

## Paediatric ENT day surgery Is it safe practice?

Saad Mohamad Asiri<sup>a,\*</sup>, Yasser A. Abu-Bakr<sup>a</sup>, Fatmia Al-Enazi<sup>b</sup>

<sup>a</sup> Department of Otolaryngology, Security Forces Hospital, P.O. Box 3643, Riyadh 11481, Saudi Arabia

<sup>b</sup> ENT Department, King Abdulaziz, University Hospital, Riyadh, Saudi Arabia

Received 27 February 2005; accepted 5 June 2005

Available online 12 May 2006

### Abstract

Day-case surgery is convenient and safe allowing patients to have the appropriate medical service without long waits. The issue of safety has been extensively studied and presented in the literature. In this paper, the Security Forces Hospital experience with otolaryngology day-surgery cases is presented.

**Objective:** To evaluate the rate of complications and their timing and to assess the safety of day-surgery procedures.

**Methods:** A total of 300 children undergoing tonsillectomy, adenotonsillectomy, adenoidectomy, myringotomy, and other minor surgeries (e.g. reduction of fracture nasal bone, foreign body removal, etc.) were observed. Post-operatively after recovery from anaesthesia, a number of parameters were recorded at intervals of 15 min for the first 4 h, 30 min for the following 3 h, and hourly until discharge. Bleeding was considered to have occurred only if medical attention was required.

**Results:** In the evaluation of *haemorrhage* as an important complication, nine cases (3%) bled in the first 6 h (six following adenoidectomy and three following tonsillectomies) after day-surgery procedures, while six cases bled after 3 days (2%). Results were compared with post-operative haemorrhage after operations done in the main OR and there it was reported in 11 out of 101 cases in whom adenotonsillectomy was performed: only one patient (1%) needed control in the OR.

**Conclusion:** Post-operative complications after day-surgery procedures are comparable to that after main OR procedures. The common paediatric ENT procedures, e.g. adenoidectomy, tonsillectomy, adenotonsillectomy, and myringotomy, can be done safely as day-case procedures in a busy hospital.

© 2006 Published by Elsevier B.V.

**Keywords:** Adenoidectomy; Bleeding; Day surgery; ENT procedures; Safety; Tonsillectomy

### 1. Introduction

Elective day surgery has become an integral part of otolaryngology practice because it is less disruptive to the life of the patient and requires less psychological preparation which is particularly important for the paediatric population. The paediatric ENT procedures, i.e. adenotonsillectomies, are becoming the commonest procedure performed either as an in-patient or as a day case. Studies have shown that after

the first 6–8 h, morbidity is very low allowing the patient to be discharged home [1–3].

In fact, there is a trend to discharge patients even sooner than 6 h [4,5].

Most of these studies are North American and mainly focus on the risk of reactionary haemorrhage.

As the vast majority of complications occurred in the first few hours after operation, the potential for undertaking day-case adenotonsillectomy is therefore clear.

### 2. The aims of this study

To evaluate the rate of complications and their timing and to assess the safety of day-surgery procedures in relation to

\* Corresponding author. Tel.: +966 1 4774480x2312;

fax: +966 1 4774480x2318.

E-mail address: vbakr2@diginet.sa (S.M. Asiri).

Table 1  
Age and number of children entered into the study

Age	Number (%)
<12 months	8 (2.6%)
12–24 months	22 (7.4%)
2–6 years	180 (61%)
6–13 years	90 (30%)
Total	300 (100%)

the occurrence of haemorrhage, fever, and emesis in the early post-operative period.

### 3. Materials and methods

This is a prospective study carried out for 8 months from April to October 2001.

A total of 300 children undergoing tonsillectomy, adenotonsillectomy, adenoidectomy, myringotomy, and other minor surgeries (e.g. reduction of fracture nasal bone, foreign body removal, etc.) were observed.

All operations were performed under general anaesthesia. The duration of operation ranged from 15 to 75 min. Post-operatively after recovery from anaesthesia, a number of parameters were recorded. These included pulse rate, vomiting, temperature, analgesia given, and signs of bleeding (i.e. increased pulse and hypotension). Observations were undertaken at intervals of 15 min for the first 4 h, 30 min for the following 3 h, and hourly until discharge. Bleeding was considered to have occurred only if medical attention was required and was classified as minor “no surgical action taken”, or severe “patient returned to the operating room”. All patients were discharged home 3–6 h post-operatively except tonsillectomy patients who were kept in the hospital overnight and discharged home the following morning.

### 4. Results

The number of children operated on was 300 [122 boys (40.7%) and 178 girls (59.3%)]. Their ages ranged from 11 months to 13 years (Table 1). The most common paediatric ENT procedures encountered are shown in Table 2.

Twenty-eight children with medically controlled diseases, e.g. asthma (16), sickle cell trait (11), and coagulopathies (1), were included.

### 5. Post-operative complications

Table 3 demonstrates the overall complications which included haemorrhage, fever, vomiting, and the period of observation.

In the evaluation of *haemorrhage* as an important complication, nine cases (3%) bled in the first 6 h (six following

Table 2  
ENT procedures in day surgery and main OR, numbers, and percentages

Type of operation	Day surgery	%	Main OR	%
Adenoidectomy	52	18	33	23.40
Tonsillectomy	70	23	34	24.11
Adenotonsillectomy	106	35	34	24.11
Myringotomy + tubes	45	15	29	20.57
Minor surgery (e.g. foreign body removal, microlaryngoscopy, reduction of fracture nasal bone, limited septoplasty, etc.)	27	9	11	7.80
Total	300	100	141	100

Table 3  
Complications in day-surgery cases and time observed with number and percentage

Complications	6 h	12 h	24 h	3 days	>3 days	Number (%)
Haemorrhage	9	0	0	0	6	15 (5%)
Fever	32	14	0	0	0	46(15.33%)
Vomiting	87	14	2	0	0	103(34.33%)

adenoidectomy and three following tonsillectomies). The bleeding was minor in all cases except for one tonsillectomy that needed re-admission from the recovery room and haemostasis performed under general anaesthetic. In addition to the above, six cases bled after 3 days (2%) but the bleeding was minimal and a conservative approach (bed rest, analgesics, antibiotics, and fluids) was enough to manage them (Table 4).

*Fever* was recorded in 46 children (15.3%), and in most of these cases, it subsided within 24 h. Fever was generally low grade. Only in 2.8% of the adenotonsillectomy group and in 1.3% of the adenoidectomy group the temperature was around 38 °C. All children were afebrile on discharge. *Vomiting* was observed in 103 children (34.3%) (Table 3).

Results were compared with post-operative haemorrhage following 141 of the same procedures done in the main OR during the same period. The reason for operating in the main OR was general medical problems (e.g. asthma, cardiac, etc). Operation types are shown in Table 2. Eighteen cases underwent adenoidectomy, 15 adenoidectomy and ventilation tubes, 20 cases adenotonsillectomy, 14 cases adenotonsillectomy with ventilation tube insertion, 6 cases microlaryngoscopy, 2 cases limited septoplasty, and 3 cases foreign body removal. Forty-eight cases had bronchial asthma, 6 had epilepsy, and 24 cases had other/unknown medical problems. Haemorrhage was reported in 11 cases. In four cases (3.96%), bleeding occurred within 6 h. One out of 101 cases (1%)

Table 4  
Comparison between cases of haemorrhage in main OR and day surgery

Complications	Day-surgery unit	Main OR
Haemorrhage		
Early	9 (3%) <sup>a</sup>	4 (3.960%) <sup>a</sup>
Late	6 (2%)	7 (6.930%)

<sup>a</sup> One case only taken to OR for control of bleeding.

in which adenotonsillectomy was performed needed to be returned to the OR to stop the bleeding. This was a 3½-year-old child 1 h post-tonsillectomy. The other three cases were managed conservatively. Bleeding occurred in seven cases (6.930%) beyond 3 days and was also managed conservatively.

## 6. Discussion

Day surgery for common paediatric ENT procedures is increasingly being practiced in light of the low complication rate in the published literature. We recorded nine cases (3%) of post-operative bleeding that was considered reactionary haemorrhage occurring during the first 6 h. The management was conservative in all but one case which needed active interference. This compares with an early post-operative bleeding rate in procedures done in the main OR, of 3.96% (four cases). Out of these four cases, only one patient (1%) was taken back to the OR for haemostasis. This is comparable to the post-operative bleeding rate after day-case operations. Panarese et al. [9] studied 392 cases, found six cases (1.53%) developed bleeding a few hours post-operatively, of which only two cases needed active management. It should be emphasized that bleeding can occur after discharge from the hospital whether these cases are undertaken as day cases or in patients. In our study, six cases (2%) developed secondary haemorrhage after the third day post-operatively.

Tewary and Curry [6] in a retrospective study of day-case tonsillectomy in children, reported that 4 out of 363 children had to be re-admitted in the first 24 h and 2 (1%) were returned to the operating theatre for hemostasis. Kendrick and Gibbin [7], in a retrospective study of 413 patients, reported that post-operative haemorrhage occurred in 16 cases (3.9%). Three children with severe bleeding (0.7%) required a return to theatre.

Fraser and Johstone [8] stated that early pyrexia after any surgical procedure is common in most cases. It is of low grade and does not indicate or predict the presence of an infection. In our study 46 cases (15.3%) developed low grade fever less than 38 C within the first 24 h. They were afebrile on discharge.

Panarese et al. [9] reported the incidence of fever in 43% depending on the type of surgery and the duration of anaesthesia.

The incidence of vomiting in the post-operative period in our study was 34.3% (103 cases). Litman et al. [10] reported the highest incidence in their review (73%) while Panarese et al. [9] observed vomiting in 41% of their cases. Vomiting is one of the most common reasons for unscheduled re-admission in day-case centres [11]. The aetiology appears to be multifactorial (swallowed blood, pain, opiate, and/or direct oropharyngeal irritation). All these factors seem to contribute to post-operative nausea and vomiting. The use of propofol as the anaesthetic agent [12] and the prophylactic

administration of metoclopramide have been reported to reduce the incidence of post-operative nausea and vomiting [13].

## 7. Conclusion

In view of the low incidence of post-operative complications, the common paediatric ENT procedures, e.g. adenoidectomy, tonsillectomy, adenotonsillectomy, and myringotomy, can be done safely as day case provided certain conditions are considered, i.e. proper patient selection, patient education pre-operatively and post-operatively, and the assurance of early access to hospital when any complications emerge.

A suitable day-case anaesthesia protocol including the routine use of an anti-emetic is likely to reduce the incidence of post-operative nausea and vomiting and make day-case ENT procedures more acceptable to patients and parents alike.

## References

- [1] Shott SR, Meyer 3rd CM, Cotton RT. Efficacy of tonsillectomy and adenoidectomy as an outpatient procedure: a preliminary report. *Int J Pediatr Otorhinolaryngol* 1997;13(August (2)):157–63.
- [2] Guida RA, Mattucci KF. Tonsillectomy and adenoidectomy: an inpatient or outpatient procedure? *Laryngoscope* 1990;100(May (5)):491–3.
- [3] Helmus C, Grins M, Wostfall R. Same day stay adenotonsillectomy: an inpatient OR outpatient procedure? *Laryngoscope* 1990;100:593–6.
- [4] Gabalski EC, Mattucci KF, Setzen M, Moleski P. Ambulatory tonsillectomy and adenoidectomy. *Laryngoscope* 1996;106/1 I:77–80.
- [5] Nicklaus PJ, Herzon FS, Steinle 4th EW. Short-stay outpatient tonsillectomy. *Arch Otolaryngol Head Neck Surg* 1995;121(May (5)):521–4.
- [6] Tewary AK, Curry AR. Same-day tonsillectomy. *J Laryngol Otol* 1993;107(August (8)):706–8.
- [7] Kendrick D, Gibbin K. An audit of the complications of paediatric tonsillectomy, adenoidectomy and adenotonsillectomy. *Clin Otolaryngol* 1993;18(April (2)):115–7.
- [8] Fraser I, Johstone M. Significance of early postoperative fever in children. *BMJ* 1981;238:1299.
- [9] Panarese A, Clarke RW, Yardley MP. Early post-operative morbidity following tonsillectomy in children: implications for day surgery. *J Laryngol Otol* 1999;113(December (12)):1089–91.
- [10] Litman RS, Perkins FM, Dawson SC. Parental knowledge and attitudes toward discussing the risk of death from anesthesia. *Anesth Analg* 1993;77(August (2)):256–60.
- [11] Truy E, Merad F, Robin P, Fantino B, Morgon A. Failures in outpatient tonsillectomy policy in children: a retrospective study in 311 children. *Int J Pediatr Otorhinolaryngol* 1994;29(March (1)):33–42.
- [12] McDowall RH, Scher CS, Barst SM. Total intravenous anesthesia for children undergoing brief diagnostic or therapeutic procedures. *J Clin Anesth* 1995;7(June (4)):273–80.
- [13] Ferrari LR, Donlon JV. A comparison of propofol, midazolam, and methohexital for sedation during retrobulbar and peribulbar block. *J Clin Anesth* 1992;4(March–April (2)):93–6.