diseases or both.

- No child with a medical history of obstructive sleep apnoea will be considered for DCT.
- Residence within 20 kilometers of this hospital and the availability of telephone and transport facility and willingness on part of the relatives/parents to report to the hospital whenever required.
- The ability of parents/ and or attendants to understand and be able to carry out instructions in the care of patient at home.
- The availability of trained health personnel at home or in the vicinity and willingness on his part to help the patient when needed.

Per-operative:

- Minimal intra operative blood loss (approximately not more than 200cc in children aged 5-12 years and 300-400cc in adults).
- Surgery duration not > 1 hour.
- Smooth un-eventful recovery from anaesthesia.

Post-operative:

- Monitoring of vital signs half hourly for 2 hours in the immediate post operative period are within normal limits.
- Stable vital signs for at least one hour before discharge.
- Adequate pain control, oral feeding tolerated without nausea and vomiting.
- Absence of pallor, excessive swallowing or abdominal distension, difficulty in respiration and pyrexia.
- Patients were discharged after 8 hours post-operatively.

Patients not fulfilling the pre-defined criteria were excluded from DCT and included in the RCT. Patients in the DCT were instructed to report NBM on the day of surgery. Patients in the RCT were admitted to the ward where they stayed for at least 24 hours post operatively. Patients in both the groups were thoroughly investigated to determine their fitness for the procedure. The following laboratory investigations were carried out, as and when necessary; Complete blood picture, screening for hepatitis B and C, Coagulation profile, urine R/E, CXR, ECG, and echocardiography.

General anaesthesia using intravenous Propofol for induction was used. Muscle relaxants administered to achieve endotracheal intubation. Halothane was used as inhalational anaesthetic for maintenance. The tonsils were bluntly dissected out of their bed and the inferior poles were constantly ligated with silk 1 after cutting with scissors above the clamps. Haemostasis was secured with ligation by silk 1 to the major bleeders and pressure application by packs to stop oozing. Electrocautery was applied to stop minor bleeds that did not stop with pressure

packing. Patients were recovered and observed in the recovery room and in the ward by trained technical and nursing staff. Vital signs were monitored every 15 minutes in the recovery room and half hourly for the first 2 hours and then 2 hourly for the first 8 hours in the ward. Any excessive swallowing, bleeding from the corner of mouth, difficulty in breathing, nausea and vomiting noted and recorded on the chart. Patients were examined by the consultant on discharge from the recovery room and 4-5 hours later in the ward at the end of the theatre hours. Patients in the DCT were examined at the time of discharge by either the consultant or registrar of the unit. DCT patients were instructed to report any bleeding, pyrexia, pain on swallowing, intolerance to food, abdominal distension, difficulty in breathing, excessive nausea and vomiting, pallor & sweating and intolerance to intake of food and fluids. Contacts number of the consultants and registrar were provided to every DCT patient and the need to communicate immediately any untoward development and preparedness to shift the patient back to the hospital when advised were emphasized. In patients were re-examined in the evening, their progress assessed by examining the charts. Appropriate instructions were given to the nursing staff when required. Follow up examinations of both sets of patients by the consultant were made on the 2nd and 10th post-operative days.

All the data regarding age, gender, occurrence of primary or secondary haemorrhage post operative nausea and vomiting was recorded on a proforma. The data was analyzed using spss 16.0 for windows. Descriptive statistics like mean ± standard deviation were calculated for quantitative variables like age and duration of symptoms. Frequency and percentages were calculated for categorical variables like gender, primary and secondary haemorrhage. The frequency of these complications was compared in the two groups and the relative safety of day case tonsillectomy was inferred from the results obtained.

RESULTS

A total of 200 cases were included in the study. The age range was 5-42 years. The mean age was 12.18 years with a standard deviation of +/- 7.131. (Table 1). The male to female ratio was calculated as 1.3:1. In all there were 115 males and 85 females (Table 2). The gender wise distribution of the patients into tonsillectomy groups has been shown in Table 3. There was one case each of the two types of haemorrhages in the DCT in contrast to 3 and 2 in the RCT group as shown in Table 4. The statistical significance of haemorrhages between Day Case and Routine Tonsillectomy groups was found to be non-

significant (p>.05) (Table 5). The frequency of other complications in the Day case and Routine tonsillectomy Groups and their statistical significance are shown in Table 6 & 7 respectively.

Table 1: Descriptive statistics

	Day case tonsillectomy	Routine case tonsillectomy	Total
N	90	110	200
Minimum	5	5	5
Maximum	40	42	42
Mean	11.92	12.39	12.18
Std. deviation	7.093	7.204	7.131

Table 2: The ages of the patients.

Age in years	Day Case Tonsillectomy	Routine Case Tonsillectomy	Total
<=15	69 76.7%	84 76.4%	153 76.5%
16 - 25	16 17.8%	19 17.3%	35 17.5%
26 - 35	4 4.4%	6 5.5%	10 5.0%
36+	1 1.1%	1 .9%	2 1.0%
Total	90 100.0%	110 100.0%	200 100%

Table 3: The gender wise distribution of the patients into Tonsillectomy Groups.

Gender		Tonsillectomy Group		Total
		Day Case Tonsillectomy	Routine Tonsillectomy	
Male	Count	52	63	115
	% within Tonsillectomy Group	57.8%	57.3%	57.5%
Female	Count	38	47	85
	% within Tonsillectomy Group	42.2%	42.7%	42.5%
Total	Count	90	110	200
	% within Tonsillectomy Group	100%	100%	100%

Table 4: The frequency of haemorrhage in the Day Case and Routine Case Tonsillectomy groups

		Day Case Tonsillectomy		Routine Case Tonsillectomy	
		Count	ColumnN%	Count	ColumnN%
Primary Haemorrhage	No	89	98.9%	107	97.3%
	Yes	1	1.1%	3	2.7%
Secondary Haemorrhage	NO	89	98.9%	108	98.2%
	Yes	1	1.1%	2	1.8%

Table 5: statistical significance of haemorrhage between Day Case and Routine Tonsillectomy groups

		Tonsillectomy group	
Primary haemorrhage			
Chi-square		.660	
Df		1	
Sig.		.417	
Secondary haemorrhage			
Chi-square		.167	
Df		1	
Sig.		.682	

Table 6: The frequency of other complications in the Day case and Routine tonsillectomy Groups.

		Day Case Tonsillectomy		Routine Case Tonsillectomy	
		Count	ColumnN	Count	ColumnN%
Post-op nausea & vomiting	No	77	85.6%	95	86.4%
	Yes	13	14.4%	15	13.6%
Difficulty in breathing	No	90	100.0%	110	100.0%
	Yes	0	.0%	0	.0%
Odynophagia	No	19	21.1%	34	30.9%
	yes	71	78.9%	76	69.1%
Intolerance to intake of food	No	86	95.6%	103	93.6%
	Yes	4	4.4%	7	6.4%

Table 7: Statistical significance of other complications in the two groups

		Tonsillectomy group	
Postop nausea & vomiting			
Chi-square		.027	
Df		1	
Sig.		.870	
Difficulty in breathing			
Chi-square		.	
Df		.	
Sig.		.	
Intolerance to intake of food			
Chi-square		.351	
Df		1	
Sig.		.554 ^a	

DISCUSSION

Tonsillectomy is the commonest ENT operation that has traditionally required overnight stay. Any treatment of a disease which can shorten the period of stay in the hospital without any increase in risk is welcome by both the patient and the treating doctor. One of the major driving forces for day care surgery is to reduce the health care cost and the waiting time for inpatient operating list surgery. It requires minimum post operative care which can be given at home with appropriate instruction and does not require overnight stay in the hospital. The benefits of day care surgery include fewer traumas and increase sense of safety to patients, the lifestyle is minimally affected and the patients can return to usual environment thus avoiding hospital routine. The

performance of tonsillectomy as a day case procedure remains controversial with concerns over postoperative morbidity. Complications usually seen with tonsillectomy are related to surgery or anaesthesia. Post tonsillectomy bleeding, primary or secondary and airway distress are the major concerns. Minor bleeding does not require any active measures but major bleeding necessitates control of hemorrhage under general anaesthesia in the operation theatre. Severe post operative pain, dehydration secondary to poor oral intake and the higher rate of post-operative nausea and vomiting after tonsillectomy are other issues that need to be addressed.

Various studies and guidance issued by medical organizations have described an unexpected post-operative admission rate of 1.8% to 4%⁹. The Guidelines set out by the Royal College of Surgeons of England for Day Case Surgery 1985 concluded that tonsillectomy would be unsuitable for day surgery because of the risk of reactionary haemorrhage. Since then, studies have shown that this risk is small, ranging from 0.49–3.9% in the U.K¹⁰. It has also been shown that this reactionary haemorrhage is likely to occur within the first 6–8 hours after the operation, suggesting that discharge after this time would be safe¹¹. However, one study showed a small percentage (0.03%) of bleeding between 8–24 hours post-operatively³. Church JJ in a study 668 patients found that only 1 out of 39 readmissions would have been avoided if all these had been in-patients. These results confirm the safety of day case tonsillectomy¹².

We studied 200 cases of tonsillectomy and compared the occurrence of primary and secondary haemorrhage in the DCT and RCT groups. The frequency of Primary haemorrhage in the two groups was 1.1% and 2.7% respectively. The frequency of secondary haemorrhage in the two groups respectively was 1.1% and 1.8%. Statistical analysis of the results showed that there was no significant difference in the occurrence post operative bleeding in the two groups. The slightly higher but insignificant number of post-operative complications noted in the inpatient group may be due to a keen and close supervision in this group. In the routine case tonsillectomy group, except for haemorrhage which was much emphasized, the other complications such as post-operative nausea & vomiting and odynophagia might have received little importance in the eyes of care givers at home or failure of communication.

In a study of 450 cases by Ismail M and colleagues at DI Khan, involving half the number as day case tonsillectomies, post-tonsillectomy hemorrhage was seen in 12(2.65%) patients; 5(2.2%)

in the inpatient group while (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%). they concluded that tonsillectomy could safely be performed as day-case procedure as there was no significant difference of post-tonsillectomy hemorrhage between day-case and inpatient procedures¹³. Rabbani MZ and colleagues at Shifa International Hospital, Islamabad studied 400 patients divided into equal number of day case and inpatient groups found that post tonsillectomy haemorrhage occurred in 10 patients (2.5%); Four (2%) occurred in day care group while 6 (3%) was seen in the inpatient group. All were secondary haemorrhages. Statistically, there was no significant difference in haemorrhages between the two groups. They concluded that tonsillectomy was safe as daycare procedure¹⁴. In yet another study of 300 cases consisting of equal number of tonsillectomies and controls at Shiraz University Iran, Faramarzi A and colleagues, found 3 cases of post-tonsillectomy bleeding in DCT group and 4 cases in the control group. There was no statistically significant difference in the rate of post-operative hemorrhage between the two groups¹⁵.

In Norfolk and Norwich University Hospital, Norwich, UK Bennett AM and colleagues performed a meta analysis of all adult and paediatric tonsillectomy studies giving the absolute number and timing of all primary haemorrhages found From a 1.4% overall risk of a primary haemorrhage only one in 14 occur after 8h, i.e., 0.1% (95% CI=0.08-0.16%). A total of 833 patients would require to be kept overnight in order to identify one case of bleeding after 8h. They concluded that little benefit was offered by overnight admission from the point of view of monitoring for primary haemorrhage. A case can be made for either day-case tonsillectomy (hospital stay over the period in which 93% of primary haemorrhages would occur) or the 'belt-and-braces' approach of a 1-week stay but current 24-hour admission appears illogical¹⁶.

CONCLUSION

Day case tonsillectomy is safe option and the rate of complications is no more than in routine in-patient procedure. It is advisable to select the patients carefully and observe them in the ward in the immediate post-operative period. The procedure should be offered to only those who fulfill certain safety parameters.

Acknowledgements: We are grateful to Mr. Amjad Khan, Sr. Statistical Officer, CPSP Regional Centre, Peshawar for his help in statistical analysis.

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.
2. D,Agostino R, Taro V, Calevo MG. Post-tonsillectomy late hemorrhage: Is it a preferably nighttime event? *Int J Pediatr Otorhinolaryngol* 2009;73: 713-6.
3. Tewary AK. Day-care tonsillectomy: a review of the literature. *J. Laryngol.Otol.* 1993; 107: 703-5.
4. Postma DS, Folsom F. The case for an outpatient approach for all pediatric tonsillectomies and/or adenoidectomies: a 4 year review of 1419 cases at a community hospital. *Otolaryngol. Head Neck Surg.* 2002; 127: 101-8.
5. Alexander RI, Kukreja R, Ford GR. Secondary post-tonsillectomy hemorrhage and informed consent. *J Laryngol Otol* 2004; 118: 937-40.
6. Chiang TM, Sukis AE, Ross DE. Tonsillectomy performed on an outpatient basis. Report of a series of 40,000 cases performed without a death. *Arch Otolaryngol* 1968;88: 307-10
7. Dawson B, Reed WA: Anaesthesia for adult surgery outpatients. *Can Anaesth Soc J* 1990; 87: 1409-11.
8. Ewah BN, Robb PJ, Raw M. Postoperative pain, nausea and vomiting following paediatric day-case tonsillectomy. *Anaesthesia* 2006;61(2):116-22.
9. Ganesan S, Prior AJ, Rubin JS: Medical Audit: Unexpected overnight admissions following day-case surgery: an analysis of a dedicated ENT day care unit. *Ann Royal Coll Surg England* 2000; 82: 327-30.
10. Kendrick D., Gibbin K. An audit of the complications of paediatric tonsillectomy, adenoidectomy and adenotonsillectomy. *Clin Otolaryngol* 1993; 18: 115.
11. Hellier WP, Knight J, Hern J, Waddell T. Day case paediatric tonsillectomy: a review of three years experience in a dedicated unit. *Clin. Otolaryngol* 1999; 24: 208–212.
12. Church J.J. Day case tonsillectomy in children. *Ambulatory Surgery.*1999; 7: 17- 19
13. Ismail M, Amanullah A, Rasheed S. Post-Tonsillectomy Hemorrhage Incidence: Comparison between Day Case And Inpatient Surgery. *Gomal Journal of Medical Sciences* January-June 2012;10(1):59-62
14. Rabbani MZ, Iqbal Z, Zafar MJ. Post Tonsillectomy Haemorrhage: "Is day care surgery safe?" *J Pak Med Assoc* 2009;59(10):709-12.
15. Faramarzi A, Heydari ST. Prevalence of Posttonsillectomy Bleeding as Day-case Surgery with Combination Method; Cold Dissection Tonsillectomy and Bipolar Diathermy Hemostasis. *Iran J Pediatr* 2010;20 (2):187-92.
16. Bennett AM, Clark AB, Bath AP, Montgomery PQ. Meta-analysis of the timing of haemorrhage after tonsillectomy: an important factor in determining the safety of performing tonsillectomy as a day case procedure. *Clin Otolaryngol* 2005;30(5):418-23.

