COMPARISON OF THE ANALGESIC EFFICACY OF LORNOXICAM VS TRAMADOL IN POSTOPERATIVE PAIN MANAGEMENT FOLLOWING MANDIBULAR THIRD MOLAR SURGERY- A SPLIT-MOUTH STUDY

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Abstract

Background: Surgical extraction of third molars is one of the most frequently performed procedures in oral and maxillofacial surgery. It often causes excruciating postoperative pain, swelling, and discomfort, so effective pain management is crucial for improving patient outcomes and satisfaction during the recovery phase. Non-steroidal anti-inflammatory medications (NSAIDs) and opioids continue to be the most popular pharmacological agents utilised for postoperative analgesia.

Objectives: This study aimed to evaluate the analgesic efficacy of Lornoxicam v/s Tramadol, in the surgical extraction of third molars.

Materials and methods: A split-mouth study was conducted in patients who required bilateral surgical extraction of third molars. Group A received Tab. Lornoxicam 8 mg and Group B received Tab. Tramadol 50 mg. Postoperative parameters such as pain, swelling, side effects, patient satisfaction, and compliance were assessed on postoperative Days 1 and 3.

Results: The Lornoxicam group demonstrated significantly lower mean VAS scores on postoperative days 1 and 3, a longer time first to rescue, and fewer adverse effects compared with the tramadol group.

Conclusion: Oral lornoxicam provided superior analgesia and an improved adverse-effect profile compared to tramadol for postoperative pain after third-molar surgery. Lornoxicam can be considered an effective single-dose option in this setting.

Key words: Surgical extraction, Lornoxicam, Tramadol, Impacted third molars, adverse effects, Pain.

Introduction:

Surgical extraction of impacted mandibular third molars is a common procedure in oral and maxillofacial surgery that frequently causes excruciating pain and discomfort following the procedure. Effective pain management is essential for the optimum recovery and patient satisfaction. The pain is mostly inflammatory in nature because of tissue damage and the release of prostaglandins and other inflammatory mediators. Nonsteroidal anti-inflammatory drugs (NSAIDs) and opioid analgesics are the mainstays of postoperative pain management. A potent NSAID that inhibits COX-1 and COX-2 enzymes, lornoxicam is a member of the oxicam class. It has a strong safety record and responds fast. Tramadol is a synthetic opioid that acts centrally, blocking serotonin and norepinephrine reuptake and activating μ-opioid receptors to induce analgesia. However, it often results in drowsiness, nausea, and vertigo [1].

Although both medications are commonly used, limited data compare their effectiveness after third molar surgery. Clinicians would be better able to choose the most efficient and well-tolerated alternative if they had a thorough understanding of the analgesic effects and adverse event profiles of each medication. The purpose of the current study was to examine the effectiveness of tramadol and lornoxicam as postoperative analgesics after impacted mandibular third molars were surgically extracted.

Methodology:

This prospective, randomised, double-blind split-mouth clinical study was conducted in the Department of Oral and Maxillofacial Surgery, Sibar Institute of Dental Sciences, after obtaining institutional ethical clearance and informed consent from all participants. A total of 40 patients aged between 18 and 40 years requiring bilateral surgical extraction of impacted mandibular third molars were included. Each patient acted as their own control and underwent two separate surgical procedures on either side at an interval of one week. All extractions were performed by the same surgeon using a standardised technique under local anaesthesia. One side (Group A) received a single oral dose of lornoxicam 8 mg immediately after surgery, while the contralateral side (Group B) received tramadol 50 mg. Postoperative evaluation included assessment of pain, adverse effects, and patient compliance. Pain intensity was recorded using the Visual Analogue Scale (VAS) on postoperative Days 1, 3, and 7, and patients with a VAS

score ≥4 were administered paracetamol 1 g as rescue medication. Adverse effects and overall patient compliance were also recorded. The inclusion criteria were patients classified as ASA I or ASA II, requiring bilateral mandibular third molar extractions, and those who provided written informed consent. Patients with a history of NSAID or opioid allergy, systemic disorders affecting drug metabolism, or those who were pregnant or lactating were excluded. Data were analysed using SPSS version 26.0, and the mean and standard deviation were calculated for all parameters. Intergroup comparisons between the two sides were made using the independent t-test, with a p-value < 0.05 considered statistically significant.

Results:

Pain (VAS score)

The data in Table 1 shows a gradual decline in postoperative pain scores for both groups across the observation period. On Day 1, the mean pain score was 6.25 for both Lornoxicam and Tramadol, indicating similar initial analgesic effects. By Day 3, the mean pain score decreased to 2.75 in the Lornoxicam group and 3.25 in the Tramadol group, showing slightly better pain control with Lornoxicam. On Day 7, pain scores further reduced to 1.5 for Lornoxicam and 3.5 for Tramadol, demonstrating that Lornoxicam provided more effective and sustained postoperative pain relief compared to Tramadol.

Time intervals	Groups	N	Mean	Standard deviation	p-value
Day 1	Lornoxicam	20	6.25	0.96	1.000
	Tramadol	20	6.25	0.96	
Day 3	Lornoxicam	20	2.75	1.16	0.136
	Tramadol	20	3.25	1.01	
Day 7	Lornoxicam	20	1.5	1.82	0.020
	Tramadol	20	3.5	0.27	

Table 1: Comparison of pain between the two groups

Patient Satisfaction

Time intervals	Groups	N	Mean	Standard deviation	p-value
Day 1	Lornoxicam	20	4.25	0.78	0.485
	Tramadol	20	4.1	0.71	
Day 3	Lornoxicam	20	4.35	0.74	0.119
	Tramadol	20	3.95	0.82	
Day 7	Lornoxicam	20	2.3	1.05	0.042
	Tramadol	20	3.5	0.45	

Table 2: Comparison of Pain satisfaction between two groups

Adverse effects:

The data in Table 3 demonstrates that Adverse effects were fewer in the Lornoxicam group compared to the Tramadol group. A higher percentage of patients experienced no adverse effects with Lornoxicam (70%) than with Tramadol (40%). Nausea and gastritis were the most common complaints in both groups, while dizziness and fatigue were reported only in the Tramadol group. Overall, Lornoxicam demonstrated a better safety and tolerability profile than Tramadol.

Groups	Adverse effects	N	Percentage
Lornoxicam	None	14	70
	Nausea	3	15
	Dizziness	0	0
	Fatigue	0	0
	Gastritis	3	15
Tramadol	None	8	40
	Nausea	4	20
	Dizziness	4	20
	Fatigue	2	10
	Gastritis	2	10

Table 3: Distribution of adverse effects in the study groups

Discussion:

In the present study, patients receiving Lornoxicam reported lower pain scores compared with those receiving Tramadol at all postoperative intervals, indicating superior analgesic efficacy. Similar findings were reported by Bouloux et al. (2012) [2], who observed that Lornoxicam provided better postoperative pain relief after oral surgical procedures compared to opioid analgesics.

According to Laine et al. (2008) [3], Lornoxicam's increased effectiveness may be explained by its dual suppression of the cyclooxygenase-1 and cyclooxygenase-2 (COX-1 and COX-2) enzymes, which results in less prostaglandin generation at the surgical site. Furthermore, Lornoxicam provides efficient pain treatment with no buildup or side effects due to its quick onset of action and short plasma half-life [4]. Conversely, Tramadol acts as a weak μ-opioid receptor agonist and inhibits reuptake of serotonin and norepinephrine, producing a centrally mediated analgesic effect (Grond & Sablotzki,2004)[5]. Afilalo et al. (2010)[6] concluded that Tramadol lacks peripheral anti-inflammatory activity; it may not adequately address the inflammatory component of postoperative dental pain. Furthermore, Tramadol is associated with side effects such as nausea, dizziness, and sedation, which can affect patient compliance. Kaila et al. (2023) stated that Pre-emptive Lornoxicam reduced immediate postoperative pain and rescue analgesic use in surgical extraction [7]. According to Kaur M et al. [8] (2014), Comparison of analgesic efficacy of lornoxicam and tramadol in patients undergoing orthopaedic surgery. Lornoxicam offers better analgesia and fewer side effects than tramadol in orthopaedic post-op care. Lustenberger FD et al (2011) [9] Lornoxicam is a safe and effective alternative to Ibuprofen, offering possibly faster onset of pain relief after third molar surgery. However, larger trials are necessary to confirm these results.

The superior clinical performance of Lornoxicam can therefore be explained by its combined peripheral and central analgesic mechanisms, addressing both the inflammatory source and sensory perception of pain, whereas Tramadol primarily modulates pain transmission in the central nervous system.

Limitations:

The limitations of the present study include a relatively small sample size and a short follow-up period. Future studies with larger populations, extended observation, and evaluation

of associated parameters such as swelling and trismus are recommended to substantiate the current findings.

Conclusion:

Lornoxicam demonstrated superior postoperative analgesic efficacy compared to tramadol following surgical extraction of mandibular third molars, with fewer adverse effects and better patient compliance. Hence, lornoxicam can be considered a safe and effective alternative to tramadol for managing postoperative pain in minor oral surgical procedures.

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