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RESEARCH ARTICLE
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COMPARISON OF POST OPERATIVE PAIN AND SWELLING AFTER WISDOM TOOTH EXTRACTION USING DIFFERENT SURGICAL TECHNIQUES

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ABSTRACT
Even though it's a common dental treatment, swelling and pain are common side effects of wisdom teeth extraction. A variety of surgical approaches have been refined to lessen the likelihood of these side effects. Examining the effects of traditional rotary bur, piezosurgery, and minimally invasive methods on swelling and pain after wisdom teeth extraction is the primary goal of this research. Fifty patients who needed their mandibular third molars extracted were divided into three equal groups. Using standardized facial reference sites at different time intervals, edema was quantified and postoperative discomfort was evaluated using the Visual Analog Scale (VAS). After piezosurgery and other minimally invasive procedures, patients reported far less discomfort and swelling than those who had the traditional approach. These results provide more evidence that cutting-edge surgical methods have the potential to improve patient comfort and shorten the recovery time.

INTRODUCTION
An extraction of the wisdom teeth, sometimes referred to as the removal of the third molar, is one of the oral surgical procedures that is performed the most frequently [1]. In spite of the fact that it is a common practice, it frequently leads to postoperative difficulties such as discomfort, edema, and trismus as a consequence of surgical trauma and inflammatory responses [2]. There is a correlation between the surgical approach that was utilized and the severity of these problems.
The removal of impacted third molars has traditionally been accomplished by the use of a conventional rotary bur technique. On the other hand, several alternative methods, including piezosurgery and minimally invasive approaches, have been implemented in order to lessen the likelihood of postoperative morbidity [3]. While piezosurgery makes use of ultrasonic vibrations to

selectively cut bone while limiting injury to soft tissue, minimally invasive approaches involve making smaller incisions and removing only a limited amount of bone [4].
In terms of postoperative pain and swelling, the purpose of this study is to compare and contrast these three different approaches. This research aims to aid doctors in selecting the most effective way for reducing the amount of discomfort experienced by patients and improving the results of their recovery by analyzing the effectiveness of various methods.

METHODOLOGY

Study Design and Participants

This randomized controlled trial included 50 patients aged 18–35 years who required mandibular third molar extractions. Patients were randomly assigned to one of the three groups:

- **Group A (Conventional Technique):** Extraction using rotary bur and elevator.
- **Group B (Piezosurgery):** Extraction using ultrasonic vibrations.
- **Group C (Minimally Invasive Technique):** Extraction with a conservative approach involving smaller incisions and limited bone removal.

Inclusion Criteria:

- Patients with impacted mandibular third molars requiring extraction.
- No systemic diseases affecting healing.
- No history of pericoronitis in the last three months.

Exclusion Criteria:

- Patients on anticoagulant therapy.
- Pregnant or lactating women.
- Patients with infections at the surgical site.

SURGICAL PROCEDURE

Every single extraction was carried out by the same skilled oral surgeon, who administered local anesthesia when necessary. Standard postoperative care was administered to the patients, which included the administration of ibuprofen (400 mg every six hours) and chlorhexidine mouthwash. The removal of the sutures occurred on the seventh postoperative day.

OUTCOME ASSESSMENT

Pain and swelling were evaluated at 24 hours, 48 hours, and 7 days postoperatively.

- **Pain:** Measured using the Visual Analog Scale (VAS), ranging from 0 (no pain) to 10 (worst pain) [5].
- **Swelling:** Measured using linear distances between facial landmarks (tragus, gonion, and pogonion) [6].

RESULTS

Pain and Swelling Comparison Across Techniques

Time Interval	Pain (VAS Score) Mean ± SD	Swelling (mm) Mean ± SD
24 hours	A: 7.5 ± 1.1	A: 5.2 ± 1.2
	B: 4.9 ± 1.0	B: 3.5 ± 1.1
	C: 4.3 ± 1.2	C: 3.0 ± 0.9
48 hours	A: 6.2 ± 1.3	A: 4.7 ± 1.0
	B: 3.5 ± 1.1	B: 3.0 ± 0.9
	C: 3.0 ± 1.0	C: 2.5 ± 0.8
7 days	A: 2.5 ± 0.8	A: 2.0 ± 0.6
	B: 1.2 ± 0.6	B: 1.2 ± 0.5
	C: 1.0 ± 0.5	C: 0.8 ± 0.4

DISCUSSION

The findings of the study reveal that piezosurgery and other minimally invasive procedures greatly reduced the amount of discomfort and edema that was experienced in comparison to the traditional rotary bur method.

When contrasted with Pain

The typical group of patients reported higher pain scores, which is likely owing to the fact that they had experienced more bone stress. On the other hand, piezosurgery demonstrated a reduced pain response due to the fact that ultrasonic vibrations cause less thermal damage [7]. By restricting the scope of surgical intervention, minimally invasive procedures further reduced the amount of discomfort that patients experienced [8].

Reduction of Swelling

The group that had the traditional procedure experienced the most significant swelling. The results of piezosurgery and minimally invasive techniques showed a considerable reduction in swelling, which is in line with the findings of studies that suggest that maintaining the integrity of soft tissue can minimize inflammatory responses [9].

Influence on Clinical Practice

According to the findings, alternative surgical procedures appear to increase the success rate of postoperative outcomes. Before implementing these approaches, however, it is important to take into consideration a number of criteria, including the amount of time required for the operation, the level of experience of the operator, and the availability of the necessary equipment [10].

CONCLUSION

According to the findings of this study, piezosurgery and other minimally invasive procedures result in less postoperative discomfort and swelling than traditional rotary bur extraction does. The findings provide credence to the implementation of innovative surgical techniques in order to improve patient comfort and speed up the healing process. The long-term impacts on healing and complications should be investigated in subsequent studies; this should be done.

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