



▪ **Brief Communication**

A single blind controlled study comparing bipolar electrocautery tonsillectomy to cold dissection method in pediatric age groups

ST Chettri¹, S Bhandary¹, A Nepal¹, RR Joshi¹, V Natesh¹, SP Sah¹, BP Sah¹, S Koirala²
Department of ¹Otorhinolaryngology & Head, Neck Surgery; ²Anaesthesiology
BP Koirala Institute of Health Sciences, Dharan, Nepal

Abstract

Background: Tonsillectomy is one of the most commonly performed operations in otolaryngology. There are many proven methods of tonsillectomy, including cold dissection and bipolar electrocautery. **Objective:** To compare bipolar electrocautery tonsillectomy with cold dissection method in pediatric age groups. **Methods:** Single blind controlled study to compare bipolar technique against the conventional dissection/snare technique. **Results:** The average amount of bleeding on electrocautery side was 4.07ml and on the cold dissection side was 14.58 ml. The mean time of operation for electrocautery and cold dissection was 12.04 and 16.57 minutes respectively. On the second post operative day, 35% of the patients complained of pain on the cauterized side, 30% complained of more pain on the dissection side while 35 % experienced equal pain on both sides. Post-operative complication such as hemorrhage was not seen in both the techniques employed. **Conclusion:** In the present study, bipolar diathermy tonsillectomy had advantages in having less post-operative time and blood loss intraoperatively but patients experience slightly more pain than cold dissection.

Keywords: tonsillectomy, bipolar electrocautery, cold dissection.

Introduction

Tonsillectomy is one of the most commonly performed operations in otolaryngology and its history dates back to antiquity when Celsus performed the first tonsillectomy in 40 A.D.

There are many proven methods of tonsillectomy like cold-knife dissection, laser, guillotine, snare with suture, suction cautery, hot-knife dissection, microdissection, electrocautery and bipolar electrocautery scissors.¹ Ideally, tonsillectomy should be fast, bloodless, and associated with rapid and uncomplicated recovery.² In spite of all the new surgical tools and techniques haemorrhage is still a significant complication during and after tonsillectomy and about 5% patients may face this problem at any time from first 24 hours to 10 days after operation.³ This study concerns two popular methods: bipolar cautery excision and dissection/snare followed by compression with gauge piece and selective cautery of bleeders. The dissection method is still preferred for in spite of various modern methods and

surgical instruments.⁴ Use of bipolar diathermy, although decreases the time to control the bleeding, is always associated with a danger of necrosis and infected slough formation which may lead to secondary hemorrhage.^{5,6}

Methods

After obtaining approval from the institutional review board of the BP Koirala Institute of Health Sciences, Dharan, Nepal, pediatric patients with history of recurrent tonsillitis presenting to otolaryngology clinic were considered for tonsillectomy. The exclusion criteria included the use of anticoagulant drugs, obstructive sleep apnea, history of bleeding disorder, recurrent acute tonsillitis within six weeks to surgery, children above the age of 12 years and patients who did not want to participate in the study.

It was a prospective single blind controlled study to compare the two methods in terms of intraoperative time, intraoperative bleeding, post operative pain and post operative hemorrhage. It was a single-blind study, as patients were aware of the operation technique but were not aware on which side the technique was

Address for Correspondence

Dr Shyam Thapa Chettri
Associate Professor, Department of ENT
B P Koirala Institute of Health Sciences, Dharan, Nepal
Email: dr_shyamtha@yahoo.com



used. The operation procedure was explained to the patients before the surgery and their written consent was obtained. All the operations were done under general anesthesia and different surgeon performed the surgeries. In one site of tonsil tonsillar dissector and snare were used and haemostasis was achieved by packing whereas in the other tonsil bipolar electrocautery was used. Intraoperative bleeding on the each side was recorded by measuring the amount of blood in milliliters collected in the suction bag and 19cm x 14cm size of standard gauge was used. The blood loss was 4 ml if the gauge piece was fully soaked and it was 2.5ml if gauge piece was partially soaked.

Throat pain was evaluated by asking the patients about the side of the tonsillectomy they had more pain on the first operative day. Operation time was also measured for each tonsil. Data analysis was done using simple frequency and percentage.

Results

Forty (40) patients underwent bipolar electrocautery and classical dissection tonsillectomy on each side of the tonsils. Males (n=22) outnumbered females (n=18). Recurrent tonsillitis was the main indication for surgery in all the cases. The average amount of bleeding on electrocautery side was 4.07ml and on the cold dissection side was 14.58 ml (Table 1).

Table 1: Showing operative time, intraoperative blood loss and post operative haemorrhage.

Operative time(minutes)	Range	Average.
Bipolar cautery	8-20	12.04
Dissection/snare	12-30	16.57
Intraoperative blood loss (milliliters)		
Bipolar cautery	0.5-10	4.07
Dissection/snare	4-35	14.58
Post-op haemorrhage	none.	

The maximum amount of bleeding on electrocautery side was 10 ml and minimum of 0.5ml whereas in cold dissection the maximum blood loss was 35ml and a minimum of 4 ml. The mean time of operation for electrocautery and cold dissection was 12.04 and 16.57 minutes respectively. Post operative hemorrhage was not seen in any of the techniques employed. On the first post operative day shown, 35% of the patients complained of pain on the cauterized side, 30% complained of more pain on the dissection side while 35 % experienced equal pain on both sides (Table 2).

Table 2: Showing severity of pain on first post op day and post op haemorrhage.

Severity of Pain	Number
Bipolar cautery	14
Dissection/snare	12
Similar	14

We observed time taken for dissecting the tonsil was short in the classical dissection method but time taken in controlling haemostasis in the same method was more which led to an overall increased operating time in this method. Whereas in case of electrocautery, haemostasis was achieved as the tonsil was dissected out.

Discussion

Using the electrocautery to remove tonsils has been the most common method in United States since 1930. The cold dissection and bipolar electrocautery tonsillectomy are routinely use for tonsillectomy. In bipolar electrocautery the spread of heat to the tissue and its environment is less than the monopolar where as in cold dissection method there is no spread of heat to the tissue thereby tissue damage is less.⁷⁻⁹

In the present study 22 males and 18 females underwent tonsillectomy for recurrent tonsillitis indicating a slight preponderance for male which is in concordance with Khan AR et al study.¹⁰

The average amount of bleeding on electrocautery side was 4.07 ml and on the cold dissection side was 14.58 ml showing a significant lower intraoperative bleeding which is in agreement to other studies.^{11,12}

The present study also observed the mean operation time for electrocautery was less than dissection method which is in accordance to the study by Bercin S et al.¹² Postoperatively the patients experience more pain in electrocautery which is similar to the study by Kirazli et al¹³ but differ from Kousha et al¹⁴ where pain was more in classical dissection method and equal pain was observed in a study by Raut et al.⁹ In most of the studies^{11,12} there was post operative hemorrhage in both the technique employed but in the present study there was no post operative hemorrhage observed probably because of a lesser sample size.

The limitation of this study was to assess the pain as it was very subjective. Moreover in children it was difficult to obtain an objective interpretation of pain. In order to overcome the assesment of pain in children, the child was only asked on which side of the tonsillectomy they had more pain on the first operative day.



Conclusion

In the present study, bipolar diathermy tonsillectomy had advantages in having less post operative time and blood loss intraoperatively but patients experience slightly more pain than cold dissection.

References

1. Saleh HA, Cain AJ, Mountain RE. Bipolar scissor tonsillectomy. *Clin Otolaryngol* 1999;24:9-12.
2. Leach J, Mannings S, Schaefer S. Comparison of two methods of tonsillectomy. *Laryngoscope* 1993;103:619-622
3. Randall DA, Hoffer ME. Complications of tonsillectomy and adenoidectomy. *Otolaryngol Head Neck Surg.* 1998; 1: 61-68.
4. Zwack GC, Derkay CS. The utility of preoperative haemostasis assessment in adeno-tonsillectomy. *Int J Ped Otolaryngology.* 1997; 39:67-76
5. Carmody D, Vamadeva T, Cooper SM. Post tonsillectomy haemorrhage. *J Laryngol Otol.* 1982;88: 117-21.
6. Brown PM, Fowler S, Ryan R, et al. ENT day surgery in England and Wales: an audit by Royal College of Surgeons of England. *J Laryngol otol.* 1998; 112: 161-65.
7. Dyleski RA, Dennis M. Tonsillitis, tonsillectomy and adenoidectomy. In: Byron J Bailey, Bailey, Norman Friedman, Jeffrey T Vrabec, editors. *Atlas of Head & Neck Surgery-Otolaryngology.* 2001;2:979-993.
8. Paradise JL. Tonsillectomy and adenoidectomy. In: Bluestone CD, editor. *Pediatric Otolaryngology.* 2003;4:1210-1222.
9. 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):2178-2182.
10. Khan AR, Khan A, Ali F, Shah ED and Khan NS. Comparison between silk ligation and bipolar cautery in tonsillectomy. *Gomal Journal of Medical Sciences.* 2007; 5:13-16.
11. Pang YT. Paediatric tonsillectomy: bipolar electrodissection and dissection/snare compared. *The Journal of Laryngology & Otology* (1995), 109:733-736
12. 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.
13. Kirazli T, Bilgen C, Midilli R, Ögüt F, Uyar M and Kedek A. Bipolar electrodissection tonsillectomy in children. *European Archives of oto-rhinolaryngology.* 2005;262:9.
14. Kousha A, Banan R, Fotoohi N, Banan R. Cold dissection versus bipolar electrocautery tonsillectomy. *Journal of Research in Medical Sciences.* 2007;12:117.