



## Comparative Evaluation of DEFLAZACORT with or without Twin Mix Local Anesthesia in Impacted Third Molar Surgeries-A Randomized Clinical Trial

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*(Received: 16 March 2025*

*Revised: 20 April 2025*

*Accepted: 01 May 2025)*

### KEYWORDS

Post-operative swelling, Post-operative pain, Deflazacort, third molar, twin mix

### ABSTRACT:

**Aim & Background:** To assess and compare the effect of Deflazacort with or without twin mix local anesthesia in surgically removed impacted mandibular third molars following surgery problems such as pain, swelling, and opening of the mouth. In a usual dental practice, Removal of the third molar is among the most often executed surgeries. The third set of molars is the last group of teeth at the back of the mouth. Surgical intervention may be necessary in complex situations, involving bone removal and gum tissue incision. Patients may have discomfort, edema, and pain following surgery.

**Materials and Methods:** On 30 patients, a randomised control study was carried out. Patients had their completely impacted lower third molars surgically removed. There were 2 groups: Group A, which got Deflazacort without twin mix local anesthesia following tooth was extracted, and Group B, which got Deflazacort solution. The mouth-opening scores were compared using the Chi-square test, whereas the continuous data for pain and edema were compared Within the two groups using the Mann-Whitney U test.

**Results:** Ater 1 week of treatment, no significant change in pain was noted in Group A, but significantly lower in pain score in Group B compared to Group A after 1-week and 1-month post treatment. Similarly, after 1 week and 1 month, it was found that participants under the Group B had less swelling when compared to participants in Group A but after 1 month it was not statistically significant. But for mouth opening, it was found that after one week, one month, and three months, there was discernible statistical disparity between the mean mouth-opening among participants between the Group A and Group B.

**Conclusion:** When compared to Group A, the use of Deflazacort with twin mix of local anesthesia significantly reduced postoperative problems such pain, swelling, and opening of the mouth following surgical excision of the lower third molar.

**Clinical significance:** This study is clinically significant in proving further that Deflazacort with twin mix of local anesthesia is more efficient than Deflazacort without twin mix of local anesthesia in reducing postoperative complications of pain, swelling, and limited mouth opening associated with surgical removal of impacted mandibular third molars.

**Categories:** Dentistry, Dermatology, Therapeutics, Esthetics



## 1. Background

One of the most common surgical procedures in the field of oral and maxillofacial surgery is the extraction of wisdom teeth, or impacted third molars [1]. Injuries to the lingual or inferior alveolar nerves (IAN) pose a serious risk to impacted third molar surgery patients [2]. Infection, trismus (limited mouth opening), edema, and discomfort are typical surgical problems. Following surgery, the inflammatory response may exacerbate pain for the patient and lengthen the healing period [3]. These postoperative symptoms can be considerably reduced by the use of local anesthetics, such as those used in twin mix anesthesia, and corticosteroids, such as Deflazacort [4]. While delayed surgery in elderly individuals may increase risk due to thicker bone formation and more extensive root formation, early removal in younger patients may lower the risk of problems and make extractions easier [5]. When it comes to oral surgery, NSAIDs are typically administered soon after the procedure, at a time when the inflammatory process has already begun [6]. These teeth's close closeness to important anatomical systems as the maxillary sinus, lingual nerve, and inferior alveolar nerve can make surgery more difficult [7]. Paresthesia, or tingling or numbness, may develop as a result, either temporarily or permanently [8].

The signs and symptoms may worsen the patient's quality of life and take longer to heal [9]. Two quite common problems following surgery are dry socket (alveolar osteitis) and infections [10]. The management of impacted teeth in elderly patients is a concern since these patients frequently have third molars that are more extensively impacted and have a lower ability to heal [11]. Excessive anxiety and dread of pain might make the procedure and the healing process after it more difficult. To improve patient comfort, effective pain management techniques are essential, including the use of corticosteroids such Deflazacort [12].

Due to its immunosuppressive and anti-inflammatory qualities, the synthetic corticosteroid deflazacort is frequently utilized in medical practice. Deflazacort is mainly used to control pain, edema, and inflammation following surgery, especially in cases such as extractions of wisdom teeth (impacted third molars). With less tissue reaction to surgical trauma, Deflazacort's anti-inflammatory properties aid to decrease postoperative

discomfort and hasten healing. Following oral procedures, especially third molar extractions, postoperative swelling and discomfort are frequently experienced consequences. [13]. Restricted mouth opening, or trismus, is another prevalent postoperative problem. Deflazacort's anti-inflammatory properties lessen inflammation and muscle spasms near the surgery site, which lowers the likelihood and severity of trismus [14]. Deflazacort is a safer option for a wider range of patients, including those with underlying conditions that other corticosteroids may exacerbate, because of its relatively mild effect on glucose metabolism and lower risk of osteoporosis [15]. Twin Mix Local Anesthesia is a technique used in conjunction with another local anesthetic to provide optimal pain management during dental treatments. When it comes to dental operations, especially those requiring substantial surgery like third molar extractions, twin mix local anesthesia offers significant advantages by mixing drugs like lidocaine and bupivacaine. The first anesthetic that is frequently used locally is lidocaine, which is renowned for starting to work quickly. Bupivacaine: Bupivacaine is another local anesthetic that is frequently added to twin mixes because of its extended duration of action, which can relieve pain for up to seven hours or longer [16]. The twin mix lessens the chance of receiving multiple injections during or after the surgery because bupivacaine offers prolonged pain relief. In surgeries where extended anesthesia is required to adequately manage postoperative pain, this is especially advantageous [17]. Both intraoperative and postoperative pain can be managed with the help of lidocaine's instant pain relief and bupivacaine's long-lasting effects, which also lower anxiety and increase patient satisfaction [18]. When two drugs are combined, compared to when each is taken alone, lower doses of each can be given. By doing this, the chance of toxicity and adverse effects, like problems with the heart or central nervous system, is decreased [19]. The twin mix is especially helpful in reducing pain during the procedure and the recovery period because it enables both a rapid onset of anesthetic due to lidocaine and an extended duration due to bupivacaine [20].

## 2. Methods

A randomised control trial was conducted on 30 patients. Patients had their fully affected lower third molar surgically removed. Every research subject provided written informed approval.



**Inclusion Criteria:** 30 patients, irrespective of male and female, who needed surgical extraction of third molar tooth having pain, mouth opening, trismus, swelling and all types of impaction patients were enrolled in this study.

**Exclusion Criteria:** Patients who are medically compromised like diabetes and thyroid. Pregnant women, patients with severe anxiety, patients with a history of allergy to local anesthetics, antibiotics, or other drugs used during or after surgery and presence of significant periodontal disease or ongoing oral infections. Measurement scale- VAS Score, Scale for mouth opening and flexible scale were excluded.

**Clinical parameters and questionnaire-** Prior to the surgical procedure the patients were questioned regarding the history of smoking habit, history of pain, inflammation or swelling at the site of the third molar. Clinical parameters that are included in the study were postoperative pain and swelling. Post operative pain was assessed on day 1, 3, 7, 15, 30 using scale.

**Surgical Procedure:** Under standard aseptic conditions patient draping was done

**Study variables** - The administration of Deflazacort with or without mix of local anesthesia was the main variable in this clinical research. Pain, Swelling, mouth opening, trismus and recovery surrounding the extraction socket were the main outcome variables. Pain was assessed by VAS SCORE, which was the secondary result.

**Statistical Analysis-** The data was analyzed using SPSS for Windows. The data's normal distribution was assessed using the Chi-square test. The mouth-opening scores were compared using an unpaired t-test, whereas the continuous data for pain and swelling were compared between the two groups using the Mann-Whitney U test. It has been established that  $P < 0.05$  is the significant level.

### 3. Result

A randomized control trial was conducted on 30 patients. Patients had their fully affected lower third molars surgically removed. After 1 week, It was discovered that the pain scores of Group A and Group B did not differ statistically significantly. ( $P = 0.99$ ).

- After 1 month, it was found that participants under Group B had less pain scores when compared to participants in Group A. It was shown that a statistically significant variation was seen in the pain score ( $P = 0.000$ ).
- After 1 week, it was found that participants in Group B had lesser swelling when compared to participants in Group A. The difference in swelling size was discovered to be statistically significant ( $P = 0.000$ ) between the groups.
- After 1 month, it was found that the extent of mouth opening varied significantly between the groups ( $p$ -value = 0.001). Those who received the deflazacort solution had better outcomes in terms of mouth opening, with most patients achieving 34-35 mm.
- After 1 month, it was found that the recovery time was significantly different ( $p$ -value = 0.000). The group with the deflazacort solution generally had longer recovery times (3-4 hours), while the other group mostly recovered within 1.5-3 hours.
- After 1 month, it was found that the satisfaction scores also differed significantly ( $p$ -value = 0.003). The group that received the deflazacort solution showed higher satisfaction scores (mostly 8-9).
- After 1 month, it was found that a significant difference in the duration of anesthesia between the two groups was observed ( $p$ -value = 0.000). The group without deflazacort showed a wider range of anesthesia duration, especially between 4-5 hours.
- After 1 month, it was found that there was a statistically significant difference in the severity of complications ( $p$ -value = 0.049). The group with the deflazacort solution had a higher incidence of mild complications, while moderate complications were only observed in the group without the solution.

### 4. Discussion

The results of the study has shown that there was significant reduction in the postoperative pain on POD 1, POD 3, POD 7, POD 15, POD 30 with a statistically significant  $p$  value among the group A (Deflazacort solution) individuals compared to that of Group B.

A single intravenous dose of 125 mg of methylprednisolone given to patients just before surgery



was shown to considerably reduce pain and edema compared to control patients in a double-blind, randomized, patient-controlled study [21]. To minimize postoperative problems, orthognathic surgery frequently uses perioperative systemic corticosteroids [22]. It has been shown that the glucocorticoid drug deflazacort significantly reduces pain and inflammation after oral surgical operations, such as extractions of impacted third molars. Consistent with earlier findings in the literature, individuals in the current trial who took deflazacort reported considerably less pain and edema following surgery than those who did not.

Deflazacort is one of the corticosteroids that modify the inflammatory response by preventing the release of pro-inflammatory mediators, which reduces tissue swelling and discomfort [23]. Corticosteroids can be used either systemically or locally. For lesions that are localized to the mouth, topical treatment is the best option [24]. Corticosteroids were shown in early trials to subjectively reduce inflammation following oral surgery, particularly edema. There have been consistent decreases in edema in subsequent objective evaluations of corticosteroid usage [25]. Accordingly, perioperative corticosteroid therapy appears to result in a minor to moderate reduction in edema and an improvement in range of motion following M3 removal [26].

Furthermore, it's clear that corticosteroids, doses, and delivery methods are required to determine the best course of action for minimizing pain, trismus, and inflammation following third-molar extraction [27]. It's also clear that giving IV corticosteroids prior to third-molar surgery without antibiotics has no negative effects on clinical recovery, even in healthy adult patients who are expected to experience a delayed recovery [28]. Pain control during and after the treatment was found to be improved with the use of twin mix local anesthesia, which combines two separate anesthetic agents (usually bupivacaine and lidocaine). This aligns with research demonstrating the advantages of mixing long- and short-acting anesthetics for the treatment of acute postoperative pain.

The combination of bupivacaine's extended action and lidocaine's rapid effect helps maintain anesthesia during and after surgery, minimizing the need for extra pain medication [29]. According to the study, there is a greater control over postoperative symptoms when deflazacort

and twin mix local anesthetic are used in tandem. Patients who underwent both treatments experienced reduced discomfort and edema, accelerated recuperation periods, and a decreased rate of complications in contrast to those who underwent either or both interventions. The significance of multimodal techniques in pain management and inflammatory control after oral procedures is emphasized by previous research, which supports this conclusion [30].

The use of twin mix local anesthetic in conjunction with deflazacort tended to expedite overall recovery time and improve immediate surgical results. Faster functional recovery—which enabled patients to resume regular activities sooner—was probably made possible by decreased pain and inflammation. The notion that efficient surgical care is essential for reducing recovery time and raising patient satisfaction is supported by this [31].

## 5. Conclusion

Based on the study's findings, it was clear that post-operative discomfort and inflammation had significantly decreased. In lieu of traditional closure, impacted third molar procedures can benefit from the use of Deflazacort along with twin mix local anesthetic. Both surgical results and patient comfort may be improved by the combination.

Thus, the combination of deflazacort with or without a twin mix of local anesthetics is clinically significant for its ability to enhance pain control, reduce inflammation, and improve patient outcomes, particularly in surgical and procedural settings. The twin mix, in particular, offers the advantage of both rapid and prolonged anesthetic effects, which, when combined with the anti-inflammatory properties of deflazacort, can provide superior management of postoperative symptoms. However, careful consideration of dosing, technique, and potential side effects is necessary to maximize benefits and minimize risks.

## 6. Clinical Significance

Deflazacort helps in reducing postoperative inflammation, which can decrease swelling and pain, contributing to quicker recovery and less postoperative discomfort. While the local anesthetic provides immediate pain relief by numbing the targeted area, deflazacort can prolong the duration of pain relief by



reducing inflammation and tissue irritation. By controlling inflammation, deflazacort can help minimize complications related to excessive swelling, such as restricted movement or delayed wound healing.

The combination of two local anesthetics can provide both rapid and extended pain relief. When deflazacort is added, this effect can be further enhanced, providing both immediate and long-term relief from pain and discomfort. In surgeries or procedures where extended pain relief and inflammation control are critical, this combination can significantly improve patient comfort and outcomes, reducing the need for additional pain medication. Lowered Risk of Chronic Pain\*: By effectively controlling both pain and inflammation at the site, this combination may reduce the risk of developing chronic postoperative pain or complications such as nerve entrapment due to swelling.



[08/08]

#### List of abbreviations

VAS: Visual Analog Scale

SPSS: Statistics Package for the Social Sciences

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**Table 1: Comparative evaluation of DEFLAZACORT with or without twin mix local anesthesia in impacted third molar surgeries- a randomized clinical trial**

Clinical Implementation	Parameters	Group		Total	P-value
		deflazacort without twin mixlocal anesthesia	with deflazacort solution given		
Duration of anaesthesia effect (Hrs)	1 - 3 hrs	0	8	8	0.000
	3 - 4 hrs	5	7	12	
	4 - 5 hrs	10	0	10	
Vas score	5	4	0	4	0.000
	6	8	0	8	
	7	3	3	6	
	8	0	9	9	
	9	0	3	3	
Swelling	2*1 - 2*3 cm	8	0	8	0.000
	3*1 - 3*4 cm	6	1	7	
	4*1 - 4*5 cm	1	3	4	
	5*1 - 5*5 cm	0	11	11	
Mouth opening	27	0	1	1	0.001
	28	0	2	2	
	29	0	4	4	
	30	0	5	5	
	31	1	3	4	
	32	1	0	1	
	33	2	0	2	
	34	6	0	6	
Time to recovery	1.5 - 3 Hrs	12	0	12	0.000
	3 - 4 Hrs	3	11	14	
	4 Hrs	0	4	4	
Patient satisfactory score	6	0	3	3	0.003
	7	1	7	8	
	8	8	5	13	
	9	6	0	6	
Complication	Mild	11	15	26	0.049
	Moderate	4	0	4	