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Effectiveness of Liposomal Curcumin on Postoperative Sequelae Following Lower Third Molar Surgery: A Randomized Controlled Clinical Trial

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Abstract

Objective: This study aims to assess the efficacy of liposomal curcumin in managing postoperative sequelae such as pain, swelling, and trismus following lower third molar surgery.
Methods: In a randomized controlled trial, patients undergoing third molar extraction were divided into two groups: one receiving liposomal curcumin and the other receiving standard postoperative care. Primary outcomes included pain, swelling, and trismus, while secondary outcomes focused on wound healing quality and infection rates. Statistical analyses determined significance between groups.
Results: Liposomal curcumin significantly reduced pain and swelling at 24, 48, and 72 hours postoperatively compared to the control group. Improved trismus and wound healing were observed in the curcumin group, with no adverse effects reported.
Conclusion: Liposomal curcumin shows potential as an adjunct for reducing postoperative sequelae following lower third molar extractions, suggesting it could enhance postoperative recovery protocols.

Keywords- Liposomal , curcumin ,pain ,swelling , trismus . third molar surgery

Introduction

Lower third molar extractions are among the most commonly performed oral surgeries and are often associated with postoperative complications, such as pain, swelling, and limited mouth opening (trismus)an hinder patients' quality of life and delay recovery .(1-4)Common postopergement includes NSAIDs and corticosteroids, but these treatments can have side effects and may not fully address inflammation.
Curcumin, derived from has garnered attention for its anti-inflammatory and antioxidant properties, especially when delivered in liposomal formulations that enhance its bioavailability and efficacy .(5) Previous studies have shown that liposomal wound healing and reduces inflammation in various clinical contexts, making it a promising candidate for managing postoperative symptoms in oral surgery . This study investigates the effectiveness of liposomal curcstoperative outcomes in lower third molar surgery, hypothesizing that it could reduce pain, swelling, and trismus compared to standard postoperative care.(6-8)

Materials and Methods

Study Design
This randomized, double-blind, controlled clinical trial was approved by the Institutional Ethics Committee and followed the Declaration of Helsinki. Informed consent was obtained from all participants prior to enrollment.

Participants
Patients aged 18-35 undergoing elective lower third molar extraction were recruited. Exclusion criteria included allergy to curcumin, systemic inflammatory conditions, active infections, or recent use of anti-inflammatory drugs .

Intervention
Participants were randomly assigned to two groups:
• Group A - 500 mg liposomal curcumin twice daily for 5 days postoperatively.
• Group B (Control): Received standard postoperative care without curcumin.

Outcome Measures
• Primary Outcomes: Pain (measured on the Visual Analog Scale), swelling (using standardized facial measurements), and mouth opening (trismus, measured by interincisal distance) .(9-11)
• Secondary Outcomes: Wound healing quality and incidence of postoperative infection.
Sta were analyzed with SPSS software. Independent t-tests and chi-square tests compared outcomes between groups, with a significance level of $p < 0.05$.

Results

Demographics A total of 100 participants were enrolled, with 50 in each group. Demographic, including age and gender, were comparable between groups.
Primary Outcomes
• Pain: Group A reported significantly lower pain scores at 24, 48, and 72 hours postoperatively ($p < 0.01$) .
• Swelling: Facial swelling was notably reduced in the curcumin group at each time point ($p < 0.05$) .
• Trismus: curcumin group by day 5 ($p < 0.01$), indicating reduced trismus . Secondary Outcomes
• Swelling: Group A demonstrated superior healing scores with reduced inflammation and erythema compared to Group B.
• infections were reported in either group, suggesting that curcumin did not increase susceptibility to infection .

Statistical Analysis
Significant differences in primary and secondary outcomes between the groups support the hypothesis that liposomal curcumin effectively reduced complications following lower third molar extractions .

Discussion

Interpretation of Findings
Our results indicate that liposomal curcumin effectively reduces pain, swelling, and trismus following third molar surgeryg previous research on its anti-inflammatory properties . This study contributes to growing evidence that curcumin could enhance postoperative recovery in oral and maxillofacial surgery. (12)

Comparison with Existing Literature
Studies have been done in various surgical and inflammatory contexts, but few have investigated its specific application in oral surgery . Our findings align with recent reports showing curcumin's efficacy in reducing postoperative inflammation, reinforcing its potential as an adjunct therapy . (13)

Strengths and Limitations
Strengths of the randomized, controlled design and use of objective clinical measurements. Limitations include a short follow-up period and single-center design.

Future Directions
Further research should explore different dosages, alternative curcumin formulations, and comparisons with other anti-inflammatory agents. Long-term studies would help elucidate the duration of curcumin's benefits in postoperative care. (14-16).

Conclusion

This randomized controlled trial suggests that liposomal curcumin can reduce pain, swelling, and trismus in the postoperative period following lower third molar extractions, with no significant side effects. These findings should be a valuable addition to standard postoperative management protocols in oral surgery.

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