

Knowledge, Attitude and Perception on Surgical Management of Mandibular Fractures among Dental Students

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ABSTRACT

Objectives: Mandible fractures account for a significant portion of maxillofacial injuries and the evaluation, diagnosis, and management of these fractures remain challenging despite improved imaging technology and fixation techniques. Understanding appropriate surgical management can prevent complications such as malocclusion, pain, and revision procedures. Depending on the type and location of the fractures, various open and closed surgical reduction techniques can be utilized. The aim of the study is to assess the knowledge, attitude and perception on surgical management of mandibular fracture among dental students.

Materials and Methods: This survey was conducted in an online forum, google forms. A pre tested questionnaire was prepared regarding mandibular fracture. The questionnaire was distributed among dental students and the results were collected and statistically analyzed and presented using SPSS software.

Results: Around 35% of the participants are interns followed by third years (33%) and final years (32%). From the current study it is seen that, around 41% of the participants have answered that the most common cause of mandibular fracture is due to road accidents. The findings from our current study proves that, majority of the participants have responded that the ideal timing for mandibular fracture healing is found to be around 4 to 8 weeks.

Conclusion: Within the limits of the current study it is proven that, majority of the participants had a good knowledge and awareness regarding mandibular fractures and their managements.

Keywords: Mandible, Fracture, Accidents, Dental students, Occlusion, trauma

INTRODUCTION

Mandible fractures account for a significant portion of maxillofacial injuries and the evaluation, diagnosis, and management of these fractures remain challenging despite improved imaging technology and fixation techniques [1]. Understanding appropriate surgical management can prevent complications such as malocclusion, pain, and revision procedures. Depending on the type and location of the fractures, various open and closed surgical reduction techniques can be utilized [2].

When all of the facial bone fractures are evaluated, incidence of the mandible fractures can be detected as 38%. If mandible fractures are not treated appropriately, they can cause morbidities at a high level. The most important aim of the treatment is to provide healing on both functional and cosmetic aspects [3]. During the determination of treatment strategy, age of the patient, presence of additional injuries, comorbid diseases of the patient, trauma type, and localization of the fracture must be kept in mind [4]. Although there are many developing techniques for the fixation of the fractures, still there is no consensus on the ideal treatment [5].

Mandible fractures have a special place within the injuries of the other bones of the maxillofacial system. In their

management, cosmetic issues and functional aspects such as chewing, speaking, and swallowing become very important. There is also another type called spontaneous mandibular fractures, which commonly occur due to osteonecrosis, osteomyelitis, atrophy, during third molar surgeries, bone harvesting procedures and benign or malignant tumors [6,7].

In cases of management of mandibular fractures, they are corrected using surgeries. The patient must be administered with general anesthesia and a surgical cut is made on the gums to reach the site of the broken bones [8]. The broken bones are fixed together using metal plates and screws and then the gums are sutured. An addition of extra bone may be required for some cases and they might be taken from legs, hips or ribs. The sutures will be removed after a few days of surgery [9]. Metal braces will be attached to the teeth and elastic bands are fixed. This shall allow the jaw to heal and will let the patient move the jaw after surgery. The metal braces and elastic bands will be removed after 4-6 weeks after the surgery [10,11].

The ultimate goal of treatment is to re-establish the patient's preinjury dental occlusion. Fractures that are nondisplaced and exhibit no occlusal changes may be amenable to nonsurgical management, but the majority of mandible fractures will require stabilization for satisfactory healing and to restore pre traumatic maxillomandibular orientation [12]. Various treatment strategies have been described and vary widely depending on the fracture location and surgeon's preference. The patient's demographics, comorbidities, dentition, and fracture characterization will all influence the choice of fixation by the treating surgeon [13].

Hence, the aim of the study is to assess the knowledge, attitude and perception on surgical management of mandibular fracture among dental students.

MATERIALS AND METHODS

Study setting - The study was conducted with the approval of the Institutional Ethics Committee [SDC/SIHEC/2020/DIASDATA/0619-0320]. The study consisted of one reviewer, one assessor and one guide.

Study design - The study was designed to include the dental students of both undergraduates and postgraduates.

Consecutive sampling - 100 dental students from undergraduates were included.

Data Collection - The survey was conducted in the month of March, 2024. It was conducted online with among 100 dental undergraduates from Chennai. The survey instrument was a questionnaire prepared after extensive review of the existing literature. The questionnaire was reviewed and amendments were made to improve clarity of the questions to eliminate ambiguous responses. Only completed surveys were taken for analysis and the uncompleted surveys were eliminated.

Statistical analysis - The collected data was tabulated and analysed with Statistical Package for Social Sciences for Windows, version 20.0 (SPSS Inc., Vancouver style) and results were obtained. Categorical variables were expressed in frequency and percentage. Chi square test was used to test association between categorical variables. Chi square tests were carried out using age, gender and as independent variables and dependent variables. The statistical analysis was done by Pearson chi square test. P value < 0.05 was considered statistically significant. All data were analyzed by multiple logistic regression analysis using SPSS software version, inference of the study is given below.

RESULTS

Our study results are depicted in Figures 1-9.



Figure 1 -Bar chart represents the frequency distribution of year of study.

X axis represents the year of study and Y axis represents the percentage of participants responded. Around 35% of the participants are interns followed by third years (33%) and final years (32%).

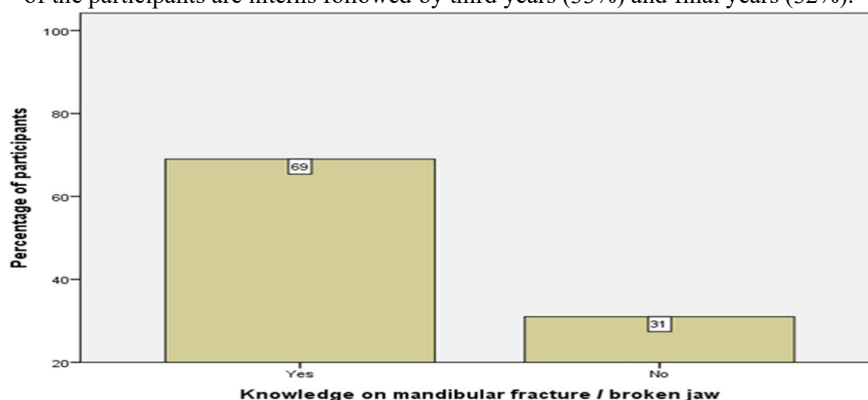


Figure 2 - Bar chart represents the frequency distribution of knowledge on mandibular fracture among dental students.

X axis represents the knowledge on mandibular fracture and Y axis represents the percentage of participants responded. Around 69% of the participants had good knowledge regarding broken jaw / mandibular fracture.

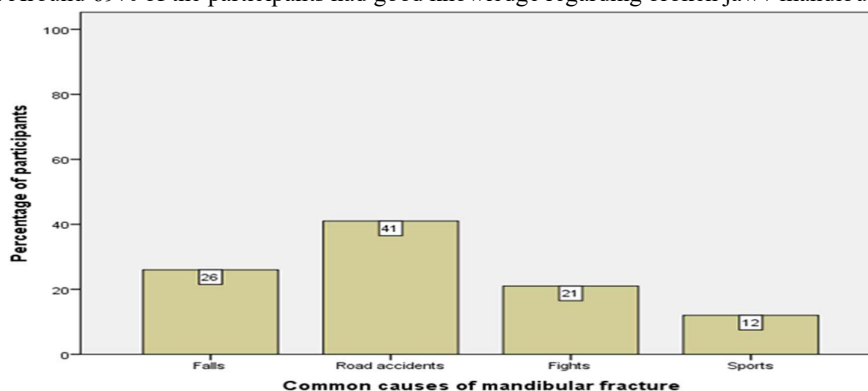


Figure 3 - Bar chart represents the frequency distribution of common causes of mandibular fracture.

X axis represents the common causes of mandibular fracture and Y axis represents the percentage of participants responded. Around 41 % of the participants have responded the most common cause is road accidents followed by falls (26%), fights (21%) and sports injuries (12%).

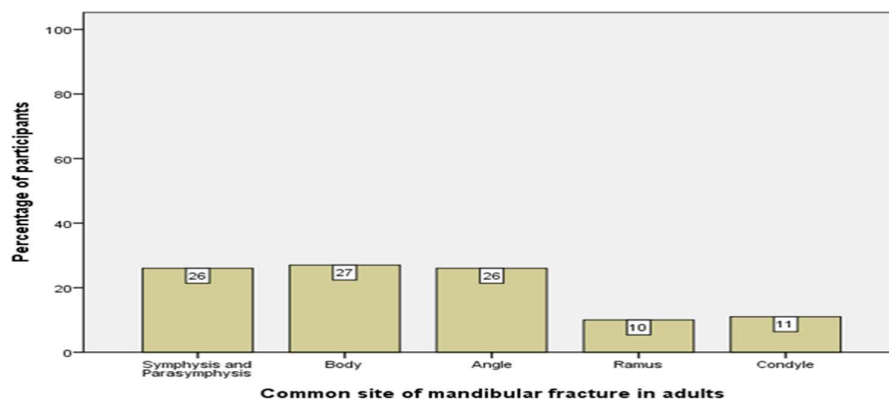


Figure 4 - Bar chart represents the frequency distribution of the common site of mandibular fracture among adults.

X axis represents the common site of mandibular fracture among adults and Y axis represents the percentage of participants responded. Around 27% of the participants have responded the common site to be the body of the mandible followed by symphysis, parasymphysis and angle (26%) followed by condyle (11%) and ramus (10%).

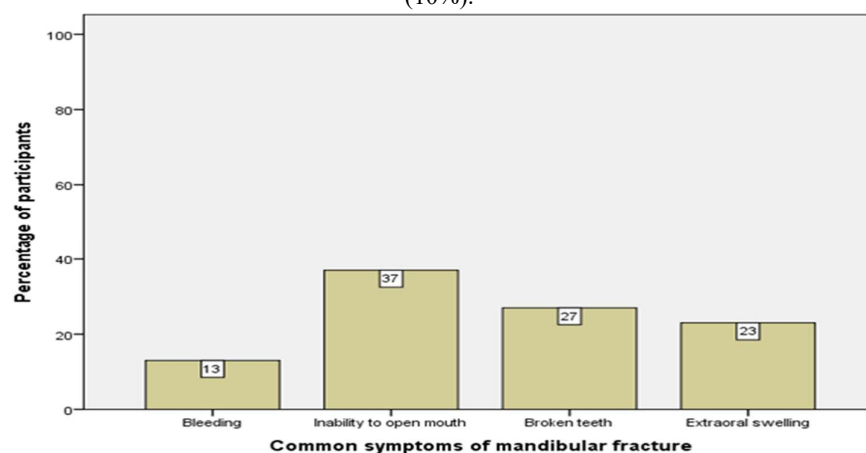


Figure 5 - Bar chart represents the frequency distribution of common symptoms of mandibular fracture.

X axis represents the common symptoms of mandibular fracture and Y axis represents the percentage of participants responded. Around 37% of the participants have responded inability to open mouth followed by broken teeth (27%) followed by extraoral swelling (23%) followed by bleeding (13%).

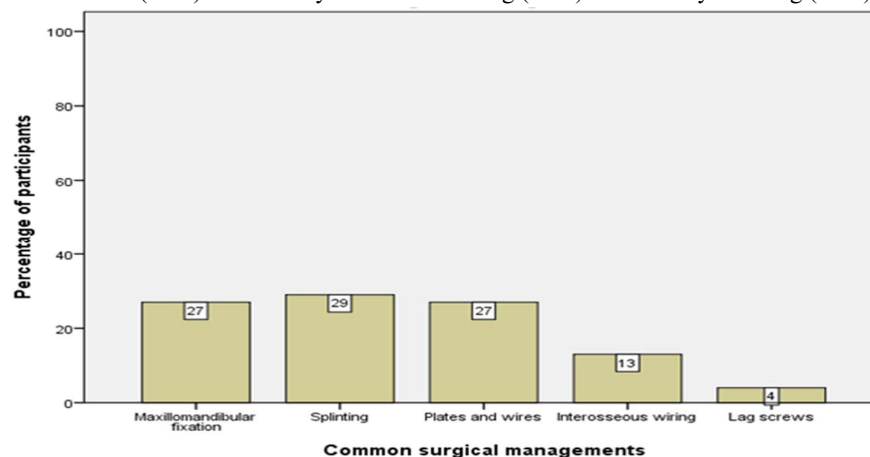


Figure 6 - Bar chart represents the frequency distribution of common surgical managements.

X axis represents the common surgical management and Y axis represents the percentage of participants

responded. Around 29% of the participants have responded splinting as the most common management followed by maxillomandibular fixation and plates and wires (27%) followed by interosseous wiring (13%) followed by lag screws (4%).

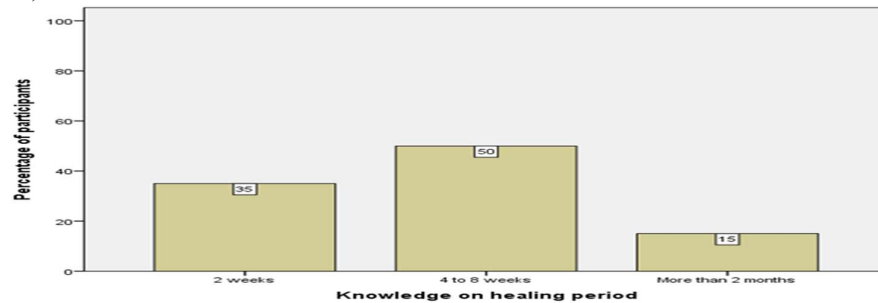


Figure 7 - Bar chart represents the frequency distribution of knowledge on healing.

X axis represents the knowledge on healing and Y axis represents the percentage of participants responded. Around 50% of the participants have responded that 4 to 8 weeks is the healing period for mandibular fracture followed by 2 weeks (35%) followed by more than 2 months (15%).

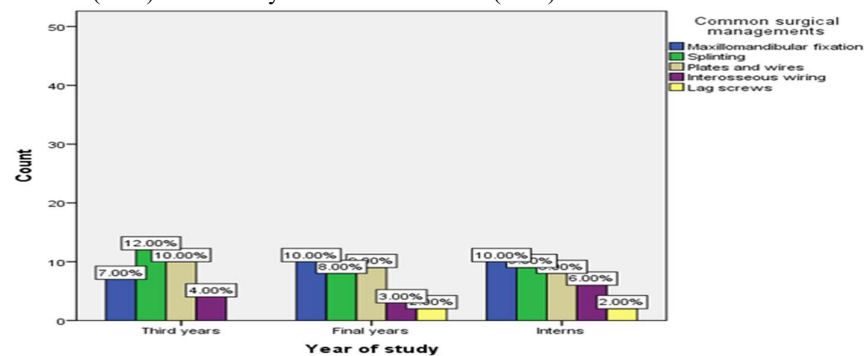


Figure 8 - Bar chart represents the association between year of study and common surgical managements.

X axis represents the year of study and Y axis represents the percentage of participants. Majority of the third years have responded splinting to be the most common surgical management followed by final years and interns who have responded maxillomandibular fixation. Chi square analysis was done and P value was found to be $0.721 > 0.05$, which is statistically not significant.

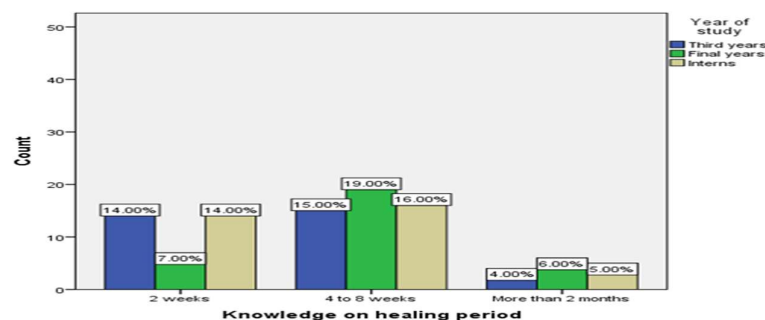


Figure 9 – Bar chart depicts the association between knowledge on healing period and year of study.

X axis represents the knowledge of the healing period and Y axis represents the year of study. Majority of the students have responded that 4 to 8 weeks is an adequate healing period for mandibular fractures. Chi square analysis was done and P value was found to be $0.001 < 0.05$, which is statistically significant.

DISCUSSION

From the current study it is proven that, majority of the participants (36%) belong to internship followed by 33% third years and 32% final year students. The findings from the current study shows that around 69% of the students had better knowledge regarding what is mandibular fracture which correlates with the study done by Lipschitz et al., 2009 [14]. The most common cause of broken or dislocated jaw is accident or trauma involving a blow to the

face. This may be the result of a motor vehicle accident, industrial accident, recreational/sports injury, or other accident. It may also result from assault. The goal of treatment is proper alignment of the jaw bone so the upper and lower teeth come together normally. Surgery is often required for moderate to severe fractures to align and immobilize the bone so it can heal [15].

From the current study it is seen that, around 41% of the participants have answered that the most common cause of mandibular fracture is due to road accidents which correlates with the study done by J F murray et al., 1975 [16]. Motor vehicle accidents are a common cause of fractures of the mandible and are the most common cause of serious and multiple fractures. The usual mechanism of injury is outlined. The common fractures that occur are through the anterior alveolar process, condylar necks, or edentulous areas of the body and symphysis [17].

Our current study shows that the most common site for mandibular fracture is body of the mandible followed by angle and symphysis and parasymphysis which contradicts with the study done by Artun et al., 2007 [18]. According to the previous study they have proven that symphyseal and parasymphyseal fractures are the most common. Symphyseal and parasymphyseal fractures are usually caused by direct trauma to the chin, such as a fall that bends the mandible. A symphyseal fracture is a midline mandibular fracture between the central incisors [19]. From our current study majority (37%) of the participants have responded that, inability to open mouth is the most common type of symptom in case of mandibular fractures which correlates with the study done by kim et al., 2021 [20]. Pain, swelling, and bleeding are the most immediate symptoms of a broken jaw. Entire face can swell, making the jaw painful and stiff. Bleeding from the mouth can occur, causing breathing difficulties in people. The blood flow can block the airways which might lead to pain and tenderness when chewing or speaking. In cases of severe jaw fracture, it might lead to limited ability to move your jaw or be unable to move the jaw at all [21].

From the present study it is proven that, majority of the participants have responded that splinting is the most commonly done surgical management in case of mandibular fractures which contradicts with the study done by Beret et al., 2021 [22]. According to the previous study it is proven that, maxillomandibular fixation is the most commonly done management. Maxillomandibular Fixation is a fundamental component in the management of facial trauma, reconstruction and orthognathic surgery. This is done to ensure the interrelationship of the dental occlusion, which is necessary in the reduction of traumatic or surgically induced segments of the mandible and maxilla [23]. However, it requires more time, involve a high cost, are complicated, need more laboratory support, extended operating time and require surgical interventions. Association between year of study and common surgical managements and P value was found to be $0.721 > 0.05$, which is statistically not significant.

The findings from our current study proves that, majority of the participants have responded that the ideal timing for mandibular fracture healing is found to be around 4 to weeks which correlates with the study done by Asif et al., 2018 [24]. Association between healing period and year of study was done and P value was found to be $0.001 < 0.05$, which is statistically significant. Numerous studies have been done in this particular domain which have shown the various surgical modalities in the management of mandibular fractures, thereby obtaining successful outcomes [25-35].

CONCLUSION

Within the limits of the current study it is proven that, majority of the participants had a good knowledge and awareness regarding mandibular fractures and their managements yet more information can be implemented among dental students regarding maxillofacial surgeries and their outcome which will be helpful in their future practices.

CONFLICTS OF INTEREST

The authors declare no potential conflict of interest.

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