

Original article

A Comparative Study of Dissection Method of Tonsillectomy vs. Bipolar Cautery Method of TonsillectomyMd. Kamruzaman¹, Md. Sazedul Islam², Timir Debnath³**ABSTRACT**

CONTEXT: The tonsils are lymph nodes in the back of the mouth and top of the throat. They help to filter out bacteria and other germs to prevent infection in the body. A bacterial or viral infection can cause tonsillitis. Strep throat is a common cause. The infection may also be seen in other parts of the throat. Whenever, tonsil become enlarged, seriously infected or causes certain complications, tonsillectomy becomes essential. It can be performed with many ways including dissection method of tonsillectomy and bipolar method of tonsillectomy.¹ **AIM OF THE STUDY:** The aim of this study was to assess the advantages of dissection method over bipolar method of tonsillectomy. **MATERIALS AND METHODS:** A prospective single blinded randomized control study was conducted in the Department of Otolaryngology, Bashundhara Ad- Din Medical College Hospital, Bangladesh during the period from July 2020 to February 2023. A total of 50 admitted patients for tonsillectomy were included as the study. **RESULTS:** In this study maximum patient were 7- 18 years. The study showed males were affected more than the females. Intraoperative blood loss was more in conventional dissection method. Post operative pain was more in electrocautery method in comparison to dissection method. Duration of surgery was more in dissection method than in bipolar cautery method. Post operative bleeding was not observed in any case of this study. **CONCLUSION:** Intraoperative blood loss and duration of surgery was more in dissection method. Post operative pain was more in electrocautery method.

Key words: Tonsillitis, Tonsillectomy, Dissection method, Cautery method.

INTRODUCTION

The tonsils are lymph nodes in the back of the mouth and top of the throat. They help to filter out bacteria and other germs to prevent infection in the body. A bacterial or viral infection can cause tonsillitis. Strep throat is a common cause. The infection may also be seen in other parts of the throat. Whenever, tonsil become enlarged, seriously infected or causes certain complications, tonsillectomy becomes essential. It can be performed with many ways including dissection method of tonsillectomy,

cold dissection, cryosurgery, coblation and bipolar method of tonsillectomy.²

So our study was designed to compare and find the advantages and disadvantages between dissection and electrocautery techniques of tonsillectomy among the population of Bangladesh.

METHODS

This study carried out over a period of 32 months (from July 2020 to February 2023). A total of 50 admitted patients for tonsillectomy were included as the study. All the participants were divided in two groups. In one group, there were 25 participants selected for dissection method. On the other hand, in another group, other 25 participants selected for bipolar method of tonsillectomy. Necessary permission and approval from the ethics

Author affiliation:

1. *Dr. Md. Kamruzaman, Assistant Professor, Department of E. N. T, Bashundhara Ad - Din Medical College and Hospital, Dhaka. Mobile: 01757754451, e-mail: dr.shuhag3@yahoo.com
2. Dr. Md. Sazedul Islam, Assistant Professor, Department of E.N.T, Prime Medical College
3. Dr. Timir Debnath, Assistant Professor, Department of E.N.T, Green Life Medical College

***For Correspondence:**

committee was taken prior to the study. the patient’s attendants involved in the study. A total of 50 patients of 5-18 years of age who were diagnosed with chronic tonsillitis based on history and clinical examination were identified as candidates for tonsillectomy were included in the study. The method employed to remove the tonsils on right and left side with Conventional dissection method and bipolar cautery respectively will vary alternatively in patients. Routine investigations including, complete blood count, bleeding time, clotting time and prothrombin time were done. All the procedures were performed under the general anaesthesia. For comparison of both the method all necessary data along with demographic and clinical status were collected in a predesigned questioner. The patient were followed up on 1st, 3rd, 7th, and 14th day of post operative period. All data were processed and analysed and disseminated by using SPSS version 22 programs as per need.

INCLUSION CRITERIA

Chronic tonsillitis patients between 7-18 years of age were included in the study.

EXCLUSION CRITERIA

Children with chronic tonsillitis below 7 years of age, patients above 18 years of age, bleeding disorders, suspected malignancy of tonsil, peritonsillar abscess were excluded from the study.

RESULT

As per our study 50 patients underwent tonsillectomy by conventional dissection and bipolar cautery method on right and left side alternatively under general anaesthesia. All patients were followed regularly after surgery on 1st, 3rd, 7th and 14th post operative days to assess the post operative morbidity and efficacy of both conventional and bipolar methods.

Informed written consents were obtained from The duration of surgery was more in dissection method than bipolar cautery method as shown in Table I. The mean duration of surgery, for conventional tonsillectomy was 15 minutes and 9 seconds and for bipolar cautery was 11 minutes and 36 seconds thus it took an average of 3 minutes 45 sec more to perform conventional dissection procedure compared to bipolar cautery and this difference is statistically significant, (p<0.00001).

The amount of intra operative blood loss on an average in conventional method was approximately 44 ml and in bipolar cautery was 23.14 ml. The difference was statistically significant (p<0.00001).

Table I: comparison of duration of surgery (min) and Intra operative blood loss (millilitres), (n= 50)

	Dissection method	Bipolar cautery	p-value
Intra-operative blood loss (milliliters)	44	23.14	<0.00001*
Duration of operating time (minutes)	15.9	11.36	<0.0001*

Post operative pain was assessed using VAS (Visual analogue scale) and was significantly more in bipolar cautery method as compared to the dissection method as shown in Table II. The mean pain score on day 1st, 3rd and 7th was more on bipolar cautery side as compared to dissection method and the results were statistically significant.

Table II: Comparison of post operative pain on 1st, 3nd and 7th post operative day

Post-op day pain scale (VAS)	Dissection method	Bipolar cautery	P value
1 st day	2.56	2.74	<0.0001*
3 rd day	3.3	4	<0.0001*
7 th day	2.3	3	<0.0001*
14 th day	1.32	1.34	<0.0001*

There was no post operative bleeding seen in any of the methods in this study.

DISCUSSION

Tonsillectomy is a very common surgery done worldwide by ENT surgeons. There are several existing techniques to perform tonsillectomy including- cold dissection, cryosurgery, diathermy (monopolar and bipolar) dissection, coblation and laser surgery.³ Cold dissection and electrocautery dissection are the main and most commonly used techniques for tonsillectomy.⁴

Diathermy has the potential advantage of reduced perioperative bleeding. The major post-operative morbidity includes pain and haemorrhage.⁵ Other complications include- post operative nausea and vomiting, delay to oral intake, airway obstruction with respiratory compromise, and primary or secondary and reactionary postoperative haemorrhage.

In this study duration of surgery was more in conventional dissection than bipolar cautery method. Study conducted by Leach et al also reported an increased operative time with the dissection technique.

The intra-operative blood loss was more in conventional dissection method in this study. The blood vessels were cut during the dissection method while in bipolar cautery the cauterisation of the blood vessels while dissecting occurs simultaneously. Shanmugam et al noted a decrease intra operative blood loss in bipolar cautery side. Also, Ayden also reported that intra-operative bleed was less in diathermy method than dissection method.

A study done by Nunez et al found that dissection tonsillectomy increased the amount of blood loss.⁶ Pang et al Raut et al showed 5 ml blood loss on an average for bipolar diathermy method while dissection technique had an average of 115 ml.^{7,8} Mofatteh et al and

Beriat et al found that intra-operative blood loss was significantly lower in the bipolar method.^{9,10}

In this study post-operative pain was more in bipolar cautery method. Shanmugam et al, assessed post operative pain using VAS which showed that the pain was more in the bipolar cautery side from day 0 to day 5. However, there was not much difference in post operative pain on both sides on day 6 day 7 and day 14. This could be due to more local inflammation caused by the cautery than that caused by the cold dissection method. Similar post operative pain scores were reported by Helena Silveira and Ali, Rafique A in their study.

Khan et al, Beriat et al, Moonka, Mofatteh et al, Nunez et al and Gregor et al found that post-operative pain was more with bipolar diathermy method.⁸⁻¹³

The intraoperative blood loss is more in conventional dissection method. The post operative pain is more in bipolar cautery method.

CONCLUSION

After observation and discussion of 50 cases we concluded that the clear field in tonsillar surgery which is very important is easily achieved by use of the bipolar cautery. The duration of surgical technique was significantly more in Bipolar cautery method than that in Conventional dissection method. Intra-operative blood loss was more in Conventional dissection method. No case of post operative bleeding was seen in any of the methods in this study.

REFERENCES

1. Derkay C, Harrow D, Welch C. Post-tonsillectomy morbidity and quality of life in paediatric patients with obstructive tonsils and adenoid: microdebrider vs electrocautery.

- Otolaryngol Head Neck Surg. 2006; 134(1): 114-20.
2. McAuliffe CJ. The history of tonsil and adenoid surgery. *Otolaryngol Clin North Am.* 1987; 20(4): 15-9.
 3. Baily BJ. Tonsils and adenoids: snapshots from the laryngoscope scrapbook. *Laryngoscope.* 1997; 107: 301-6.
 4. Kirazli T, Bilgen C, Midilli R, Ogüt F, Uyar M, Kedek A. Bipolar electrodissection tonsillectomy in children. *Eur Arch Otorhinolaryngol.* 2005; 262(9): 716-8.
 5. Omrani M, Barati B, Omidifar N, Okhovvat AR, Hashemi SAG. Coblation versus traditional tonsillectomy: A double blind randomized controlled trial. *J Res Med Sci.* 2012; 17(1): 45-50.
 6. Nunez DA, Provan J, Crawford M. Postoperative tonsillectomy pain in pediatric patients: electrocautery (hot) vs cold dissection and snare tonsillectomy-a randomized trial. *Arch Otolaryngol Head Neck Surg.* 2000; 126(7): 837-41.
 7. Pang YT, El-Hakim H, Rothera MP. Bipolar diathermy tonsillectomy. *Clin Otolaryngol Allied Sci.* 1994; 19(4): 355-7.
 8. Raut V, Bhat N, Kinsella J, Toner JG, Sinnathuray AR, Stevenson M. Bipolar scissors versus cold dissection tonsillectomy: a prospective, randomized, multi-unit study. *laryngoscope.* 2001; 111(12): 2178-82.
 9. Mofatteh MR, Salehi F, Hosseini M, Hassanzadeh Taheri M, Sharifzadeh G, Hassanzadeh-Taheri M. Comparison of postoperative morbidity between conventional cold dissection and bipolar electrocautery tonsillectomy: which technique is better? *Braz J Otorhinolaryngol.* 2020; 86(4): 427-33.
 10. Beriat GK, Ezerarslan H, Ekmekçi P, Kocatürk S. The use of bipolar electrocautery tonsillectomy in patients with pediatric respiratory tract obstruction. *J Clin Analytical Med.* 2012; 3(1): 36-40.
 11. Khan MA, Khan ZU, Akram S, Rafique U, Usman HB. Comparison of postoperative pain and haemorrhage in children after tonsillectomy with bipolar diathermy technique versus tonsillectomy with cold steel dissection and silk ligature. *Pakistan Armed Forces Med J.* 2015; 65(6): 739-42.
 12. Moonka PK. Ligation vs. bipolar diathermy for haemostasis in tonsillectomy-a comparative study. *Indian J Otolaryngol Head Neck Surg.* 2002; 54(1): 35-8.
 13. MacGregor FB, Albert DM, Bhattacharyya AK. Post-operative morbidity following paediatric tonsillectomy; a comparison of bipolar diathermy dissection and blunt dissection. *Int J Pediatr Otorhinolaryngol.* 1995; 31(1): 1-6