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Treatment of Mandibular Fractures with a Malleable Non-Compression Miniplate at Government Dental College and Hospital, Jaipur

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Abstract

Background: The treatment of mandibular fractures has been in a constant state of evolution over the past few decades. The most significant advancements related to the management of fractures of the man- dible are based on specific technical refinements in the methods of internal fixation.

Methods: The study comprised of 15 patients having mandibular fractures, attending the outpatients department and emergency of Department of Oral & Maxillofacial Surgery, Government Dental College & Hospital, Jaipur.

Result- Preoperative occlusion was found to be deranged in 13 out of the 15 patients. The functional occlusion was achieved postoperatively in all the patients. There is significant decrease in pain from follow up I to follow up III. No pain was observed in follow up IV in any of the patients. At follow up I Swelling was present in almost 50% of patients. At follow up II swelling was present in only 20% patients & swelling was absent in all of the patients at the III & the last follow up.

Conclusion: In conclusion, let us welcome any new method of fixation offered for the treatment of fractures, but we should be discriminating and critical at first, and we should use it intelligently, otherwise failures may not only do harm to the patient but may also bring disrepute to the method which it does not deserve.

Keywords: Maxillofacial, Surgery, Fracture.

Introduction

Rigid internal fixation is a form of fixation applied directly to bone which is strong enough to permit active use of skeletal structure during healing phase.

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A fracture is a structural failure in bone. A fracture is said to be "compound" when it punctures the skin and "closed" if it does not. A bone can be compounded from the outside by a bullet or other object. More commonly the sharp bone end punctures the skin from inside. The significance is that an open fracture invites the complication of infection[1,2].

Fracture Healing

Bone possesses the unique ability to completely heal itself with tissue ultimately indistinguishable from the original structure.

Traditionally, fracture healing has been divided histologically into four descriptive stages:

- Stage of inflammation
- Stage of soft Callus
- Stage of hard callus
- Stage of bone remodeling.

However, there are two other important aspects of healing which includes:

- The stage of impact
- The stage of induction.

After a discontinuity occurs due to fracture or an osteotomy, the transmission of normal forces through the bone is no longer possible. The external dynamic forces of bending and torque will lead to displacement of the fracture ends.

The main aim of treatment of fractures is to obtain a final function as close to the pre fracture situation as possible. Fixation & stabilization of the two ends after fracture or osteotomy is to anatomically reposition the ends & resist any external force like torsion that may act on the two ends.

Material and Methods

The study comprised of 15 patients having mandibular fractures, attending the outpatients department and emergency of Department of Oral & Maxillofacial Surgery, Government Dental College & Hospital, Jaipur.

Pre-operatively detailed medical history of the patients was recorded. Patients were diagnosed on the basis of clinical examination and radiographic interpretation. Routine investigations were done. Informed consent was taken to participate in the study.

Inclusion criteria-

1. The patients were taken up randomly irrespective of age, sex, caste and

creed.

2. Patients with isolated fractures of mandible were selected.

Exclusion criteria-

1. Refused consent.

2. Patients who were suffering from major systemic disease.

3. Mandibular fractures with comminution and infection were excluded.

4. Pathological fracture.

5. Pregnant and lactating females

Result

In the present study most common age group of patients who underwent surgery were between 16-45 years (80%).Number of male patients was higher (93%) than the number of female patients (5%).

Table 1: Occlusion

	Pre op.	Post op.
Deranged	13	0
Intact	2	15

Preoperative occlusion was found to be deranged in 13 out of the 15 patients. The functional occlusion was achieved postoperatively in all the patients.

Table 2: Time Lapse between injury and definitive management

Time lapse (days)	Number of patients	Percentage
<1	-	-
1 – 3	-	-
4 – 7	5	33
8 – 11	7	47
12 – 15	3	20
Total	15	100

In the present study maximum number of patients was treated within time lapse of 8-11 days (47%). Mean time lapse between injury and definitive management was seen to be 8.7 days.

Table 3: Assessment of Pain (VAS scale)

Follow up	Mean Pain Score(VAS Scale)
I (within 72 hrs)	4.2
II (2nd wk)	1.2
III (6th wk)	0.3
IV (3rd mth)	0

There is significant decrease in pain from follow up I to follow up III. No pain was observed in follow up IV in any of the patients.

Table 4: Assessment of Swelling

Follow up	No.of patients	
	Present (>preop)	Absent (<preop)
I (within 72 hrs)	7	8
II (2nd wk)	3	12
III (6th wk)	0	15
IV (3rd mth)	0	15

At follow up I Swelling was present in almost 50% of patients. At follow up II swelling was present in only 20% patients & swelling was absent in all of the patients at the III & the last follow up.

Table 5: Assessment of Paresthesia

Follow up	No. of patients with paresthesia	
	Present	Absent
I (within 72 hours)	2(14%)	13 (86%)
II (2nd wk)	2(14%)	13 (86%)
III (6th wk)	1(7%)	14 (93%)
IV (3rd mth)	0(0%)	15 (100%)

Only 2 (14%) patients out of 15 presented with paresthesia upto follow up II. Paresthesia disappeared at follow up III in 1 of the patient. There was no paresthesia in any of the patients at the last follow up.

Discussion

The art of surgery demands that we evaluate the risk and benefits of each treatment modality and apply it appropriately to each patient. This is true in the management of maxillofacial trauma as well and mandibular fractures especially. As there are a vast variety of treatment modalities for managing mandibular fractures, it remains imperative that we should consider the anatomic, physiologic and biomechanical factors associated with managing these injuries.

It is well established that bone healing is optimized by precise anatomic reduction and rigid immobilization. Once fractures are reduced and immobilized, optimal bone repair is dependant on preservation and maintenance of intact blood supply. Movement of fractures causes disruption of the osteogenic elements and capillaries. This results in formation of poorly vascularized fibrous tissue which gives rise to complications in fracture healing like fibrous union or sometimes even non-union.

Intermaxillary fixation was done pre-operatively in all the patients to achieve the optimum habitual occlusion, which was in correlation with study conducted by Schilli (1977)[3].

The time lapse between injury and definitive management seems to be important because delay in seeking treatment increases the possibility of infection. In our study, majority of patients (47%) were given definitive management within the time lapse of 8-11 days after the injury. Infection was not present in any of the case preoperatively. This finding correlates with findings of Smith et al(1991)[4].

Mental nerve paresthesia of fractured site was found in two (14%) patients on the first follow-up (within 72 hrs) & second followup (2 week), but the paresthesia disappeared in one patient at the third follow-up (6 weeks). At the last follow up (3 months)

paresthesia was not present in any of the patient. Paresthesia may have been due to fracture line passing through the mental foramen region or may be due to the manipulation of nerve during the surgical procedure. Paresthesia seen in our study (14%) is in correlation with the paresthesia reported in the study of Cawood (1985)[5] 8%.

Conclusion

In conclusion, let us welcome any new method of fixation offered for the treatment of fractures, but we should be discriminating and critical at first, and we should use it intelligently, otherwise failures may not only do harm to the patient but may also bring disrepute to the method which it does not deserve.

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