MONOPOLAR DIATHERMY AS COMPARED TO SILK LIGATURES FOR PER OPERATIVE HAEMORRHAGE CONTROL DURING TONSILLECTOMY

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ABSTRACT

Objective: To determine whether monopolar diathermy is a better tool for haemostasis compared to tying of silk ligatures.

Study Design: Quasi-experimental study.

Place and Duration of Study: The study was done in ENT department of Combined Military Hospital Rawalpindi from July 2006 to March 2007.

Patients and Methods: Seventy patients were included in this study and were divided into two groups of thirty-five each; one group underwent tonsillectomy with monopolar diathermy for haemorrhage control and tying of silk ligatures for hemostasis in second group. Chi square test was used as the test of significance.

Results: Monopolar diathermy is shown to be a better method of haemorrhage control as compared to tying of silk ligatures (p-value <0.05).

Conclusions: These results demonstrate the effectiveness of monopolar diathermy as a coagulation tool.

Key Words: Haemorrhage, monopolar diathermy, tonsillectomy.

INTRODUCTION

Tonsillectomy is one of the most common procedure to relieve the patient of repeated attacks (three to four per year for two to three years) of true acute tonsillitis [1, 2]. Tonsillectomy can also be performed as part of another procedure like removal of styloid process.

Per operative control of haemorrhage during tonsillectomy is one of the most important part of tonsillectomy. Different methods are available to control the peroperative haemorrhage during tonsillectomy like pressure method, typing of ligature, monopolar and bipolar diathermy [3].

Newer techniques of tonsillectomy include the Harmonic scalpel [4], which uses ultrasonic technology to cut and coagulate tissues at lower temperatures than those associated with electrocautery. Carbon Dioxide LASER is also used to perform tonsillectomy and is an almost bloodless procedure that has developed as an alternative to traditional dissection tonsillectomy during recent years [5].

Use of monopolar diathermy as compared to silk sutures to control the bleeding and securing haemostasis must be evaluated as these are the two most commonly used methods for per operative haemostasis depending upon the surgeon's preference [1].

The purpose of this study was to determine whether monopolar diathermy is a better tool for haemostasis compared to tying of silk ligatures.

PATIENTS AND METHODS

The study was carried out, as a Quasi Experimental Study in ENT Department CMH Rawalpindi. The study comprised of seventy patients of any age divided into two groups with 35 patients in each group. Sampling technique used was non probability convenience sampling. The study was completed in eight months time. There were 53 males and 17 females. Patients included were aged between 8 to 25 years, undergoing tonsillectomy for recurrent tonsillitis. Patients with bleeding diathesis or in whom tonsillectomy was being performed to confirm lymphoma were excluded.

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Informed consent was obtained from all patients. Patients were divided into the two groups by random allocation. Group 'A' underwent extracapsular tonsillectomy by dissection method with monopolar diathermy for haemostasis and Group 'B' underwent tonsillectomy with Silk sutures for haemostasis.

All the patients had tonsillectomy performed under the same condition with gauze pieces used to clean the operating field. The gauze pieces were of standard size i.e. 1cm by 1cm with four folds in each gauze piece. As the patient's throat was to be packed so one gauze pieces of standard size was placed around the endotracheal above the anesthetists packing and this pack was also be included in the count. Suction was not used and only gauze pieces were used to clear the operating field when required.

Mild haemorrhage was taken as soakage of 4 to 5 gauze pieces of standard size, 6 to 10 as moderate and 11 to 15 as severe haemorrhage.

Data Analysis

Data has been analyzed using SPSS version 10.0. Descriptive statistical chi were used to determine the data. Che-square test was used to compare the haemorrhage control in both the groups. P-value < 0.05 was considered as significance.

RESULTS

A total of seventy patients were included in this study over a period of eight months. The patients were divided into two groups A and B. Both groups underwent extracapsular tonsillectomy with monopolar diathermy for haemostasis in group A and tying of silk ligatures in group B.

Group A comprised of 25(71%) males and 10 (29%) females. The mean age of patients on group A was 13.45 years (SD=4.54). Group B comprised of 28 (80%) males and 7 (20%) females. The mean age of patients of group B was 12.25 years (SD=3.5).

In group A 28 (80%) patients had mild 6 (17%) patients had moderate and 1 (3%) patient had sever haemorrhage wile in group B, 14 (40%) patients had mild, 12 (34%) patients had moderate and 9 (26%) patients had sever haemorrhage. There was significant difference in haemorrhage control in both the groups (P-value<0.05) (Table)

Patients in both the groups recovered from anaesthesia without any complications. Patients were kept on postoperative antibiotics and analgesics and discharged between second and third postoperative day. In all patients with the score of severe haemorrhage post operative packed cell volume was estimated but none required postoperative transfusion.

Chi square test was applied to test the significance of haemorrhage control in both groups. P value was calculated, and was found to be <0.05. Results showed a significant difference in hemorrhage control by the two methods.

Table: Haemorrhage Category Distribution in Both Groups.

	Mild	Moderate	Sereve	Total
Group A	28 (80%)	6 (17.1%)	1 (2.8%)	35
Group B	14 (40%)	12 (34.2 %)	9 (25.7%)	35

DISCUSSION

Tonsillectomy is regarded as one of the most commonly performed operation in Otorhinolarygology. In our center haemorrhage control during tonsillectomy is achieved by applying pressure in the tonsillar fossa followed by either monopolar diathermy of bleeding point or by tying a knot with silk ligature on the bleeding point. Tying a knot is time consuming and requires expertise. While using the monopolar diathermy is easy and does not require expertise. Hamemorrhage after tonsillectomy can be classified according to Windfuhr J as [6],

- Grade-1: There is minor capillary oozing which stops spontaneously.
- Grade-2: bleeding point visible and can be cauterized.
- Grade-3: Bleeding point not visible and ligation of bleeding point required.

- Grade-4: Ligation of external carotid artery becomes necessary
- Grade-5: Lethal outcome.

The results of our study show monopolar diathermy as a better method for haemorrhage control as compared to silk ligatures. Phillipps et al [7] in their study found no difference in haemorrhage control with either use of diathermy or silk ligatures and this was mainly due to the fact that their study was carried out by more than one surgeon with varying surgical expertise and quality of surgery, whereas in our study only one surgeon had performed all the surgeries over a period of eight months. Watson et al [8] in their study found diathermy as a better method of haemorrhage control as regards the time saved during surgery but no difference in haemorrhage control rates was seen. In a review study by Murty [9] et al in England there was a wide variation in response.Roy et al [10] in a prospective study done on 200 cases found monopolar diathermy a better method for haemostasis control as compared to ligatures. Ritter et al [11] found in their study diathermy better than ligatures in tonsillectomy due to less time consumption and better haemostasis. Haemorrhage control in our study was calculated by using gauze pieces of fixed size. It was found that use of monpolar diathermy was easy and the size of pharynx did not hamper its use. Whereas use of silk ligatures was cumbersome with delay in haemostasis.In addition positioning of the knot in children was a tedious process requiring expertise and the knot was prone to slipping. No statistical significance in the moderate group was due to the fact that nearly 90 % of the cases fell into either mild or severe haemorrhage group. Therefore the number of cases in moderate group was not enough to give a statistically valid result.

Review of literature has shown that haemorrhage control during tonsillectomy has been one of the greatest concerns of surgeons. Newer methods for haemorrhage control like thermal welding system [12], ligassure vessel sealing system [13], and use of haemostatic agents like fibrin glue [14] and bismuth subgallate [15] is being evaluated with initial promising results. Monopolar diathermy is being replaced by bipolar diathermy as it functions both as a cutting and coagulation tool [16-19].

These results demonstrate that there is a statistical difference in use of monopolar diathermy for haemostasis as compared to tying of silk ligatures. Haemorrhage control was better in the diathermy group as compared to the ligature group.

CONCLUSION

Haemostasis is an important step in tonsillectomy. Our study has shown that monopolar diathermy is a better method of haemorrhage control as compared to tying of silk ligatures.

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