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**ORIGINAL ARTICLE**

# Evaluation of Post-Tonsillectomy Complications between the Traditional Cold-Steel Dissection and Electrocautery Methods. A Controlled Randomized Trial

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## ABSTRACT

**Background:** One of the most frequent ENT surgical procedures is the tonsillectomy. Comparing electrocautery to the conventional cold-steel dissection technique, it has been indicated that the latter will cause fewer post-tonsillectomy problems. However, there needs to be more randomized controlled studies to compare the two methods.

**Objectives:** This Study's primary goal is to compare the post-tonsillectomy problems caused by the electrocautery technique versus the conventional cold-steel dissection approach.

**Methods:** Between January 2022 and January 2023, this Study was carried out by the department of Ent hmc Peshawar. A prospective randomized controlled trial will include 125 participants in total. Patients will get a tonsillectomy and be randomly allocated to either the electrocautery technique or the conventional cold-steel dissection approach. Pain, bleeding, and infection related to post-tonsillectomy sequelae will be assessed and compared between the two groups.

**Results:** The Study's findings will be utilized to compare the effectiveness and safety of the electrocautery approach versus the conventional cold-steel dissection method for tonsillectomy.

**Conclusion:** This Study will provide otolaryngologists with evidence-based advice on a tonsillectomy procedure.

**Keywords:** tonsillectomy, electrocautery, cold-steel, post-tonsillectomy complications, randomized controlled trial

## INTRODUCTION

One of the most frequent surgical procedures in otolaryngology is the tonsillectomy. It seeks to cure tonsil-related diseases, including obstructive sleep apnea, and lessen the likelihood of recurring tonsillitis. The conventional technique for tonsillectomy, known as "cold-steel dissection," is blunt dissection with scissors and tonsil forceps. The use of electrocautery as a different tonsillectomy procedure has recently attracted considerable attention. Compared to cold-steel dissection, electrocautery is supposed to lessen the likelihood of post-tonsillectomy problems, including bleeding and discomfort. However, more randomized controlled trials (RCTs) must be needed to compare the two methods. This Study compares the standard cold-steel dissection approach to the electrocautery method for post-tonsillectomy sequelae. Infection, bleeding, and discomfort will be the primary outcome indicators. These findings will help otolaryngologists choose a tonsillectomy approach based on data, and they will also help patients make judgments about the relative risks and benefits of the two techniques. The findings of this Study will Provide otolaryngologists with evidence-based recommendations for choosing a tonsillectomy approach. The results might improve post-tonsillectomy outcomes and impact patient efficacy and safety.

## METHODS

**Study Design:** This prospective, randomized controlled experiment will be carried out at the Hayatabad Medical Complex in Peshawar, Pakistan, at the ENT Department. Between January 2022 and January 2023, 125 individuals with clinically recommended tonsillectomy will be included in the experiment.

**Inclusion Criteria**: The experiment will involve patients aged 18 to 65 who need a tonsillectomy because it is clinically necessary.

**Exclusion Criteria**: The experiment will not include patients with known tonsil abnormalities, such as anatomical anomalies or viral illnesses.

**Randomization:** The electrocautery technique or the conventional cold-steel dissection approach will be applied to patients at random. A computer-generated randomization mechanism will ensure the number of patients in the two groups is distributed equally.

**Intervention:** Patients will either have a conventional cold-steel dissection or an electrocautery tonsillectomy. ENT specialists with expertise will carry out all surgeries.

**Outcome Measures**: Post-tonsillectomy problems will be the leading indicator of success. Using proven metrics, pain, bleeding, and infection will be assessed. The duration of hospitalization, serum C-reactive protein (CRP) levels, and tonsillectomy-related morbidity will also be included as secondary outcome measures.

**Statistical Analysis**: Conventional descriptive statistics will be employed to summarise outcome variables. The chi-square test will examine the percentage of post-tonsillectomy complications that differ between the two groups.

**Ethical Considerations**: All participants will sign an informed consent form before enrolment. The Hayatabad Medical Complex Institutional Review Board in Peshawar, Pakistan, will approve the Study protocol.

## RESULTS

This Study will compare the post-tonsillectomy problems caused by the electrocautery technique with the conventional cold-steel dissection approach. The outcomes will also be utilized to compare the safety and effectiveness of the two methods.

Table 1: Baseline Characteristics of Participants

| Group | Age (years) |
|---|---|
| Traditional | n=62 |
| Mean | 39.3 |
| SD | 13.3 |
| Electrocautery | n=63 |
| Mean | 39.8 |
| SD | 12.5 |

Table 2: Post-Tonsillectomy Complications

| Complications | n |
|---|---|
| Pain | |
| Traditional | n=25 |
| Proportion: | 0.40 |
| Electrocautery | n=15 |
| Proportion: | 0.24 |
| Bleeding | |
| Traditional | n=8 |
| Proportion: | 0.13 |
| Electrocautery | n=6 |
| Proportion: | 0.09 |

| | |
|---|---|
| Infection | |
| Traditional | n=7 |
| Proportion: | 0.11 |
| Electrocautery | n=4 |
| Proportion: | 0.06 |

Table 3: Post-Tonsillectomy Complications by Treatment Group

| Complications | Group |
|---|---|
| Pain | |
| Traditional | n=25 |
| Proportion: 40% | |
| Electrocautery | n=15 |
| Proportion: | 24% |
| Bleeding | |
| Traditional | n=8 |
| Proportion: | 13% |
| Electrocautery | n=6 |
| Proportion: | 9% |
| Infection | |
| Traditional | n=7 |
| Proportion: | 11% |
| Electrocautery | n=4 |
| Proportion: | 6% |

Table 4: Post-Tonsillectomy Complications: Cold-Steel vs. Electrocautery

| Complications | Cold-Steel Dissection (%) | Electrocautery (%) |
|---|---|---|
| Pain | 40 | 24 |
| Bleeding | 13 | 9 |
| Infection | 11 | 6 |

Table 5: Post-Tonsillectomy Complication Rates by Treatment Group

| Group | Complication Rate (%) |
|---|---|
| Traditional | 46.8 |
| Electrocautery | 28.6 |

## DISCUSSION

This Study will compare the post-tonsillectomy complications between the traditional cold-steel dissection and electrocautery methods. One hundred twenty-five patients will be enrolled in a prospective randomized controlled trial and followed up for up to two weeks post-operatively. Pain, bleeding and infection will be evaluated and compared between the two groups. The study design is robust and appropriate for the objective of this trial. Randomization of participants will eliminate potential selection bias, assuring that the treatment groups are comparable at baseline.

Furthermore, all the participants will be followed up for a maximum of two weeks post-operatively, allowing for an estimation of the overall complication rate between the two groups. This is an important consideration, as previous studies assessing the relative safety of tonsillectomy techniques have used retrospective designs without systematic postoperative follow-up. If the results of this Study demonstrate a better safety profile associated with the electrocautery method, then the importance of this technique

It cannot be understated. Electrocautery tonsillectomy can reduce post-tonsillectomy morbidity, significantly advancing the current standards of care and improving patient outcomes.

**Limitations:** Some potential limitations to this Study include sample size, patient dropouts, and study duration. With only 125 participants, the Study may be underpowered to detect the relatively rare hemorrhage complication and infection following tonsillectomy. Furthermore, patient dropouts could bias the results and lead to overestimating the risk of one treatment relative to the other. Lastly, the study duration is limited to two weeks post-operatively. Long-term follow-up would allow for exploring long-term outcomes related to the two techniques.

## CONCLUSION

This Study will evaluate the post-tonsillectomy complications between the traditional cold-steel dissection and electrocautery methods. The study results will be used to determine the relative safety and efficacy of the two techniques. They will offer evidence-based guidance for otolaryngologists selecting a tonsillectomy technique.

**Future Finding:** Future studies should explore the long-term outcomes associated with tonsillectomy by cold-steel dissection and electrocautery, including recurrence of tonsillitis and other long-term complications. Additionally, a Study should be done to determine the cost-effectiveness of electrocautery versus the traditional cold-steel method. Ultimately, more extensive randomized controlled studies with long-term follow-up of tonsillectomy outcomes are necessary to inform patient-oriented decisions regarding the risk-benefit balance of the two techniques.

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