"Case Report"

Evaluation Effect Dexamethason and Paracetamol Post-Odontectomy 38 with Impaction IA Mesioangular

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Abstract

Introduction: Impacted teeth are a pathological situation where a tooth cannot or will not erupt into normal functional position. Odontectomy is one of the most frequently performed procedures and an invasive procedure that involves extensive tissue trauma and a considerable postoperative inflammatory response. However, to achieve adequate pain relief, monotherapy is difficult and multimodal analgesia is now accepted as the cornerstone of effective pain treatment. Objective: This case report was written with the aim of evaluating the effects of dexamethasone combined with paracetamol in post-operative patients. Case Report: A 24 year old male patient came complaining that his lower left, rearmost teeth often had food stuck in them and were difficult to clean. Patient complaints since 1 year ago and said it was difficult to clean the area even with a toothbrush. The patient wants the tooth to be removed immediately. On objective examination, there were 38 mesioangular impacted teeth with percussion (-), palpation (-), sonation (-), and vitality (+). On supporting examination, it could be seen that there was 38 class IA mesioangular impacted teeth. Result: An odontectomy was carried out on the impacted tooth 38 with a trapezium flap design and post-operative medication was given in the form of amoxicillin, dexamethasone, paracetamol and multivitamins. Control after 7 days of odontectomy to see the effectiveness of the medication given. Conclusion: The use of corticosteroids in the form of dexamethasone combined with paracetamol provides a shorter edema effect and adequate pain relief after surgery.

Keywords: Impaction, odontectomy, dexamethasone, paracetamol

INTRODUCTION

An impacted tooth is a pathological situation in which a tooth cannot or will not erupt into its normal functional position. This situation can occur due to insufficient eruption space, obstruction of neighboring teeth, and abnormal eruption pathways. Completely or partially impacted teeth must be removed if signs of pathological change are found. Mandibular third molars are the most frequently found impacted teeth in humans. The prevalence of impacted third molars ranges from 16.7%-68.6%. Most studies report no gender predilection for impacted third molars but some studies report a higher frequency in women than men. 1

Odontectomy is one of the most frequently performed procedures in many oral and maxillofacial surgery practices. Odontectomy is an invasive procedure that involves extensive tissue trauma and a considerable postoperative inflammatory response. Although the inflammatory process is necessary for healing, if it worsens, the inflammatory process can cause pain, swelling, trismus, alveolar osteitis, dehiscence, bleeding, and disruption of the periodontal status of the second molar which is still a problem for both surgeons and patients. 2,3,4

One of the most widely used treatments to control postoperative complications is corticosteroids. Corticosteroids work in the early phase of the inflammatory process by suppressing the production of vasoactive substances, such as prostaglandins and leukotrienes, thereby reducing fluid transudation and consequently oedema. Although these drugs can help control pain, they should be used in combination with analgesics that have clinically significant effects. 3 In such cases, the most used corticosteroid is dexamethasone, due to its anti-inflammatory effectiveness and
accessibility. If the patient is not receiving parenteral corticosteroids, the oral route is an option.

However, to achieve adequate pain relief, monotherapy is difficult and multimodal analgesia is now accepted as the cornerstone of effective pain treatment. Combining analgesics with diverse mechanisms of action and potential synergistic effects means a broader spectrum of pain can be addressed, and low doses of single drug components can be administered thereby increasing efficacy and minimizing side effects.

This case report was written with the aim of evaluating the effects of administering dexamethasone combined with paracetamol in post-operative patients.

**CASE REPORT**

A 24 year old male patient came to RSGM UMY on October 23 2023 complaining that his bottom left teeth at the back often had food stuck in them and were difficult to clean. Complaints since 1 year ago. Patients complain that it is difficult to clean the area even with a toothbrush. The patient wants the tooth to be removed immediately. The patient did not have any drug allergies. Not currently taking regular medication. No history of systemic disease is suspected. The patient's family was also not suspected of having a history of systemic illness.

On objective examination, there were 38 mesioangular impacted teeth with percussion (-), palpation (-), sondation (-), and vitality (+). Supporting examination, it could be seen that there was 38 class IA mesioangular impacted teeth. The diagnosis in this case is vital pulp with mesioangular class IA tooth impaction. The treatment planning that will be carried out is (1) Dental Health Education (DHE), (2) odontectomy of tooth 38 with block anesthesia, (3) control and evaluation.

**CASE MANAGEMENT**

The operator begins to prepare the tools and materials that will be used, namely diagnostic set, injection syringe, surgical suction, scapel handle, respirator, Minnesota/Langen back, low speed straight handpiece, round bone bur size HP 7/8, fissure bone bur size HP 702/ 703, luxator, bein (size 2, 3, 4), frontal forceps, bent pean/Hemostat, curette, bone file, irrigation syringe, cirugis tweezers, surgical scissors, needle holder, cytoject, povidone iodine, benzocaine, pehcain, saline, spogostan 2 pcs, gauze, oralblok/articaine (carpul), needle cytoject 21mm, blade no.15, suture needle size ¾ circle with a length of 19 mm and silk atraumatic thread size 3.0.

Treatment begins with asepsis of the work area using povidone iodine and then applying a topical anesthetic in the form of benzocaine to the area to be injected for 2-3 minutes until the surface looks wrinkled. Infiltration anesthesia using a Citoject gun filled with articaine and a Citoject needle installed in the area where the injection syringe will be penetrated for 1-2 mm deep anesthesia, 0.5ml. Next, blow anesthesia...
using the indirect Fisher block technique, 2 cc, wait a few moments until the anesthesia works, which is indicated by the patient starting to feel thickness in the lips and tongue on the side where the anesthesia is given. Long buccal nerve anesthesia on the distobuccal side of the M3 tooth and lingual nerve anesthesia on the M3 buccal nerve using Citoject. Then, when the anesthesia has worked, the operator performs separation using an excavator to remove the bond between the periodontal tissue and the tooth to be extracted.

Next, the operator begins to incise the flap with a trapezoidal flap design. In the distal area of the third molar to the mesial of the second molar, a horizontal incision is made perpendicular to the occlusal edge of the alveolar bone. Then, from the mesial of the second molar, a semivertical incision is made on the mesial of the second molar down to the fornix, approximately reaching the apex of the first molar. A semi-vertical incision was made distal to the third molar. After both incisions have been made properly down to the bone, the flap is opened using a raspatorium with a full thickness technique and then held in place with a minesota/langenbeak.

Next, we move on to the tooth extraction stage. The buccal and distal parts of the bone were reduced using a HP 8 low speed round bone bur followed by irrigation with saline/water in the mesial, buccal and distal parts in one direction using Collan neck technique until the depth of the bifurcation was palpable. Checking bifurcation using an excavator. Sagittal separation according to the tooth axis from the bifurcation direction to the coronal direction using a tapper bone bur to separate the tooth into distal and mesial parts. Beins are used to loosen teeth. Once it is felt that the tooth is starting to luxate, it is removed and removed using a bent hemostat. Pry up the distal tooth and take it, then pry up the mesial tooth and take it. Curettage is performed to clean the inside of the socket. Sharp bones are smoothed with a bone file. Irrigate the socket with saline and povidone iodine.

After ensuring that there are no sharp parts of bone and that the socket area is clean, the socket is then filled with spongostan and sutured using a simple interrupted technique with nylon thread and stitching starting from the distal and mesial corners of the trapezium, then at the semi-vertical incision. The patient was prescribed medication in the form of antibiotics using 15 amoxicillin 500 mg
taken 3x1 a day and finished, dexamethasone 0.5 mg 10 taken 3x a day, paracetamol 500 mg 10 taken as needed, and zegavit multivitamin 5 taken once a day.

Figure 6. Hecting all parts that have been incised.

Then on 30 of October 2023 the patient came for post-odontectomy control last week. The patient has finished antibiotics, dexamethasone and analgesics after odontectomy but still has vitamins left. The patient mentioned swelling some time after the odontectomy but after taking medication, it subsided a few hours later. On the 5th day the patient complained of pain that came and went in the suture area between M1 and M2. The patient had taken paracetamol to reduce the pain, but after the effect of the drug wore off, the pain returned.

DISCUSSION

An impacted tooth is a pathological situation in which a tooth cannot or will not erupt into its normal functional position. Several methods have been used to classify impactions. This classification is based on many factors, namely the degree of impaction, angulation of the third molars, and their relationship to the anterior border of the mandibular ramus. The depth or height of the maxillary and mandibular third molars can be classified using the Pell and Gregory classification system, where impacted teeth are assessed based on their relationship to the occlusal surface of the adjacent second molar. 1

Prevention or reduction of the inflammatory process after third molar surgery justifies the prescription of various medications such as NSAIDs, corticosteroids, and opioids. Various clinical trials have shown that the effect of corticosteroids in controlling complications after third molar surgery is superior to NSAIDs. Dexamethasone has two mechanisms of action that inhibit the inflammatory process. The first is a genome-wide (slow-acting) mechanism that involves the diffusion of corticosteroid molecules through the cell membrane and binding to cytosolic receptors GR-α and GR-β for subsequent transport to the nucleus where they bind to specific DNA sequences and increase mRNA expression and synthesis of anti-subsequent inflammation. The second is a non-genomic
(fast-acting) mechanism that involves the binding of dexamethasone to cell membrane receptors, resulting in the formation of second messengers such as cAMP or protein kinase, which inhibit the expression of the enzymes phospholipase-A2 and COX-2. Therefore, dexamethasone was chosen because of its high anti-inflammatory effectiveness, long half-life (36-54h), and proved more effective in controlling swelling because has a longer duration of action and greater potency than methylprednisolone. 

In this case, dexamethasone was given by the oral route at a dose of 0.5 mg after surgery and consumed 3 times a day for 3 days. The patient stated that oedema occurred only a few moments after surgery, but after taking dexamethasone, the oedema began to decrease and there was no swelling the next day. Giving dexamethasone to reduce postoperative facial oedema is considered quite effective. This is in accordance with research conducted by Alcantara in 2013 which stated that administering dexamethasone 8 mg before surgery provided better control of swelling and trismus compared to methylprednisolone at a dose of 40 mg and there was no significant difference in terms of pain control. 

Research conducted by D Núñez-Díaz in 2019 stated that in mandibular third molar surgery, administration of dexamethasone before surgery resulted in a much greater reduction in facial edema compared to administration after surgery. There was no significant difference between the two groups regarding trismus and postoperative pain intensity. Side effects of steroids depend on the dose and duration of administration. Long-term use can delay healing and increase a person's susceptibility to infection, but side effects are rare with single-dose or short-duration therapies, such as those often used in oral surgery. But, in Alcantara et al., said dexamethasone has a longer duration of action and greater potency than methylprednisolone.

Administration of corticosteroids combined with non-opioid analgesics of the paracetamol group is necessary because monotherapy is difficult to obtain an adequate pain relief effect. Administration of paracetamol only inhibits prostaglandin synthesis in the central nervous system and peripherally inhibits the formation of pain impulses, but unlike NSAIDs, paracetamol is not a peripheral COX inhibitor. Recent research states that the active metabolite in paracetamol, namely N-acylphenolamine (AM404), has been proven to be involved in the analgesic effect of paracetamol by activating TRPV1 in the spinal cord. Paracetamol activates the serotonergic system and decreases cannabinoids. Paracetamol has a central analgesic effect and inhibits prostaglandin production through inhibiting COX-3 enzyme activity which is equivalent to NSAIDs with lower COX-1 inhibition.

Despite its short half-life, apart from its use as an analgesic, paracetamol is used to support NSAIDs and SAIDs or as an alternative option where NSAIDs are contraindicated in the history of hypersensitivity, bleeding, and grastointestinal ulcers. Research by Laory et al (2021) states that the combination of dexamethasone paracetamol is better than dexamethasone alone in reducing the incidence of postoperative afternoon throat (POST) for general anesthesia.

CONCLUSION
The use of corticosteroids in the form of dexamethasone combined with paracetamol provides a shorter edema effect and adequate pain relief after surgery.
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REFERENCE


