



Research Paper

Day-case tonsillectomy in children: Experience from a Teaching Hospital in Jordan

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ABSTRACT

Objectives: This study has been conducted for the first time in Jordan to investigate safety issues relating to day-case tonsillectomies in children and to study the post-operative complication rate compared to tonsillectomies carried out with inpatient admission to hospital.

Materials and methods: Retrospective review of medical charts of 419 pediatric patients who had undergone tonsillectomies. Patients were divided into two groups, with 103 patients in the inpatient group and 316 patients in the day-case group. A comparison is made between the clinical and demographic data of the patients studied and the postoperative complication rate.

Results: The two main indications for tonsillectomy in all patients were recurrent infection and tonsillar hypertrophy. For instances of day-case tonsillectomy, only one patient had secondary post-tonsillectomy bleeding (0.32%); likewise, there was only one case of this reported for the inpatient group (1%), and there were no cases of reactionary hemorrhage reported in either groups. Statistical analysis failed to show a significant association between the inpatient and day-case surgery groups ($P > 0.05$) in terms of post-tonsillectomy bleeding.

Conclusion: We found day-case tonsillectomy to be a safe procedure in children if the inclusion and exclusion criteria followed properly. The observation time following tonsillectomy is crucial to avoid the postoperative complications.

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1. Introduction

Tonsillectomy is one of the most common Ear, Nose and Throat (ENT) procedures performed, representing 20–40% of the surgical procedures performed by ENT surgeons [1]. Tonsillectomy is generally performed as an inpatient surgical procedure involving hospitalisation, and the main concern with regard to the operation is the risk of post-tonsillectomy bleeding.

Day-case surgery (outpatient surgery) has begun to gain acceptance and popularity in many parts of the world due to the rapid recovery rate after surgery in addition to economic concerns which favour day surgery procedures due to the associated significant cost reduction [2]. While high outpatient tonsillectomy rates are reported in the USA (89%), Canada (67%) and Belgium (93%) [3],

most patients in Jordan and other Arabic countries undergo tonsillectomy as inpatients. This study is the first in Jordan to examine the safety of day-case tonsillectomies among children and to study the postoperative complication rate compared to that for tonsillectomies carried out with inpatient admission in hospital.

2. Materials

This study involved a retrospective review of the medical charts of 419 pediatric patients who underwent tonsillectomy in the period from January 2014–May 2018 in a university Teaching Hospital in the southern provenance of Jordan (Al-Karak hospital). This study was conducted by a group of surgeons using the same operative procedure and the same post-operative protocol for the follow-up and management of patients.

2.1. Operative procedure and postoperative follow up

In all patients, the tonsillectomy was performed by dissection, without infiltration of local anaesthesia, using cold instruments for

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dissection and ligation of the lower pole; hemostasis was secured by packing + bipolar cautery. Tonsillectomy was performed alone or in combination with other surgical procedures, such as adenoidectomy and/or myringotomy + grommets during the same operation. Surgery was performed early in the morning in each case and always by a senior surgeon. All patients observed in the day case unit postoperatively for at least four to 6 h and examined by the ENT Surgeon before discharging from the unit.

2.2. Data analysed

The following data were recorded on the retrospective reviews of the medical charts for each child:

- Age at the time of the operation and gender;
- Indication for tonsillectomy;
- Concomitant disease;
- Mode of hospitalisation: outpatient or conventional inpatient;
- Development of early or late postoperative complications, re-operation;
- Secondary readmission.

The criteria for day-case tonsillectomy followed the guidelines of the day surgery unit. Inclusion criteria included:

- 1) Patients over the age of three years,
- 2) Patient considered medically fit for surgery after assessment by the anaesthetist and 3) Availability of good day home care and home not situated too far from the hospital [3,5].

Exclusion criteria included: 1) Patients age under three years 2) Presence of obstructive sleep apnoea; 3) Patient with uncontrolled medical illness (including asthma, hypertension, diabetes, heart disease, severe allergy); Trisomy 21 or facial dysmorphism; 4) Patient with bleeding tendency 5) Family factors which meant the patient was at risk (including low level of education of the parents, parental refusal, home situated far from the hospital, no family care, no telephone at home); [3,5].

3. Methods

Statistical analysis was conducted using Statistical Package for Social Science (SPSS, version 20). A Chi-square test was used to compare frequencies and an independent sample t-test was used to compare means. A p-value of less than 0.05 was considered statistically significant.

4. Results

A total number of 419 patients underwent tonsillectomy in a Jordanian Teaching Hospital during the period January 2014–May

2018. There were 103 inpatient cases involving conventional hospitalisation and 316 outpatient cases. All the patients were children of less than 12 years of age. For the inpatient cases, 67 were males and 36 females; the mean age was 5.2 years. For the outpatient cases, 207 were males and 109 were females with a mean age of 5.8 years. Clinical and demographic data for patients are shown in Table 1.

The two main indications for tonsillectomy in all patients were recurrent infection and tonsillar hypertrophy. In total, 55% of the day-case tonsillectomies were performed due to recurrent tonsillitis. For the day-case tonsillectomies, none of the patients had obstructive sleep apnoea while only one patient from the inpatient group had obstructive sleep apnoea as an indication for tonsillectomy.

In the cases of day-case tonsillectomy, only one patient had secondary post-tonsillectomy bleeding on day 10 post-operatively and this patient required re-admission and hemostasis was secured under general anaesthesia in the operating theatre; the patient was treated with I.V. antibiotics for five days as a case of secondary bleeding due to infection. From among the inpatient group, one patient had secondary bleeding on day 6 post-operatively and required re-admission and control of bleeding under general anaesthesia in the operating theatre. Neither of the two patients required a blood transfusion.

Regarding other post-operative complications, one patient from the day-case group required re-admission due to poor oral intake, and he was rehydrated on re-admission. Among the inpatient group, none of the patients had any other complications. In particular, none of the patients from either group presented with primary hemorrhage. The overall incidence of secondary hemorrhage in day-case tonsillectomies was less than 1% (0.32%), and in the inpatient group, almost 1%, as stated in Table 2.

No significant correlation was observed between postoperative complications and the children's ages or genders or the indication for tonsillectomy, and there was no association between either the inpatient of the day-case group and post-tonsillectomy haemorrhage ($P > 0.05$) (Figs. 1–3).

5. Discussion

Tonsillectomy is commonly performed in pediatric age groups [4] but it is also performed, to a lesser degree, on teenagers and

Table 2
Post-tonsillectomy complications according to type of surgery.

	Inpatient, N (%)	Daycase, N (%)
Sample sizes	103	316
Primary hemorrhage	0	0
Secondary hemorrhage	1 (1%)	1 (0.32%)
Fever	0	0
Pool oral intake	0	1 (0.32%)
Re-admission	1 (1%)	2 (0.64%)
Revision surgery	1 (1%)	1 (0.32%)

Table 1
Demographic data for inpatient and day-case tonsillectomy.

		Inpatient, N (%)	Daycare, N (%)
Age group (in years)	3–4.5	42 (40.7%)	75 (23.7%)
	5–6.5	43 (41.7%)	163 (52%)
	7–8.5	11 (10.6%)	31 (9.8%)
	9–10.5	7 (7%)	33 (10.4%)
	11–12.5	0	14 (4.4%)
Indication for surgery	Recurrent tonsillitis	52 (50.4%)	175 (55.3%)
	Tonsillar hypertrophy	51 (49.5%)	140 (44.3%)
	Obstructive sleep apnea	0	1 (0.3%)
Type of surgery	Tonsillectomy alone	47 (45.6%)	165 (52.2%)
	Adeno tonsillectomy	53 (51.5%)	141 (44.6%)
	Adeno tonsillectomy + myringotomy	3 (3%)	10 (3.2%)

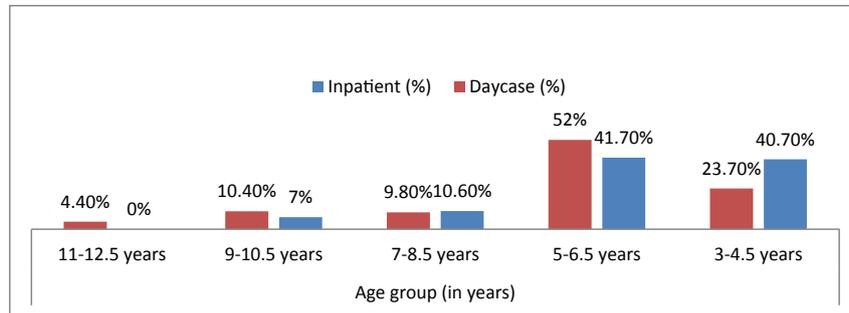


Fig. 1. Age group for inpatient and day-case tonsillectomy.

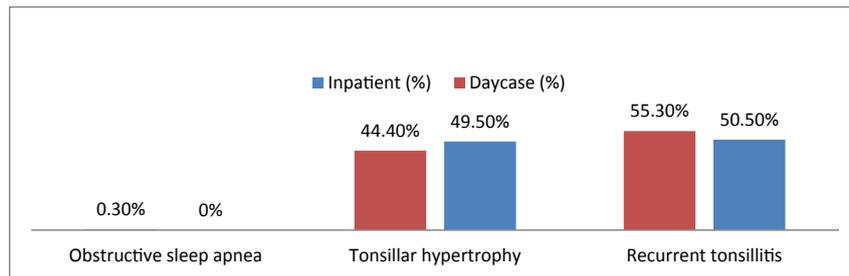


Fig. 2. Indication for surgery for inpatient and day-case tonsillectomy.

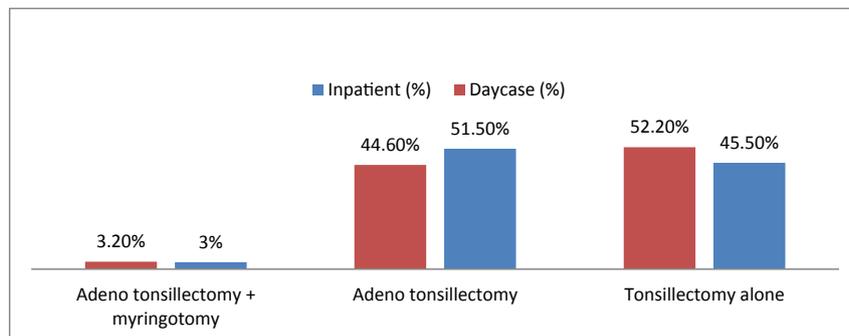


Fig. 3. Type of surgery for inpatient and day-case tonsillectomy.

young adults. In this series of 419 tonsillectomies in children, the outpatient surgery rate was 75% and the main indication for tonsillectomy was recurrent tonsillitis (55%) which is similar to the data for other studies [5].

Hemorrhage is still the most commonly reported complication of post-tonsillectomy in the literature [6]. It is divided into two main types according to the onset of occurrence; primary, within 24 h after surgery and secondary occurring >24 h, commonly 5–10 days after the operation.

Primary hemorrhage is generally related to the surgical technique used whereas secondary hemorrhage is usually related to factors affecting the oropharyngeal healing like infection [6]. In our study, for the day-case group, the overall rate of secondary hemorrhage was less than 1% (0.32%), and, for the inpatient group, it was 1%. We had no cases of primary hemorrhage for either day-case or inpatient tonsillectomies; thus, our results were lower than the published rates, and there was no association in either the inpatient or day-case patient group with post-tonsillectomy hemorrhage. Ranjit et al. reported a primary and secondary hemorrhage rate of 0.6% and 7.1%, respectively [7]. Earlier research found a 16.9% secondary hemorrhage rate in 200 patients [8]. However, Blakley,

found that post-tonsillectomy hemorrhage rates of about 5% are typical [9]. Lower rates of hemorrhage ranging from 0.4 to 6.27% have also been published [10,12].

A review of the literature showed that reactionary hemorrhage before 24 h is rare and generally occurs in the first 6 h following tonsillectomy [11]; for this reason, observation of patients in our day-case unit is done for at least four to 6 h postoperatively, and the patient's tonsillar fossa is examined before discharge. The technique used for removing the tonsils has an effect on the rate of complications in particular for rates of reactionary hemorrhage. We use a relatively safe technique in our centre: a method combining cold dissection tonsillectomy and bipolar diathermy hemostasis. The safety of this technique has been tested and proved by other researchers in the literature [12].

Careful patient selection is important to minimise the risks of tonsillectomy; day-case surgery is contraindicated in patients younger than three years, in those with major heart disease, airway disease and hemorrhage diathesis [5]. Social factors like absence of home care, presence of the home far away from the hospital (greater than 1 h's drive) and absence of a family car are all factors which put the patient at risk and are considered a contraindication

for day-case surgery. While recent research found that all elective tonsillectomy patients should be considered for day-case surgery, patients aged two years or less, if the indication for surgery was neoplasm or quinsy and the patient has an American Society of Anaesthesia score of more than two should be excluded [13].

In their study, Ranjit et al. cited two cases of primary hemorrhage and, in both cases, the indication for surgery was obstructive sleep apnoea [7]. Researchers consider OSAS as a contraindication for day-case tonsillectomy due to increased intraoperative respiratory risk in the case of severe OSAS in children [14]. For this reason, none of our patients in day-case tonsillectomy had OSAS. Although many surgeons advocate an overnight stay for patients with OSAS and the practice of keeping these patients in overnight for saturation monitoring is widely undertaken, supporting evidence is still inconclusive [15].

Day-case tonsillectomy practice has increased worldwide with significant applicability and cost-effectiveness [16]. The advantages of day-case tonsillectomy include reduced cost, sparing more inpatient beds and allowing patients to recover at home beside family members in addition to avoidance of the risk of cross-infection [11].

5.1. Study limitations

There are few limitations in our study, including the small number of patients in the inpatient group which might affect the statistical significance between the different age groups in the inpatient group. The retrospective design of the study is another limitation as all information regarding the patients history depends on the reliance of the medical charts of patients. The other limitation is that not all patients underwent tonsillectomy in our institute included as only patients operated with the same surgical procedure enrolled in this study. However, despite these limitations, this is the first study investigate the safety of day-case tonsillectomy in Jordan and thus the results of this study could encourage other Otolaryngologist in our country and other countries in the Middle East to shift into Day-case tonsillectomy as anew practice and to share their institutions experience.

6. Conclusion

Although many studies in the literature have been published concerning the feasibility of day-case tonsillectomy, the results of our study show that day-case tonsillectomy is a safe procedure in children, in cautiously selected patients based on medical and social considerations using a safe surgical technique. Monitoring time following tonsillectomy is crucial and should be for at least four to 6 h postoperatively. ENT surgeons should make the decision about whether to continue the patient on the day-case pathway or to shift them to an inpatient stay according to the patient situation.

Ethical approval

Ethics approval was granted by the ethics committee at Mutah University (number 201831).

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Author contribution

Hani Al-Shagahin is the corresponding author of the manuscript and responsible for study concept or design, data collection, data analysis or interpretation, writing the paper and finalization.

Osameh AlBtoush was responsible for data collection, data analysis or interpretation, writing the paper.

Badi Alrawashdeh was responsible for data collection and data analysis.

Zaid Alsunna was responsible for data collection and formatting the manuscript.

Suheir Ababseh was responsible for data interpretation and analysis.

Conflict of interest statement

There are no conflicts of interest.

Guarantor

Hani Al-Shagahin is the Guarantor of the research.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.ijso.2019.04.002>

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