

‘Group and save’ for paediatric tonsillectomy: is it required routinely?

M-L MONTAGUE, M S W LEE, S S M HUSSAIN

Abstract

Objectives: The aims of this study were: (1) to establish current UK practice with respect to ‘group and save’ of serum for paediatric tonsillectomy; and (2) to determine the need to group and save serum prior to routine paediatric tonsillectomy.

Methods: Members of the British Association of Otorhinolaryngologists – Head and Neck Surgeons were surveyed by e-mail. A prospective study (November 1999 to August 2002) of all children undergoing tonsillectomy or adenotonsillectomy was undertaken. Outcome measures included reactionary and secondary post-tonsillectomy haemorrhage rates, blood transfusion requirements and ‘return to theatre’ rates.

Results: We surveyed 464 association members. The response rate was 52 per cent ($n = 242$). Twenty-five respondents (10.3 per cent) indicated that they undertook group and save prior to tonsillectomy or adenotonsillectomy in children. Two hundred and seventeen (89.7 per cent) indicated that they did not. Of those who did group and save for children, 20 respondents (80 per cent) did so routinely. The remaining five respondents (20 per cent) did so only for children weighing less than 15 kg ($n = 4$) or less than 10 kg ($n = 1$). During the study period, 325 children underwent tonsillectomy or adenotonsillectomy. The reactionary haemorrhage rate was 0.6 per cent ($n = 2$) and the secondary haemorrhage rate 5.5 per cent ($n = 18$). The two cases of reactionary haemorrhage were returned to theatre immediately for control of haemostasis. All secondary haemorrhages were managed conservatively. No child required blood transfusion during the study period.

Conclusion: Routine group and save of serum for children undergoing elective tonsillectomy or adenotonsillectomy seems unnecessary. We recommend that it be undertaken only in special circumstances.

Key words: Tonsillectomy; Child; Blood Grouping and Cross-Matching; Great Britain

Introduction

The routine pre-operative assessment of healthy children undergoing tonsillectomy with or without adenoidectomy includes haemoglobin estimation, coagulation screening, and ‘group and save’ of serum in some centres. Several previous studies have addressed the need for pre-operative full blood count^{1,2} and coagulation screening^{3–5} in children undergoing tonsillectomy. They concluded that the value of performing a pre-operative haemoglobin estimation was doubtful and could be safely abandoned.^{1,2} Routine coagulation screening before tonsillectomy or adenotonsillectomy has been found to have low sensitivity and a low bleeding predictive value.³ It is not cost-effective and can

potentially delay surgery. It is therefore not indicated unless a medical history of bleeding tendency is suspected.^{3–5}

Only one study, in 1993, specifically addressed the need to group and save serum for this type of surgery.⁶ In this small study, 34 per cent of 18 consultants surveyed in the south-west Thames region of the UK routinely requested group and save for tonsillectomy. Of these consultants, 17 per cent requested a group and save pre-operatively and another 17 per cent took a peri-operative sample from all children.

The aims of this study were to establish current practice with respect to group and save of serum for paediatric tonsillectomy in the UK, and also to

From the Department of Otolaryngology, Ninewells Hospital and Medical School, Dundee, Scotland, UK.

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determine the need to group and save serum prior to routine paediatric tonsillectomy, based on recent departmental experience.

Methods

To meet the first aim, the electronic mail addresses of members of the British Association of Otorhinolaryngologists – Head and Neck Surgeons were first obtained from the association. Members were then surveyed by electronic mail, requesting a ‘yes’ or ‘no’ response to the question, ‘Is it your or your anaesthetist’s practice to group and save children (irrespective of age) prior to them undergoing tonsillectomy or adenotonsillectomy?’ Non-responders were surveyed by electronic mail on two further occasions in an attempt to increase the response rate.

Departmental experience was based on a prospective study of all children aged 14 years or less undergoing elective tonsillectomy or adenotonsillectomy between November 1999 and August 2002. Tonsillectomy was performed by one of the two commonly employed methods in the UK⁷ – ‘cold steel dissection’ (i.e. dissection using cold steel instruments) or bipolar diathermy dissection – according to surgeon preference. Outcome measures included reactionary and secondary post-tonsillectomy haemorrhage rates, blood transfusion requirements, and ‘return to theatre’ rates. Reactionary haemorrhage was defined as that occurring within 24 hours of tonsillectomy, and secondary haemorrhage as that occurring between one and 10 days after tonsillectomy.

Results

Valid e-mail addresses for 464 of the 600 (77.3 per cent) consultant otolaryngologist members were obtained from the British Association of Otorhinolaryngologists – Head and Neck Surgeons. Four hundred and sixty-four association members were surveyed by electronic mail. Two hundred and forty-two replies were received, a response rate of 52 per cent. The distribution of responses to the question (i.e. ‘yes’ or ‘no’) is shown in Figure 1. Twenty-five respondents (10.3 per cent) indicated that they did undertake group and save of serum prior to tonsillectomy or adenotonsillectomy in children. Two hundred and seventeen (89.7 per cent) indicated that they did not. Of those who did group and save for children, 20 respondents (80 per cent) did so routinely. The remaining five respondents (20 per cent) did so only for children weighing less than 15 kg ($n = 4$) or less than 10 kg ($n = 1$).

During the study period (34 months), 325 children (mean 8.4 years, range three to 14 years) underwent tonsillectomy or adenotonsillectomy in our department. A cold steel dissection technique was employed for 172 children and bipolar diathermy dissection for 153 children (Table I). All operations were performed on an in-patient basis under general anaesthesia. The reactionary post-tonsillectomy haemorrhage rate was 0.6 per cent ($n = 2$). In both cases of reactionary haemorrhage, the children were returned to theatre immediately

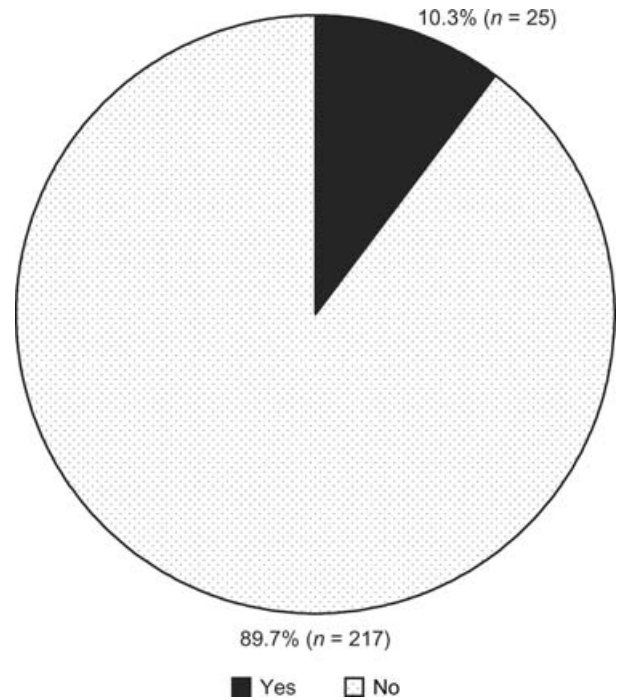


FIG. 1

Distribution of responses to survey question, ‘Is it your or your anaesthetist’s practice to group and save children (irrespective of age) prior to them undergoing tonsillectomy or adenotonsillectomy?’

for control of haemostasis. The secondary post-tonsillectomy haemorrhage rate was 5.5 per cent ($n = 18$). Every child returning to the department with secondary post-tonsillectomy haemorrhage, irrespective of its severity, was admitted for a minimum period of 24 hours (mean 2.6 days). All 18 cases of secondary haemorrhage were managed conservatively, which included the administration of an intravenous broad-spectrum antibiotic. No child required a blood transfusion during the study period.

Discussion

Group and save of serum refers to a process of determining a patient’s ABO and rhesus blood types and screening the patient’s serum for the presence of atypical antibodies directed against red blood cell antigens. The serum sample is then saved for seven days in case a blood transfusion is required. Group and save of serum is typically undertaken when a

TABLE I
POST-TONSILLECTOMY HAEMORRHAGE RATES IN CHILDREN

Technique	Children (n (%))	Haemorrhage (n (%))	
		Reactionary	Secondary
Cold steel dissection	172 (53)	0 (0)	6 (3.5)
Bipolar dissection	153 (47)	2 (1.3)	12 (7.8)
Total	325 (100)	2 (0.6)	18 (5.5)

blood transfusion is possible but unlikely. This is in contrast to cross-matching blood, which involves determination of blood group, screening for antibodies and selecting compatible donor units. It is performed when a blood transfusion is certain or highly likely.

Tonsillectomy with or without adenoidectomy is often the first haemostatic challenge in children. The rationale behind performing routine pre- or peri-operative group and save in children undergoing the procedure is that fully cross-matched blood can be available for transfusion within approximately 10 to 20 minutes, in the event of massive haemorrhage. This rationale can be challenged in the knowledge that, if group and save were to be performed only in the event of a haemorrhagic complication, the blood transfusion services of most hospitals can now release blood within 30 minutes of receiving the blood sample.

In this study, secondary haemorrhage occurred an average of 8.8 days post-operatively (median eight days, range six to 14 days). Serum samples were saved for seven days. Thus, if blood transfusion had been required in any of the children in the study, a pre- or peri-operative group and save sample, if taken, would have already reached its expiry date by the time bleeding was likely to occur. With this in mind, it would not be unreasonable to perform group and save in children on return to theatre, if required in the case of reactionary haemorrhage, or when venous access was being established on presentation, in the case of secondary haemorrhage.

- **The routine pre-operative assessment of healthy children undergoing tonsillectomy with or without adenoidectomy includes haemoglobin estimation, coagulation screening, and 'group and save' of serum in some centres**
- **A survey of members of ENT-UK revealed that 89.7 per cent of respondents felt that routine group and save for tonsillectomy and adenotonsillectomy was unnecessary**
- **A study of 325 children (mean 8.4 years, range three to 14 years) undergoing tonsillectomy or adenotonsillectomy revealed that none required blood transfusion**
- **The routine group and save of serum for elective tonsillectomy or adenotonsillectomy is an unnecessary added expense**

In this study, 20 per cent of respondents performing group and save did so only for children weighing less than 15 kg. Certainly, low weight has been defined as one of nine risk factors which predict the need for allogeneic transfusion, in a series of studies of over 10 000 patients, covering a wide variety of surgical procedures.⁸ Post-tonsillectomy haemorrhage occurred in this study in children with a mean age

of 11.2 years (median 12 years, range six to 14 years). A larger study of very young children would be required to determine whether a weight of less than 15 kg was associated with a greater risk of post-tonsillectomy haemorrhage and whether the routine group and save of serum could be justified in this subgroup of children.

The response rate of 52 per cent for the survey was lower than expected. This may reflect the fact that paediatric surgery is not performed in some ENT departments in the UK. The British Association of Otorhinolaryngologists – Head and Neck Surgeons membership comprised 600 consultants at the time of the survey, but valid e-mail addresses were available for only 464 consultant members. Although the response rate was 52 per cent, responders actually represented only 40.3 per cent of association members. The percentage of those performing routine group and save of serum for children (10.3 per cent, $n = 25$) is therefore likely to represent an underestimate of current practice in the UK. The estimated cost of performing group and save of serum in the UK National Health Service (NHS) is £25.00 (€38.00) (Scottish Blood Transfusion Service, personal communication). Therefore, the financial implications are likely to be huge, considering the number of tonsillectomies performed annually within the NHS.

Conclusions

In our experience, most paediatric post-tonsillectomy haemorrhages are managed conservatively. The need for a blood transfusion in children after tonsillectomy is distinctly unlikely. Therefore, the routine group and save of serum for elective tonsillectomy or adenotonsillectomy is an unnecessary added expense. However, we would advocate that it should be performed in special circumstances, e.g. when a medical history of bleeding is suspected, and in the case of bleeding diatheses such as von Willebrand's disease, haemophilia A and haemophilia B.

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Address for correspondence:
Mr S S Musheer Hussain,
Consultant Otolaryngologist,
Department of Otolaryngology (Ward 26),
Ninewells Hospital and Medical School,
Dundee DD1 9SY,
Scotland, UK.

Fax: 01382 632816
E-mail: musheerh@tuht.scot.nhs.uk

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