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Original Research Article

Comparison of Postoperative Pain and Analgesic Requirement in Coblation versus Cold Dissection Tonsillectomy: A Retrospective Study at a Tertiary Care Hospital in Rajasthan

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Abstract:

Background: Tonsillectomy is a commonly performed ENT surgery, and postoperative pain remains a major concern affecting recovery.

Objective: To evaluate postoperative pain scores and analgesic need between coblation and cold dissection tonsillectomy.

Methods: One hundred patients were the subject of a retrospective investigation (50 coblation, 50 cold dissection) who underwent tonsillectomy at Manu ENT & Multispeciality Hospital, Sikar, Rajasthan, over a period of one year. On days 1, 3, and 7, the Visual Analog Scale (VAS) was used to measure postoperative pain. Analgesic requirements during the first postoperative week were also recorded. The Student's t-test and Chi-square test were used for statistical analysis, and a p-value of less than 0.05 was deemed significant.

Results: Patients in the coblation group reported significantly lower pain scores compared to the cold dissection group on postoperative day 1 (4.2 ± 1.1 vs. 6.8 ± 1.3), day 3 (2.9 ± 0.9 vs. 5.2 ± 1.2), and day 7 (1.5 ± 0.6 vs. 2.4 ± 0.8). The mean analgesic requirement was also lower in the coblation group (3.1 ± 0.7 doses vs. 5.8 ± 1.0 doses).

Conclusion: Coblation tonsillectomy is associated with significantly less postoperative pain and reduced analgesic requirement compared to the conventional cold dissection technique.

Introduction

One of the most popular surgical operations in ENT (ear, nose, and throat) treatment is tonsillectomy, particularly in children and young adults who suffer from recurrent throat infections or obstructive symptoms. Although it is a routine surgery, patients frequently experience considerable discomfort after the operation, with pain being the most significant postoperative complication. Severe throat pain can interfere with swallowing, delay oral feeding, prolong recovery time, and increase the need for pain medication, which negatively impacts patient comfort and overall outcomes. Over the years, many modifications of surgical technique have been introduced to reduce morbidity, but managing pain after tonsillectomy continues to be a challenge.

The cold dissection method has traditionally been the standard approach for tonsillectomy. In this technique, the tonsil is carefully separated from its bed with scissors or a scalpel, and bleeding is usually controlled using sutures or electrocautery. Although simple and cost-effective, the method is associated with greater intraoperative bleeding and significant tissue injury, leading to more postoperative discomfort. Coblation tonsillectomy, on the other hand, is a newer technique that employs radiofrequency energy in a saline medium to produce a plasma field. This technology allows dissection at much lower temperatures than electrocautery, thereby reducing collateral tissue damage. The reduced heat injury is believed to result in less pain, faster healing, and a reduced requirement for postoperative analgesics.

Previous studies have reported mixed findings regarding the benefits of coblation over conventional cold dissection. While several authors have demonstrated that coblation is associated with reduced pain and quicker recovery, others have found no meaningful difference between the two methods. Furthermore, the higher cost of coblation devices often limits their widespread adoption, especially in resource-limited settings. Against this background, the present study was carried out at Manu ENT & Multispeciality Hospital, Sikar, Rajasthan, to retrospectively evaluate and compare

postoperative pain and analgesic use in patients who underwent coblation and cold dissection tonsillectomy. The study aims to provide locally relevant evidence that may guide surgeons in choosing the most appropriate technique by weighing clinical benefits against cost considerations.

Materials and Methods

Study design: Retrospective observational study.

Setting: Manu ENT & Multispeciality Hospital, Sikar, Rajasthan.

Duration: January 2023 to December 2023.

Sample size: 100 patients.

Grouping: 50 underwent coblation tonsillectomy, and 50 underwent cold dissection tonsillectomy.

Inclusion criteria: Patients aged 5–40 years undergoing tonsillectomy for recurrent tonsillitis.

Exclusion criteria: Patients with bleeding disorders, systemic illnesses, or peritonsillar abscess.

Data collection: Medical records, operative notes, and nursing charts were reviewed. On days 1, 3, and 7, the Visual Analog Scale (VAS) was used to measure postoperative pain. Analgesic requirements (total doses in the first postoperative week) were recorded.

Statistical analysis: SPSS software was used to examine the data. The Student's t-test was used to compare continuous variables, which were reported as mean ± standard deviation. The Chi-square test was used to compare categorical variables. Statistical significance was defined as a p-value of less than 0.05.

Results

Table 1: Demographic Characteristics

Variable	Coblation (n=50)	Cold Dissection (n=50)	p-value
Mean age (years)	18.6 ± 7.2	19.1 ± 6.9	0.72 (NS)
Male: Female	28:22	26:24	0.68 (NS)

The two groups were comparable with respect to age and gender distribution.

Table 2: Postoperative Pain Scores (VAS)

Post-op Day	Coblation	Cold Dissection	p-value
Day 1	4.2 ± 1.1	6.8 ± 1.3	<0.001
Day 3	2.9 ± 0.9	5.2 ± 1.2	<0.001
Day 7	1.5 ± 0.6	2.4 ± 0.8	0.002

Pain scores were significantly lower in the coblation group at all measured time points.

Table 3: Analgesic Requirement

Group	Mean total doses (first 7 days)	Range	p-value
Coblation	3.1 ± 0.7	2–5	<0.001
Cold Dissection	5.8 ± 1.0	4–8	<0.001

Analgesic requirement was significantly reduced in the coblation group compared to the cold dissection group.

Discussion

This retrospective analysis compared postoperative pain levels and analgesic requirements in patients who underwent coblation versus cold dissection tonsillectomy. The data revealed that those treated with coblation reported consistently lower pain scores across all measured time points and required fewer doses of analgesics in the first postoperative week. These findings suggest that coblation provides a gentler surgical approach, resulting in improved patient comfort and faster recovery compared to the traditional technique.

The results of the present study are in agreement with several previously published works that highlighted the advantages of coblation in reducing postoperative morbidity. Numerous trials have shown that coblation is associated with less pain, earlier resumption of oral feeding, and a reduced need for medication. Timms and others described coblation as a technique that limits thermal damage to surrounding tissue, explaining its favorable outcomes. Similarly, Parker and colleagues observed significantly lower pain scores in patients undergoing coblation compared to cold dissection. Nevertheless, not all studies report the same benefits. Some researchers have failed to detect statistically significant differences between the two approaches, which could be attributed to differences in study populations, sample sizes, or the experience of the operating surgeon.

The biological basis for coblation's advantage lies in its mechanism of action. Coblation generates a plasma field using radiofrequency energy delivered through saline, which disrupts tissue bonds at relatively low temperatures, typically between 40–70°C. In contrast, electrocautery, which is often

employed for hemostasis in cold dissection, can reach temperatures over 400°C. Exposure to such high heat causes more collateral tissue damage, greater inflammatory response, and nerve irritation, all of which contribute to severe pain following surgery. Coblation minimizes these adverse effects, which explains the consistently lower pain scores and reduced swelling observed in patients treated with this method.

Another key outcome of this study was the reduced analgesic consumption among patients undergoing coblation. Fewer doses of pain-relieving drugs not only improve comfort but also decrease the risk of drug-related side effects such as gastric irritation, nausea, or drowsiness. On a broader level, lower analgesic use may also reduce indirect healthcare costs related to medication, nursing care, and prolonged recovery. Although coblation equipment is more expensive than traditional instruments, the reduction in postoperative morbidity and the potential for quicker return to daily activities may balance or even outweigh these costs in the long term.

Cost, however, remains a significant concern, especially in low- and middle-income countries where healthcare resources are limited. Cold dissection remains popular because it requires minimal instruments and is highly economical. Coblation, on the other hand, demands specialized machines and disposable wands, making it substantially more expensive. The question of cost-effectiveness is therefore crucial in determining whether the benefits of coblation justify its adoption in such settings. Further research, particularly economic evaluations conducted in real-world hospital environments, is needed to provide a clear picture of whether coblation offers long-term financial advantages.

Despite the promising results, certain limitations of this study must be acknowledged. Being retrospective in design, it depended on the accuracy of medical records, which may not capture all clinical details comprehensively. Pain assessment, although conducted with a Visual Analog Scale, is inherently subjective and influenced by individual tolerance. Moreover, the sample size was modest and the study was limited to a single institution, which restricts the generalizability of the findings. Additionally, other important outcomes such as operative time, intraoperative blood loss, secondary hemorrhage, and long-term healing were not evaluated. Future research should include multicenter, prospective randomized controlled trials with larger sample sizes to provide stronger evidence and to evaluate a broader range of clinical outcomes.

Conclusion

Coblation tonsillectomy is associated with significantly lower postoperative pain and reduced analgesic requirement compared to cold dissection. It should be considered a preferred surgical technique, especially for patients where minimizing postoperative morbidity is a priority.

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