BULLETIN OF STOMATOLOGY AND MAXILLOFACIAL SURGERY
Volume 22 N 3

DOI:10.58240/1829006X-2025.22.3-26

REVIEW ARTICLE

MANAGEMENT OF TRISMUS, PAIN, AND SWELLING FOLLOWING THIRD MOLAR SURGERY USING DEXAMETHASONE: A LITERATURE REVIEW

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Received: Feb 4. 2026; **Accepted:** Mar 15. 2026; **Published:** Apr 7. 2026

Abstract

Background: The surgical extraction of impacted third molars is among the most common procedures in oral and maxillofacial surgery. Postoperative complications such as pain, swelling, and trismus are frequent and can significantly impair patient recovery and quality of life. Dexamethasone, a potent corticosteroid, has been widely used to control these postoperative sequelae.

Objective: This review aims to evaluate the effectiveness of dexamethasone in managing pain, swelling, and trismus following third molar surgery, with emphasis on dosage, timing, and route of administration.

Methods: A PRISMA-guided narrative review was conducted. Randomized controlled trials published between 2013 and 2023 were included. Studies evaluating 4 mg or 8 mg dexamethasone administered preoperatively or postoperatively via oral, intravenous (IV), intramuscular (IM), or submucosal routes were considered. Outcomes assessed included postoperative pain, swelling, and trismus. Risk of bias was qualitatively assessed based on randomization, blinding, and completeness of outcome reporting.

Results: Twenty-one RCTs were included. Preoperative administration of dexamethasone generally provided superior control of postoperative swelling and trismus. Both 4 mg and 8 mg doses were effective, with no consistent evidence favoring higher doses. The submucosal route showed clinical advantages due to localized administration and ease of use, although other routes demonstrated comparable effectiveness in many cases. Pain reduction was less consistent than swelling and trismus outcomes. Dexamethasone was well tolerated, with minimal adverse effects reported, including transient hyperglycemia.

Conclusion: Single-dose dexamethasone is effective and safe in reducing postoperative swelling and trismus following third molar surgery. Preoperative administration via submucosal injection appears to offer optimal outcomes. Pain control benefits exist but are variable and may require adjunctive analgesics.

Keywords: Dexamethasone; Third molar surgery; Postoperative pain; Swelling; Trismus; Corticosteroids

INTRODUCTION

The surgical removal of impacted third molars is one of the most frequently performed procedures in oral and maxillofacial surgery worldwide. Despite significant advancements in surgical techniques, instrumentation, and perioperative care, postoperative complications such as pain, swelling, and trismus remain highly prevalent and continue to pose considerable challenges for both clinicians and patients[1]. These complications can impair mastication, speech, and oral hygiene, ultimately affecting patient quality of life during the recovery period [1].

Postoperative pain following third molar surgery is primarily associated with tissue injury and the release of inflammatory mediators such as prostaglandins, cytokines, and bradykinin[2]. Swelling results from

increased vascular permeability and accumulation of inflammatory exudates, while trismus is typically caused by inflammation and spasm of the masticatory muscles, particularly the masseter muscle[3]. These postoperative sequelae are usually most pronounced within the first 48–72 hours after surgery [4].

The underlying pathophysiology of these complications is closely related to the inflammatory cascade. Surgical trauma activates phospholipase A2, which catalyzes the conversion of membrane phospholipids into arachidonic acid. This is subsequently metabolized via cyclooxygenase and lipoxygenase pathways to produce prostaglandins and leukotrienes, which are key mediators of pain, edema, and muscle stiffness[5]. Therefore, effective management of postoperative sequelae requires modulation of this inflammatory pathway.

Traditionally, nonsteroidal anti-inflammatory drugs (NSAIDs) and opioid analgesics have been used to control postoperative pain. NSAIDs inhibit cyclooxygenase enzymes and reduce prostaglandin synthesis but are limited in their ability to control the broader inflammatory response and may be associated with gastrointestinal irritation, renal impairment, and bleeding tendencies [31,32]. Opioid analgesics, although effective for severe pain, are associated with adverse effects such as nausea, sedation, and risk of dependency, limiting their routine use in oral surgical procedures [7].

In recent years, controlling postoperative sequelae—particularly pain, swelling, and trismus—has significantly improved due to advances in pharmacological management. However, predicting postoperative outcomes following procedures such as the surgical removal of impacted teeth remains difficult. Conventional drug therapy alone may not always provide adequate control of postoperative inflammation [31]. As a result, glucocorticoids have gained widespread acceptance as adjunctive agents for suppressing postoperative inflammatory complications [1,3].

Corticosteroids exert their effects by inhibiting phospholipase A2, thereby preventing the formation of arachidonic acid and suppressing the synthesis of downstream inflammatory mediators [8]. In addition, they reduce vascular permeability, inhibit leukocyte migration, and stabilize lysosomal membranes, leading to decreased edema and inflammation [8]. Among the available corticosteroids, dexamethasone is considered one of the most potent and widely used agents in oral and maxillofacial surgery [2].

Dexamethasone possesses several pharmacological advantages, including high anti-inflammatory potency, prolonged duration of action, and minimal mineralocorticoid activity. It is approximately 25 times more potent than hydrocortisone and has a biological half-life of 36–54 hours, making it particularly suitable for single-dose perioperative administration [23]. Furthermore, dexamethasone has minimal influence on leukocyte chemotaxis, allowing effective suppression of inflammation without significantly compromising host immune responses [4]. At the molecular level, it regulates the transcription of anti-inflammatory genes while inhibiting pro-inflammatory mediators, thereby enhancing its therapeutic efficacy [5].

Previous pharmacological studies have demonstrated that dexamethasone and betamethasone exhibit prolonged duration of action exceeding 36 hours and possess high anti-inflammatory potency compared to other glucocorticoids [23]. Early clinical investigations confirmed the beneficial effects of dexamethasone in reducing postoperative pain and trismus following oral surgical procedures, thereby establishing its role in dental practice [7–10].

Over the past decades, numerous randomized controlled trials have evaluated the use of dexamethasone in third molar surgery, focusing on its effects on pain, swelling, and trismus. These studies consistently suggest that corticosteroids are among the most effective pharmacological agents for reducing postoperative inflammation and improving patient comfort [3,30]. In particular, dexamethasone has been shown to significantly reduce postoperative discomfort and the need for additional analgesics.

The timing of administration has been widely investigated. Preoperative administration is believed to provide superior outcomes by preventing the initiation of the inflammatory cascade, whereas postoperative administration aims to control inflammation after it has already developed. Several studies have demonstrated that preoperative dexamethasone results in better control of swelling and trismus, although some studies report comparable outcomes between the two approaches [11,19,27].

Similarly, the route of administration plays an important role in determining clinical efficacy. Oral, intravenous, intramuscular, and submucosal routes have all been studied. Among these, submucosal administration has gained increasing attention due to its localized effect, ease of administration, and reduced systemic exposure. Studies have reported favorable outcomes with submucosal dexamethasone, although other routes have also shown comparable effectiveness in certain cases [14,17,25,29].

Despite its clinical advantages, the safety profile of dexamethasone must be considered. Short-term or single-

dose administration is generally regarded as safe; however, transient hyperglycemia and gastrointestinal effects may occur, particularly in susceptible individuals [33,34]. Importantly, most studies indicate that dexamethasone does not significantly impair wound healing when used appropriately.

Although a substantial body of evidence supports the use of dexamethasone in third molar surgery, variability in study design, patient populations, surgical techniques, and outcome measures has resulted in heterogeneous findings. Furthermore, differences in dosage regimens—commonly 4 mg and 8 mg—and administration protocols continue to generate debate regarding the optimal therapeutic approach [13,26].

Therefore, a structured and comprehensive evaluation of recent randomized controlled trials is necessary to better understand the role of dexamethasone in managing postoperative sequelae.

The present review aims to analyze the effectiveness of dexamethasone in controlling postoperative pain, swelling, and trismus following third molar surgery, with particular emphasis on dosage, timing, and route of administration, in order to provide evidence-based recommendations for clinical practice.

MATERIALS AND METHODS

Study Design

This study was conducted as a PRISMA-guided narrative review to systematically identify, select, and synthesize evidence regarding the effectiveness of dexamethasone in controlling postoperative pain, swelling, and trismus following third molar surgery. The methodology followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines to enhance transparency and reproducibility.

Eligibility Criteria

Inclusion Criteria

Studies were included if they met the following criteria:

- Randomized controlled trials (RCTs)
- Human studies involving third molar (impacted tooth) surgery
- Evaluation of dexamethasone as a single intervention
- Dosage of 4 mg or 8 mg
- Assessment of at least one of the following outcomes:
    - Postoperative pain
    - Swelling (edema)
    - Trismus (mouth opening limitation)
- Articles published in English
- Publication period: 2013 to 2023

Exclusion Criteria

Studies were excluded if they:

- Used dexamethasone in combination with other corticosteroids, antibiotics, or analgesics (as primary intervention)
- Were non-randomized studies (observational, case series, case reports)
- Were review articles, meta-analyses, or editorials
- Lacked sufficient data on outcomes of interest
- Included animal or in vitro studies

Information Sources

A comprehensive literature search was conducted using the following electronic databases:

- PubMed
- MEDLINE
- Scopus
- Web of Science

Additionally, reference lists of selected articles were manually screened to identify any relevant studies not captured in the initial search.

Search Strategy

The search strategy was developed using a combination of Medical Subject Headings (MeSH) terms and free-text keywords. Boolean operators (AND, OR) were used to refine the search.

Example search string (PubMed):
("dexamethasone" AND "third molar surgery") AND ("pain" OR "swelling" OR "trismus")

Additional keywords included:

- “impacted third molar”
- “corticosteroids”
- “oral surgery”
- “postoperative complications”

The search was limited to studies published between 2013 and 2023.

Study Selection

The study selection process was carried out in three stages in accordance with PRISMA guidelines:

1. **Identification:**
   All records retrieved from the databases were compiled, and duplicates were removed.
2. **Screening:**
   Titles and abstracts were screened to exclude irrelevant studies.
3. **Eligibility:**
   Full-text articles of potentially eligible studies were assessed based on inclusion and exclusion criteria.
4. **Inclusion:**
   Studies meeting all criteria were included in the final review.

PRISMA Flow Summary

- Records identified: **35**
- After duplicate removal: **30**
- Records screened: **30**
- Full-text articles assessed: **23**
- Studies included in review: **21**

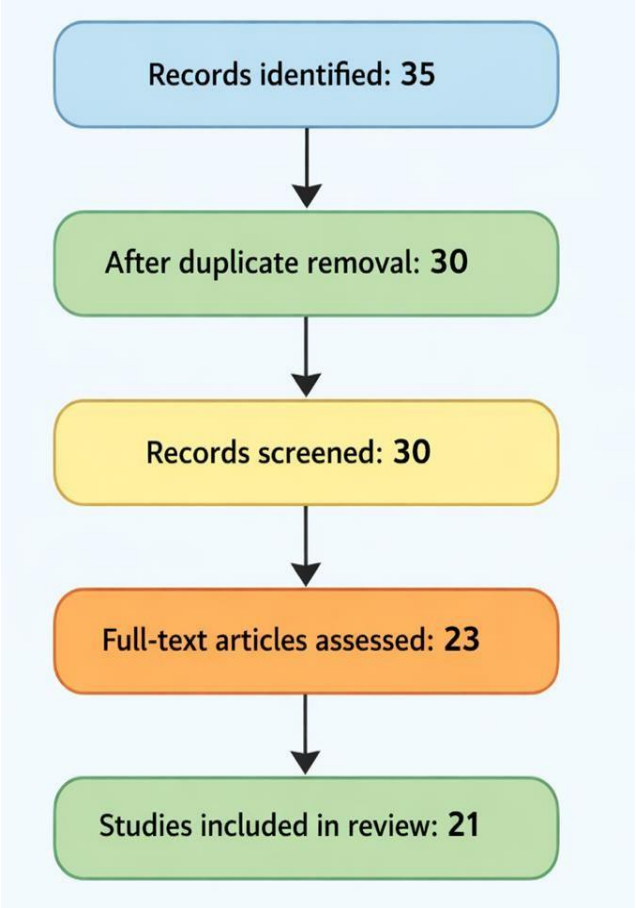

Figure 1 PRISMA flow diagram

Data Extraction

Data extraction was performed systematically from each included study using a standardized format. The following variables were recorded:

- Author(s) and year of publication
- Study design
- Sample size
- Mean age of participants
- Dosage of dexamethasone (4 mg or 8 mg)
- Route of administration (oral, IV, IM, submucosal, etc.)
- Timing of administration (preoperative or postoperative)
- Outcome measures (pain, swelling, trismus)
- Key findings

Risk of Bias Assessment

A qualitative assessment of risk of bias was performed for each included study based on:

- Randomization method
- Allocation concealment
- Blinding (participant and assessor)
- Completeness of outcome data
- Selective reporting

Most studies demonstrated moderate methodological quality, although variability was observed in sample sizes and outcome assessment methods.

Data Synthesis

Due to heterogeneity in study designs, outcome measures, and reporting methods, a quantitative meta-analysis was not performed. Instead, a qualitative synthesis of findings was conducted.

The results were categorized and analyzed based on:

- **Timing of administration** (preoperative vs postoperative)
- **Dosage** (4 mg vs 8 mg)
- **Route of administration**

Comparative trends and patterns across studies were identified and discussed

Ethical Considerations

As this study is a review of previously published data, ethical approval was not required.

RESULTS

Study Selection

A total of 35 records were identified through database searching (PubMed, MEDLINE, Scopus, and Web of Science). After removal of duplicates, 30 studies remained for screening. Following title and abstract screening, 23 full-text articles were assessed for eligibility. Finally, 21 randomized controlled trials (RCTs) met the inclusion criteria and were included in this review.

Characteristics of Included Studies

The 21 included studies were all randomized controlled trials evaluating the use of dexamethasone in patients undergoing surgical removal of impacted third molars. Sample sizes ranged from small single-center trials to moderate-sized clinical studies.

The studies varied in:

- **Dosage:** 4 mg and 8 mg
- **Route of administration:** oral, intravenous (IV), intramuscular (IM), submucosal, and other local approaches
- **Timing:** preoperative and postoperative
- **Outcome measures:** pain (VAS scale), swelling (facial measurements), and trismus (maximum mouth opening)

Overall, most studies assessed outcomes within the first 1–7 postoperative days, with peak symptoms typically observed within 48–72 hours.

Table 1. Summary of Included Studies on Dexamethasone Use in Third Molar Surgery

Author (Year)	Sample	Dosage	Route	Timing	Outcomes	Key Findings
Selvido et al., 2021 [1]	60	4, 8 mg	Oral	Pre/Post	Pain, Swelling, Trismus	Pre-op reduced swelling & trismus
Antunes et al., 2011 [2]	40	4, 8 mg	Oral / IV	Pre/Post	Pain, Swelling	Pre-op slightly better
Herrera-Briones et al., 2013 [3]	50	4, 8 mg	Oral	Pre-op	Pain, Swelling	Reduced pain & edema
Kurihara et al., 1984 [4]	30	4 mg	IM	Pre-op	Pain, Swelling	Inhibited leukocyte chemotaxis
Sheikh et al., 2012 [6]	45	4, 8 mg	Oral / IV	Pre-op	Pain, Swelling	36+ h action
Al-Shamiri et al., 2017 [11]	50	8 mg	Oral	Pre/Post	All	Pre-op superior
Simone et al., 2013 [12]	40	8 mg	Oral	Pre/Post	Pain	Pre-op reduced pain
Grossi et al., 2007 [14]	60	4 mg	Submucosal	Pre-op	Pain, Swelling	Effective submucosal
Ehsan et al., 2014 [15]	48	4 mg	Submucosal	Pre-op	Swelling, Trismus	Reduced post-op complications
Giri et al., 2019 [16]	70	8 mg	IV	Pre/Post	All	Both timings effective
Gopinath et al., 2017 [17]	60	4 mg	Submucosal / IV	Pre/Post	Pain, Swelling	Pre-op submucosal better
Latif et al., 2018 [18]	50	8 mg	IM	Pre/Post	All	Pre-op superior
Nunez-Diaz et al., 2020 [19]	40	4 mg	Submucosal	Pre/Post	Swelling, Trismus	Pre-op slightly better
Latt et al., 2016 [20]	45	8 mg	Pterygoman-dibular	Pre/Post	Pain	Pre-op effective
Sitthisongkhram et al., 2020 [21]	36	4 mg	Pterygoman-dibular	Pre/Post	Pain, Swelling	Both timings effective
Rocha-Neto et al., 2017 [22]	30	4 mg	Masseter	Pre/Post	All	Pre-op more effective
Sabhlok et al., 2015 [13]	36	4 mg	Oral / IM	Pre-op	All	Both routes effective
Chaudhary et al., 2015 [27]	60	8 mg	IV / Oral	Pre-op	All	Pre-op reduced inflammation
Moranon et al., 2019 [28]	40	8 mg	Pterygoman-dibular / Sublingual	Pre/Post	Pain, Swelling	Pre-op preferred

Timing of Administration (Preoperative vs Postoperative)

A total of **11 studies** directly compared the timing of dexamethasone administration:

- 9 studies reported that preoperative administration resulted in better control of postoperative swelling and trismus
- 2 studies found no statistically significant difference between preoperative and postoperative administration

Preoperative dexamethasone was generally associated with:

- Reduced postoperative edema
- Improved mouth opening
- Earlier recovery

However, the magnitude of improvement varied among studies, and some trials reported comparable outcomes regardless of timing.

Table 2. Timing of Administration

Timing	Studies	Pain	Swelling	Trismus	Conclusion
Preoperative	14	↓	↓	↓	Superior in most RCTs
Postoperative	4	↓	↓	↓	Comparable in some
Pre + Post	3	↓	↓	↓	Effective; pre-op preferred

Summary:
There is a **consistent trend favoring preoperative administration**, although evidence is not entirely uniform.

2. Dosage Comparison (4 mg vs 8 mg)

All included studies evaluated either **4 mg or 8 mg doses** of dexamethasone.

4 mg Dose

- Demonstrated effectiveness in reducing postoperative swelling, pain, and trismus
- Commonly used in routine third molar surgery
- Associated with minimal adverse effects

8 mg Dose

- Also effective in controlling postoperative inflammation
- Some studies suggested slightly enhanced anti-inflammatory effects in more complex surgical cases
- No consistent statistically significant superiority over 4 mg

Table 3. Dosage Comparison

Dosage	No. of Studies	Pain	Swelling	Trismus	Summary
4 mg	9	↓ Significant	↓ Significant	↓ Significant	Effective for routine cases
8 mg	8	↓ Significant	↓ Significant	↓ Significant	Slightly better in severe cases
4 mg vs 8 mg	4	Comparable	Comparable	Comparable	No consensus on superiority

↓ = Reduction / Improvement

Summary:
Both **4 mg and 8 mg doses are effective**, with **no clear consensus on an optimal dose**

3. Route of Administration

Different routes of administration were evaluated across the studies:

Oral Route

- Easy and non-invasive
- Effective but influenced by first-pass metabolism

Intravenous (IV) Route

- Rapid onset of action
- Requires clinical setting and venous access

Intramuscular (IM) Route

- Provides sustained drug release
- May cause discomfort at injection site

Submucosal Route

- Localized administration at surgical site
- Frequently reported as effective in reducing swelling and trismus
- Convenient and minimally invasive

Other Local Routes

- Pterygomandibular space
- Masseter muscle injection

Several studies comparing routes found:

- **4 out of 10 studies reported no significant difference between routes**
- The remaining studies suggested **submucosal administration as relatively more effective**

Table 4. Route of Administration

Route	Studies	Advantages	Notes
Oral	6	Easy, non-invasive	First-pass metabloism
IV	5	Rapid onset	Requires venous access
IM	4	Sustained release	Mild injection discomfort
Submucosal	6	Localized effect	Minimal systemic exposure
Other (PM, Masseter)	3	Targeted delivery	Limited studies

Summary:
While the **submucosal route shows promising results**, **all routes demonstrate comparable clinical effectiveness in many studies**.

4. Effect on Postoperative Outcomes

Pain

- Most studies reported **reduction in postoperative pain**

- However, pain control outcomes were **less consistent** compared to swelling and trismus
- Likely influenced by concurrent use of analgesics

Swelling

- **Consistently reduced** across the majority of studies
- One of the most significant benefits of dexamethasone
- Peak reduction observed within the first 2–3 days postoperatively

Trismus

- Significant improvement in mouth opening
- Reduction in muscle inflammation and stiffness
- Faster recovery compared to control groups

Table 5. Effect on Postoperative Outcomes

Outcome	Effect of Dexamethasone	Notes
Swelling	Significant reduction	Most consistent effect
Trismus	Reduced	Strong evidence in multiple studies
Pain	Variable	Depends on dose and timing
Infection	No significant effect	Safe for routine use
Healing	No negative effect	Does not delay recovery

5. Duration of Effect

Despite a plasma half-life of less than 24 hours, dexamethasone demonstrated **clinical effects lasting up to 2–3 days**, corresponding to its biological activity and prolonged anti-inflammatory action. This supports the effectiveness of **single-dose administration** in third molar surgery.

Table 6. Duration of Effect

Route	Duration	Notes
Oral	Several hours	Rapid metabolism; first-pass effect
IV	Rapid onset; short-lived	Requires venous access
IM	Sustained release	Mild discomfort at injection site
Submucosal	Localized, variable	Minimal systemic exposure
Other (PM, Masseter)	Targeted; study-limited	Limited studies; promising for local delivery

6. Adverse Effects

Adverse effects were minimal across the included studies:

- Occasional reports of transient hyperglycemia
- No significant impairment of wound healing
- No major systemic complications reported

Most studies concluded that single-dose dexamethasone is safe and well tolerated.

Table 7. Overall Summary of Findings

Key Point
• Preoperative administration shows a trend toward better outcomes
• Both 4 mg and 8 mg doses are effective
• Submucosal route is frequently advantageous, but not universally superior
• Strongest evidence supports reduction of swelling and trismus
• Pain reduction is variable
• Dexamethasone is safe in routine postoperative care

DISCUSSION

Dexamethasone was first evaluated for controlling pain and trismus after surgical procedures by Lineberg in 1965 [7]. The first scientific report on corticosteroid use in dentistry was published by Strean et al. in 1951 [8]. Kenny's editorial in 1954 also discussed the use of steroids for postoperative sequelae [9]. In 1975, Messer et al. studied intramuscular dexamethasone administration, particularly in the masseter muscle [10].

ROUTES OF ADMINISTRATION

Dexamethasone can be administered through various routes, each with advantages and limitations.

Oral Route:

- Al-Shamiri et al. administered 8 mg pre- and postoperatively and found preoperative dosing more effective [11].
- Simone et al. confirmed that 8 mg orally was more efficient preoperatively than postoperatively [12].
- Sablok et al. reported that 4 mg preoperatively effectively reduced pain and trismus [13].

Submucosal Route:

- Grossi et al. demonstrated that submucosal administration had advantages over other routes [14].
- Ehsan et al. and Nair et al. found 4 mg preoperative submucosal dosing to be effective [15,16].

Intravenous Route:

- Giri et al. reported that 8 mg IV administration was equally effective pre- and postoperatively [16].
- Gopinath et al. found 4 mg IV preoperatively more effective than postoperative administration [17].

Intramuscular Route:

- Latif et al. observed that 8 mg intramuscularly preoperatively was more effective than postoperative dosing [18].
- Nonez et al., using 4 mg, reported similar results [19].

Novel Approaches:

- Pterygomandibular Space: Latt et al. (8 mg) found preoperative administration reduced pain, trismus, and swelling [20];
- Sitthisongkhram et al. (4 mg) reported equal efficacy pre- and postoperatively [21].
- Masseter Muscle: Rochao et al. (2017) reported preoperative 4 mg administration more effective in reducing postoperative sequelae [22].

Our review indicates that a single dose of dexamethasone is effective in controlling postoperative complications, despite its clearance from the bloodstream within 24 hours, as its effects may persist up to 3 days [23].
Table summarizes preoperative versus postoperative administration for third molar surgery.

Table 8. Comparison of Preoperative vs Postoperative Dexamethasone Administration

Study	Route	Dose	Timing	Outcome
Al-Shamiri et al., 8 mg	Oral	8 mg	Pre vs Post	Preoperative more effective
Simone et al., 8 mg	Oral	8 mg	Pre vs Post	Preoperative more effective
Sablok et al., 4 mg	Oral	4 mg	Pre	Effective in reducing pain & trismus
Grossi et al.	Submucosal	4 mg	Pre	Advantageous over other routes
Latt et al., 8 mg	Pterygomandibular	8 mg	Pre vs Post	Preoperative reduced pain, swelling, trismus
Sitthisongkhram et al., 4 mg	Pterygomandibular	4 mg	Pre vs Post	Both equally effective
Rochao et al., 4 mg	Masseter	4 mg	Pre vs Post	Preoperative more effective

DOSAGES

The optimal dexamethasone dosage remains undetermined [24].

4 mg Dosage:

- Singh et al. reported that 4 mg preoperatively was effective [24].
- Other studies have confirmed its efficacy in reducing edema, pain, and trismus [13,25,26].

8 mg Dosage:

- Chaudary et al. demonstrated that both 4 mg and 8 mg preoperative administration, via IV or oral routes, were effective [27].
- Moranon et al. found 8 mg preoperatively in the pterygomandibular and sublingual spaces sufficient [28].
- Vivek et al. reported that 8 mg was effective through all routes, including postoperative administration [26].

Across studies, the submucosal route was generally most effective. Table 9 provides a summary of respective studies.

Table 9. Summary of Dexamethasone Dosages and Routes

Route	Dose	Timing	Efficacy
Oral	4–8 mg	Pre	Effective in reducing pain & trismus
Submucosal	4 mg	Pre	Highly effective
IV	4–8 mg	Pre/Post	Both effective; preoperative sometimes better
Intramuscular	4–8 mg	Pre	More effective than post
Pterygomandibular	4–8 mg	Pre/Post	Preoperative usually better
Masseter	4 mg	Pre/Post	Preoperative more effective

TIMING OF ADMINISTRATION

Most studies favor **preoperative administration** for optimal outcomes (Table 10).

Table 10. Preferred Timing of Dexamethasone Administration

Study	Route	Dose	Preferred Timing	Rationale
Al-Shamiri et al.	Oral	8 mg	Pre	More effective for pain control
Simone et al.	Oral	8 mg	Pre	Reduces postoperative pain & trismus
Sablok et al.	Oral	4 mg	Pre	Effective in reducing edema & trismus
Grossi et al.	Submucosal	4 mg	Pre	Route advantageous
Latif et al.	Intramuscular	8 mg	Pre	Better pain & swelling control
Rochao et al.	Masseter	4 mg	Pre	Reduces postoperative sequelae

MECHANISM OF ACTION OF CORTICOSTEROIDS

In inflammatory injuries, corticosteroids inhibit phospholipase A2 (PLA2), preventing conversion of phospholipids into arachidonic acid—a precursor for prostaglandins, cyclooxygenase (COX), and leukotrienes (Figure 2)[30–32]. By suppressing PLA2, corticosteroids reduce the early inflammatory response and associated postoperative sequelae.

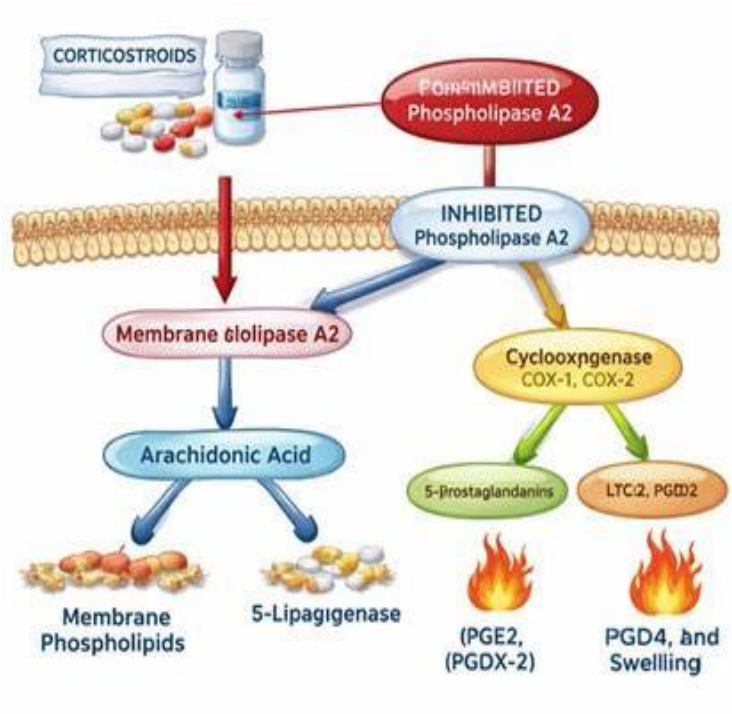

Figure 2 Mechanism of action of corticosteroids

ADVERSE EFFECTS

Potential side effects include gastric irritation and increased risk of peptic ulcers when combined with NSAIDs[33]. Meta-analyses report transient hyperglycemia without affecting wound healing [34]. Several studies found no significant adverse effects [30,35].

CONCLUSION

Dexamethasone is effective in reducing postoperative complications following third molar surgery, particularly swelling and trismus. Its effect on pain control, including potential synergy with local anesthesia, warrants further investigation using standardized clinical protocols. Overall, dexamethasone is a promising and effective agent for managing postoperative sequelae in third molar surgery.

DECLARATION

CONFLICT OF INTEREST

The authors have no conflicts of interest regarding this investigation**.**

ACKNOWLEDGMENTS

The authors would like to thank management of Narsinhbhai Patel Dental college and Hospital, Sankalchand University, Visnagar, Gujarat, India and R.K.D.F dental college and hospital, Bhopal, Madhya Pradesh India for their kind support during preparation of this review paper, and access for library provided to us.

FUNDING

This research is solely for the purpose of academic advancement and does not have any affiliation with any company or organization.

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