

## Is Daycare Tonsillectomy Safe?

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### Abstract

#### Introduction:

Tonsillectomy is one of the most common procedures performed by Ear, Nose, and Throat surgeon. Usually, the procedure is carried out as an inpatient surgery. With the increasing need to reduce healthcare costs, spare precious hospital beds, and shorten elective surgery lists, there is currently a trend towards performing tonsillectomy on a daycare basis.

#### Materials and Methods:

A prospective review of all tonsillectomies performed at the University Malaya Medical Center was undertaken for the year 2013. Demographic details, qualifying indications, and complication rates were evaluated.

#### Results:

There was no incidence of primary hemorrhage among the 96 tonsillectomies performed. There was no significant correlation in terms of secondary hemorrhage between inpatient and day-case tonsillectomy ( $P=0.54$ ). Only two patients required revision surgery to stop post-tonsillectomy bleeding. None of the patients required blood transfusion, and there were no mortalities.

#### Conclusion:

Daycare tonsillectomy is safe as long as the patient is carefully selected. Both medical and social aspects should be taken into consideration. A post-operative observation period of at least 6 to 8 hours is important. The surgeon should personally review the patient post-operatively and decides if he or she should be hospitalized for observation, or safe for discharge.

#### Keywords:

Daycare, Hemorrhage, Post-tonsillectomy bleeding, Tonsillectomy.

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## **Introduction**

Tonsillectomy is one of the most common procedures performed by ear, nose, and throat (ENT) surgeons. In the US, an estimated 340,000 tonsillectomies are performed annually (1). Fujihara et al. estimated that tonsillectomies have been performed in approximately 0.09% of the pediatric population in Wakayama Prefecture, Japan compared with a rate of 10% among children in the US and 40% in the UK (2–4).

Tonsillectomy is generally performed as an inpatient surgery because of concerns regarding post-tonsillectomy hemorrhage. However, with the current emphasis on healthcare costs, considerable effort is being made to reduce the expense of these procedures, and tonsillectomy is now performed as day-case surgery in many major medical centers (5–8). Furthermore, daycare tonsillectomy shortens patient waiting lists for elective surgery. Daycare tonsillectomy has long been performed in Western countries and is found to be safe (9,10). In Malaysia, results from Nurliza et al. showed that there was no cases of bleeding following daycare tonsillectomy (11). We therefore conducted this study to investigate the safety of day-case tonsillectomies.

## **Materials and Methods**

All the patients who underwent tonsillectomy at the University Malaya Medical Center (UMMC) in 2013 were recruited. Patients were followed-up 2 weeks post-operatively, and then contacted by telephone at 1 month in the post-operative period to determine if any complications had occurred. Complications that were considered major included primary hemorrhage, secondary hemorrhage requiring surgical intervention, and hemorrhage requiring transfusion. Minor complications included fever, post-operative pain, secondary hemorrhage not requiring surgical

intervention, presence of blood-stained saliva, and poor oral intake requiring admission.

The criteria for daycare tonsillectomy strictly followed the guidelines of the day surgery unit and included patients over the age of 4 years only. Those patients who fulfilled the inclusion and exclusion criteria underwent daycare tonsillectomy if they gave consent. No randomization was performed. Inclusion criteria were 1) Patient above 4 years of age; 2) Patient considered medically fit after assessment by the anesthetist; 3) Presence of a guardian at home who could arrange immediate hospitalization of the patient in case of emergency. Exclusion criteria were 1) Presence of obstructive sleep apnea; 2) Patient with uncontrolled medical illness (including asthma, hypertension, diabetes); 3) Syndromic patient (including Down's syndrome); 4) Patient with bleeding diathesis.

Primary hemorrhage was defined as bleeding that occurred within 24 hours of the operation, while secondary hemorrhage occurred subsequently. A patient below the age of 12 was considered a child. Patients were considered febrile if their temperature rose above 38 °C or if they were prescribed antibiotics for fever by the physician. Data were analyzed using SPSS version 20. Fisher's exact test was used to compare the rate of post-tonsillectomy hemorrhage between daycare and inpatient tonsillectomies. A value of  $P < 0.05$  was considered statistically significant. The small samples size for daycare tonsillectomy in this study might affect the accuracy of the statistical tests.

## **Results**

There were 90 inpatient tonsillectomies performed in 2013, 84 of which were audited. Six inpatient cases were either defaulters or had incomplete data. In addition, 12 day-case tonsillectomies were performed, all of which were audited.

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Overall, among inpatient and day-case tonsillectomies, there were 55 adults (57.3%) and 41 children (42.7%).

Regarding inpatient tonsillectomy, 46.4% were performed in the pediatric population. Patients aged 13–24 years and 25–36 years represented 21.4% and 22.6%, respectively,

of inpatient tonsillectomies. The ages of the patients undergoing daycare tonsillectomy ranged from 4 to 32 years, of whom only 16.7% were considered pediatric. The majority of the daycare tonsillectomies were performed in adolescents and young adults (Table. 1).

**Table 1:** Demographic data for inpatient and daycare tonsillectomy.

		Inpatient, N (%)	Daycare, N (%)
Age group (in years)	≤12	39 (46.4%)	2 (16.7%)
	13–24	18 (21.4%)	5 (41.7%)
	25–36	19 (22.6%)	5 (41.7%)
	37–48	3 (3.6%)	0
	49–60	1 (1.2%)	0
	61–72	4 (4.8%)	0
Time (in min)	≤30	22 (26.2%)	7 (58.3%)
	31–60	50 (59.5%)	5 (41.7%)
	61–90	10 (11.9%)	0
	91–120	2 (2.4%)	0
Indication for surgery	Recurrent tonsillitis	52 (61.9%)	10 (83.3%)
	Previous quinsy	1 (1.2%)	0
	Obstructive sleep apnea	23 (27.4%)	0
	Malignancy	4 (4.8%)	0
	Tonsillar hypertrophy	4 (4.8%)	2 (16.7%)

The two main indications for inpatient tonsillectomies were recurrent tonsillitis and obstructive sleep apnea, accounting for 61.9% and 27.4% of tonsillectomies, respectively. Other indications for surgery were previous quinsy, malignancy and tonsillar hypertrophy. In total, 83.3% of daycare tonsillectomies were performed for recurrent tonsillitis.

There were no major complications among daycare tonsillectomies. No patients had primary bleeding post-tonsillectomy. Only one patient presented with blood-stained saliva, and none required surgical intervention to secure hemostasis. One patient had to be hospitalized for observation as the surgeon encountered poor plane

during dissection and complications were anticipated (although not realized). None of the patients who experienced fever or poor oral intake required admission.

Among inpatient tonsillectomies, there were two patients (2.4%) with major complications. Both presented with secondary bleeding which required surgical intervention to secure the bleeding. The overall incidence for secondary hemorrhage was 6%, among which two patients required revision surgery and three cases resolved spontaneously. Seven patients had minor complications. Four patients experienced complications of fever, three experienced a secondary bleed which stopped spontaneously and one patient had poor oral

intake (Table. 2). No patients had a primary hemorrhage.

Statistical analysis concluded that there was no association in post-tonsillectomy hemorrhage between the inpatient and day-case surgery groups ( $P=0.54$ ).

**Table2:** Complications rate among inpatient and daycare tonsillectomy.

Complications	Inpatient N (%)	Daycare N (%)
Primary hemorrhage	0	0
Secondary hemorrhage	5 (6.0%)	1 (8.3%)
Fever	4 (4.8%)	0
Poor oral intake	1 (1.2%)	0
Re-admission	4 (4.8%)	1 (8.3%)*
Revision surgery	2 (2.4%)	0

\* Direct hospitalization for observation post-tonsillectomy in daycare

### Discussion

Bluestone reported that 60% of tonsillectomies in US were performed in children (12). However, a publication by Ranjit et al. reported only 15.6% of tonsillectomies in Singapore were carried out in children (13), possibly due to a reluctance on the part of Asian parents for their children to undergo surgery. From our audit, we had almost equivalent numbers of adult and pediatric patients.

The age distribution for patients undergoing daycare and inpatient surgery was slightly different. The majority of inpatients were of pediatric age, whereas for daycare surgery, most were teenagers and young adults. This can be largely attributed to the attitude of parents who prefer their children to stay in hospital for continuation of care after surgery. On the other hand, teenagers and young adults tend to be those without any other medical illness and they are more confident in taking care of themselves and are able to understand instructions well. Therefore,

these are the groups that tend to prefer daycare surgery, as this will minimize inconvenience to their daily routines.

The indication for surgery in our center did not differ from the publication by Ranjit et al. in Singapore (13). According to Ranjit et al., 76.8% of cases were performed for recurrent tonsillitis and 10.2% of tonsillectomies were done in conjunction with surgery for obstructive sleep apnea. This is consistent with a publication by Ahmad et al. regarding data in Tengku Ampuan Afzan Hospital (14).

The main concern over daycare tonsillectomy is safety. Ranjit et al. published data regarding post-tonsillectomy complications from their Singapore study (13), and reported a primary and secondary bleeding rate of 0.6% and 7.1%, respectively. We had no cases of primary hemorrhage among either daycare or inpatient tonsillectomies. However, the incidence of secondary hemorrhages was 6% and 8.3% for inpatient and day-case surgery, respectively. According to the statistical analysis, there was no association in terms of secondary hemorrhage between tonsillectomies performed on an inpatient or a daycare basis ( $P=0.54$ ). Therefore, we can conclude that it is safe to perform tonsillectomy as daycare surgery as long as patients are carefully selected based on medical and social criteria. An audit performed by Chee et al. in Singapore concluded that day surgery would not add to the risk inherent in a tonsillectomy (15). A literature review of recent daycare tonsillectomy studies showed a low hemorrhage risk, with a published incidence of hemorrhage ranging from 0.4 to 6.27% (16–19). Tewary noted that the risks of tonsillectomy can be minimized through careful patient selection (20). Day-case surgery was contraindicated in those with major heart disease, airway disorders, bleeding diatheses, and mental

retardation. Social criteria such as adult supervision and easy access to hospital were deemed important. Travelling time for the patient to reach the hospital should not exceed 30 minutes. Patients and carers should also understand what complications to look for and be confident in taking care of themselves at home.

Ranjit et al. reported two cases of primary hemorrhage in their study, and in both cases, the indication for surgery was obstructive sleep apnea (13). Therefore, tonsillectomy undertaken for obstructive sleep apnea should not be performed as a daycare surgery. We have taken this precaution and excluded patients with obstructive sleep apnea from daycare tonsillectomy.

According to Gabalski et al., specific medical conditions that automatically eliminated patients as candidates for ambulatory surgery include morbid obesity, sleep apnea, Pickwickian syndrome, airway compromise (as in mucopolysaccharidoses or craniofacial anomalies), congenital heart disease, previous anesthesia complications, and mental retardation (21). Patients with abnormal coagulation studies or known coagulopathy were deemed ineligible for outpatient surgery. Medical problems that may render patients ineligible include patients with severe asthma who are on regular medications, diabetes, coagulation disorders, sickle cell disease, epilepsy and other diseases that may require an overnight stay.

Monitoring time is crucial for daycare tonsillectomy. Moralee et al. reported a 0.8% rate of primary bleeding, all of which occurred within 8.4 hours post-surgery (22). According to Gabalski et al., a post-operative observation period of 6 hours is excessive and can be reduced to 4 hours (17). However, we still recommend that patients undergoing daycare tonsillectomy are observed up to at least 6–8 hours post-

surgery and reviewed by the surgeon before being discharged home. The surgeon should not hesitate to admit the patient for observation if deemed necessary.

The advantages of daycare tonsillectomy are reduced costs, sparing inpatient beds and operating theaters, as well as enabling patients to recover at home and avoid the risk of cross infection (23). Daycare tonsillectomy will also bring minimal interruption to patients' daily routines. When it is more commonly performed, parents would prefer their child to rest and recover at home rather than in an unfamiliar hospital.

We understand there are a few limitations in our study, including the limited number of daycare tonsillectomies. However, we hope that this publication will encourage more centers to carry out daycare tonsillectomies and to publish their data in the future.

### **Conclusion**

Daycare tonsillectomy is an alternative to inpatient surgery in view of rising healthcare costs and pressures on inpatient beds. Post-tonsillectomy complications are rare. We reported no primary hemorrhage in our audit. We conclude that daycare tonsillectomy can be safely performed, provided the patient is carefully selected based on medical and social considerations. Post-operative monitoring period and review by the surgeon are both important in anticipating possible bleeding cases and these cases should be admitted for observation.

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