

Management of Fracture Mandible among Patients Attending Dental OPD Bahawal Victoria Hospital and Quid-e-Azam Medical College, Bahawalpur

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ABSTRACT

Objective: To determine fracture mandible presentation and its reduction along with outcome under local anesthesia treated by eyelet dental wiring as intermaxillary fixation (IMF)

Patients & Methods: This descriptive hospital patient's records base study was carried out among outdoor patients with clinical history of fracture mandible and confirmed through panoramic or plain X-rays mandible AP view at Department of Oral and Dental Surgery BVH/QMC, Bahwalpur in one year from January 2015 to December 2015. A total 140 patients treated under local anesthesia regardless of age and gender either directly approaching Dental OPD or through our Hospital Department of Accident & Emergency and admitted cases within various wards of our institution with proper referral. The patients with history of any medical compromised condition were excluded from our study until they were fit for oral and dental surgery. The patients data was recorded for analysis on the important variables like age, area of residence, gender, socioeconomic status, nature of oral & dental trauma, site of mandible fracture, any other associated injury, radiological evidence of fracture mandible and the its management outcome through intermaxillary fixation.

Results: Out of total 140 cases fracture of mandible were reduced under local anesthesia of regardless age and gender, the most common site to be fracture of the mandible recorded was at the angle of mandible 38 (27%) while body of mandible 32 (23%), the other sites noticed were 24 (17%) of the fracture at the condyle of the mandible, 21 (15%) on the parasymphysis and symphysis 15 (11%) region 10 (07%) of dento-alveolar region as well. The most frequent cause determined for the fracture of the mandible was the motor cycle road side traffic accident 67 (47%) mostly in the young adult age group, while assaults 33(24%) and history of fall 19 (14%), inter personal fight 14(10%) sports related injuries were only 07 (05%). All of these fracture mandibles were reduced at the dental OPD by eyelet dental wiring as intermaxillary fixation for 4–6 week under local anesthesia as day care oral and dental surgery.

Conclusion: The most common cause of the fracture mandible in our study setting was determined the road side traffic accident mostly among the young adults on motor cycles without a driving license with other associated injury of head and neck and the limbs as well.

Key words: Fracture, Mandible, Intermaxillary fixation, Jaw reduction

INTRODUCTION

The mandible is the unique type of the bone among the facial bones of human body with respect to its prominent position and movement for mastication and speech along with deglutition. It has prime importance in aesthetic with respect to jaws occlusion and dental literature reveals the mandible fracture as one of the most common among the facial bones fractures particularly in the young adult age below 30 years.¹ It has been documented that among the most common cause of the mandible fracture is the road side traffic accidents by motor cycles and the motor vehicle

without use of helmets and seat belts in our settings followed by interpersonal violence, fall and sport injuries and industrial accidents.² At the same time it has been noticed that mandible fracture may occur either alone and associated with the other fractures of the bones of body, depending upon the mechanism of injury and the force involved and its direction, which usually determines the site of the mandibular fracture as well.³

It is mandatory for the management of the fracture mandible, first of all maintaining airway for respiration by arresting the oral bleeding sites for

restoring the form and function of oral cavity. Since long the most established simple method of fracture mandible reduction in routine outdoor practice is the eyelet inter-dental wiring through intermaxillary fixation called IMF, the use of arch-bars and conventional acrylic splints for the children.^{4, 5} Although, the treatment pattern of the to reduce mandibular fracture has also been now mostly shifted from inter dental wiring of osteosynthesis and the IMF to open jaws reductions and its internal fixations with miniplates fixed with screws.⁶

The mini palates is also being used at our institution under general anaesthesia on proper operation list once a week for the maxillary and mandible fracture reduction as well, no doubt it has its role in the oral health quality of life for the patients during bone healing process.⁷ It is worth mentioning not only in our study settings, still many parts of the developing countries the routine outdoor non affording patients prefer for the IMF after their informed consent, even in a tertiary care hospital of Southern Punjab, Pakistan.⁸ The rationale of the present study was to come up with our routine outdoor patients data who were non affording have been managed by the conventional eyelet inter dental wiring through intermaxillary fixation for about 4-6 with mouth closed and patients put on soft liquid diet.

PATIENTS AND METHODS

This descriptive hospital base study was carried out among outdoor patients with clinical history of fracture mandible and confirmed through panoramic or plain X-rays mandible AP view at Department of Oral and Dental Surgery BVH/QMC, Bahawalpur in one year from January 2015 to December 2015. A total 140 patients treated under local anaesthesia regardless of age and gender either directly approaching Dental OPD or through our Hospital Department of Accident & Emergency and admitted cases within various wards of our institution with proper referral. The parameter used for mandible reduction has been used as the balanced occlusion with maxilla and mandible in harmonious relationship with respect to incisors, canines, and molar teeth in its proper relationship and the condyles properly placed in condylar fossa and the fractured parts of the mandible fully approximated with immobilizations for the healing period.⁹ A standard a septic protocol has been in place for this procedure at our dental outdoor patients with proper kits containing all the

necessary instruments and materials. Usually stainless steel wires gauge 26 or diameter of 0.3mm to 0.6mm available from local market by name of the dental fracture wires are used for eyelets and inter dental wiring depending upon its requirement for dentoalveolar fracture segment reduction accordingly. The local anaesthesia used for this procedure is lidocaine with epinephrine dilution of 1:10000 dilutions also available as dental cartridge of 1.8ml solution form for single use in dental syringe, usually for one patient about 08 dental cartridges are used keeping in view the patient medical history.^{10,11} All the patient records and investigations along with their radiographs are very carefully reviewed by the principle investigator and the senior doctors supervision and data is recorded on specifically developed semi structure type Proforma for record keeping for patients follow up and have also been used for data analysis on SPSS version 20. The mandibular fractured have been classified as per standard oral surgery notations conventionally used in our routine practice, data of the study subjects have been compiled as per variables of interest, age, gender, nature and aetiology of facial trauma, fracture sites of mandible etc. Frequencies of the different variables have been calculated and presented in tabulated form as given in the results section.¹²

RESULTS

The road side traffic accident were determined to be the most significant cause of the fracture mandible in our study observed number 67 (47%) and out of these 67, when further looked for the motor cycles and four wheel vehicles accident it was determined that more than 60 percent were just due to motor cycles alone. The next frequent cause was the history of assaults 33 (24%) followed by fall at home or work place 19 (14%), then interpersonal fight and sports from 10% to 5%. It is worth mentioning from our data set, the male to ratio as around 3:1 and most of all these fractured among the males study subject were in the younger age group of 20 to 30 years of age in our study settings. It was further observed that most of the study subjects belong to the rural and city slums areas with respect to their area of residence (Table 1). Although, all of these fracture jaw patients have been managed as outdoor patients at our dental OPD, some of them were referred from the department of accident and emergency while most of our study subjects were

our institutional admitted cases our associated head and neck trauma from the neurosurgery ward 66 (47%) followed by the orthopaedic ward with history of associated trauma of the limbs 44 (31%), our data set also indicates that along with the mandible fracture of the subject also have associated fracture of maxilla and zygomatic complex 19 (14%) and dentoalveolar fractures 11 (08%) as well.

Table 1: Distribution of main causes of fracture mandible (n = 140)

Causes of fracture mandible	No.	%
Road traffic accidents	67	47.0
History of assaults	33	24.0
History of fall at home or work place	19	14.0
Inter personal fight	14	10.0
Sports related injuries	7	5.0

Table 2: Distribution mandible fracture associated with other injury

Mandible fracture associated with other injury	No.	%
Head and neck injury/neuro-trauma	66	47.0
Orthopedic trauma of the limbs	44	31.0
Maxilla and zygomatic complex	19	14.0
Dento-alveolar fracture	11	8.0

Table 3: Distribution of main sites of fracture mandible

Main site of fracture mandible	No.	%
Angle of mandible	38	27.0
Body of mandible	32	23.0
Condyle of mandible	24	17.0
Parasymphysis	21	15.0
Symphysis menti	15	11.0
Dento-alveolar region	10	07.0

Table 4: Distribution of fracture mandible management protocol

Fracture management protocol	No.	%
Eyelet wiring intermaxillary fixation	98	70.0
Introsseous wiring with IMF	30	21.0
IMF with use of arch bars	12	9.0

All these patients have been managed under local anaesthesia and we have used arch bars and introsseous wiring for dentoalveolar fractures to

manage these fracture along with conventional intermaxillary fixation for about six week (Table 2). When our study data was analyzed with respect distribution of the site of the of mandible fractured, it was determined that 38 (27%) were at angle of the mandible, while body of mandible were noticed 32 (23%) of the fracture were at the condyle of the mandible 24 (17%) and on the parasymphysis 21 (15%) and symphysis 15 (11%) along with its associated of dentoalveolar 10 [7%] (Table 3). It is evident from the results of our study from table No. 4 98 (70%) of the fracture mandible were reduced through intermaxillary fixation while only among 30 (21%) of the cases introsseous wiring along with IMF was done where there was associated maxillary segmental dentoalveolar fracture as well or history of the zygomatic complex fracture (Table 4).

DISCUSSION

The two important findings determined from our study are with respect study subjects age and gender i.e., the most younger at group of 20–30 years has been most frequently involved and the male to female ratio of 3:1 are in consistent to the results reported from many areas of our country and the neighbouring countries as well.^{13,14} The obvious reason behind this finding is the vulnerability of the younger age group with respect to their mobility and use of most frequent cause of road side accident the motor bikes and vehicles similarly the finding of the gender distribution has been evident and it is inconsistent with the results of many researcher from many parts of the world.¹⁵ Among the facial bones mandible is most frequent bone to be fractures due to trauma because of its prominent position and mobility as compared to maxilla.¹⁶

From the sites of the mandible it is reported that body of mandible at its angle is most frequent site to be involved in fracture, followed by the parasymphysis and symphysis region, this finding of our study is also in consistent with other results of the maxillofacial trauma studies.^{17,18} As already pointed out in the introduction part of our study rationale, now days the mostly carried out method of fracture jaw reduction is the rigid fixation through mini plates, but in our study setting due to non-affordability of the general public, still mandible fractures are being reduced under local anaesthesia among routine outdoor patients as per their informed consent.

The results of many studies support the

evidence, that most of the fractures mandibles still are being reduced very amicably through intermaxillary fixation at many parts of the world as closed jaw reduction as compared to open reduction methods with quite satisfactory outcome.^{19,20} From the results of some studies have shown higher rate of post operative infection rate of rigid fixation as compared to closed jaws reduction, which quite supportive evidence from our study as well, as hardly total 05 (03%) cases reported with respect to soft tissues infection associated with bone involvement while no reported evidence of gross discrepancy with respect to mal-union, any follow up case of temporomandibular joint dysfunction and similarly satisfactory mouth opening up to 40mm with balance anatomical occlusion with patients acceptable facial symmetry.^{20,21}

CONCLUSION

The results of our study has determined that fracture mandibles are more frequently observed predominantly among male population of Sothern Punjab, in quite younger age group with the most often due to road side accidents. The most commonly fractured site of the mandibular was at the angle of the body, followed by the symphysis and parasymphysis area involving the condylar region as well. The fracture mandible still can easily be treated through intermaxillary fixation as closed reduction with good approximation and immobilization with adequate outcome for non-affording patients in spite of rigid fixation with miniplates under general anesthesia as outdoor patients with good prognosis.

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