

## predictable risk factors in patients with post-operative mandibular fractures who attended Al-Jumhuri Hospital, Mosul City

**By**

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### **Abstract :**

**Background :** after treatment for mandibular fractures can lead to complications that cause substantial morbidity.

**Objective:** To describe the risk factors associated with post-operative mandibular fractures in patients who attended Al-Jumhuri Hospital, Mosul City. **Patients & Materials:** this prospective study discussed the result of 34 patients with fracture mandible who attended the center of oral & maxillofacial department in Al-Jumhuri Hospital in Mosul City, during the period from February - 2020 to July /2021 .

Medically compromised patients, edentulous, Patient with fracture mandible treated after 6-10 days of incidence of injury, all the patients underwent general anaesthesia via nasotracheal intubation. The fracture was reduced and establishment of ideal occlusion was obtained. The miniplate was adapted to the fracture line & secured with monocortical screws, Care was taken to place the screws laterally to the roots & superior to the neurovascular bundle , the incision sites were closed in 2 layers & corrugated drain was placed. The MMF was placed in 7-10 days. & incision site irrigated with normal saline , intra & extraorally with daily dressing, Patients were observed for complications: soft tissue infection, non union, malunion, malocclusion, nerve injury, tooth damage, pain, post operative radiographs were obtained in all cases. **Results :** from 34 patients in this study the age of the patients ranged between 15-50 years, The mean age of the patients was 31,26 years, so males 30 (88.2%) more than female 4 ( 11.8%) were female . The distribution of the occupations of the patients are Workers 17 (50%), policeman are 9 (26.5%), & employed 4 (11.7%), house wife 2(5.9%) & students 2 (5.9%). As well as about 18(52.4%) of 34 patients came from the urban so as to see from the Mosul city & 16 ( 47.1%) from outside the Mosul (rural area ). The distribution of the site of fractures was as follows : Mandibular angle( No.=14, 41.2%), Body 12 (35.3%), Parasymphyseal fractures ( No.=7,20.6%) , Symphyseal fractures( No.=1, 2.9%) , and the distribution of the etiological factors of fractures mandible shown as the following : Missile 16(55.9%), RTA 11(29.4%) , FFH 5 (11.8%), miscellaneous 2 (2.9%). so 30 ( 88.2%) of the patient we use extraoral approach & for 4 (11.8%) intraoral approach was used . **Conclusion :** In the present study, incidence of mandibular fracture was more common in males with male and more common in age of the patients ranged between 15-50 years, so more incidence of mandibular fracture in workers and policeman , as well as about 18(52.4%) of 34 patients came from the urban , the most commonly fractured site were the Mandibular angle and Body .as well as the etiological factors of fractures mandible shown as the following : Missile , RTA and FFH

**Keywords :** risk factors , post-operative mandibular fractures , Al-Jumhuri Hospital

## **Introduction :**

Approximately the tenth most often injured bone in the body, the mandible is one of the most commonly injured facial bones (Afrooz et al. 2015 and Amarista Rojas FJ, Bordoy Soto MA, Cachazo M, et al. 2017), The condylar process fractures fall into three main categories: low mandibular neck fractures, which are extracapsular fractures; high mandibular neck fractures, which are primarily intracapsular; and what are known as diacapitular fractures, which are always intracapsular and comprise any fractures involving the medial portion of the mandibular head (Cornelius et al., 2014; Cornelius et al. 2014).

The most common causes of maxillofacial fractures are road traffic accidents, falls, assaults, sports, and work injuries (Marker et al., 2000). Mandibular fractures can be classified in relation to their anatomic localization as follows: symphysis/parasymphysis, angle, ramus, condyle, and coronoid process (Nardi et al., 2020).

Mandibular fracture complications can cause substantial morbidity and affect 9.8 to 23.7% of patients [Dawoud et al., 2021]. The categories of complications are as follows: those that necessitate additional surgery, those that require medication administration, and those that don't [DINDO et al., 2004].

Reducing the frequency of problems requires an understanding of the patient and treatment characteristics that are linked to those issues. Although the exact cause differs from nation to nation, cultural, social, environmental, and economic variables are typically to blame. According to Edward et al. (1994), the primary cause of mandibular fractures in underdeveloped nations is road traffic accidents (RTAs), while the primary causes in affluent countries are physical assault and interpersonal violence.

## **Patients & Materials:**

this prospective study discussed the result of 34 patients with fracture mandible who attended the center of oral & maxillofacial department in Al-Jumhuri Hospital in Mosul City, during the period from February - 2020 to July /2021 . Medically compromised

patients, edentulous, older than 50 years of age and below 12 years are excluded from the study.

### **Instruments:**

For every patient in the study, the fracture was treated with the Wurzburg 2mm pure titanium miniplate system , the set consist of :

- 1- Miniplate, 1mm thick, different lengths & shapes, 4 holes, 6 holes, 10 holes H & L, straight shape
- 2- Screws: had an inner core diameter of 1-5 & another (thread) diameter of 2 mm.
- 3- Plate bending plier: for plate adaptation.
- 4- Plate holding forceps.
- 5- Screw driver.

### **Methods**

Method of application of the miniplate :Patient with fracture mandible treated after 6-10 days of incidence of injury, all the patients underwent general anaesthesia via nasotracheal intubation. Either arch bars placed in both dental arches or eyelids with MMF, an intraoral or/and extraoral incisions were made . The fracture was reduced and establishment of ideal occlusion was obtained. The miniplate was adapted to the fracture line & secured with monocortical screws All patients received intravenous antibiotics from the time of admission until discharge. Then prescription of 7-10 days course of oral antibiotics.

Care was taken to place the screws laterally to the roots & superior to the neurovascular bundle , the incision sites were closed in 2 layers & corrugated drain was placed. The MMF was placed in 7-10 days. & incision site irrigated with normal saline , intra & extraorally with daily dressing .

Patients were instructed to continue a fluid diet for 4 weeks. All patients were followed for at least 8 weeks. Patients were observed for complications: soft tissue infection, non union, malunion, malocclusion, nerve injury, tooth damage, pain, post operative radiographs were obtained in all cases.

**Results :**

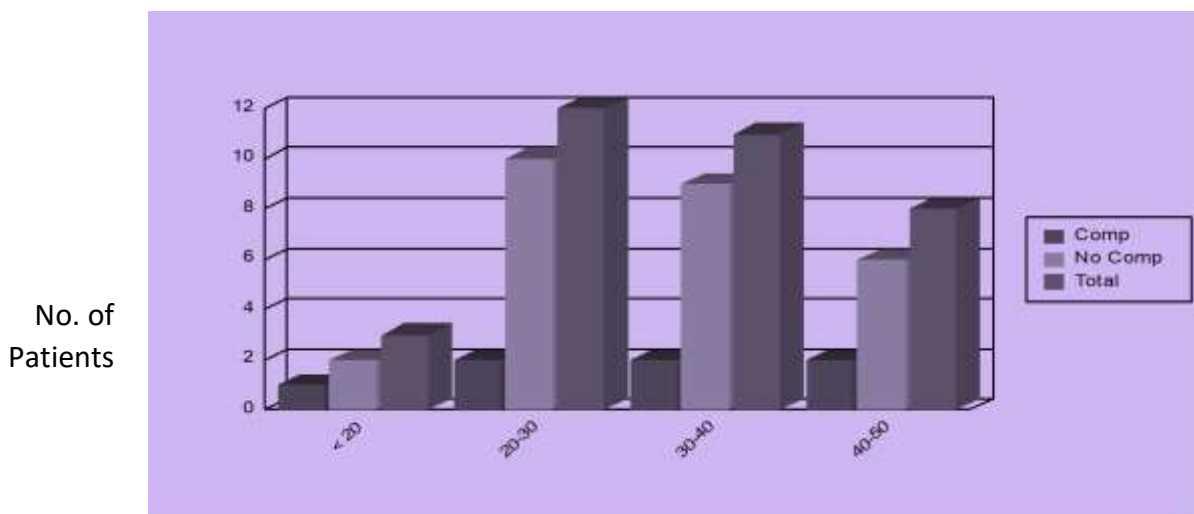
**Distributions:**

Which involve distribution of the samples of patients involve in the study.

**Distribution of the sample according to the age:**

from 34 patients in this study the age of the patients ranged between 15-50 years, The mean age of the patients was 31,26 years

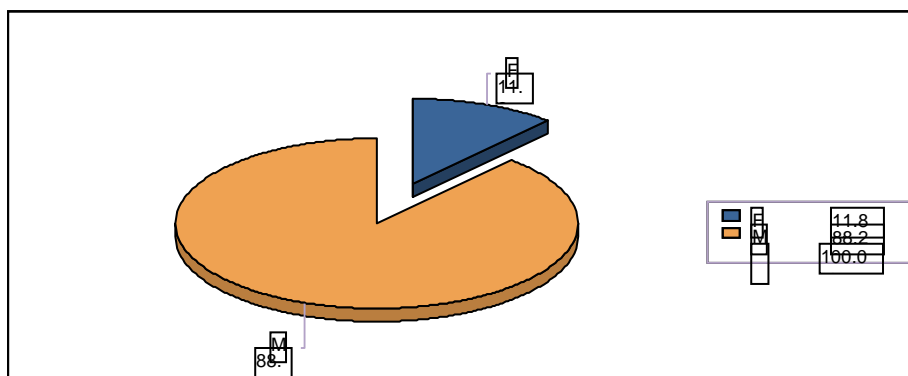
The age distribution shown in figure (1) .



**Figure(1): Age of Patients**

**Gender distributions:**

From the patients, 30 (88.2%) were males & 4 ( 11.8%) were female . sex distribution is shown in figure (2).

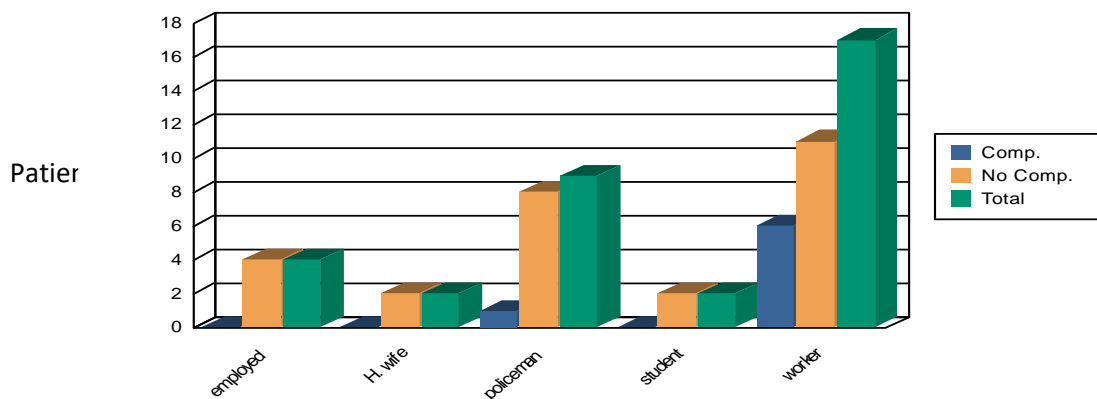


**Figure(2): Male to Female Ratio**

In this study, young and adult males accounted for 69.5% of all patients with mandibular fractures, a level similar to those reported by Qudah, et al. 2005, Dongas, et al.2002, Both young and adult females are less affected than males, with an incidence of 30.5%. The findings from this study are consistent with those from previous research.

**Occupation :**

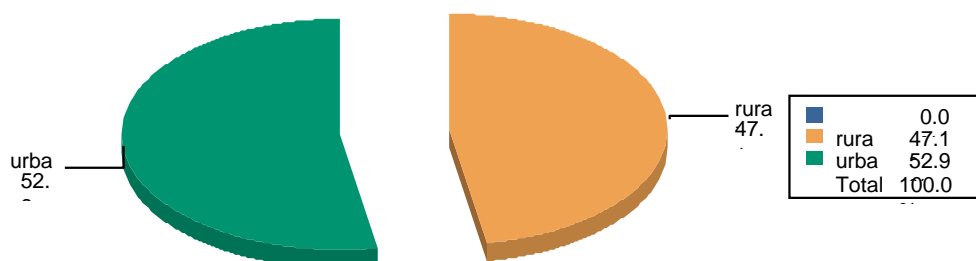
The distribution of the occupations of the patients are shown in the figure (3), Workers 17 (50%), policeman are 9 (26.5%), & employed 4 (11.7%), house wife 2(5.9%) & students 2 (5.9%).



**Figure(3): Occupation distribution**

**Residence**

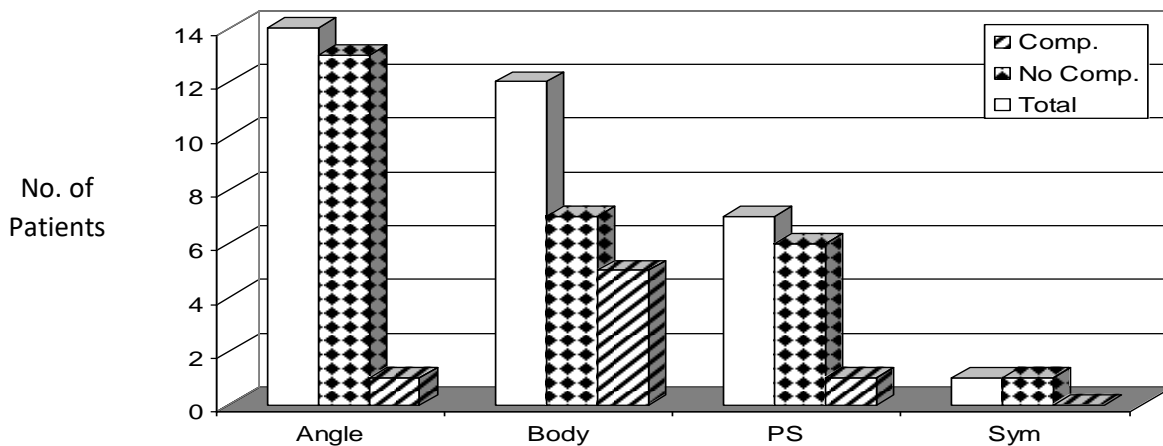
18(52.4%) of 34 patients came from the urban so as to see from the Mosul city & 16 ( 47.1%) from outside the Mosul (rural area ).this shown in fig. (4)



**Figure(4): Residence of the Patients / Total**

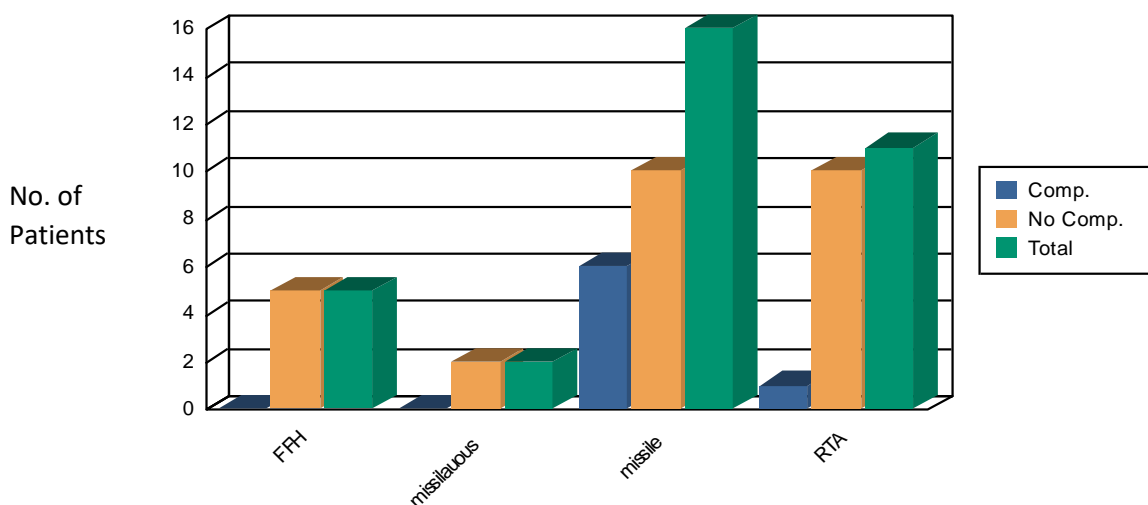
**Anatomical locations of fractures**

The distribution of the site of fractures was as follows : Mandibular angle( No.=14, 41.2%), Body 12 (35.3%), Parasymphyseal fractures ( No.=7,20.6%) , Symphyseal fractures( No.=1, 2.9%) , this is shown in the figure (5)



**Figure(5): Anatomical distribution Cause of trauma**

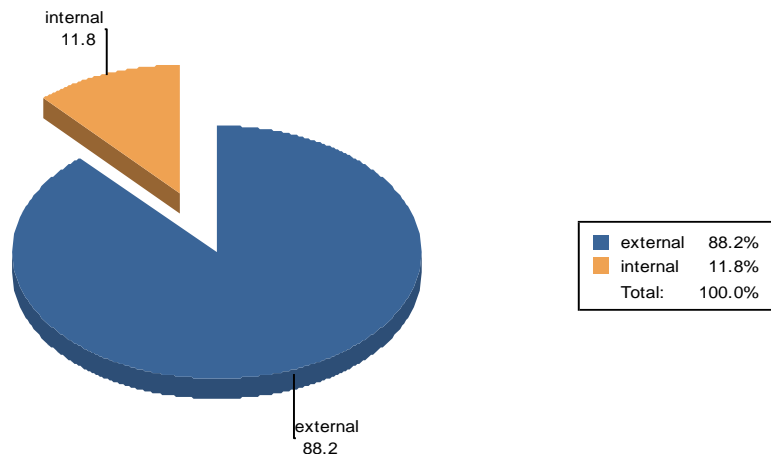
The distribution of the etiological factors of fractures mandible shown in figure(6). Missile 16(55.9%), RTA 11(29.4%) , FFH 5 (11.8%), miscellaneous 2 (2.9%).



## Figure(6): Cause of trauma

### Approach to the fracture site during operation:

For 30 ( 88.2%) of the patient we use extraoral approach & for 4 (11.8%) intraoral approach was used ( fig.-7).



Figure(7): Approach to the fracture site during operation

### Discussion :

From 34 patients in this study the age of the patients ranged between 15-50 years, The mean age of the patients was 31,26 years

The age group of 21–30 years old had the highest incidence of mandibular fractures (41.2%), according to a 2013 study by Rashid et al. This is in line with findings from Chrcanovic *et al.*, (2012). Kansakar *et al.*, (2005) explained that the high incidence in this age group can be attributed to the fact that individuals in this age group are more likely to be involved in business, sports, and high-speed transportation, all of which increase their vulnerability.

Mandibular fractures typically affect young guys between the ages of 16 and 30. Compared to other facial skeleton bones, the mandible breaks much more frequently and accounts for up to 70% of instances (Naeem et al., 2017). According to research by Serebrakian *et al.*, (2017), women sustain majority of their

fractures from falls and car accidents, but men sustain more than 50% of their fractures as a result of violence. In 2017(Serebrakian *et al.*,2017).

The fracture sites were distributed in the following ways: Mandibular angle: body 12 (35.3%), no. = 14, 41.2% fractures of the paramethism (No.=7,20.6%), fractures of the symphysem (No.=1, 2.9%), Adult patients most frequently had mandibular fractures at the symphysis and parasymphysis, then the condyle, body, and angle. Nonetheless, it was shown that the condyle and mandibular symphysis/parasymphysis were the most frequently occurring sites in younger patients.

These results contrast with research conducted in Ibadan, Nigeria (Abiose, 1986) and Portugal , where it was found that the mandibular body was the most often fractured region in adult patients. Our results for pediatric patients are in line with those of earlier research (Oji, 1998; Infante, 1994).

The parasymphysis (35–50%), body (21–36%), condyle (20–26%), and angle (15–26%) are the most common fracture sites. According to Laub (2016) and Gadicherla *et al.*, (2016), fractures of the ramus (2-4%) and coronoid process (1-2%) are less prevalent.However, Shah *et al.*, 2019 results revealed that the single fracture sites that were most common to least common were parasymphysis (12.3%), body (10.5%), angle (8.7%), condyle (6.5%), symphysis (4.3%), and finally ramus (1.1%).

### **Conclusion :**

- 1- In the present study, incidence of mandibular fracture was more common in males with male and more common in age of the patients ranged between 15-50 years
- 2- The distribution of the occupations of the patients are Workers and policeman , as well as urban patients more than others.
- 3- The most commonly fractured site were the Mandibular angle and Body .
- 4- Etiological factors of fractures mandible shown as the following : Missile , RTA and FFH



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