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Original Research Article

Assessment of the Efficacy and Safety of Ligation Versus Bipolar Diathermy for Intraoperative Haemostasis During Tonsillectomy: A Prospective Interventional Study

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Conflict of interest: Nil

Abstract

Background: Tonsillectomy is associated with intraoperative bleeding and postoperative morbidity, making effective haemostasis an important component of surgical management. Mechanical ligation is reliable but may prolong haemostasis, whereas bipolar diathermy permits rapid coagulation of bleeding vessels. This study compared the efficacy and safety of ligation and bipolar diathermy for intraoperative haemostasis during tonsillectomy.

Methods: This prospective, interventional, randomized comparative study was conducted among 80 patients aged 5–40 years undergoing elective tonsillectomy. Participants were randomly allocated into two equal groups: ligation (n=40) and bipolar diathermy (n=40). Intraoperative blood loss, time to achieve haemostasis, total operative time, postoperative haemorrhage, postoperative pain assessed using the Visual Analogue Scale (VAS), duration of hospital stay, and intraoperative and postoperative complications were evaluated. Data were analysed using IBM SPSS Statistics version 27.0. Continuous variables were compared using the independent-samples t-test, while categorical variables were analysed using the Pearson chi-square test or Fisher's exact test. A p-value <0.05 was considered statistically significant.

Results: The two groups were comparable regarding age (p=0.648) and gender distribution (p=0.654). Mean intraoperative blood loss was significantly lower in the bipolar diathermy group than in the ligation group (54.3 ± 14.2 vs. 82.5 ± 18.6 mL; t=7.53, p<0.001). The mean time required to achieve haemostasis was also significantly shorter with bipolar diathermy (5.6 ± 1.3 vs. 8.4 ± 1.7 min; t=8.22, p<0.001). Total operative time was significantly reduced in the bipolar group (34.8 ± 5.7 vs. 42.6 ± 6.8 min; t=5.57, p<0.001). Postoperative VAS scores were significantly lower with bipolar diathermy on POD 0 (5.4 ± 1.0 vs. 6.2 ± 1.1; p=0.001), POD 3 (4.2 ± 1.1 vs. 5.0 ± 1.2; p=0.002), and POD 5 (2.7 ± 0.8 vs. 3.1 ± 0.9; p=0.039). Hospital stay was significantly shorter in the bipolar group (1.78 ± 0.48 vs. 2.15 ± 0.62 days; t=2.97, p=0.004). Primary/reactionary and secondary haemorrhage, as well as intraoperative and postoperative complications, were numerically less frequent with bipolar diathermy, but the differences were not statistically significant (p>0.05).

Conclusion: Bipolar diathermy demonstrated significantly greater haemostatic efficiency than ligation during tonsillectomy, with reduced intraoperative blood loss, faster haemostasis, shorter operative time, lower postoperative pain scores, and shorter hospital stay. Although postoperative haemorrhage and other complications were not significantly different between groups, bipolar diathermy appears to be an effective and safe alternative to conventional ligation for intraoperative haemostasis during tonsillectomy.

Keywords: Tonsillectomy; Bipolar Diathermy; Ligation; Haemostasis; Intraoperative Blood Loss; Postoperative Pain; Post-Tonsillectomy Haemorrhage.

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Introduction

Tonsillectomy remains a commonly performed surgical procedure in otorhinolaryngology, particularly for patients with recurrent or chronic tonsillitis, obstructive tonsillar hypertrophy, and other established tonsillar indications. Despite its routine nature and generally favourable safety profile, the procedure may be associated with significant perioperative morbidity, including intraoperative blood loss, postoperative haemorrhage, pain, and delayed recovery. Post-

tonsillectomy haemorrhage is of particular clinical concern because it can necessitate further medical or operative management and, in severe cases, can result in substantial or life-threatening blood loss. Knubb et al. (2023) reported considerable variation in postoperative haemorrhage according to the surgical technique, patient characteristics, and indication for tonsil surgery [1].

Achieving adequate haemostasis during tonsillectomy is therefore an essential aspect of the surgical procedure. Mechanical ligation has traditionally been used to control bleeding vessels, particularly following cold-steel dissection, and provides definitive vessel closure. However, identification and individual ligation of bleeding vessels may prolong the haemostatic process and potentially contribute to increased blood loss and operative duration.

Bipolar diathermy, in contrast, enables localized coagulation of bleeding vessels through the application of thermal energy and has gained widespread acceptance because of its ability to provide rapid haemostasis. In a prospective comparative study, Bashir and Swami (2023) reported that bipolar electrocautery was associated with faster haemostasis and lower intraoperative blood loss than silk ligation [2].

Nevertheless, the benefits of thermal haemostasis must be considered alongside its potential effects on surrounding tissues. Excessive thermal injury may contribute to postoperative tissue damage, pain, and delayed bleeding. Pinder et al. (2022), in a Cochrane review, observed that diathermy may reduce intraoperative blood loss but may be associated with greater postoperative pain, while the available evidence did not establish clear overall superiority of one haemostatic approach over another [3]. Fushimi et al. (2023) further identified bipolar electrocautery as an independent risk factor for post-tonsillectomy haemorrhage in adults, highlighting the importance of balancing the advantages of rapid haemostasis against the possible risks associated with thermal tissue injury [4].

Recent evidence has continued to demonstrate differences in postoperative outcomes among available tonsillectomy techniques. Russo et al. (2024), in a systematic review and network meta-analysis involving 6464 patients, reported substantial variation in postoperative bleeding and pain according to the surgical technique. Their analysis indicated that bipolar diathermy tonsillectomy had a comparatively greater probability of postoperative bleeding and pain than several alternative techniques [5]. Similarly, Alenezi et al. (2025), in a systematic review and meta-analysis of randomized clinical trials, reported considerable heterogeneity in primary and secondary post-tonsillectomy haemorrhage across surgical techniques, with bipolar diathermy demonstrating a relatively higher pooled rate of secondary haemorrhage [6].

Aim: To compare the efficacy and safety of ligation versus bipolar diathermy for achieving intraoperative haemostasis during tonsillectomy.

Objectives

- To compare intraoperative blood loss between the ligation and bipolar diathermy groups.
- To compare the time required to achieve haemostasis between the two techniques.
- To compare the total operative time between the groups.
- To assess and compare the incidence of primary/reactionary and secondary postoperative haemorrhage.
- To compare postoperative pain scores using the Visual Analogue Scale (VAS).
- To compare the duration of hospital stay following tonsillectomy.
- To assess and compare intraoperative and postoperative complications associated with both haemostatic techniques.

Materials & Methods

Study Design: A prospective, interventional, randomized comparative study was conducted to compare ligation and bipolar diathermy for intraoperative haemostasis during elective tonsillectomy.

Study Population: The study included 80 patients aged 7–35 years diagnosed with chronic tonsillitis and scheduled for elective tonsillectomy, with or without adenoid hypertrophy.

Study Place: The study was conducted in the Department of Otorhinolaryngology (ENT), Lord Buddha Koshi Medical College & Hospital, Saharsa, Bihar, India in collaboration with Department of Physiology, Shree Narayan Medical Institute & Hospital, Saharsa, Bihar, India.

Study Period: The study was conducted over the period of 12 months from June 2024 to May 2025, including patient recruitment, intervention, postoperative follow-up.

Ethical Considerations: The study was conducted after approval from the Institutional Ethics committee. Written informed consent was obtained from all participants or their legally authorized guardians before enrolment. Patient confidentiality was maintained throughout the study.

Inclusion Criteria

- Patients aged 7–35 years undergoing elective tonsillectomy, with or without adenoid hypertrophy.

- Patients providing written informed consent for participation.

Exclusion Criteria

- Age <7 years or >35 years.
- Acute tonsillitis, peritonsillar abscess, or significant chronic systemic illness.
- Anaemia or immunocompromised status.
- Patients undergoing concomitant procedures, including myringotomy, grommet insertion, or lymph-node biopsy.
- Patients unwilling to undergo surgery or participate in the study.

Methodology: Eligible patients were randomly allocated into two equal groups (n=40 each) using a table of random numbers.

- **Group A** (**n=40 each**): underwent haemostasis by ligation using 3-0 Vicryl, whereas
- **Group B** (**n=40 each**): underwent haemostasis using bipolar diathermy.

Demographic, clinical, operative, and postoperative data were recorded prospectively in structured case-record forms.

Surgical Procedure: All patients underwent elective tonsillectomy under general anaesthesia using a standardized surgical technique. In Group A, bleeding vessels were controlled by ligation with 3-0 Vicryl sutures. In Group B, haemostasis was achieved using bipolar diathermy. The same perioperative protocol was followed in both groups.

Investigations: Routine preoperative investigations, including complete blood count, haemoglobin level, platelet count, coagulation profile, blood grouping, and other investigations as clinically indicated, were performed before surgery.

Outcome Measures: The primary outcomes were intraoperative blood loss and time required to achieve haemostasis. Intraoperative blood loss was estimated from the suction-container volume and gauze blood absorption. Haemostasis time was measured using a stopwatch from the start of haemostatic intervention until complete haemostasis was achieved.

Secondary outcomes included:

- Total operative time.
- Postoperative pain assessed using the Visual Analogue Scale (VAS) on postoperative days 0, 3, and 5.
- Primary/reactionary and secondary postoperative haemorrhage.
- Intraoperative mucosal injury and other complications.
- Duration of hospital stay.

Statistical Analysis: Data were recorded in structured case-record forms, entered into Microsoft Excel 365 for cleaning and verification, and subsequently analysed using IBM SPSS Statistics version 27.0 (IBM Corp., Armonk, NY, USA). Continuous variables were expressed as mean ± standard deviation (SD**)**, and categorical variables as frequency and percentage. Normality of continuous variables was assessed using the Shapiro–Wilk test. For normally distributed continuous variables, comparisons between the two groups were performed using the independent-samples Student's t-test. Categorical variables were compared using the Pearson chi-square test or Fisher's exact test, as appropriate. A two-tailed p-value <0.05 was considered statistically significant.

Results

Table 1: Comparison of Age and Gender Distribution Between the Ligation and Bipolar Diathermy Groups

Demographic characteristics	Ligation (n=40)	Bipolar diathermy (n=40)	Statistical test	p-value
Age (years), mean ± SD	22.6 ± 8.1	21.8 ± 7.6	t=0.46	0.648
Gender, n (%)				
Male	23 (57.5)	21 (52.5)	χ^2=0.20	0.654
Female	17 (42.5)	19 (47.5)		
Total	40 (100.0)	40 (100.0)	—	—

Table 1 present the mean age was 22.6 ± 8.1 years in the ligation group and 21.8 ± 7.6 years in the bipolar diathermy group. The difference in mean age was not statistically significant (t=0.46, p=0.648). Males constituted 57.5% of the ligation group and 52.5% of the bipolar diathermy group, while females constituted 42.5% and 47.5%, respectively. The gender distribution was also comparable between the groups (χ^2=0.20, p=0.654).

Table 2: Comparison of Intraoperative Blood Loss Between the Ligation and Bipolar Diathermy Groups

Intraoperative blood loss (mL)	Ligation (n=40)	Bipolar diathermy (n=40)	t-value	p-value
Mean ± SD	82.5 ± 18.6	54.3 ± 14.2	7.53	<0.001
Range	50–120	30–85		

SD, standard deviation.

Table 2 demonstrate the mean intraoperative blood loss was significantly higher in the ligation group (82.5 ± 18.6 mL) than in the bipolar diathermy group (54.3 ± 14.2 mL). The difference was statistically significant (t=7.53, p<0.001), indicating significantly lower blood loss with bipolar diathermy.

Table 3: Comparison of Time Required to Achieve Haemostasis Between the Ligation and Bipolar Diathermy Groups

Time to achieve haemostasis (min)	Ligation (n=40)	Bipolar diathermy (n=40)	t-value	p-value
Mean ± SD	8.4 ± 1.7	5.6 ± 1.3	8.22	<0.001
Range	5–12	3–8		

Table 3 show the mean time required to achieve haemostasis was significantly longer in the ligation group (8.4 ± 1.7 min) compared with the bipolar diathermy group (5.6 ± 1.3 min). This difference was statistically significant (t=8.22, p<0.001), demonstrating faster haemostasis with bipolar diathermy.

Table 4: Comparison of Total Operative Time Between the Ligation and Bipolar Diathermy Groups

Total operative time (min)	Ligation (n=40)	Bipolar diathermy (n=40)	t-value	p-value
Mean ± SD	42.6 ± 6.8	34.8 ± 5.7	5.57	<0.001
Range	32–56	25–46		

Table 4 present the mean total operative time was 42.6 ± 6.8 min in the ligation group and 34.8 ± 5.7 min in the bipolar diathermy group. The bipolar diathermy group had a significantly shorter operative time (t=5.57, p<0.001).

Table 5: Comparison of Primary and Secondary Postoperative Haemorrhage Between the Ligation and Bipolar Diathermy Groups

Postoperative haemorrhage	Variable	Ligation (n=40), n (%)	Bipolar diathermy (n=40), n (%)	χ^2	p-value
Primary/reactionary haemorrhage	Present	1 (2.5)	0 (0.0)	1.01*	0.500
	Absent	39 (97.5)	40 (100.0)		
Secondary haemorrhage	Present	3 (7.5)	1 (2.5)	1.05	0.307
	Absent	37 (92.5)	39 (97.5)		

χ^2/Fisher's exact test.

Table 5 show that primary/reactionary haemorrhage occurred in 2.5% patient in the ligation group and none in the bipolar diathermy group; the difference was not statistically significant (p=0.500, Fisher's exact test). Secondary haemorrhage occurred in 7.5% patients in the ligation group and 2.5% patient in the bipolar diathermy group, with no statistically significant difference between the groups (p=0.307).

Table 6: Comparison of Postoperative Pain Scores Between the Ligation and Bipolar Diathermy Groups

Postoperative assessment	Ligation (n=40), Mean ± SD	Bipolar diathermy (n=40), Mean ± SD	t-value	p-value
POD 0	6.2 ± 1.1	5.4 ± 1.0	3.36	0.001
POD 3	5.0 ± 1.2	4.2 ± 1.1	3.12	0.002
POD 5	3.1 ± 0.9	2.7 ± 0.8	2.10	0.039

POD, postoperative day; SD, standard deviation; VAS, Visual Analogue Scale.

Table 6 and figure I, show that mean VAS pain scores were significantly higher in the ligation group than in the bipolar diathermy group on POD 0 (6.2 ± 1.1 vs. 5.4 ± 1.0; p=0.001), POD 3 (5.0 ± 1.2 vs. 4.2 ± 1.1; p=0.002), and POD 5 (3.1 ± 0.9 vs. 2.7 ± 0.8; p=0.039**)**. Thus, postoperative pain was significantly lower among patients undergoing bipolar diathermy.

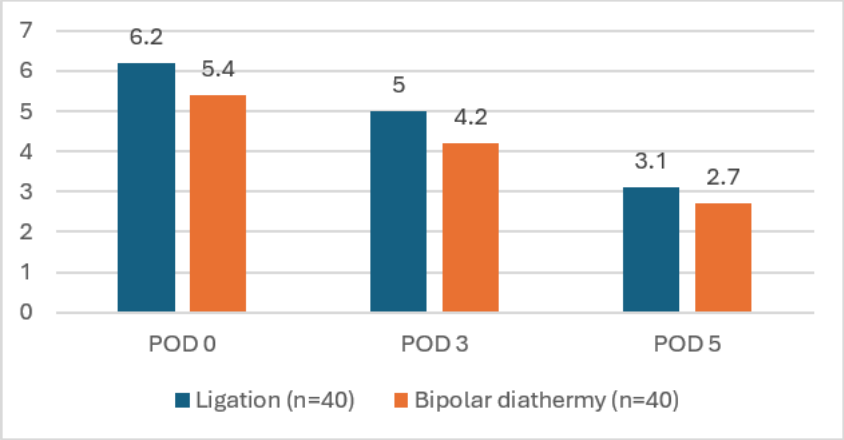


Figure I: Comparison of Postoperative Pain Scores Between the Ligation and Bipolar Diathermy Groups

Table 7: Comparison of Duration of Hospital Stay Between the Ligation and Bipolar Diathermy Groups

Duration of hospital stay (days)	Ligation (n=40)	Bipolar diathermy (n=40)	t-value	p-value
Mean ± SD	2.15 ± 0.62	1.78 ± 0.48	2.97	0.004
Range	1–4	1–3		

Table 7 demonstrate the mean duration of hospital stay was 2.15 ± 0.62 days in the ligation group compared with 1.78 ± 0.48 days in the bipolar diathermy group. The difference was statistically significant (t=2.97, p=0.004), indicating a shorter hospital stay with bipolar diathermy.

Table 8: Comparison of Intraoperative and Postoperative Complications Between the Ligation and Bipolar Diathermy Groups

Complications	Variable	Ligation (n=40), n (%)	Bipolar diathermy (n=40), n (%)	χ^2	p-value
Intraoperative complications	Mucosal injury	4 (10.0)	2 (5.0)	0.72	0.396
	Difficult haemostasis	5 (12.5)	1 (2.5)	2.86	0.091
	Excessive bleeding	6 (15.0)	2 (5.0)	2.22	0.136
Postoperative complications	Primary/reactionary haemorrhage	1 (2.5)	0 (0.0)	1.01*	0.500
	Secondary haemorrhage	3 (7.5)	1 (2.5)	1.05	0.307
	Significant postoperative pain	8 (20.0)	4 (10.0)	1.56	0.212
	Nausea/vomiting	5 (12.5)	4 (10.0)	0.12	0.729

χ^2/Fisher's exact test'; POD, postoperative day; VAS, Visual Analogue Scale.

Table 8 show that Mucosal injury (10.0% vs. 5.0%), difficult haemostasis (12.5% vs. 2.5%), and excessive bleeding (15.0% vs. 5.0%) were more frequent in the ligation group than in the bipolar diathermy group; however, none of these differences was statistically significant (p>0.05).

Similarly, primary/reactionary haemorrhage, secondary haemorrhage, significant postoperative pain, and nausea/vomiting were numerically more frequent in the ligation group, but the differences were not statistically significant (p>0.05).

Discussion

In the present study, the mean age did not differ significantly between the ligation and bipolar diathermy groups (p=0.648), and the distribution of male and female participants was likewise comparable (p=0.654). This baseline similarity strengthens the interpretation that differences observed in operative and postoperative outcomes were primarily related to the haemostatic technique rather than demographic imbalance. Shrestha et al. (2023), in a prospective randomized comparison of bipolar scissors and conventional cold dissection tonsillectomy, similarly reported comparable demographic profiles between the study groups, with a mean patient age of approximately 22 years [7]. Thus, the young-adult demographic observed in the present study is consistent with recently published tonsillectomy cohorts.

A marked reduction in intraoperative blood loss was observed with bipolar diathermy. The mean blood loss was 82.5 ± 18.6 mL in the ligation group and 54.3 ± 14.2 mL in the bipolar diathermy group, representing an approximately 34% reduction; the difference was highly statistically significant (t=7.53, p<0.001). This finding indicates a substantial haemostatic advantage of bipolar diathermy during tonsillectomy. The present observation is consistent with Bashir and Swami

(2023), who reported mean blood losses of 68.6 ± 5.3 mL with silk ligation and 49.5 ± 4.5 mL with bipolar electrocautery [2]. Although their investigation used a different study design, the direction and magnitude of the difference support the present findings. Shrestha et al. (2023) also observed lower median blood loss with bipolar scissors compared with conventional cold dissection, although statistical significance was not achieved [7]. The lower blood loss associated with bipolar techniques may be explained by the ability to coagulate bleeding vessels directly at the operative site, thereby reducing the need for repeated mechanical vessel control. However, the haemostatic advantage of energy-based techniques is not consistently demonstrated across all studies. Kang et al. (2024), in a systematic review and meta-analysis evaluating BiZact tonsillectomy, reported a significant reduction in operative time but did not demonstrate a significant overall reduction in intraoperative bleeding compared with control techniques [8]. Differences in device characteristics, surgical technique, energy settings, patient populations, and definitions of blood loss may account for this variability.

The present study demonstrated a significantly shorter time to achieve haemostasis with bipolar diathermy. Mean haemostasis time was 5.6 ± 1.3 minutes in the bipolar group compared with 8.4 ± 1.7 minutes in the ligation group ($t=8.22$, $p<0.001$). The approximately 2.8-minute reduction represents an important improvement in intraoperative haemostatic efficiency.

These findings are in accordance with Bashir and Swami (2023), who demonstrated more rapid haemostasis with bipolar electrocautery than with silk ligation [2]. A possible explanation is that bipolar diathermy combines vessel sealing and coagulation in a single operative step, whereas conventional ligation involves identification of the bleeding vessel followed by grasping, tying, and cutting. Kang et al. (2024) similarly demonstrated a significant reduction in operative duration with an energy-based tonsillectomy device, although substantial heterogeneity was observed across the included studies [8]. The present findings therefore support the role of bipolar diathermy in facilitating rapid intraoperative control of bleeding.

Total operative duration was significantly shorter in the bipolar diathermy group than in the ligation group. The mean operative time was 34.8 ± 5.7 minutes compared with 42.6 ± 6.8 minutes, respectively ($t=5.57$, $p<0.001$). Thus, bipolar diathermy reduced the operative duration by approximately 8 minutes.

This reduction may have practical implications in routine otorhinolaryngological practice, particularly in settings with a high surgical workload. Shorter procedures may improve operating-room utilization and decrease the duration of anaesthetic exposure. Shrestha et al. (2023) similarly observed a shorter operative duration with bipolar scissors compared with conventional cold dissection, although the difference did not reach statistical significance [7]. In contrast, the meta-analysis by Kang et al. (2024) demonstrated a significant reduction in operative time with energy-based tonsillectomy techniques [8]. The stronger statistical effect observed in the present study may be related to the direct comparison between bipolar diathermy and ligation specifically for haemostasis.

Primary/reactionary haemorrhage occurred in 2.5% of patients in the ligation group and in none of the patients treated with bipolar diathermy. Secondary haemorrhage was observed in 7.5% and 2.5% of patients, respectively. Although both outcomes were numerically less frequent following bipolar diathermy, neither difference reached statistical significance (primary/reactionary haemorrhage, $p=0.500$; secondary haemorrhage, $p=0.307$). Alenezi et al. (2025), in a systematic review and meta-analysis involving 1684 participants, reported pooled primary and secondary haemorrhage rates of 1.0% and 5.8%, respectively, across different tonsillectomy techniques; the pooled secondary haemorrhage rate associated with bipolar diathermy was 8.6% [6]. These findings demonstrate that secondary haemorrhage remains an important consideration with thermal haemostatic techniques.

Conversely, Ota et al. (2025) reported that a standardized tonsillectomy protocol incorporating pre-emptive haemostasis and low-output bipolar energy was associated with a lower postoperative haemorrhage rate compared with conventional surgery [9].

Postoperative pain scores were significantly lower in the bipolar diathermy group at all assessed time points. Mean VAS scores were lower with bipolar diathermy on postoperative day (POD) 0, POD 3, and POD 5, with statistically significant differences at each assessment ($p=0.001$, 0.002, and 0.039, respectively). Shrestha et al. (2023), however, found no significant difference in postoperative pain between bipolar scissors and conventional cold dissection [7]. This discrepancy may be attributable to differences in the type of bipolar device, energy settings, surgical technique, patient population, analgesic protocols, and pain-assessment methodology.

In present study, patients undergoing bipolar diathermy had a significantly shorter hospital stay than those undergoing ligation (1.78 ± 0.48 vs. 2.15 ± 0.62 days; $t=2.97$, $p=0.004$). This difference may reflect the combined effect of reduced operative blood loss, faster haemostasis, shorter operative duration, and lower postoperative pain observed in

the bipolar group. Ota et al. (2025) demonstrated that standardization of haemostasis and low-output bipolar energy could improve perioperative outcomes, although their study primarily focused on postoperative haemorrhage and blood loss rather than direct comparison of ligation with bipolar diathermy [9].

The overall complication profile favoured bipolar diathermy numerically, although none of the observed differences reached statistical significance. Mucosal injury occurred in 10.0% of patients in the ligation group compared with 5.0% in the bipolar group (p=0.396). Difficult haemostasis was observed in 12.5% versus 2.5% (p=0.091), while excessive bleeding occurred in 15.0% versus 5.0% (p=0.136), respectively.

A similar pattern was observed for postoperative complications. Primary/reactionary haemorrhage occurred in 2.5% versus 0%, secondary haemorrhage in 7.5% versus 2.5%, significant postoperative pain in 20.0% versus 10.0%, and nausea/vomiting in 12.5% versus 10.0% in the ligation and bipolar groups, respectively. None of these differences was statistically significant, with p-values of 0.500, 0.307, 0.212, and 0.729, respectively.

Shrestha et al. (2023) similarly reported no significant difference in postoperative pain between bipolar scissors and conventional cold dissection, although their study identified a higher frequency of postoperative haemorrhage with the bipolar technique [7]. Kang et al. (2024) also concluded that energy-based tonsillectomy techniques may improve operative efficiency without producing a consistent reduction in postoperative bleeding or pain [8]. These findings reinforce the concept that different energy modalities can produce distinct tissue responses depending on their thermal characteristics.

Limitations

- The sample size was relatively small (n=80), and the study was conducted at a single tertiary-care centre, which may limit the generalisability of the findings.
- The follow-up period was limited, particularly for assessing delayed postoperative complications.
- Postoperative pain assessment using the Visual Analogue Scale (VAS) is subjective and may be influenced by individual patient perception and analgesic use.
- Surgeon-related factors, including operative experience and surgical technique, may have introduced variability despite the use of a standardized surgical protocol.
- Larger multicentric studies with longer follow-up periods are warranted to validate these findings and improve their generalisability.

Conclusion

In present study, authors found that bipolar diathermy demonstrated superior haemostatic efficiency compared with ligation during tonsillectomy. Bipolar diathermy was associated with lower intraoperative blood loss, faster achievement of haemostasis, and shorter total operative time. Postoperative pain scores and duration of hospital stay were also lower with bipolar diathermy. Although postoperative haemorrhage and other complications were numerically more frequent in the ligation group, the differences were not statistically significant.

Overall, bipolar diathermy appears to be an effective and safe alternative to ligation for intraoperative haemostasis during tonsillectomy, with potential advantages in operative efficiency and postoperative recovery.

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Author contributions: Dr. Jay Narendra Suratwala contributed to study design, surgical procedures, and data collection. Dr. Nutan Bala contributed to data analysis, interpretation, and manuscript preparation. Both authors critically reviewed and approved the final manuscript.

Conflict of interest: The authors declare that there is no conflict of interest.

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