e-ISSN: 0976-822X, p-ISSN:2961-6042

Available online on http://www.ijcpr.com/

International Journal of Current Pharmaceutical Review and Research 2024; 16(4); 469-473

Original Research Article

# A Comparative Study of the Two Methods of Tonsillectomy: Bipolar Electrocautery Method vs Cold Dissection

**Lakshmi Unnikrishnan[1], Siddharth Kumar[2]**

[1]MO, Sadar Hospital, Hajipur, Bihar, India

[2]Senior Resident, Department of ENT, JLNMCH, Bhagalpur, Bihar, India

**Received: 15-02-2024 / Revised: 12-03-2024 / Accepted: 20-04-2024**
**Corresponding Author: Dr. Siddharth Kumar**
**Conflict of interest: Nil**

**Abstract**

**Background & Objectives:** There are many methods for tonsillectomy. The present study was carried out to assess and compare the bipolar electrocautery method to cold dissection method of tonsillectomy.

**Methods:** 60 patients presenting with chronic tonsillitis who underwent tonsillectomy between December 2021 and May 2023 in the department of ENT, JLN,MCH, Bhagalpur were included in the study. The patients were randomly assigned into two groups. Bipolar electrocautery method was used in group A while cold dissection method was used in group B. Data collected and analysed .The patients were followed up for a period of 3 months.

**Results:** Significant reduction in operation time and reduced intraoperative blood loss were seen in group A whereas group B patients showed a decrease in intensity of otalgia and nausea / vomiting.

**Interpretation & Conclusion:** Bipolar electrocautery gave better results in terms of intraoperative blood loss and operation time, hence could be a better option in children. Whereas when the post operative pain is considered, cold dissection method gave better.

**Keywords:** Tonsillectomy, Bipolar Electrocautery, Cold Dissection Method.



## Introduction

Tonsillectomy is one of the oldest surgeries in ENT. Many methods of tonsillectomy have been described in literature , ranging from blunt finger dissection to the use of different forms of electrical and radiofrequency devices. All of these methods have their own advantages and disadvantages.

Tonsillectomy results in disruption of mucosa and nerve fibres followed by inflammation and spasm of pharyngeal muscles that lead to pain. Trauma to the surrounding pharyngeal musculature during the procedure is also responsible for the pain [1]. Electrocautery diathermy has the advantages of causing thermal injury to surrounding structures thus contributing to pain. On the other hand, electrocautery diathery has the advantages of reducing intraoperative blood loss and the risk of post operative primary(reactionary) haemorrhage[2].

Tonsillectomy leads to open wound that heals by secondary intention. The most common serious complication of tonsillectomy is delayed haemorrhage. Generally some patients will require readmission to the hospital for control of their pain, dehydration and secondary haemorrhage. Varying incidence of post operative haemorrhage , return to normal diet, resumption of baseline activities are considered in choosing the method for tonsillectomy.

## Aims and Objectives

To assess and compare the use of bipolar electrocautery method with that of cold dissection method of tonsillectomy based on operative time, blood loss, post operative pain and secondary haemorrhage. [2,3]

## Materials and Methods

This study included patients who underwent tonsillectomy in the department of ENT of JLNMCH, Bhagalpur during the period December 202 1to May 2023. [4]

Sample size- A total of 60 patients , randomly grouped into group A and group B, with 30 cases in each group. Group A cases were operated with bipolar electrocautery and group B cases were operated with cold dissection method. [5]

**Inclusion Criteria** – Patients with clinically diagnosed chronic tonsillitis.

**Exclusion Criteria –**

1. Acute tonsillitis

2. Quinsy

3. Those who had impaired bleeding and coagulation profile.

4. Haemoglobin < 10 gm / dl

5. Acute upper respiratory infection.

A detailed case history and clinical examination was done. Properly informed written consent was taken from the parents of children. Children older than 10 years also received an informed consent form. Data was collected and analysed using SPSS version 26. p value < 0.05 was considered statistically significant. VAS score ( a scale of 0 - 10 ) was used for analysis of pain where score of 10 denoted the maximum pain intensity. The patients were followed up for a period of 3 months. The results were recorded and tabulated.

**Results**

The present study consisted of 60 cases, which were clinically diagnosed with chronic tonsillitis, studied between December 2021 to May 2023 in the department of ENT, JLNMCH, Bhagalpur.

In this study, the age of the patients ranged from 6 to 15 years. The median age of patients in each group is presented in table 1. Group A had median age of 7.9 ± 2.6 years while Group B had 8.6 ± 2.2 years. The youngest patient was 6.3 years old while the oldest was 14.7 years. Group A had 18 males and 12 females while Group B had 16 males and 14 females.

**Table 1: Median age in each group**

| | GROUP A | GROUP B |
|---|---|---|
| Median age (in years) | 7.9 ± 2.6 | 8.6 ± 2.2 |

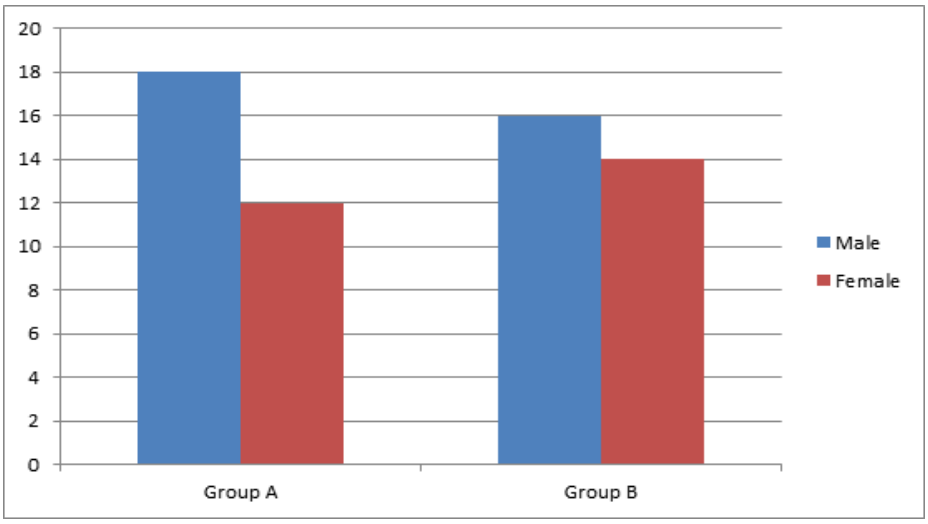


**Figure 1: Sex distribution in each group**

**Table 2: Mean operation time in each group**

| | Group A | Group B |
|---|---|---|
| Mean operation time (in minutes) | 22.33 ± 3.5 | 31.6 ± 4.6 |

**Table 3: Bleeding in each group**

| Types of bleeding | Group A | Group B |
|---|---|---|
| Intraoperative bleeding(in ml.) | 6.30 ± 1.25 | 32 ± 3.5 |
| Reactionary haemorrhage | 0 | 0 |
| Secondary haemorrhage | 0 | 0 |

In the present study, the mean operation time was lesser in Group A than that of group B . In group A it was 22.33 ± 3.5 minutes while in group B it was 31.6 ± 4.6 minutes. The statistical difference was found to be significant ($p<0.05$).The mean intraoperative blood loss in group A was 6.30 ± 1.25 ml. while in group B it was 32 ± 3.5 ml. No cases of reactionary haemorrhage or secondary haemorrhage were seen in any group.

**Table 4: VAS score for pain in different time in each group**

| Pain | Group A | Group B |
|---|---|---|
| 4 hour | 5.6 ± 0.40 | 5.7 ± 0.65 |
| 24 hour | 6.2 ± 0.35 | 6.7 ± 0.30 |
| 7$^{th}$ day | 3.6 ± 0.20 | 2.9 ± 0.45 |
| 14$^{th}$ day | 0.9 ± 0.05 | 0.2 ± 0.03 |

**Table 5: Post operative complications in each group**

| Post operative complication | Group A | Group B |
|---|---|---|
| Throat pain | 10 | 7 |
| Otalgia | 7 | 3 |
| Nausea / vomiting | 5 | 3 |

In our study, post operative pain was recorded at 4 hour,24 hour,7th day, 14th day. In group A it was 5.6 + 0.40, 6.2 + 0.35, 3.6 + 0.20 and 0.9 + 0.05 respectively. In group B it was 5.7 + 0.65, 6.7 + 0.30 , 2.9 + 0.45 and 0.22 + 0.03 respectively. Other parameters such as throat pain, otalgia and nausea or vomiting were also recorded. Group A had 10 (33.33%) cases of throat pain , 7(23.33%) cases of otalgia and 5 (16.66%) cases of nausea / vomiting .In group B there were 7 (23.33%) cases of throat pain, 3 (10 %) cases of otalgia and 3 (10 %) cases of nausea or vomiting.

**Discussion**

Any method of tonsillectomy is not free from complications. There are complications of bipolar electrocautery method [3] as well as that of cold dissection method [4]. There are many different opinions on which method is the best for tonsillectomy. An ideal method should be selected on criteria of minimal intraoperative bleeding, lesser operative time, lesser post operative pain and maximum safety and effectiveness.

In the present study, out of 60 patients, Group A had 18 (60 %) males and 12 (40 %) females while Group B had 16 (53.33%) males and 14( 46.66 %) females. The gender distribution was statistically comparable in both groups. The median age of the patients in group A was 7.9 + 2.6 years and 8.6 + 2.2 years in group B. Statistically there was no significant difference between the median age in two groups and so both groups were comparable in terms of age too.

The mean operative time in group A was 22.22 + 3.5 while in group B it was 31.6 + 4.6. The operative time was considered from the time of mucosal incision upto the attainment of complete haemostasis. We observed significant ($p< 0.05$) reduction in operation time in group A where bipolar electrocautery was used. [6] Similar findings were shown by the study conducted

by Bercin S et al5. Another study done by Guragain et al showed lesser operative time in electro dissection method6 . Cold dissection method causes active bleeding that required more time to achieve haemostasis while in bipolar electrocautery method dissection of tissue and coagulation of small blood vessels gets done simultaneously leading to clear field and thereby faster attainment of complete haemostasis resulting in lesser operative time. [7,8]

Our study showed that the mean blood loss in group A was 6.30 + 1.25 ml while in group B it was 32 + 3.5 ml. The maximum blood loss in group A was 8.0 ml while minimum blood loss was 2.0 ml. In group B, the maximum blood loss was 38 ml and the minimum was 22 ml. For the purpose of measuring intraoperative blood, blood was collected in suction bag and gauze piece of standard size 19cm x 14 cm were used. If the gauze was fully soaked, the blood loss was assumed to be 4ml while 2 ml in case of partially soaked gauze. Study conducted by Kousha A et al also showed similar result [7].

Guragain R et al had also observed lesser blood loss in electrocautery method8. The difference in intraoperative blood loss between the two groups was found to be significant ($p < 0.05$). The lesser blood loss in group A makes bipolar electrocautery a preferred method in paediatric age group. [9]

None of the cases of any group showed reactionary haemorrhage or secondary haemorrhage in the present study, probably because of a lesser sample size. Haemorrhage in tonsillectomy can be classified in three types- Primary haemorrhage, Reactionary haemorrhage and Secondary haemorrhage. Reactionary haemorrhage is mainly due to slippage of ligatures, increase in blood pressure after recovery from anaesthesia, bleeding from injured muscles. Secondary haemorrhage is the result of infection in tonsillar fossa.The postoperative haemorrhage is influenced by several factors such as postoperative care, bleeding disorders, surgical techniques used, medications etc9. In other studies done by Hashemi et al and Stavroulaki et al there were no cases of postoperative bleeding [10,11].

The VAS score for pain was recorded on 4 hour, 24 hour, 7th day and 14th day of post operative period. In group A it was 5.6 + 0.40 , 6.2 + 0.35 ,3.6 + 0.2 and 0.9 + 0.05 respectively while in group B, it was 5.7 + 0.65 ,6.7 + 0.3 , 2.9 + 0.45 and 0.2 + 0.03 respectively. There was no statistically significant difference in pain score between each group in initial hours. However, on post operative 7th and 14th days, there were significant difference in pain scores between both groups with p value $< 0.05$. Similar result was also shown by the study conducted by Gendy et al. and Silveria et al. where greater pain was recorded in bipolar electrocautery method [12,13]. As the first week ends, the pain scores also decreased creating a significant difference between 2 groups. By reducing the postoperative pain, it not only provided comfort to patient but also reduced the risk of dehydration by improving oral intake and reduced the risk of infection and secondary haemorrhage.

We observed that in group A, 10 (33.33%) patients complained of throat pain post operatively while in group B it was 7 (23.33%). In group A, there were 7(23.33%) cases of otalgia while it was 3(10%) in group B. As far as nausea or vomiting is concerned, we had 5 (16.66%) cases in group A while 3(10%) cases in group B. Although the number of cases in group A was greater than that of group B, there was no significant difference between the two groups. Similar results were found by Stavroulaki et al. who compared the morbidity after tonsillectomy between electrocautery method and cold dissection method11. In another study conducted by Kousha et al. the incidence of otalgia was found to be 15% in electrocautery method while in the study done by Hashemi et al it was 26% [7,10].

**Conclusion**

Based on the observations of our study, the following conclusions can be drawn:

Intraoperative blood loss was significantly less in bipolar electrocautery method. As the children have low blood volume, bipolar electrocautery method is useful in avoiding unfavourable complications arising due to severe bleeding during tonsillectomy. There is significantly lesser time of operation in bipolar electrocautery method. Therefore there is lesser pressure on the tongue by Davis blade. Also there is reduced anaesthesia duration, which results in decreased recovery time and thus avoiding complication due to long anaesthesia duration. Other parameters - pain, otalgia, nausea or vomiting studied in this study showed favourable results in cold dissection method group. Therefore, this method may be preferred in adults as far as these parameters are concerned.

**References**


1. Stoker KEDon DMKang DRHaupert MSMagit AMadgy DN Pediatric total tonsillectomy using coblation compared to conventional electrosurgery: a prospective, controlled single blind study. Otolaryngol Head Neck Surg 2004;
2. Williams JDPope TH Prevention of primary tonsillectomy bleeding. Arch Otolaryngol. 1973; 98306- 309
3. Mofatteh MR, Meghdadi S, Sharifzadeh G, Salehi F, Taheri MMH. A study of the complications of bipolar electrocautery tonsillectomy in patients admitted to Vali-e-Asr Hospital of Birjand. J Surgry Trauma. 2015; 3:33-38.
4. Mofatteh MR, Golbui SH, Hassanzadeh Taheri MM, Hossaini SM, Jannesar Borugerdi Y. Survey of the efficacy of antibiotic therapy on complications consequent of tonsillectomy and adenotonsillectomy. J Birjand Univ Med Sci. 20 13;20:211-219.
5. Bersin S,Kutluhan A,Yurttas V,Bozdemir K,Yalciner G.Comparison between bipolar cautery dissection and classic dissection techniques in tonsillectomy.Kulak Burun Bogaz Ihtis Derg. 2008;18(1):24-30 .
6. Guragain R, Bhusal C, Adhikari P, Pokharel R. Intraoperative blood loss & operating time in tonsillectomy: is electrodissection better?. Nepalese J ENT Head Neck Surg. 2011;1:6-7.
7. Kousha A, Banan R, Fotoohi N, Banan R. Cold dissection versus bipolar electrocautery tonsillectomy. JRMS. 2007;12:117-120.
8. Guragain R, Bhusal C, Adhikari P, Pokharel R. Intraoperative blood loss & operating time in tonsillectomy: is electrodissection better?. Nepalese J ENT Head Neck Surg. 2011;1:6-7.
9. Mirzaie N. Comparison of suture ligation versus electrocoagulation in controlling post tonsillectomy bleeding. Sci J Kurdistan Univ Med Sci. 2005;11(2):1-6.
10. Hashemi M, Salmani A, Abtahi M. Comparison of morbidity of bipolar electrocautery tonsillectomy using scissors and classic. Research in Medical Sciences. 2001; 6(4):324-7.
11. Stavroulaki P, Skoulakis C, Theos E, Kokalis N, Valagianis D. Thermal welding versus cold dissection tonsillectomy: a prospective, randomized, single-blind study in adult patients. Ann Otol Rhinol Laryngol. 2007;116(8):565-70.
12. Gendy S, O'Leary M, Colreavy M, Rowley H, O'Dwyer T, Blayney A. Tonsillectomy cold dissection vs. hot dissection: a prospective study. Ir Med J. 2004;98:243-244.
13. Silveira H, Soares JS, Lima HA. Tonsillectomy: cold dissection versus bipolar electrodissection. Int J Pediatr Otorhinolaryngol. 2003;67:345-351.