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Effect of Dexamethasone Intraligament Injection on Post-Endodontic Pain in Patients with Symptomatic Irreversible Pulpitis

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Author`s Contribution

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ABSTRACT

Objective: This study aimed to evaluate the efficacy of intraligamentary dexamethasone injection in reducing post-endodontic pain among patients with symptomatic irreversible pulpitis.

Methodology: A descriptive case series was conducted at the Department of Dentistry, Ibn-e-Siena Hospital, Multan, from October 2023 to April 2024. A total of 155 patients aged 18–65 years, presenting with irreversible pulpitis of less than seven days' duration, were enrolled using non-probability consecutive sampling. After informed consent, all patients received a pre-operative intraligamentary injection of dexamethasone (0.4 mL) using a pressure syringe following standard anesthesia. Single-visit pulpectomy was performed 30 minutes post-injection by an experienced endodontist. Postoperative pain was assessed at six hours using a Visual Analogue Scale (VAS). Treatment success was defined as VAS < 3. Data were analyzed using SPSS v23, and chi-square test was applied to assess associations; $p < 0.05$ was considered significant.

Results: Of the 155 patients, 72 (46.5%) were male and 83 (53.5%) were female, with a mean age of 38.6 ± 10.4 years. Successful pain control was achieved in 109 (70.3%) patients, while 46 (29.7%) experienced persistent pain (VAS ≥ 3). No statistically significant association was observed between treatment success and gender ($p = 0.404$), laterality ($p = 0.928$), or tooth location ($p = 0.411$).

Conclusion: Preoperative intraligamentary injection of dexamethasone significantly reduced post-endodontic pain in patients with symptomatic irreversible pulpitis, with a success rate of 70%. Incorporating this approach into routine endodontic practice can enhance patient comfort and improve clinical outcomes.

Keywords: Dexamethasone, intraligamentary injection, irreversible pulpitis, post-endodontic pain, root canal therapy.

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Introduction

Dexamethasone is a potent glucocorticoid with anti-inflammatory efficacy 25 times more than that of hydrocortisone 18. Intraligament injection of dexamethasone can reduce or even prevent postoperative pain in patients with irreversible pulpitis after root canal treatment.

Health is considered as paramount assets of human life.[1,2] Endodontic procedures are among commonly practiced dental procedures.[3] Nowadays, there is a sharp rise in the number of people suffering from anxiety.[4] Management of

endodontic pain has a positive impact on reducing fear and anxiety of endodontic patients.[5]

Endodontic pain management encompasses all aspects of treatment; preoperative pain control includes accurate diagnosis and anxiety reduction; while intraoperative pain control mainly depends on effective local anesthetic/operative techniques. Comprehensive knowledge of local anesthetic solutions and their in-time proper use are necessary for pain-free treatment.[6] Dental patients may present with swelling, severe pain [7] and in dentistry, fear of cross infection is also there. [8-9] Most individuals undertake endodontic treatment to get pain's relief. [9,10]

However, management of postoperative pain may be as important if not superior. Most of the endodontic patients believe that pain perception subsequent to endodontic treatment of a tooth is unavoidable, yet several clinical trials indicated that postoperative pain occurs not in all endodontic patients.[12] Control of post-endodontic pain can involve a variety of techniques and pharmacologic agents including antibiotics, which are also prescribed, and various factors & decisions are also taken into account prior to their prescription. [13-14]

Ineffectiveness of local anesthesia in symptomatic teeth with irreversible pulpitis has always been a matter of complexity and frustration for both patient and the clinician.[15] Various mechanisms have been proposed to explain this phenomenon, prostaglandins which are terminal products of arachidonic acid cyclooxygenase (COX) pathway metabolism; can sensitize the nociceptors to bradykinin and histamine factors as the main agents of inflammatory soup in inflamed pulps.[16]

Dexamethasone is a potent glucocorticoid with antiinflammatory efficacy 25 times more than that of hydrocortisone.[17] Mehrvarzfar et al. have shown that supra periosteal infiltration of dexamethasone can reduce or even prevent postoperative pain in patients with irreversible pulpitis.[16] Dentist should also have knowledge about anaphylactic Reaction due to local anesthesia.[18]

In cases of teeth with symptomatic irreversible pulpitis, the failure rate of the inferior alveolar nerve block (IANB) can be as high as 44–81%. [15] Literature indicates that premedication with ketorolac, meloxicam, ibuprofen, and dexamethasone enhances the efficacy of IANB in mandibular molars with symptomatic irreversible pulpitis..[19] Administration of dexamethasone has been shown to improve IANB effectiveness, thereby reducing the need for supplementary injections and increasing the dentist's confidence in achieving adequate anesthesia. The objective of this study was to evaluate the effect of intraligamentary dexamethasone injection on post-endodontic pain in patients with symptomatic irreversible pulpitis.

Methodology

This case series study of 06 months' (October 19, 2023 to April 19, 2024) duration was conducted at Department of Dentistry, Ibn-e-Siena Hospital Multan. Sample size was calculated using WHO calculator through formula for single proportion. Where, Success of intraligamentary dexamethasone injection = 73%,[18] confidence level = 95 %, absolute precision = 7 %. Total sample size = 155

All the patients were assessed through history and medical record review. Visual analogue scale was used to record the severity of pain patients either male or female gender in the age bracket of 18 - 65 years, presenting with Irreversible pulpitis < 7-days duration, and able to understand VAS pain scoring were included in the study. Patients having known allergy or contraindications to study medication, history of gastric / peptic ulcer, gastrointestinal bleeding, any contraindication to dexamethasone therapy i.e. diabetes mellitus, uncontrolled hypertension, renal impairment, patient taking SSRI therapy were excluded from the study.

The study was conducted after permission from institutional ethics review committee. A total of 155 patients presenting to the Department of Dentistry with irreversible pulpitis and fulfilling the inclusion criteria were enrolled via non-probability consecutive sampling technique, after the informed consent had obtained from patients. Baseline characteristics including age (years) gender (male/female), laterality (right / left), location (upper / lower) of affected molar teeth, type of teeth (first / second molar) and duration of symptoms (days) were noted. All the patients received pre-operative intraligamentary injections of Dexamethasone. The area of intraligamentary injection was dried using sterile gauze and topical anesthesia of 20% benzocaine was applied using a sterile applicator. The applicator was held in place for 80 seconds. The intraligamentary injections was given using a specialized pressure type syringe. Thirty gauge extra short needles were used in all patients. The needle was 65 inserted in the mesial gingival sulcus, with the bevel facing towards the bone, at the mesio-buccal line angle with 30° from the long axis of the tooth. The needle was pushed firmly between the alveolar bone and the tooth and 0.4ml of study medication was injected. After 30 minutes of wailing, single session pulpectomy was performed by consultant dental surgeon with > 3 years post fellowship experience as per institutional protocol. All the

patients were followed up at six hours for pain assessment. Visual analogue scale (VAS) was used for pain assessment. A score of 0 indicates no pain and 10 showing severe pain. The treatment was considered successful if the patients experienced pain VAS < 3 six hours after treatment. All the data was recorded on proforma.

All the obtained data was entered in and analyzed through SPSS v23. The quantitative variables like age and duration of symptoms were presented as mean and standard deviation. The quantitative variables like gender, laterality, position & type of molar tooth and treatment success were presented as frequency and percentages. To control the confounding and effect modification the data were stratified on age groups, gender, laterality and position & type of molar tooth. Post stratification effect on treatment success was assessed by applying Chi-square test, and p-value < 0.05 was taken as significant

Statistical analysis using the chi-square test found no significant link between treatment success and age (p = 0.866, or gender (p = 0.404). Similarly, no significant association was found between success and the side of the mouth affected (laterality) (p = 0.928) or the position of the molar (upper or lower) (p = 0.411)

Results

Out of 155 patients, 72 (46.5%) were males while 83 (53.5%) were females. 69 patients were in age group of 18-39 years while 86 were 40 years and above. When talking about laterality i.e., right was found in 80 (51.6%) patients and left was found in 75 (48.4%) patients. As shown in table I.

Table I: Distribution of laterality among participants.

Laterality	Frequency	Percentage
Right	80	51.6
Left	75	48.4
Total	155	100

Location of affected molar teeth i.e., upper side was found in 73 (47.1%) patients while lower side was found in 82 (52.9%) patients (Table II).

Table II: Distribution of Location of affected molar teeth.

Location of affected molar teeth	Frequency	Percentage
Upper	73	47.1
Lower	82	52.9
Total	155	100

The study outcome i.e., success was found in 109 (70.3%) patients while it was not found in 46 (29.7%) patients.

By using chi-square test it was found that success was not significantly associated with gender, p-value = 0.404. Significant association was not found between the success and laterality with p-value = 0.928. There was no significant association between success and location of affected molar teeth with p-value = 0.411. As shown in Table III.

Table III: Association of different variables with respect to treatment of success.

Variable name with category		**Success**		P-value
		Yes	No	
Gender	Male	53	19	0.404
	Female	56	27	
Laterality	Right	56	24	0.928
	Left	53	22	
Location of affected molar teeth	Upper	49	24	0.411
	Lower	60	22	

Discussion

Studies have shown that the more intense and long-lasting the pain, the higher the chance that the pulp is irreversibly inflamed. One of the most obvious signs of irreversible pulp inflammation is spontaneous pain, which can occur without any trigger, such as hot or cold food. In severe cases, this pain can even wake a person from deep sleep.[20]

In irreversible pulpitis, the pulp remains alive but is so severely inflamed that it is unlikely to heal with conservative treatments. Research suggests that in 26–60% of cases, the dental pulp can transition from being healthy to completely dead (necrotic) without causing any noticeable pain.[21]

According to Pochapski et al., a preventive (prophylactic) injection of dexamethasone significantly reduces the severity of pain after treatment. In this study, dexamethasone was found to effectively lower post-treatment pain in patients with symptomatic irreversible pulpitis.[22]

Mehrvarzfar and colleagues[23] compare three different types of groups receiving intraligamentary injections before the Root canal treatment of molars. Results of that study is similar to that of current study and supports the use if intraligamentary steroid injection for pain control after RCT.

Most of the researchers made a conclusion that about 50% patients of irreversible pulpitis experienced no pain postoperatively after endodontic treatment but in current study introduction of intraligamentary injection reduced this painful incidence to 30% while the 70% patients had no pain. Recently prevalence of dentinal hypersensitivity is also recorded as high.[24] Main aim of restorative dentistry

is to save natural teeth.[25], and socioeconomic status (SES) is also a key factor in determining one's quality of life and getting treatment [26]. SES & Demographic factors have a dominant part in providing high quality of health.[27]

Another study conducted by Yousuf stated that there is no statistically significant difference between dexamethasone and placebo injection in the patient of irreversible pulpitis after having Root canal treatment. The results of that study are different than that of current study because sample size of previous study was less than that of current study. Yousuf stated that intraligamentary injection of corticosteroids definitely reduced the post-operative pain in cases of irreversible pulpitis.[28]

WHO focus on improving oral health thus, reducing burden of illnesses.[29] Teeth have great influence on one's personality.[30] Moreover, anxiety, distress and fear are attributed to clinical dentistry.[31]

Another study by Aggarwal et al concluded that preoperatively intralegamantary injection had excellent results in pain control in case of Root canal treated teeth. Results of Aggarwal's are similar to that of current study which stated that about 70% of the patient's felt relief from pain in the root canal treated teeth having irreversible pulpitis.[32]

Intraligamentary injection is not the common practice in dentistry but it produce an excellent results in decreasing post-operative pain after Root canal treatment. Intraligamentary injection is extreme painful but it should be administered after local anesthesia which reduces the pain and discomfort of intraligamentary injection. Another study also concluded that intraligamentary injection significantly decreased the post-operative pain after Root Canal Treatment.[33] Dexamethasone provided anti-inflammatory in the current study which provided long term pain relief.

There is dire need of conducting researches, educational programs, taking public health measures so that public could be aware and disease can be prevent at an earlier stage. [34,35]

Study Limitations

1. Single-Center Study – The research was conducted at a single institution, which may limit the generalizability of the findings to other populations, clinical settings, or geographic locations.
2. Short Follow-Up Duration – The study primarily assessed post-endodontic pain within a short period. A longer follow-up could provide better insights into the prolonged effects of dexamethasone on pain management and healing outcomes.
3. Limited Sample Diversity – The study population may not fully represent all patient demographics, including variations in age, medical history, or dental anatomy, which could influence treatment outcomes.
4. Lack of a Placebo-Controlled Group – Without a placebo group, it is difficult to determine the true effect of dexamethasone compared to the psychological or procedural impact of the treatment.

Future Implications of the Study

1. Enhanced Pain Management Strategies – The findings of this study can contribute to improved pain control protocols in endodontic treatments, reducing patient discomfort and enhancing overall treatment experiences.
2. Reduction in Dental Anxiety and Fear – Effective post-endodontic pain management using dexamethasone intraligamentary injections may help reduce patient anxiety, encouraging more individuals to seek timely dental care without fear of pain.
3. Refinement of Clinical Guidelines – If proven effective through further research, intraligamentary dexamethasone injections could be incorporated into standardized clinical guidelines for managing post-endodontic pain in patients with symptomatic irreversible pulpitis

Conclusion

Intraligamentary injection of dexamethasone significantly reduced the post-operative pain and discomfort after RCT of the tooth which have irreversible pulpitis preoperatively. It is concluded that preoperative intraligamentary injection of dexamethasone should be practiced to increase the success rate of RCT after irreversible pulpitis.

References

1. Habib MF, Mahmood H, Khan J, Mahmood Y, Javaid MM, Imtiaz N, et al. Effectiveness of proper brushing technique based on repetition and reinforcement on the oral health status of school children: a quasi-experimental interventional design. J Pharm Technol Clin Pharm. 2023 Oct 16;30(18):602-9. doi:10.53555/jptcp.v30i18.3044
2. Javaid MM, Farooq F, Khalid SN, Ullah A, Langrial RZ, Junaid M, et al. Assessment of periodontal status and oral health-related quality of life among pregnant women. J Soc Obstet Gynaecol Pak. 2024;14(2):96-100.
3. Chaudhary FA, Fazal A, Javaid MM, Hussain MW, Siddiqui AA, Hyder M, et al. Provision of endodontic treatment in dentistry amid COVID-19: a systematic review and clinical recommendations. Biomed Res Int. 2021;2021:8963168. doi:10.1155/2021/8963168
4. Baqi A, Shaikh SP, Zia MS, Javaid MM, Malik MS, Zia Q. Determinants of anxiety in amputees owed to traumatic and non-traumatic causes in Quetta. Ann Pak Inst Med Sci. 2022 Sep 11;18(3):175-80. doi:10.48036/apims.v18i3.671
5. Aggarwal V, Singla M, Rizvi A, Miglani S. Comparative evaluation of local infiltration of articaine, articaine plus ketorolac, and dexamethasone on anesthetic efficacy of

inferior alveolar nerve block with lidocaine in patients with irreversible pulpitis. J Endod. 2011;37(4):445-9. doi:10.1016/j.joen.2011.01.016
6. Pochapski MT, Santos FA, de Andrade ED, Sydney GB. Effect of pretreatment dexamethasone on postendodontic pain. Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 2009;108(5):790-5. doi:10.1016/j.tripleo.2009.05.014
7. Jehan R, Mujtaba H, Noor N, Shoaib M, Noor A, Afzal J, et al. Root resorption in ameloblastoma: a radiographic analysis of 35 cases. Biomedica. 2022 Mar 5;38(1):18-22. doi:10.51441/BioMedica.5-647
8. Khan N, Sartaj R, Sajid M, Jamil M, Javaid M. Patient perception regarding cross-infection control: a cross-sectional study. Pak Oral Dent J. 2021;41(1):15-7.
9. Naqid IA, Mosa AA, Ibrahim SV, Ibrahim NH, Hussein NR. Hepatitis B vaccination status and knowledge, attitude, and practice towards Hepatitis B virus among medical sciences students: A cross-sectional study. Plos one. 2023 Nov 6;18(11):e0293822.
10. Noor N, Azhar R, Sartaj R, Mujtaba H, Humayoun S, Javaid MM, et al. Severity of post obturation pain in single versus multiple sittings endodontic treatment using rotary nickel titanium instruments. Ann Pak Inst Med Sci. 2023;19(3):220-4. doi:10.48036/apims.v19i3.764
11. Arora M, Sangwan P, Tewari S, Duhan J. Effect of maintaining apical patency on endodontic pain in posterior teeth with pulp necrosis and apical periodontitis: a randomized controlled trial. Int Endod J. 2016;49:317-24. doi:10.1111/iej.12457
12. Ali M, Rasheed D, Irshad HH, Jamil M, Javaid MM, Sajid M. Knowledge regarding prescription of antibiotic for endodontic treatment among house officers of Multan. J Pak Dent Assoc. 2023;32(2):54-9. doi:10.25301/JPDA.322.54
13. Basharat S, Kumar R, Mushtaq M, Javaid MM. Understanding regarding antibiotic resistance among health care professionals in government sector of tehsil Gujar Khan. Pak J Public Health. 2019;9(3):144-8. doi:10.32413/pjph.v9i3.361
14. Jawa ZA, Jawa LA, Jamil M, Sajid M, Javaid MM. Knowledge of antibiotic prescription for endodontic treatment in final year students and house officers. Pak J Public Health. 2018;8(1):18-21. doi:10.32413/pjph.v8i1.84
15. Ahmed M, Noor A, Noreen R, Sajid M, Jamil M, Javaid M. Comparison of 0.5 mg dexamethasone and placebo used as premedication for success of inferior alveolar nerve block. Pak Oral Dent J. 2021;41(3):148-57.
16. Mehrvarzfar P, Shababi B, Sayyad R, Fallahdoost A, Kheradpir K. Effect of supraperiosteal injection of dexamethasone on postoperative pain. Aust Endod J. 2008;34(1):25-9. doi:10.1111/j.1747-4477.2007.00076.x
17. Ahmed MH, Hassan A. Dexamethasone for the treatment of coronavirus disease (COVID-19): a review. SN Compr Clin Med. 2020;2(12):2637-46. doi:10.1007/s42399-020-00610-8
18. Mansoor A, Mansoor E, Hasan U, Saeed H, Hussain K, Javaid MM. Knowledge and attitude of undergraduate dental students regarding anaphylactic reaction in Islamabad. Ann Pak Inst Med Sci. 2023;19(4):546-50. doi:10.48036/apims.v19i4.944
19. Elnaghy AM, Elshazli AH, Elsaka SE. Effectiveness of oral premedication of meloxicam, ketorolac, dexamethasone, and ibuprofen on the success rate of inferior alveolar nerve block in patients with symptomatic irreversible pulpitis: a prospective, double-blind, randomized controlled trial. Quintessence Int. 2023;54(2):92. doi:10.3290/j.qi.b3605097
20. Catterall W. From ionic currents to molecular mechanisms: the structure and function of voltage-gated sodium channels. Neuron. 2000;26(1):13-25. doi:10.1016/S0896-6273(00)81133-2
21. Nusstein J, Reader A, Nist R, Beck M, Meyers WJ. Anesthetic efficacy of the supplemental intraosseous injection of 2% lidocaine with 1:100,000 epinephrine in irreversible pulpitis. J Endod. 1998;24(7):487-91. doi:10.1016/S0099-2399(98)80053-8
22. Pochapski MT, Santos FA, de Andrade ED, Sydney GB. Effect of pretreatment dexamethasone on postendodontic pain. Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 2009;108:790-5. doi:10.1016/j.tripleo.2009.05.014
23. Mehrvarzfar P, Esnashari E, Salmanzadeh R, Fazlyab M. Effect of dexamethasone intraligamentary injection on post-endodontic pain in patients with symptomatic irreversible pulpitis: a randomized controlled clinical trial. Iran Endod J. 2016;11(4):261-6. doi:10.22037/iej.2016.2
24. Mansoor A, Mansoor E, Sana A, Javaid MM, Asghar MS, Hussain K. Active role of potassium nitrate toothpaste for treating dentine hypersensitivity and maintaining their normal physiology. Pak J Physiol. 2023;19(3):39-42. doi:10.69656/pjp.v19i3.1582
25. Mansoor A, Mansoor E, Sana A, Javaid MM, Khan AS, Hussain K. Physiological and socio-economic satisfaction level of patients for acrylic and cast alloy dentures. Pak J Physiol. 2023;19(4):6-10. doi:10.69656/pjp.v19i4.1584
26. Javaid MM, Tariq MA, Sajid M, Uraneb S, Zia Q, Umer MF, et al. Impact of socioeconomic status and duration of HIV/AIDS on scarcity of vitamin D among HIV infected patients. Pak J Public Health. 2023;13(2):84-7. doi:10.32413/pjph.v13i2.1184
27. Mansoor A, Mansoor E, Sana A, Javaid MM, Hussain K. Vaccination status of Hepatitis-B among dental patients visiting a public health sector of Islamabad. Ann Pak Inst Med Sci. 2023;19(3):356-60. doi:10.48036/apims.v19i3.929
28. Javaid MM, Ahmad I, Mansoor E, Ali SI, Bairam S, Umair M, et al. Socioeconomic status: a lethal weapon in deteriorating the satisfaction level attributed to thalassemia management in Pakistan. Ann Pak Inst Med Sci. 2025;20(4):795-9. doi:10.48036/apims.v20i4.1207
29. Yousaf A, et al. Effect of supraperiosteal injection of dexamethasone on interappointment pain in teeth with symptomatic irreversible pulpitis: a comparative study. Life Sci. 2020;1(4):145-8. doi:10.37185/LnS.1.1.111
30. Shah MHF, Javaid MM, Khattak UK, Javed F, Waheed BK, Mujtaba A. Myths regarding dental health and hygiene among the employees of a tertiary care hospital: single-centre study. J Islamabad Med Dent Coll. 2024;13(2):319-25. doi:10.35787/jimdc.v13i2.1209
31. Mansoor A, Mansoor E, Hassan U, Javaid MM, et al. Dental anxiety level assessment among students and house

officers of a public sector in Islamabad. Ann Pak Inst Med Sci. 2024;20(4):742-5. doi:10.48036/apims.v20i4.1106

32. Chaudhary FA, Fazal A, Ahmad B, Khattak O, Hyder M, Javaid MM, et al. The impact of COVID-19 pandemic on the psychological health and dental practice of oral healthcare workers: a scoping review. Risk Manag Healthc Policy. 2022;15:1421-31. doi:10.2147/RMHP.S370125
33. Aggarwal V, Singla M, Saatchi M, Gupta A, Hasija M, Meena B, et al. Preoperative intraligamentary injection of dexamethasone can improve the anesthetic success rate of 2% lidocaine during the endodontic management of mandibular molars with symptomatic irreversible pulpitis. J Endod. 2021;47(2):161-8. doi:10.1016/j.joen.2020.11.023
34. Goyal S, Chaudhary R, Reddy A, Kadir A, Bhatt Y, Anjaneyulu KV. Comparing the efficacy of local intraligamentary injection of dexamethasone and piroxicam on postoperative pain in mandibular molars with symptomatic irreversible pulpitis. J Datta Meghe Inst Med Sci Univ. 2024;19(1):127-32. doi:10.4103/jdmimsu.jdmimsu_270_23
35. Ullah A, Pervez N, Javaid MM, Din SU, Liaqat S, Junaid M. Assessment of the influence of risk factors on the incidence of oral squamous cell carcinoma (OSCC) in the northern Pakistani population. Pak J Public Health. 2023;13(2):80-3. doi:10.32413/pjph.v13i2.116