

ORIGINAL RESEARCH

A Comparative Assessment of Dissection and Snare versus Electrocautery Techniques for Tonsillectomy: A Randomised Clinical Trial

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ABSTRACT

Background: One of the most popular surgical operations carried out worldwide is tonsillectomy. The present study was conducted to compare dissection, snare, and electrocautery techniques for tonsillectomy.

Materials and Methods: 46 cases of tonsillitis of both genders were divided into 2 groups of 23 each. Group I patients were subjected to tonsillectomy using dissection and snare, and group II underwent electrocautery methods. All patients had their intraoperative blood loss, length of surgery, postoperative pain assessment, total length of hospital stay, and any other complications and their management.

Results: Group I had 17 males and 13 females, and Group II had 18 males and 12 females. In groups I and II, the mean intra-operative blood loss (ml) was 4.6 and 2.5, respectively. Pain after 4-6 hours postsurgery (VAS) was 5.4 and 6.2, the duration of operating time (mins) was 6.5 and 4.3, and the duration of stay (hours) was 31.2 and 42.5, respectively. The difference was significant ($P < 0.05$).

Conclusion: Electrocautery tonsillectomy is a widely used and effective technique for tonsil removal, particularly valued for its ability to control intraoperative bleeding and the duration of surgery.

Keywords: Dissection, Electrocautery, Tonsillitis

Introduction

One of the most popular surgical operations carried out worldwide is tonsillectomy. The most common symptoms are still airway blockage (kissing tonsils) or recurring tonsillar infection (chronic tonsillitis).¹ Tonsillectomies were performed using the cold technique up until the late 1960s, which involved cutting the tonsil capsule with a blunt and sharp instrument from the fossa floor.² Dissection tonsillectomy is a traditional technique where the tonsils are removed using surgical instruments such as scalpels, scissors, and forceps. The procedure involves dissecting the tonsil tissue from the surrounding muscles and tissue.³

Hot electrocautery was deemed safe and simple to execute in the 1970s because of the low intraoperative hemorrhage. Despite advancements in technology, surgical procedures, and tonsillectomy instruments, the major difficulties of intraoperative blood loss, postoperative haemorrhage, and postoperative discomfort persist.⁴

Anaesthesiologists and surgeons have traditionally suggested and looked for strategies to lower peri- and post-operative morbidity.⁵ There are a number of electrocautery-based treatments that have been developed that reduce bleeding after surgery, but they do not appreciably lessen pain. Cohen L. was the first to implement intra-operative closure of the bleeding site as a standard procedure, and it has been used ever since.⁶ Electrocautery tonsillectomy is a common method for removing the tonsils using electrical current to cut tissue and control bleeding simultaneously. Electrocautery utilises heat generated by electric current to cut tissue and achieve hemostasis. The device used is often called a "cautery pen" or "electrocautery unit".⁷

Aim and objectives: The present study was conducted to compare dissection, snare, and electrocautery techniques for tonsillectomy.

Materials and Methods

The present randomised clinical trial was conducted on 60 cases of tonsillitis of both genders at the Department of Otorhinolaryngology (ENT), Sri Krishna Medical College & Hospital, Muzaffarpur, Bihar, India. All were informed regarding the study, and their written consent was obtained. The study was approved by the Institutional Ethics Committee. The duration of the study was from February 2021 to August 2021. A treatment chart and patient data collection form with demographic details such as name, age, gender, etc., were recorded.

Inclusion Criteria

- Patients who give written informed consent.
- Patient's age between 8 – 30 years.
- Patients suffering from chronic tonsillitis.
- Available for follow up.

Exclusion Criteria

- Patients who not give written informed consent.
- Patients suffering from acute tonsillitis or having bleeding disorders, active menstruation, Hb level less than 10 gm/dl.
- Not available for follow-up.

Patients were divided into two groups of 30 each.

Group I: Patients were subjected to tonsillectomy using dissection and snares.

Group II: Patients underwent electrocautery methods.

Routine blood and urine examinations, namely the complete blood count (CBC), bleeding time (BT), and clotting time (CT), blood grouping, as well as urine routine and microscopy, etc., were undertaken in every case before the operation.

All patients had their intraoperative blood loss estimated by weighing the gauze pieces before and after soakage, length of surgery, postoperative pain assessment by using the Visual Analogue Scale (VAS) (response from 1–10), total duration of hospital stay, and any other complications and their management. For tonsillectomy using dissection and snare technique, a set of instruments consisting of Boyle-Davis mouth gag, Draffin's bipod, Denis Browne's tonsil holding forceps, Mollison's tonsillar dissector, cum anterior pillar retractor, and Eve's tonsillar snare (Cold Steel) was used. The bi-polar and monopolar electrocauteries were used.

Statistical Analysis

The data thus obtained were subjected to statistical analysis. The Chi-square test was used to assess categorical data, whereas the Analysis of Variance (ANOVA) was used to examine means. The findings were obtained by using suitable statistical tests utilising Microsoft Excel and the Statistical Package for Social Sciences (SPSS). A P value < 0.05 was considered significant.

Results

Table I: Distribution of patients

Groups	Group I (n=30)	Group II (n=30)
Method	Dissection and snare	Electrocautery
M:F	17:13	18:12
Mean age (years)	15.45± 3.61	15.90±4.10

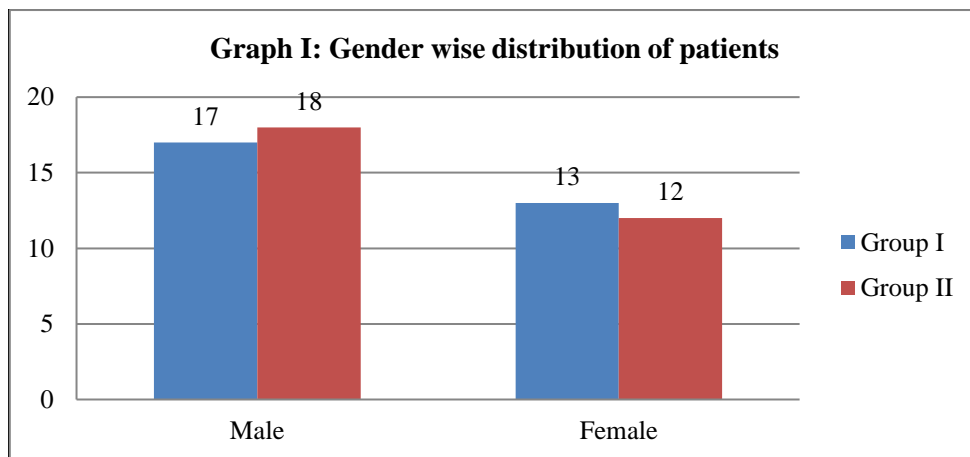
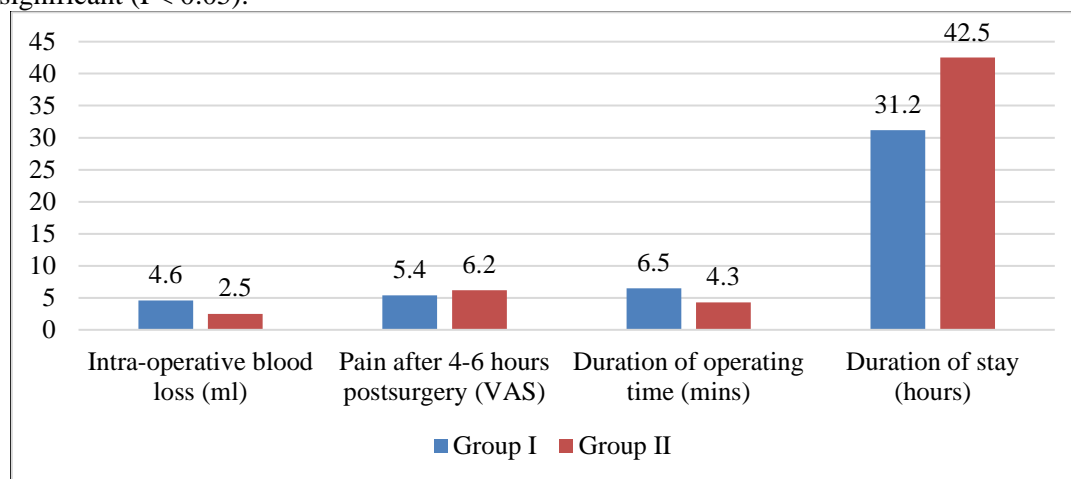


Table I, graph I shows that group I had 17 males and 13 females and group II had 18 males and 12 females. The mean age in group-I and II was 15.45 and 15.90 years respectively.

Table II: Assessment of parameters

Parameters	Group I	Group II	P value
Intra-operative blood loss (ml)	4.6±1.73	2.5±0.95	0.001
Pain after 4-6 hours postsurgery (VAS)	5.4± 0.48	6.2±0.35	0.01
Duration of operating time (mins)	6.5±0.42	4.3±0.56	0.001
Duration of stay (hours)	31.2±14.92	42.5±20.65	0.03

Table II shows that in group I and group II, the mean intra-operative blood loss (ml) was 4.6 and 2.5 respectively. Pain after 4-6 hours post-surgery (VAS) was 5.4 and 6.2, duration of operating time (mins) was 6.5 and 4.3 and duration of stay (hours) was 31.2 and 42.5 respectively. The difference was significant ($P < 0.05$).



Graph II: Assessment of parameters

Discussion

The benefit of electrocautery is that simultaneous cutting and cauterising reduces the risk of significant bleeding during the procedure. The efficiency of the electrocautery device can make the procedure faster than traditional methods.^{8,9} Instant coagulation of blood vessels helps maintain a clear surgical field and reduces the need for sutures or packing.^{10,11} The present study was conducted to compare dissection, snare, and electrocautery techniques for tonsillectomy.

We found that group I had 17 males and 13 females, and group II had 18 males and 12 females. The mean age in groups I and II was 15.45 and 15.90 years, respectively.

Havleet al.¹² compared the advantages and disadvantages of dissection, snare, and electrocautery techniques of tonsillectomy among 50 clinically diagnosed cases of chronic tonsillitis. All cases were randomised into groups I and II and subjected to tonsillectomy using dissection, snare, and electrocautery methods, respectively, after prior routine investigations. Intra-operative blood loss, duration of surgery, assessment of postoperative pain, total duration of hospitalisation, and any other complication and its management, as well as the condition of the tonsillar fossa, were noted in all cases after surgery and during the follow-up period of 10 days post-surgery. The mean intraoperative blood loss was significantly less after using electrocautery. The mean postoperative pain was significantly less after dissection and the snare method. The mean duration of surgery was significantly shorter after using electrocautery. The mean duration of hospitalisation and the extended postoperative procedure required were higher after the electrocautery method; however, they were not statistically significant. There was no significant difference in postoperative tonsillar fossa healing in either group during the follow-up period of 7–10 days.

We found that in groups I and II, the mean intra-operative blood loss (ml) was 4.6 and 2.5, respectively. Pain after 4-6 hours post-surgery (VAS) was 5.4 and 6.2, the duration of operating time (mins) was 6.5 and 4.3, and the duration of stay (hours) was 31.2 and 42.5, respectively. Kanayet al.¹³ examined the rate of bleeding following a tonsillectomy using the ligature technique. This study included 12,536 patients in total who had tonsillectomy procedures. Haemorrhage following a tonsillectomy happened in just 62 cases (0.494%). Merely 14 (0.001) patients necessitated corrective surgery and re-intubation. In other investigations, the bleeding rate was significantly lower than that of other methods.

Ali et al.¹⁴ compared harmonic scalpel (HS) tonsillectomy with electrocautery (EC) tonsillectomy in terms of operating time, intra-operative blood loss, post-operative pain, and secondary haemorrhage. Sixty adult patients, subjected to tonsillectomy only, were evaluated in this prospective study. The patients were stratified into 2 groups (30 each) based on the dissecting instrument used (HS vs. EC). The mean operative time was less in the electrocautery group (EC 3.57 +/- 0.85 minutes vs. HS 4.20 +/- 1.37 minutes; $p < 0.05$). The mean intraoperative blood loss was less in the HS group (EC 3.43 +/- 3.42 ml vs. HS 2.40 +/- 2.74 ml; $p = 0.10$). Postoperative pain was significantly lower in the harmonic scalpel group as compared to the electrocautery group on the 1st, 2nd, and 3rd postoperative days ($p < 0.05$). From the 3rd postoperative day onwards, although the harmonic scalpel group was slightly better in terms of pain on a visual analogue scale, it was not statistically significant. Secondary haemorrhage after tonsillectomy was less in HS (EC 10% vs. HS 3%; $p = 0.61$).

Limitation(s)

The shortcoming of the study is the small sample size.

Conclusion

The authors found that electrocautery tonsillectomy is a widely used and more effective technique for tonsil removal, particularly valued for its ability to control intraoperative bleeding and the duration of surgery under anaesthesia as compared to dissection and snare.

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References

1. Salam MA, Cable HR. Post-tonsillectomy pain with diathermy and ligation techniques. A prospective randomised study in children and adults. *Clinical Otolaryngology*. 1992; 17:517-19.
2. Pang YT. Bipolar diathermy tonsillectomy. *Clinical Otolaryngology*. 1994;19(4):355-57.
3. Adoga AA. Cold versus hot dissection tonsillectomies: The Nigerian experience. *East and Central African Journal of Surgery*. 2011;16(3):64-68.
4. Mofatteh MR, Salehi F. Comparison of postoperative morbidity between conventional cold dissection and bipolar electrocautery tonsillectomy: Which technique is better? *Braz J Otorhinolaryngol*. 2019; 1808-8694(18)30260-X.
5. Vithayathil AA, Maruvala S. Comparison between cold dissection snare method and bipolar electrocautery method in tonsillectomy. *Research in Otolaryngology*. 2017;6(2):17-22.

6. Senzen OS, Kaytanc H. Comparison between tonsillectomy with thermal welding and the conventional 'cold' tonsillectomy technique. ANZ J Surg. 2008;78:1014-18.
7. Lassaletta L. Pediatric tonsillectomy: Postoperative morbidity comparing microsurgical bipolar dissection versus cold sharp dissection. Int J Pediatric Otorhinolaryngol. 1997;1814(3):307-17.
8. Álvarez Palacios I, González-Orús Álvarez-Morujó R, Alonso Martínez C, Ayala Mejías A, ArenasBrítez O. Postoperative pain in adult tonsillectomy: Is there any difference between the technique? Indian J Otolaryngology Head Neck Surgery. 2017;69(2):187-93.
9. Nunez DA, Provan J. Postoperative tonsillectomy pain in pediatric patients. Arch Otolaryngology Head Neck Surgery. 2000;126:837-41.
10. Mac Kenzie IJ. Prospective study of pain and hemorrhage following tonsillectomy. Clinical Otolaryngology. 1983;8:366.
11. Havle AD, Prabhune SC, Pincha N. A Comparative Study of Dissection and Snare and Electrocautery Techniques of Tonsillectomy-A Randomised Clinical Trial. Journal of Clinical & Diagnostic Research. 2020 May 1;14(5).
12. Kannan DS, Rajan GS, Narendra kumar V, Baby AN. Dissection and Snare Method of Tonsillectomy, Hemostasis by Ligature Technique in a Tertiary Care Center: A Decade Study. Journal of Head & Neck Physicians and Surgeons. 2021 Jan 1;9(1):47-50.
13. Ali NS. Harmonic scalpel versus electrocautery tonsillectomy: A comparative study in adult patients. J Pak Med Assoc. 2011;61(3):256-59.