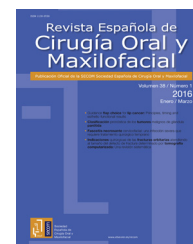




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Original article

Evaluation of efficacy of peri-operative administration of hydrocortisone and dexamethasone in prevention of post-operative complications in oral and maxillofacial surgeries

Supriya G. Bhandage^{a,*}, Manjunath S. Kurki^a, Garima Sachdeva^b,
Nishanth Shetty^c, Mainak Kundu^b, Achla Bharti Yadav^d

^a Department of Oral and Maxillofacial Surgery, Sri Hasanamba Dental College and Hospital, Vidyanagar, Hassan 573201, Karnataka, India

^b Department of Oral Surgery, Sri Hasanamba Dental College and Hospital, Vidyanagar, Hassan 573201, Karnataka, India

^c Armed Forces Hospital, Muscat, Oman

^d Department of Oral Pathology, PGIDS, Rohtak 124001, India

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ABSTRACT

Objective: To evaluate the role of intra-operative hydrocortisone and post-operative dexamethasone on reducing post-operative complications following major surgeries involving oral cavity as in oral and maxillofacial surgeries performed under general anesthesia.

Methodology: The post-surgical stress induces changes in metabolic and endocrinal pathways and also results in activation of inflammatory pathways. Post-operative administration of steroids helps in blocking all the stages of inflammatory process. This study was conducted on a group of 20 patients undergoing major surgical procedures. These patients were administered a combination of intra-operative hydrocortisone and post-operative dexamethasone therapy. Efficacy of these drugs in reducing post-operative complications was evaluated, using parameters like post-operative pain, number of analgesic injections, edema, sore throat, nausea and vomiting.

Results: A 70% mean reduction in pain was seen on 2nd post-operative day and a drastic 97% pain reduction was noted on 4th post-operative day. An overall 12 mm reduction in swelling was noted over the span of 4 days of hospital stay. Post-operative administration of dexamethasone helped in reduction of sore throat up to 95% on 2nd post-operative day. A remarkable finding noted was, that, none of the patients developed nausea and vomiting post-operatively.

Abbreviations: ASA, American Society of Anesthesiologists; Hr, hour; PO, post-operative; P, pain; S, swelling; ST, sore throat; DI, number of diclofenac injections administered; STDEV, standard deviation; F, f-factor; P value, probability; df, degree of freedom; mm, millimeters; mg, milligrams.

* Corresponding author.

E-mail address: supriyagb11@gmail.com (S.G. Bhandage).

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Conclusion: Surgeries done in and around the oral cavity are mostly prone to contamination as presence of saliva, bacteria, contaminants from stomach flora through acid reflux and post-operative events like vomiting, pollute the surgical site. A single intra-operative dose of hydrocortisone followed by post-operative tapered administration of dexamethasone helps in combating almost all of the post-operative complications after major oral and maxillofacial surgical procedures and hence hastens healing of surgical site.

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Evaluación de la eficacia de la administración peri-operatoria de hidrocortisona y dexametasona para prevenir las complicaciones postoperatorias de la cirugía oral y maxilofacial

R E S U M E N

Palabras clave:

Curación de la herida
postoperatoria
Esteroides
Dexametasona
Hidrocortisona

Objetivo: Evaluar el papel de la administración intraoperatoria de hidrocortisona, y postoperatoria de dexametasona, para reducir las complicaciones postoperatorias tras las cirugías mayores de la cavidad oral y la cirugía oral y maxilofacial realizadas bajo anestesia general.

Metodología: El estrés postquirúrgico induce cambios en las vías metabólica y endocrina, y origina también la activación de las vías inflamatorias. La administración postoperatoria de esteroides ayuda a bloquear todas las etapas del proceso inflamatorio. Este estudio se realizó en un grupo de 20 pacientes sometidos a intervenciones quirúrgicas mayores. A dichos pacientes se les administró una combinación de hidrocortisona intra-operatoria y dexametasona postoperatoria. Se evaluó la eficacia de dichos fármacos para reducir las complicaciones postoperatorias, utilizando parámetros tales como dolor postoperatorio, número de inyecciones analgésicas, edema, dolor de garganta, náuseas y vómitos.

Resultados: Se observó un 70% de reducción media del dolor al segundo día postoperatorio y un 97% de reducción drástica del dolor al cuarto día postoperatorio. Se observó una reducción general de 12 mm del edema durante el transcurso de la estancia hospitalaria de 4 días. La administración postoperatoria de dexametasona ayudó a reducir el dolor de garganta en un 95% durante el segundo día postoperatorio. Un hallazgo destacable fue que ninguno de los pacientes desarrolló náuseas ni vómitos a nivel postoperatorio.

Conclusión: Las cirugías practicadas en y alrededor de la cavidad oral son más propensas a la contaminación, ya que la presencia de saliva, bacterias, contaminantes de la flora estomacal a través del reflujo ácido, y los acontecimientos post-operatorios tales como vómitos, contaminan el sitio quirúrgico. La administración de una única dosis intra-operatoria de hidrocortisona y postoperatoria de dexametasona ajustada ayuda a combatir la mayoría de las complicaciones postoperatorias tras las intervenciones quirúrgicas mayores orales y maxilofaciales y, por tanto, contribuye a la curación del sitio quirúrgico.

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Introduction

The foremost factor in post-operative morbidity, excluding failures of surgical and anesthetic technique, is the surgical stress response. This surgical stress entails increased demands on organ function. These changes in organ functioning are interceded by endocrinal and metabolic changes and activation of many biological cascade systems (cytokines, complement, arachidonic acid metabolites, nitric oxide, free oxygen radicals, etc.). Activation of these biological systems is a result of the inevitable post-operative inflammation.

Corticosteroids have proved to be a boon for being the most efficacious anti-inflammatory agents. Its anti-inflammatory action has been put to test in many different studies and has stood the test of time.¹⁻¹⁰ Most surgeons employ this

property to control operative outcomes and provide a comfortable post-operative recovery.^{1-5,9,10} Corticosteroids have various applications; it is principally used as a replacement therapy in patients with adrenal insufficiency, in immunosuppressive therapy and as an anti-inflammatory agent.^{2,9,11-13} Its use as a life saving drug in cases of anaphylactic shock, Ludwig's angina and auto-immune diseases is a well proven fact.

Corticosteroids induce the synthesis of endogenous proteins, which block the enzymatic activation of phospholipase A2 which in turn inhibits arachidonic acid release. This leads to inhibition of the synthesis of prostaglandins, leukotrienes or substances related to thromboxane which are responsible for inflammation and pain.

The side effects of corticosteroids due to adrenocorticoid suppression are well known and depend on dose and duration of treatment.^{11,13} Such suppression can be observed when the

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