



Is there a justification for routine pre-operative deposit of blood for tonsillectomy/adenotonsillectomy?

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ABSTRACT *Objectives* : To determine the frequency of intra or post operative blood transfusion in tonsillectomy and/or adenotonsillectomy; the reason(s) for blood transfusion, and thus justify or otherwise routine preoperative blood deposit for the surgeries.

Methods : The case notes of post tonsillectomy and/or adenotonsillectomy patients in the Hospital from January 2015 to June 2016 were reviewed to extract the required information. The biodata of the patients, state of preoperative preparation, intra and post operative events among others were documented. Data obtained were analyzed and presented in tabular and descriptive forms.

Results : There were 65 surgical cases; 8 tonsillectomy and 57 adenotonsillectomy studied. They comprised of 32 males and 23 females with a mean age of 6.4500 ± 7.1056 . The means of their parameters were: weight 22.23 ± 16.93 kg, Hb 11.975 ± 1.318 g/dl, operative blood loss 78.05 ± 70.64 ml and average duration of surgery 52.68 ± 22.27 minutes. There was no intra or post operative blood transfusion recorded.

Conclusions : The patients studied were adequately prepared for surgery and there was no intra or post operative blood transfusion. Routine preoperative blood deposit was therefore not justified.

KEYWORDS : Tonsillectomy, adenotonsillectomy, blood transfusion, preoperative blood deposit.

Introduction

Tonsillectomy and/or adenotonsillectomy is one of the most commonly performed surgeries and the most commonly performed operation in Otolaryngology. Most of the patients involved are the paediatrics in whom the complications arising thereof poses a great challenge to both the surgeon and the anaesthetist.

Tonsillectomy is rarely performed for life threatening reasons, but it has life-threatening complications. The most dreaded complication is haemorrhage. It is usually primary or reactionary in type, occurring any time up to 24 hours after operation. Studies are abound that show bleeding as the most common complication of adenotonsillectomy and the various methods to reduce the blood loss (Prasad and Prasad 2011, Holden and Maher 1965, Spoerell et al 1960, Callanan et al 1995).But none in literature indicated pre-operative blood deposit. Most of the deaths associated with tonsillectomy or adenotonsillectomy are directly or indirectly associated with this complication. This calls for careful selection and preparation of patients prior to the surgery. In our facility, the anaesthetists demand for routine deposit of at least two units of blood by every patient prior to surgery and this must be palpable before the patient is allowed into the theatre.

This study seeks to ascertain the number of tonsillectomy and/or adenotonsillectomy patients in our centre who has had intra or post operative blood transfusion, the reason(s) for the transfusion, the state of pre-operative preparation of the patients and thus the justification or otherwise for the routine pre-operative deposit of blood for tonsillectomy and/or adenotonsillectomy. The outcome of the study is expected to effect a change in the demand/use of blood for the surgery and stimulate interest for further studies in this area.

Patients and methods

The study consisted of the review of case notes of patients who had tonsillectomy and/or adenotonsillectomy taken in sequence over a period of eighteen months at the University of Nigeria Teaching Hospital (UNTH), Ituku-Ozalla, Enugu. The patients' records in the clinics, wards and theatre including the anaesthetic charts were scrutinized to extract the required data. The patients had pre-operative evaluation which included a thorough history and physical examination to rule out recent upper respiratory tract infection, bleeding tendencies, coincidental anaemia, heart murmur, jaundice

and patients receiving anticoagulant therapy. The state of the patients' dentition were assessed for carious or loose front teeth or capped teeth. The pre-operative investigations included urinalysis, haemoglobin level estimation, total and differential blood counts, the clotting profile, blood grouping; serum electrolyte, urea and creatinine, and a chest radiograph. Patients with derangement in any of these indices were usually excluded from surgery. Those operated upon were of ASA1 46(70.77%) and ASA11 19(29.23%) status. All the patients were admitted for a minimum of one day before operation. Anaesthesia was administered by the consultant anaesthetist or senior resident in anaesthesia for all the tonsillectomies or adenotonsillectomies in the cases studied. All the cases were operated under general anaesthesia with endotracheal tube intubation. The anaesthetist kept and maintained record of the quantity of weighed and sterilized ribbon gauze used for the surgery. The same is true for the suction bottle and its tubing and the amount of normal saline used for intermittent suction, to prevent suction tube blockage. The estimated blood loss and duration of surgery were usually calculated and recorded in the anaesthetic chart by the anaesthetist. Intravenous (IV) antibiotics were given intra-operatively and continued postoperatively for the first 24hours and subsequently converted to orals. Conventional dissection and snare method was used for the removal of the tonsils and curette method for the tonsils. All surgeries were done by the consultant otolaryngologist or senior registrar in Otolaryngology. For adenotonsillectomy, the adenoids were removed first. After adenoidectomy, a length of ribbon gauze was used to pack the nasopharynx. Tonsillectomy was then performed for the two tonsils and the bleeding points were cauterized or clamped and ligated as appropriate. The tonsillar fossae were then packed with gauze for further haemostasis. After a reasonable length of time, the gauze packs were removed and operation sites examined to confirm no active bleeding. Then the reversal of anaesthesia was done, patient taken to the recovery room and closely monitored for full recovery from anaesthesia and later moved to the ward when certified fit.

The data generated were analyzed using descriptive statistics and presented both in tables and descriptive forms.

The study was approved by the institutional ethics and review board of the hospital.

Results

A total of 65 cases: tonsillectomy (8) and adenotonsillectomy (57) were studied. They comprised of 32 males and 23 females, ratio 1.39:1.00. Their ages ranged from 0.83 to 32 years, mean \pm SD was 6.4500 ± 7.1056 , median 4 years with 95% confidence interval (CI) of 4.6893 to 8.2107. The average age of the males 5.2481 ± 6.3591 compared to females 8.6448 ± 7.9825 , was not quite statistically significant; $p = 0.0649$. Majority 65.61% of the patients studied were in the 0-5-years age group, made up of 49.23% male and 15.38% females followed by 6-10 years age group that constituted 23.08% , 9.23% males and 13.85% females Table 1.

Table 1. Age and sex distribution of the patients.

Age in years	Number of patients	Males(%)	Females(%)	% Males + Females
0-5	42	32(49.23)	10(15.38)	64.61
6-10	15	6(9.23)	9(13.85)	23.08
11-15	1	1(1.54)	-	1.54
16-20	1	1(1.54)	-	1.54
21-25	2	1(1.54)	1(1.54)	3.08
26-30	3	-	3(4.62)	4.62
31-35	1	1(1.54)	-	1.54
Totals	65	42(64.62)	23(35.39)	100.01

Thus 87.69% of the cases were aged 10 years and below. The mean age of the 0-5-years age group was 2.7440 ± 13722 , minimum 0.83 years, median 2.875 and maximum 5 years with 95% CI of 2.3164 to 3.1717. The mean age of males (N=32) in this group was 2.6069 ± 1.3235 while that of females (N=10) was 3.1830 ± 1.5046 and there was no statistically significant difference between their ages, $p = 0.2514$.

The mean weight of the patients was 22.23 ± 16.93 kg; males 19.45 ± 15.03 kg, females 27.30 ± 19.27 kg with no statistically significant difference between them, $p = 0.4440$.

Mean haemoglobin (Hb) of the cases involved was 11.975 ± 1.318 g/dl, averages for males 11.736 ± 1.044 g/dl and females 12.343 ± 1.659 g/dl. The difference between the two averages was statistically significant, $p = 0.0750$.

The mean blood loss in the study was 78.05 ± 70.64 ml; in males the mean blood loss was 76.74 ± 74.66 ml, and in females it was 80.43 ± 64.17 ml with no statistically significant difference between them $p = 0.8422$.

Average duration of surgery was 52.68 ± 22.27 minutes; males 48.36 ± 21.14 minutes and females 60.57 ± 22.57 minutes with statistically significant difference between them, $p = 0.0335$.

The indications for surgery were obstructive adenotonsillar disease 56(86.11%), chronic tonsillitis (fibrosed tonsils) 3(4.62%) and recurrent tonsillitis 6(9.23%).

There was no intra-operative or post-operative blood transfusion in the patients. All the patients had uneventful operations and were discharged home from the ward without any incidence.

Discussion

Approximately 88% of the cases studied were aged 10 years and less indicating that the findings in the study would be comparable with studies limited to children. It further supports the assertion that most of the patients undergoing tonsillectomy and/or adenotonsillectomy are children.

Though males outnumbered females, their average weights were comparable ($p = 0.4440$) but there was some variation in their mean Hb in favour of the females, 11.736 g/dl versus 12.343 g/dl ($p = 0.0750$). The reason for this was not readily apparent. However, the minimum acceptable Hb in our centre was 10 g/dl for all surgical cases.

The mean blood loss in this study was 78.05 ml with no significant difference between male and females ($p = 0.8422$). The average blood loss during a routine tonsillectomy and adenoidectomy is between 100 ml and 130 ml (Holden and Mayer 1965, Shalom 1964). Age does not confer any impact on adenotonsillectomy blood loss (Holden and Mayer 1965, Shalom 1964, Manikandan et al 2015). In our study, blood loss was not statistically different between males and females.

This findings has been replicated in other studies (Shalom 1964, Manikandan et al 2015) but contrasted with others that showed more blood loss in males (Prasad and Prasad 2011). This they attributed to the difference in weight, males being usually heavier though this was not borne out in the study. Our patients received antibiotics during the surgery which has been shown to reduce operative blood loss (Prasad and Prasad 2011) and surgeries were taken by experienced hands which further paves way for less blood loss. The most essential part of tonsillectomy is the control of haemorrhage and the operation is not completed until all bleeding has ceased. Anaesthesia was administered by capable anaesthetists thus obviating the short comings of anaesthetic technique which could produce laryngospasm, gagging or straining which ultimately may increase blood loss (Holden and Mayer 1965). Smooth recovery of patients from anaesthesia is essential. The recovery of the patient from anaesthesia must be as gentle as possible, coughing and retching are liable to cause haemorrhage. The anaesthetic team needs to focus attention to viable areas that will reduce blood loss such as premedication with vitamin K and the use of thromboplastin on sponges (Maier and Bogue 1960), peritonsillar infiltration of 0.5% lignocaine with adrenaline (Boliston and Upton 1980, Broadman et al 1989, Rasgon et al 1991), and application of quixil fibrin glue to the operative sites in tonsillectomy and adenoidectomy which provides effective haemostasis sealing with good systemic and local compatibility (Vaiman et al 2003). Only 3(4.62%) of our series were fibrosed tonsils. Some authors have reported significant blood loss in fibrosed tonsils (Prasad and Prasad 2011, Holden and Mayer 1965) and attributed it to the lesser contraction of the vessels in fibrosis thus resulting in more blood loss. But in all these, there was no record of blood transfusion even in our series. Blood transfusion should be considered in a patient that has lost excessive amount of blood at operation and who continues to bleed in the immediate post-operative period. Transfusion is necessary when the loss is between 10 and 15% of the total blood volume (Davenport and Barr 1963). It is thus clear that blood should only be deposited if there is a specific indication and not just as a routine. The indications should therefore be stringent and loose indications such as currently done are to be condemned. It ought not be seen as a prophylactic ritual carried out for no particular reason with no particular result. Consideration should be made of the economic effect on the patients who deposit blood that were not needed.

Conclusion

The study showed that the patients undergo adequate pre-operative evaluation for anaesthetic and surgical fitness. Operative blood loss in our series mirrors what is obtained in other studies. There was no case of intra-operative or post-operative blood transfusion in the study. The pre-operative blood deposit in tonsillectomy and/or adenotonsillectomy as practiced in our facility is in no way justified.

Conflict of interest: There is no conflict of interest.

Funding: There was no external funding obtained, hence there is no conflict of interest.

Ethical approval: No ethical clearance was given but the committee on research gave approval as it is a retrospective study,

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