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ORIGINAL ARTICLE

Post-tonsillectomy hemorrhage after bipolar diathermy vs. cold dissection surgical techniques in Alahsa region, Saudi Arabia☆

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KEYWORDS

Post-tonsillectomy hemorrhage;
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Risk factors;
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Abstract *Introduction:* Tonsillectomy is a common surgical procedure done by otolaryngologists. Tonsillectomy is a relatively simple procedure. The concept of implementing it as a day case operation has become increasingly popular.
Material and Methods: This is a cross sectional study done in Alahsa city, eastern province, Saudi Arabia during the period from January 2014 to March 2015,This study reported the postoperative hemorrhage after Bipolar diathermy and Cold dissection surgical techniques to evaluate the incidence of the hemorrhage and to identify the possible risk factors associated with its occurrence.
Results: Postoperative bleeding occurred in 45 (3.6%) out of 1232 patients. Post-tonsillectomy hemorrhage according to operation technique was significantly higher among patients who underwent bipolar diathermy than cold dissection technique ($p < 0.05$).
Conclusion: Bleeding after operation by bipolar diathermy technique was occurring more frequently within the first five days. Hemoglobin level was significantly decreased in post-tonsillectomy hemorrhage.

1. Introduction

Tonsillectomy dates back over 2000 years[1] and is now the most commonly performed surgical procedure in Pediatrics.[2] It is a common surgical procedure done by otolaryngologists. Tonsillectomy is a relatively simple procedure. The concept of implementing it as a day case operation has become increasingly popular.[3] However, a number of postoperative complications have been well-documented in the literature; the most common and potentially life-threatening of which is post-tonsillectomy hemorrhage (PTH).[4] Considering that it is an elective procedure, it is often connected with a comparatively high bleeding rate. Furthermore, bleeding in this location (the upper airways) always represents a significant risk.[5] PTH occurs at a rate between 0.28% and 20%. This wide range may reflect the diversity in the otolaryngological community on how to properly define significant PTH.[6] This study

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reported the postoperative hemorrhage after Bipolar diathermy and Cold dissection surgical techniques at the Alahsa city, Saudi Arabia, to evaluate the incidence of this hemorrhage and to identify the possible risk factors associated with its occurrence.

2. Materials and methods

This is a cross sectional study done in Alahsa city, Saudi Arabia, during the period from January 2014 to March 2015, and the outcome of Pediatric tonsillectomy performed as day case procedures was studied. A total number of patients who underwent tonsillectomy were one thousand two hundred and thirty-two patients (928 of them by bipolar diathermy technique, 304 by cold dissection technique). This study included only forty-five patients coming back after tonsillectomy with bleeding. Indications for tonsillectomy among most of patients were recurrent tonsillitis (Throat infections), snoring or problems with sleep. Surgical procedures were performed using the techniques of bipolar diathermy or cold dissection. Postoperatively, they received the same medications (antibiotics and analgesics). Postoperative tonsillectomy hemorrhage incidents were identified. Data collected included patient's age, day of postoperative bleeding, operation duration, site of bleeding and the vital signs. To determine statistical significance, cross tabulation and chi-squared analysis were performed. Statistical significance was set at $P < 0.05$.

3. Results

Postoperative bleeding occurred in 45 (3.6%) out of 1232 patients. Comparisons for age, medication used, medication allergy, other illness, development and growth were done. The age of ten patients (22.2%) was on the range of 0–6 years, and the age of the rest 35 patients (77.8%) was > 6 years.

Table 1 Patients characteristics.

Characteristics	Frequency, *n*	%
Ages (mean 8.3 years)		
0–6 Years	10	22.2
>6 Years	35	77.8
Medication used		
1 – Ventolin	9	20.0
2 – Flixonase	2	4.50
3 – Nasonex	2	4.50
4 – Others	32	70.1
Medication allergy		
1 – Penicillin	4	8.80
2 – Others	1	2.20
3 – None	40	89.0
Other illness		
1 – Asthma	9	20.0
2 – DM	2	4.40
3 – Allergic rhinitis	3	6.60
4 – Epilepsy	1	2.20
5 – None	30	66.8
Development and growth delay		
1 – Normal	43	95.5
2 – Abnormal	2	4.50

About 95.5% of patients with postoperative bleeding were having normal growth and development as shown in Table 1. Thirty-eight patients (84.4%) were suffering from recurrent tonsillitis (Throat infection), twenty-eight (62.2%) of them had snoring and 25 (55.6%) were suffering from sleeping difficulties (e.g. Apnea) (see Fig. 1). Post-tonsillectomy hemorrhage according to operation technique was significantly higher among patients who underwent the bipolar diathermy than cold dissection technique ($p < 0.05$). On the other hand, there were no statistically significant differences in age groups, other illness, vital sign and sides of bleeding according to patients' operation technique as shown in Table 2. The mean hemoglobin levels were significantly decreased among postoperation patients compared to preoperation ($p < 0.05$), while the hemoglobin variation between the two tonsillectomy techniques revealed a non-significant difference ($P > 0.05$), Table 2. The levels of prothrombin time (PT), Activated partial thromboplastin time (APTT) and international normalize ratio (INR) were statistically not significant (($p = 0.166$), ($p = 0.183$), ($p = 0.415$), respectively)) in postoperation compared to preoperation, Table 3.

4. Discussion

Tonsillectomy-related morbidity and mortality are sources of potential malpractice claims in the field of otolaryngology. Tonsillectomy operation with hemorrhage is the major complication which, can be potentially life threatening. The previously reported clinical risk factors for post-tonsillectomy hemorrhage included age, sex, surgical technique and device, surgeon's skill level, and tonsillectomy indication.[7–11] Our results agree that age, tonsillectomy indication, and operation technique are predictive of post-tonsillectomy hemorrhage. Several studies have described the patient's age as a significant risk factor.[12] Tomkinson et al.[9] reported that patients older than 12 years had a 3-fold higher likelihood of severe post-tonsillectomy hemorrhage, and this finding was in agreement with our present study results which indicated that most of the patients with post-tonsillectomy hemorrhage were in older age group. This is probably related to the fact that older patients, who were the majority of the bleeder group in our study, have more time to get infected which leads to more fibrosis and more aggressive operation. Several studies have found an association between the indication for tonsillectomy and the post-tonsillectomy hemorrhage. In our study, the indication for tonsillectomy was mainly related to recurrent throat infection, snoring and sleep difficulties, as reported previously.[8,9] No statistical association was found between operative time and post-tonsillectomy hemorrhage. In the present study, bleeding after operation was observed among bipolar diathermy patients (22 out of 45) within less than 5 days after operation compared to (2 out of 45) patients in cold dissection group. Our result was in agreement with the study done by Weimert et al. who performed a double blinded study to compare bipolar diathermy tonsillectomy and cold dissection. They found no difference in the incidence of post-tonsillectomy hemorrhage.[13] Previous authors have noted that bipolar diathermy may cause increased severity of pain and may increase the risk of delayed hemorrhage.[14] However, proponents of the technique state that it is a much faster procedure with minimal intraoperative blood loss and negligible incidence of immediate post-tonsillectomy