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Intraoperative Blood Loss & operating time in Tonsillectomy: Is Electrodissection Better ?

Objective:

To compare bipolar electrodissection with cold dissection paediatric tonsillectomy in terms of operative time and intra-operative blood loss.

Methods:

This is a prospective randomized study performed in 30 children age less or equal to 13 years undergoing tonsillectomy in Department of ENT and Head and Neck Surgery, TU Teaching Hospital, Kathmandu, between October 2007 and December 2008. In both techniques, duration of surgery and amount of blood loss were recorded and compared. Statistical analysis was done using student t- test.

Results:

Out of 30 children (60 tonsils), 30 tonsils underwent tonsillectomy by bipolar electrodissection and 30 tonsils by cold dissection. Mean duration of surgery and mean blood loss in bipolar electrodissection were 14.88 minutes and 7.38 ml respectively while in cold dissection group, they were 23.03 minutes and 11.73 ml respectively. (p- value less than 0.001- highly significant).

Conclusion:

Bipolar electrodissection is a safe technique which reduces the duration of surgery and blood loss as compared with cold dissection group.

INTRODUCTION:

Tonsillectomies are one of the most common operations performed by otorhinolaryngologists in paediatric population in order to resolve upper airway obstruction and recurrent or chronic throat infections.¹ There is no consensus on the optimum method of performing tonsillectomy. Various methods have been described and these are frequently compared in the otorhinolaryngology literature.² The first tonsillectomy was performed by Celsus using his finger nails 200 years ago.³ Several techniques of tonsillectomy has been advocated since then. However the difficulties encountered by surgeons especially in controlling the peri-operative bleeding were a major drawback. The concept of electrodissection was first described by Goycolea⁴ in 1982 using monopolar diathermy and 10 years later Pang⁵ reported the first electrodissection tonsillectomy using the bipolar forceps. To date, there is no conclusive evidence in the literature as to which surgical technique is best for performing paediatric tonsillectomy.⁶ The ideal tonsillectomy has been defined as fast, bloodless and associated with rapid and uncomplicated recovery. The aim of this study is to compare bipolar electrodissection with cold dissection tonsillectomy in terms of operative time and intra-operative blood loss.

MATERIALS AND METHODS:

This is a prospective randomized study done in 30 children (60 tonsils) age less or equal to 13 years undergoing tonsillectomy in the Department of ENT and Head and Neck Surgery, TU Teaching Hospital, Kathmandu, between October 2007 and December 2008. Informed consent was taken for the study. In both techniques, duration of surgery and amount of blood loss were recorded and compared.

The surgery was conducted under general anesthesia with orotracheal intubation. In children less than or equal to 5 years of age, only one method of tonsillectomy was used (either bipolar electrodissection or cold dissection), while in children of more than 5 years to 12 years of age, two different techniques were used in two different sides of tonsil. In cold dissection, the method used was classical method using scissors and tonsillar dissector. No electrocautery was used to control the bleeding. If required, ligation of the bleeding vessel was done not controlled by tonsillar packs of standard size. In bipolar electrodissection, haemostasis was achieved by the same bipolar forceps. Operating time was measured from the anterior pillar incision or beginning of dissection until complete haemostasis of tonsillar fossa was achieved. Operative blood loss was measured by the use of standard gauge piece of size 19cm x14 cm. The blood loss was 4ml if the gauge piece was fully soaked and it was 2.5 ml if the gauge piece was partially soaked. The time of adenoidectomy was excluded in cases where it was performed in same setting. All children were prescribed a standard regimen of amoxicillin 50mg/kg body weight and suspension of paracetamol and ibuprofen at the interval of 8 hours. Patients were discharged on the seventh postoperative day. Statistical analysis was done using student t- test.

RESULTS:

Out of 30 children (60 tonsils), 30 tonsils underwent tonsillectomy by bipolar electrodissection and 30 tonsils by cold dissection. Mean duration of surgery and mean blood loss in bipolar electrodissection group were 14.88 minutes and 7.38 ml respectively while in cold dissection group, they were 23.03 minutes and 11.73 ml respectively. (p- value less than 0.001).

Table: 1. Operative time in CDT and BET

Methods	Number (n)	Mean time (minutes)	Standard Deviation(SD)	Z test	p value
CDT	30	23.03	5.6	6.9	p<0.001
BET	30	14.8	83.29		

Table: 2. Blood loss in CDT and BET

Methods	Number (n)	Mean blood loss (ml)	Standard Deviation(SD)	Z test	pvalue
CDT	30	11.73	2.86	6.21	<0.001
BET	30	7.38	2.81		

DISCUSSION:

Dissection tonsillectomy is performed worldwide but there is no consensus on the methods of dissection which includes blunt and sharp dissection (cold dissection tonsillectomy), electrocautery dissection (hot dissection tonsillectomy), cryosurgery, ultrasonic removal, laser tonsillectomies, and co-blation dissection. It is generally accepted that the ideal method should decrease the operating time, blood loss, post operative haemorrhage and particularly the post operative morbidity.⁷ Historically diathermy was not used during tonsillectomy because inflammable gases were used for induction. With the advent of non-inflammable gases, monopolar and subsequently bipolar diathermy was introduced as a means of securing haemostasis and later on for performing surgery itself. When diathermy was introduced, enthusiastic reports were made claiming the significant reduction on operative time and blood loss.⁵ Tonsillectomy using bipolar scissors is a relatively new technique. Initial result reported a high incidence of accidental injury and burn to the oral mucosa in addition to raising the possibility of an increased incidence of post operative pain and haemorrhage.⁸ Weimert et al reported a significant reduction in the intra-operative blood loss and operating time by diathermy tonsillectomy.⁹ Our study showed a significant reduction in the operating time when bipolar electrodissection was used. This was similar to other studies.¹⁰⁻¹² Thus, reduction in the operating time will make shorter duration of anesthesia which finally leads to the faster recovery of the patient. In our study, there was a significant reduction of blood loss also in bipolar electrodissection group which was similar to other studies.¹⁰⁻¹³ In children, reducing the blood loss is of utmost importance as increase volume of blood loss can lead a child to delayed recovery. Furthermore total circulating blood volume is less in children. These two parameters are appealing to any surgeons but they are particularly important when surgery involves the paediatric age group, especially the very young with obstructive sleep apnoea.¹⁴ Thus, reduced operating time with the use of bipolar electrodissection could increase the number of operations in a theater so that the waiting list of date of surgery in paediatric patients will eventually decreased.

A long period of waiting list is a problem in our hospital too, so as to decrease it, tonsillectomy by bipolar dissection is one of the good options. Sood and Strachan raised concerned about the safety of the bipolar scissors for tonsillectomies.⁸ However, our study did not show any complication or accidental injury to the other structure which could be due to thermal burn, so that it could be used safely in tonsillectomy.

CONCLUSION:

Bipolar electrodissection tonsillectomy is a relatively safe technique. It significantly reduces the operating time and intra-operative blood loss. So this technique can be an alternative to classical cold dissection tonsillectomy in children. Reduction in these parameters can increase the number of operation cases in the theatre which eventually lead to a decrease in the waiting list of surgical cases in paediatric otorhinolaryngology unit.

REFERENCES:

- Blair RL, McKerrow WS, Carter NW, Fenton A. The Scottish tonsillectomy audit. The audit sub-committee of the Scottish Otolaryngological Society. *J Laryngol Otol* 1996; 110: 1-25.
- McGuire NJ. A method of guillotine tonsillectomy with an historical review. *J Laryngol Otol* 1967;81:187-95.
- Curtin JM. The history of tonsil and adenoid surgery. *Otolaryngol Clin North Am* 1987; 20: 415-9.
- Goycolea MV, Cubillos PM, Martinez GC. Tonsillectomy with a suction coagulator. *Laryngoscope* 1982;92:818-9.
- Pang YT, El-Hakim H, Rothera MP. Bipolar diathermy tonsillectomy. *Clin Otolaryngol* 1992;19:355-7.
- Saleh HA, Cain AJ, Mountain RE. Bipolar scissor tonsillectomy. *Clin Otolaryngol* 1999; 24: 9-12.
- Leach J, Mannings S, Scheefer S. Comparison on two methods of tonsillectomy. *Laryngoscope* 1993;103:619-22.
- Sood S, S trachan DR. Bipolar scissor tonsillectomy. *Clin Otolaryngol* 1999;24:465.
- Weimert TA, Babyak JW, Richter HJ. Electrodissection tonsillectomy. *Arch Otolaryngol Head Neck Surg* 1990;116: 186-8.
- Kirazli T, Bilgen C, Midilli R, Ogut F, Uyar M, Kedek A. Bipolar electrodissection tonsillectomy in children. *Eur Arch Otorhinolaryngol* 2005;262:716-8.
- Silveira H, Soares JS, Lima HA. Tonsillectomy: cold dissection versus bipolar electrodissection, *Int J Pediatr Otorhinolaryngol* 2003;67:345-51.
- Raut VV, Bhat N, Sinnathuray AR, Kinsella JB, Stevenson M, Toner JG. Bipolar scissors versus cold dissection for pediatric tonsillectomy—a prospective, randomized pilot study. *Int J Pediatr Otorhinolaryngol* 2002;64:9-15.
- Raut VV, Bhat N, Kinsella JB, Toner JG, Sinnathuray AR, Stevenson M. Bipolar scissors versus cold dissection tonsillectomy: a prospective, randomized multiunit study, *Laryngoscope* 2001; 111:2178-82.
- Barkowitz RG, Zalzal GH. Tonsillectomy in children under 3 years of age. *Arch Otolaryngol Head Neck Surg* 1990; 116: 685-6.