

Use Of Dexamethasone Injection In Impacted Mandibular Third Molar Surgery: A Review

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Introduction

Dexamethasone is long acting (Biological t_{1/2} 36 hours) glucocorticoids. It is very potent and highly selective glucocorticoids. Corticosteroids are used in different ways by the oral & maxillofacial health care workers. The common oral procedures where corticosteroids are used are root canal treatment, periodontal surgeries, orthognathic surgeries, tooth impaction surgeries, etc. Corticosteroids are broadly used for the treatment of oral mucosal diseases for e.g oral lichen planus, oral submucous fibrosis, pemphigus, recurrent aphthous stomatitis & burning mouth syndrome, etc. Corticosteroids are also used as topical medication for e.g Triamcinolone acetonide (0.1%). Dexamethasone is a synthetic adrenocortical steroid that exerts basic glucocorticoid actions and is approximately twenty-five times more potent than hydrocortisone.¹ It is one of the most potent anti-inflammatory drugs that are why it used in the oral & maxillofacial surgeries to prevent the post-operative oedema. However, a variety of conditions contra-indicate the use of corticosteroids. These include patients suffering from diabetes mellitus, peptic ulceration, active or healed tuberculosis, hypertension, ocular herpes, glaucoma, acute and chronic infections, psychosis, osteoporosis,² Cushing's syndrome and renal insufficiency. Pregnancy is a contraindication to the use of corticosteroids.³

Third molars are the most commonly impacted teeth.⁴ They are present in 90% of the population with 33% having at least one impacted third molar.⁵ Surgical extraction of impacted third molar is one of the most commonly performed procedure in oral surgery that is often associated with significant postsurgical sequelae pain, swelling and

Abstract

Postoperative oedema and trismus after the third molar surgery are commonly encountered problems by the Oral and Maxillofacial Health Care Workers. Corticosteroids have two main pharmacological actions. The 1st one is immunosuppressive action and the 2nd one is anti-inflammatory action. Corticosteroids are given in the case of mandibular third molar surgery due to their anti-inflammatory action. Intramuscular, intravenous or sub mucosal injection of dexamethasone appears to be effective in the prevention of postoperative oedema. It can be given either as preoperative, perioperative or postoperative injection.

Keywords: Corticosteroids; Dexamethasone; 3rd molar surgery; Oedema

trismus due to the inflammatory response.⁶ Surgical insult to the tissue results in vasodilation, migration of leukocytes and plasmal transudation via endothelial gap junctions.⁷ Corresponding clinical manifestation includes swelling (tumor), redness (rubor), increase in temperature (calor), pain (dolor) and loss of function (functio laesa).⁸ Glucocorticoids act by controlling the rate of synthesis of anti-inflammatory proteins.⁹ Blackwell et al¹⁰ has shown that glucocorticoids can induce the release of antiphospholipase proteins, which presumably can inhibit the release of arachidonic acid and its metabolism to prostaglandins and thromboxanes, which increase capillary permeability. Radiographs are necessary for knowing the type of impaction. (Fig: 1)

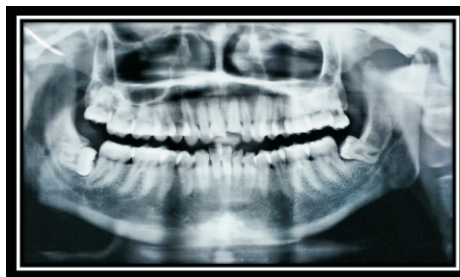


Fig: 1- This is an OPG showing horizontally impacted mandibular 3rd molar on right side & mesio-angularly impacted mandibular 3rd molar on left side.

Dexamethasone & Route of Drug Delivery

Dexamethasone can be given intra-venous, intra-muscular in masseter, gluteal or deltoid region, submucosal injection, endo alveolar powder. 4mg Dexamethasone injection is given as intra muscular injection. In earlier studies, pain has been significantly reduced due to prophylactic steroid administration.¹¹

Submucosal injection of dexamethasone 4mg is effective therapeutic strategy for improving the quality of life after surgical

removal of impacted mandibular 3rd molars with a comparable effect on post-operative sequelae to intra muscular injection.¹² Dexamethasone 8 mg was more effective than that of 4 mg at reducing facial swelling & trismus.¹³

Conclusion

Dexamethasone is long acting glucocorticoids. It is potent anti-inflammatory agent. Its biological t_{1/2} life is more than 36 hours. It can be given by submucosal route, intra-venous route, intra-muscular route but submucosal route is preferred because having similar results as compare to intra muscular injection. There is no pain during sub mucosal injection. Dexamethasone shows good result when given pre-operatively or peri-operatively then post-operatively. This drug can be used commonly to prevent post-operative oedema after the impacted mandibular 3rd molar surgery. Complete medical health check-up is mandatory before administering Dexamethasone injection because Dexamethasone is contra indicated in many health's related disorders.

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Reference

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