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COMPARATIVE STUDY OF EFFECTIVENESS OF DEXAMETHASONE INJECTION AFTER ORIF IN MANDIBLE

Dental Science

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ABSTRACT

Aims & objectives The purpose of this study was to compare the effects of 4mgm inj dexamethasone IV intra operatively after ORIF on post operative oedema, pain & trismus in fracture mandible.

Material & Method. THis prospective study included 162 cases of fracture mandible. Patients were divided into two groups randomly. Patients who received IV injection of 4 mgm Dexamethasone intraoperatively were study group (Group 1) & those who didn't receive injections of Dexamethasone were categorised as controlled group (Group 11) with 81 patients each. Clinically mouth opening, swelling, infection pain, post operative discomfort were assessed on 2nd, 4th 7th, 10 day Th day followed by 4, 8 & 12 weeks time

Result Pain ,Mouth Post operative oedema & other postoperative discomfort was significantly less in study group as compared to controlled group

KEYWORDS

Orif, Fracture Mandible, Injection Dexamethasone, Inter Incisal Distance, Post Operative Swelling

INTRODUCTION

Fracture Mandible is the commonest fracture of face caused by Road traffic accidents assault fall, sport injuries etc. & para symphysis is most common amongst all facial fractures [1, 2]. This site of fracture depends upon the mechanism of injury ,Anatomy of mandible & direction of force [3] with condyle fracture 26-37% ,body fracture 18-29% ,Angle 20-25%,symphysis & para symphysis 14-19% ,Ramus 2-4% & coronoid 1% [4,5]

Management of mandible fracture depends on clinical presentation , systemic health of patient .The main principles of management are anatomic reduction ,fixation , immobilization , prevention of infection& restoration of function [3,6]. The goal of open reduction is to achieve anatomic reduction, eliminate the intermaxillary fixation, immediate restoration of function, prevention of infection, to restore aesthetics, Recovery to normal [7, 8]. For these reasons Most of the cases require open reduction & internal fixation which is usually associated with post operative pain ,swelling ,trismus & discomfort, Extensive swelling has the potential to compromise airway . These operative effects are result of inflammation resulting from release of histamines,bradykinnis,serotonins & other inflammatory mediators due to surgical trauma. [9].To overcomes these post operative complications various approaches have been used like non steroid anti inflammatory drugs, opiods, or combination of two. Corticosteroids especially dexamethasone is the most Effective drugs for overcoming pain, inflammation & trismus, which inhibits the initial step of inflammation [10]

MATERIAL & METHODS

This prospective study was conducted in oral & Maxillofacial surgery. Isolated mandible fracture cases in age group from 18 – 65 years were included in this study Patients having single, double unilateral, bilateral fractures in symphysis, para symphysis, body & angle region were taken in present study. Patients who received IV injection of 4 mgm Dexamethasone were study group (A) & those who didn't receive injections of Dexamethasone were categorised as controlled group (B). ORIF was done using intra oral approach by using miniplates. In Group A 4mgm of dexamethasone was given intravenously intraoperatively followed by Diclofenac sodium Tab BD. Both groups were prescribed 50 mgm of Diclofenac sodium in BD doses for 3days initially followed by SOS Follow up of one year was done in all cases ,Patients with infected fractures ,liver kidney diseases ,patients on immunosuppressive drugs, breast feeding allergy or psychosis , fractures associated with midrace injuries were excluded from study. 162 Patients were divided into two groups randomly.

Data collection

After taking informed consent facial swelling, edema, trismus & interincisal distance was recorded. The facial swelling was evaluated using vertical & horizontal on 2nd ,4th 7th , 10 day th day followed by 4 ,8 & 12 weeks time .Infection rate was measured clinically & radio graphically

Facial swelling was measured by tap measuring between the points 3 reference points described by Schultz-Mosagau . Two measurements were made between pogonion, Corner of mouth & tragus.

Gonion to lateral cantus of eye bilaterally
Tragus to commisure of lip bilaterally
Tragus to midline in chin bilaterally
Tragus to ala of Nose bilaterally as shown in figure
Interincisal opening was measured using maximum mouth opening
Pain was evaluated in post operative period using Visual analog Scale (total analgesic consumption) (VAS)

RESULTS: Both groups consisted of 162 patients with 81 cases each group .117 cases were males, & 45 females Pain was less in study group as compared to controlled group based on VAS & analgesic consumption Mouth opening was taken as distance between maxillary & mandibular central incisors.

In study group Mouth opening was more 1.8 to 2.5 cms (interincisal distance) than controlled group which further improved by 4th

postoperative day whereas in controlled group mouth opening was between 1.5 to 2.0 cms till 5th day & full mouth opening was achieved between 10-15 days

Post operative oedema was very less in study group on first postoperative day & in 60-72% cases there was no swelling between 4th & 7th day where as in controlled group oedema was seen in all patients which disappeared between 9-12 days

Study Group	**Controlled group**	n 162
No of patients	81	81
Males Females	117	45
Age		
less than 40 years	125	
more than 40 yrs	37	
FACIAL EDEMA		
2nd post operative day	89% present	99% present
7th postoperative day	97% absent	67% absent
postoperative trismus present		
4th day	54%	84%
post operative pain after 3 days		
sever	17%	27%
moderate	34%	53%
mild	49%	

DISCUSSION

Osteosynthesis by open reduction & internal fixation provides optimal stability for fracture healing .Clinicians have used cold ice therapy [11] low laser therapy [12],NSAIDS, [13,14] opiod drugs,[15] acupuncture [16] & corticosteroids[17,18]Corticosteroids have various effects on body functions like influencing on carbohydrate ,protein & fat metabolism, water & electrolyte balance, the function of kidney nervous system, skeletal system,& cardiovascular systems. These corticosteroids suppress or prevent inflammation by interfering with edema, leukocytic migration, capillary dilatation & fibrin deposition phagocytosis [19]. Weber CR et al [20] stated that Dexamethasone appears to be most appropriatefor preoperative & post operative use because it has highest anti inflammatory activity, no mineralocorticoid activity & longest available half life of 36 to 54 hrs. also has widespread numerous effects like preservation of normal function of immune system, CVS, endocrine nervous & skeletal muscle system[21]

Different routes & regimes of dexamethasone have been eg 4mgm, 8mgm, preoperative, postoperative, by IV, IM, submucosal & oral routesMojsa et al reported that sub mucosal injection of dexamethasone 4mgm both before & after surgery decreased pain effectively [22] contrast with the present study pain in study & controlled group did not show much difference as reported by Beirne & Hollander[8] who also suggested no difference in pain control after administering 4 or 8 mgm of dexamethasone & in control group

Nupert et al [23] used intravenous 4mgm in disimpaction cases immediately after surgery. In the present study also 4mgm dexamethasone IV was used immediately after surgery

Inter incisal distance showed remarkably improvement in study group after injecting 4mgm of dexamethasone IV immediately after surgery in accordance to Nupert at al [23] which further improved after 24-48 hrs after surgery where as trismus remained for 10-15 days in controlled group

Boonsiriseth et al [24] recommended preoperative dexamethasone (8mg) both by intramuscular injection or oral consumption can decrease post operative pain facial swelling & limited mouth opening.In the present study there was almost no swelling postoperatively on first 3rd & 5th day in study group where as in controlled group marked edema was noted which lasted for 5-7 days post operatively

Messer & Kelley [25] reported significant decrease in post operative discomfort by using dexamethasone intramuscularly after surgery similar to the present study where post operative discomfort was reduced significantly as compared to control group.

CONCLUSION. Healing after fracture reduction & fixation is good outcome of surgical wound . From the present study it is concluded that administration of corticosteroids such as 4mgm dexamethasone sodium phosphate intravenously helps significantly in reducing post operative discomforts like pain, edema & trismus in ORIF for Mandibular fractures

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