

DIATHERMY TONSILLECTOMY VERSUS CONVENTIONAL DISSECTION TONSILLECTOMY

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SUMMARY

This study compares the conventional method of tonsillectomy, the dissection snare method with that of the newer procedure, bipolar electrodissection method. We studied 200 cases in two groups, hundred in each. In the first group the patients underwent tonsillectomy by dissection-snare method and in the second by electrodissection method. The results of the two groups were studied regarding the time taken in the procedure, blood loss during the procedure, postoperative analgesia required, reactionary hemorrhage, postoperative diet toleration and secondary hemorrhage. Regarding the postoperative diet taken and reactionary haemorrhage the bipolar method is better, but there is no significant difference regarding the postoperative analgesia, postoperative pain and secondary hemorrhage. We concluded that bipolar electrodissection method is the superior method regarding the time taken during the procedure, the intra operative blood loss was lower and there was no need of ties (ligating the bleeding vessels) in the diathermy method.

INTRODUCTION

Tonsillectomy is one of the most commonly performed surgeries in the pediatric population all over the world. The removal of tonsils and adenoids is fre-

quently performed in the practice of almost all otolaryngologists. Celsius made the first authentic report on the removal of the tonsils in the first century A.D. The Greeks called the tonsils indurated and inflamed *antiades*. They were loosened by scraping

around them and then torn out; alternately they were picked up with a little hook and excised with a scalpel. Afterwards the fossa was washed out with vinegar and painted with a medication to reduce bleeding.¹ The operation became popular in the nineteenth century after the invention of 'tonsillotome' by Physick, but there was no reliable way of stopping the bleeding. Ice was commonly used, and styptics such as tannogallic acid (de Santi, 1894; Ellegood, 1898) or silver nitrate (Pyncheon, 1898) were available.² Ligation was first adopted as a routine measure by Cohen (1909), and has remained in use ever since.³ In today's world of otolaryngology the preferred methods of tonsillectomy are; dissection-snare method, electrodissection (diathermy) method and the laser tonsillectomy. More and more centers are adopting the procedure of electro-dissection or laser dissection.

MATERIAL AND METHODS

The study was conducted in the ENT department of Postgraduate Medical Institute, Lady Reading Hospital, Peshawar during one year, from 1st January 1998 to 31st Dec 1998. A total of one hundred cases underwent tonsillectomy with dissection snare method and the other hundred were subjected to bipolar electrodissection method of tonsillectomy. Most of the patients selected were from the district Peshawar and the nearby vicinity for easy access for the follow-up. All of them were admitted through the out patients department a day before surgery and the selection criteria was as follow:

- All the patients were between the ages of 5 to 40
- All the patients were confirmed booked cases of chronic tonsillitis or children with confirmed history of enlarged tonsils causing obstructive breathing problems

SEX INCIDENCE IN TWO GROUPS

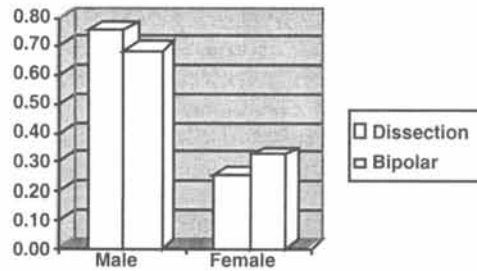


TABLE - 1

- Any patient with history of any associated systemic disease e.g. diabetes mellitus, hypertension, tuberculosis or any bleeding diathesis were excluded from this study.
- Any patient with history of associated nasal symptoms, ear discharge or generalized lymphadenopathy was excluded from the study.

On admission each patient was evaluated fully and the findings were recorded in a printed proforma for this purpose. The evaluation included detailed history of the patient's complaints either from the patients themselves or from the parents or the caretakers, which included the history of recurrent episode of sore throats, fever, signs symptoms of upper respiratory infection. Others with huge tonsils causing

TIME OF SURGERY IN TWO GROUPS

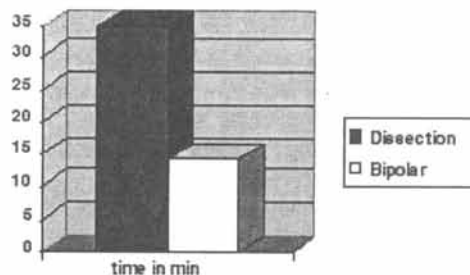


TABLE - 2

BLOOD LOSS IN TWO GROUPS

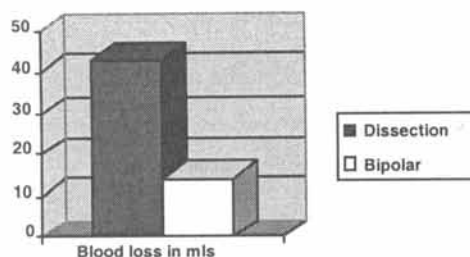


TABLE - 3

obstruction in form of daytime spontaneous breathing difficulties, obstruction during eating or snoring at night. During physical examination the general health of the patient was assessed including pulse rate, blood pressure, auscultation of the lungs and heart, abdominal palpation for any visceromagnally and the temperature was noted.

The routine investigations performed were:

- Hemoglobin percentage, bleeding time and clotting time.
- Routine biochemical and microscopic examination of urine.
- X-ray chest were done in cases of suspected pathology in the chest.

COMPARATIVE STUDY OF TWO GROUPS

	Electrodissection no = 100	Dissection-Snare no = 100
First oral intake	First hour	Much later
Soft diet	2nd post op day	2nd post op day
Normal diet	After a week	After a week
Reactionary Hge	No patient	Two patients
Secondary Hge	One Patient	One patient
Analgesia for children	5 - 10 days	5 - 10 days
Analgesia for adults	7 - 10 days	7 - 10 days

TABLE - 4

After selection of the patients for the surgery, preoperative counseling was done. The patients and the attendants were told about the surgery to be performed, about the expected results of the surgery along with the expected complications. A written consent was taken from all patients or parents/guardians. None of the patients were given any sedatives the night before.

Surgical Procedure

Dissection Snare Method:

Tonsillectomy was performed under general anesthesia in reverse trendelenberg position with a nasal endotracheal intubation. The tonsil being held in the forceps and retracted medially, in the upper pole the mucosal incision would gap. Careful dissection done to preserve the tonsillar pillars and the bleeding was sucked up with the suction tip. When the dissection reached the lower pole of the tonsil, a tonsillar snare was passed around the tonsil, which was then amputated by closing the snare loop. The tonsillar fossa was packed with swab. The other palatine tonsil is then similarly removed. Ties were used to secure the haemostasis.

Electrodissection Method:

The anesthesia and the patient's position were the same as in the other method. Bipolar machine set at 30W; using a single straight or stepped bipolar forceps a palatoglossal incision was made with cautery. The palatine tonsil was identified and dissected from the superior to the inferior pole with careful cauterization of the tissue. It was possible to identify most of the blood vessels supplying the tonsil; these were cauterized before separating them from tonsil. No snare was used and further haemostasis was secured by point coagulation. No ties were used.

Follow-up

While sending patients home, they were told to come back after a week for check-ups. They were also advised to seek immediate medical advice in case of bleeding. Afterwards follow-up was arranged on monthly basis, for three months.

At each follow-up visit they were asked about the relief of their pre-operative symptoms, any change in voice or regurgitation of food through the nose. The findings were recorded on the specified proforma.

RESULTS

All patients were from age 5 to 40 years. Out of hundred cases for tonsillectomy with dissection-snare method 75 i.e. 75% were male and 25 i.e. 25% were female. The other 100 patients who underwent electro dissection, 68 i.e. 68% were male and 32 i.e. 32% were female (Table 1). The time of surgery was recorded using a stopwatch starting from the beginning of the dissection till the complete haemostasis was secured. The average operation time was 14.2 minutes for diathermy group and 35 minutes for the dissection-snare group (Table 2). Blood loss during the procedure was quantified by measuring the blood in the suction bottle plus any blood in the swabs, in cases done with dissection method. While in cases of bipolar diathermy 1 x 4 inches specially made swabs were used. Each was calculated to imbibe approximately 5 ml blood if fully saturated. The average blood loss by diathermy method was 14 ml and by dissection-snare method was 42.5 ml (Table 3). Using the time to the first oral intake of drink or food as an indicator of pain severity, patients in the bipolar diathermy group took the drinks and ice

cream significantly early than those in the dissection group. (Table 4) There was no significant difference in analgesic requirements between the two groups. Most of the patients were discharged after 24 to 48 hours and brufen was used as an analgesic. In the dissection-snare, two patients (2%) developed reactionary haemorrhage requiring haemostasis in the theatre. No case of reactionary bleeding occurred in the electrodissection group in our study. Almost all the patients were on liquids, ice cream and soft diet for the first 24 hours. The patients in the diathermy group started their diet significantly earlier than the patients in the dissection group. On the second day soft semisolid food was started by most of the patients and all of them had normal routine diet after a week. Each group had one case of secondary haemorrhage, due to infection, which was treated conservatively with intravenous antibiotics. Both the cases were admitted on the fifth post-operative day and were kept for 48 hours. All the patients on discharge were advised for the follow-up visits after a week. Twenty-one (21%) of diathermy group and 17 of dissection group failed to come back after a week and all other patients had their follow-up visits in the out patient department. At each follow-up visit they were asked about the relief of their pre operative symptoms and the throats were examined for any complication of surgery. The findings were recorded on the proforma.

DISCUSSION

There is no consensus about the best method of tonsillectomy. This study was planned to compare the results of tonsillectomy performed with bipolar diathermy with that of tonsillectomy performed with conventional dissection-snare method. Dissection tonsillectomy can be accomplished by blunt, laser or diathermy dissection.

Laser tonsillectomy (Martinez and Akin, 1987; Oas and Bartels) has achieved a growing popularity in the United States with the increasing availability of machines and reported reduction in morbidity.⁴ There is a significant decrease in intraoperative blood loss, reduction in postoperative pain and more rapid healing, though these have been disputed by some authors.^{4,5} Historically diathermy was not used during tonsillectomy because of flammable, anesthetic gases. With the advent of non-flammable agents, monopolar, and subsequently bipolar, diathermy was introduced as a mean of securing haemostasis. Electrodissection tonsillectomy was usually performed with monopolar. Various authors, have used this method with low morbidity i.e. shorter operative time, and significantly low volume of blood loss.^{6,7} The use of bipolar diathermy also achieves these advantages. The precise nature of bipolar diathermy dissection allows the blood vessels to be identified and diathermized keeping blood loss to minimal.

In our study the average intra operative blood loss with diathermy was 14 ml as compared to 42.5 ml by dissection-snare method. Y. T. Pang, in his study of 60 patients in each group found an average of 5 ml (ranging from 0-25 ml) intra operative blood loss in bipolar diathermy group, which was significantly less than the dissection-snare group, average 39.5 ml.⁸ Other electro dissection series, which are associated with a lower operative blood loss, range from 0.5 ml to 24 ml.^{7,11,9,10} In dissection-snare method blood loss ranges from 53 ml to 132 ml.¹¹ Kalimullah Thaheem found intra operative blood loss by diathermy method to be 10 ml as compared to 33 ml by dissection-snare method (this study was carried out on one side tonsil only).¹² In our study of 100 cases in each group the average operation time was 14.2 minutes with bipolar diathermy

as compared to 35 minutes on average for tonsillectomy by dissection-snare method. Lassaletta-L et al, studied 120 patients and found little difference in the two methods, with average of 15.3 minutes with bipolar and 16.3 min with dissection-snare method.¹³ Pang et al, in his series found mean of 11.2 minutes in bipolar diathermy as compared to 19.9 minutes in dissection-snare method.⁸ Kalimullah Thaheem found average time of 8 minutes on one side only with diathermy method as compared to 17 minutes on the other side only with dissection-snare method.¹² Using the time to the first oral intake of drink or food (ice-cream) as an indicator of pain severity, in our study no significant difference was found, although patients with dissection-snare method started their diet a little latter as compared to those who underwent tonsillectomy with bipolar diathermy. Similar findings were noted by Mann et al,¹⁴ and Weimert et al,¹⁵ Lassaletta-L et al,¹³ in his study found markedly decrease in pain severity in patients who underwent bipolar diathermy tonsillectomy in the first hour of the surgery as compared to tonsillectomy done by dissection-snare method. Tay-HL in his prospective study of 105 patients reported the same results of less pain on the diathermy side in the first post-operative day.^{16,17} Ahmad et al reported the blood loss and time to be two important factors in tonsillectomy, and so diathermy tonsillectomy is an effective technique in our set up, where the burden of patients is too much in our hospitals.¹⁸ However late postoperative pain measured on the tenth day showed a moderately increase in children who underwent bipolar diathermy tonsillectomy. Kalimullah Thaheem in his series of 500 patients who underwent diathermy on one side and dissection on the other side, found no difference in severity of pain in either side in 350 patients, 98 patients complained greater pain on the side where diathermy tonsillectomy was done, while 52 patients

had a greater pain on the side of dissection tonsillectomy¹². Wexler-DB, 1996, reported an average delay in recovery of 2 days for adults and in a lesser delay in paediatric patients by diathermy method.¹⁹ Nunez et al in their study of 54 children reported diathermy method to be more painful.²⁰ Salam et al reported no difference in the two methods in children but the hot (diathermy) to be more painful in adults.²¹ In this study, the analgesic doses required in the first 48 hours (the stay of patients in the hospital after surgery) were almost equal in both groups with no significant difference. This conforms with other studies using electro dissection compared with the conventional technique.^{11,14} Complications such as primary / reactionary haemorrhage occurred in two patients (2%) operated by dissection-snare method with no case of reactionary haemorrhage with bipolar diathermy. Cormody et al, found reactionary haemorrhage was three times frequent in patients where ligature were used to arrest bleeding at operation than in group where diathermy was used.²² Mackenzie et al, reported 172 patients who had ligatures on one side compared to diathermy on the other side, only one primary bleed occurred on the ligated side.²³ Secondary haemorrhage occurred in one patient in each group (1%) and both the patients were admitted on the fifth postoperative day. In literature it is found that secondary haemorrhage is slightly more common with diathermy than conventional dissection-snare method. D. Carmody et al, found late tonsillar haemorrhage following the use of diathermy (1.8%) was greater than that occurring after ligation of vessels (0.9%).²² Mackenzie et al, and Roberts et al, found similar results.²³ Lassaletta-L et al, found no difference between the two techniques in the incidence of later postoperative haemorrhage.¹³ Kalimullah Thaheem while performing 500 cases of tonsillectomies with electro-

dissection on one side and conventional dissection-snare method on the other side found 5 cases of secondary haemorrhage on the diathermy tonsillectomy side while only 3 cases of secondary haemorrhage were noted on the dissection-snare side¹³. Mysiorek et al, reported that excessive intra-operative blood loss is one of the risk factors for postoperative tonsillectomy hemorrhage.²⁴

CONCLUSION

We conclude that bipolar diathermy tonsillectomy is a safe and effective method of tonsillectomy. There is significantly less operative blood loss and operative time as compared to tonsillectomy by dissection-snare method and there is no measurable increase in postoperative morbidity. Thus the recovery rate is improved, and return to normal activities are all-better in diathermy patients²⁵. It is especially useful in children with bleeding disorders and is particularly suitable in adults.

The diathermy experience of users and non-users with regard to speed, postoperative pain and haemorrhage differs markedly.

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