

Incidence of Dentoalveolar Fracture Among the Trauma Patients Reported to a Private Dental Institution - A Single Institution Retrospective Study

Running Head Title: Incidence of Dentoalveolar Fracture Among Maxillofacial Trauma Patients, Revathy Elango¹, Saravanan Lakshmanan^{2*}

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ABSTRACT

Background: Dentoalveolar fractures occur as a result of disruption in the continuity between the dental hard tissue and the alveolar bone. The major causes of dentoalveolar fractures among adults include trauma during fight, road traffic accidents, sports injuries and rarely occupational trauma. Conservative therapy with long-term follow-up is the most commonly followed approach for treating facial trauma among young individuals when tooth-bearing areas are involved.

Aim: The aim of the present study is to assess the incidence of dento alveolar fracture among the trauma patients who reported to the private dental institution.

Materials and method: The retrospective observational study was conducted among patients who reported to the Department of Oral and Maxillofacial surgery at Saveetha Dental College and hospital, Chennai during the time period May 2021 to May 2023. The patient demographic details and data pertaining to study parameters were retrieved from patient records provided by the institution. A total of 97 patients reported to the department of oral and maxillofacial surgery with maxillofacial injury and fulfilled the inclusion criteria during the study period were included in the study.

Results: The results of the present study, reveals that dentoalveolar fractures were more predominant among males belonging to the age group of 21 to 30 years.

Conclusion: From the results of the present study, it can be concluded that 1/4th of the patients reporting due to trauma had dentoalveolar fracture. It was more common among male (74.3%) and among young individuals belonging to 21 to 30 years of age (41%).

KEYWORDS: Dentoalveolar, Fracture, Injury, Maxillofacial, Trauma

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INTRODUCTION

Dentoalveolar fractures occur as a result of disruption in the continuity between the dental hard tissue and the alveolar bone. (1) Dentoalveolar trauma usually involves the components of dentition, periodontium and the alveolar bone. The most common clinical presentation of these dentoalveolar fractures include pain, inflammation, tooth mobility, laceration, avulsion, malocclusion and also impaired functioning of the mouth. (2). It also includes other implications such as facial nerve damage

and fractures. (3) The most common etiology of dentoalveolar fractures among children involves fall from bicycles, sport injuries and occasionally due to child abuse. (4)

The major causes of dentoalveolar fractures among adults include trauma during fight, road traffic accidents, sports injuries and rarely occupational trauma.(5) Dentoalveolar fracture occurs either due to direct trauma to the teeth or due to a trauma to the chin resulting in the

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mandibular and maxillary dentition being forced against each other. According to Andreasen, bone fractures includes the following: Comminution of the alveolar socket, Fracture of the socket wall, Fracture of the alveolar process, Fracture of the mandible or maxilla (6)

Assessment of patients with dentoalveolar fractures is difficult due to the severe nature of the injury which includes soft tissue lacerations, displacement of teeth and fracture of bone. Anxiety management also plays a key role for a proper patient examination. (7) A panoramic radiograph is a useful diagnostic tool that gives an overview of the entire dentition and the underlying jaw fractures. Occasionally these bone fractures in the alveolus may extend down and involve the parasymphysis of the mandible. From previous studies, it has been observed that the most common site for these dentoalveolar fractures is between the lateral incisor and canine. (8)(9) the use of advanced techniques like CBCT improves the preoperative risk assessment, leading to better surgical outcomes and reduced complications.(10) Similarly, modern maxillofacial surgery aims at reducing post operative effects through a wide range of modalities. (11)

Conservative therapy with long-term follow-up is the most commonly followed approach for treating facial trauma among young individuals when tooth-bearing areas are involved. Currently, the various methods of stabilizing displaced dentoalveolar fractures include the application of arch bars and metal (cap) splint or acrylic plates fixed using circum-mandibular wiring under general anesthesia. (12,13) Apart from reestablishing the pre-morbid position of the traumatized tooth in its socket, the goal of the treatment is directed toward achieving the pre-traumatic occlusion and intra-arch contour (14) The aim of the present study is to assess the incidence of dento alveolar fracture among the trauma patients reported to the private dental institution.

MATERIALS AND METHOD

The retrospective observational study was conducted among patients who reported to the Department of Oral and Maxillofacial surgery at Saveetha Dental College and hospital, Chennai during the time period May 2021 to May 2023.

Inclusion criteria

1. Patients reporting to the department of oral and maxillofacial surgery with maxillofacial injury.

2. Patients of any age group and gender.

Exclusion criteria

1. Maxillofacial injury associated or secondary to other maxillofacial pathologies eg: pathological fracture secondary to systemic diseases or local factors such as cyst or tumor.
2. Patients with cervical or head injury.
3. Patients with history of debilitating systemic diseases
4. Patients who are physically or mentally challenged.

Ethical Consideration

Approval was obtained from the Institutional Review Board of Saveetha Institute of Medical and Technical Sciences, India.

Data Collection

The patient demographic details and data pertaining to study parameters were retrieved from patient records provided by the institution. A total of 97 patients reported to the department of oral and maxillofacial surgery with maxillofacial injury and fulfilled the inclusion criteria during the study period were included in the study.

Study Parameters

The following data were extracted for the purpose of the study:

1. Demographic data (age, gender)
2. Etiology of injury

Statistical Analysis

The data obtained was subsequently tabulated in excel spreadsheet and was exported to IBM SPSS version 20 for statistical analysis. The data were analysed descriptively measuring mean, standard deviation, percentage and frequency. The association between different study parameters were analysed using Pearson's Chi square test at confidence interval 95%. The output was generated with graphical and tabular representatives.

RESULTS

From the results of the present study, it can be found that among the trauma patients who reported to the private dental institution, 27.25% had reported due to dentoalveolar fracture as shown in figure 1. The present study also demonstrates that dentoalveolar fractures were more predominant among males with 74.3% of the patients (Figure 2). The majority of the patients who

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reported due to dentoalveolar fracture belonged to the age group of 21 to 30 years (41%) which indicates the prevalence of the injury among young individuals as shown in figure 3.

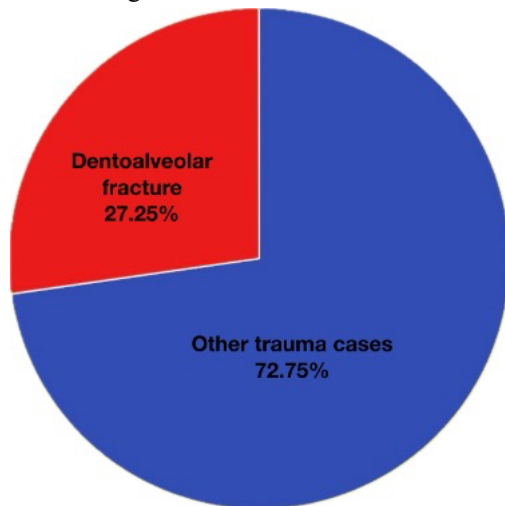


Figure 1: Represents the incidence of dentoalveolar fracture among the trauma patients who reported to the private dental institution

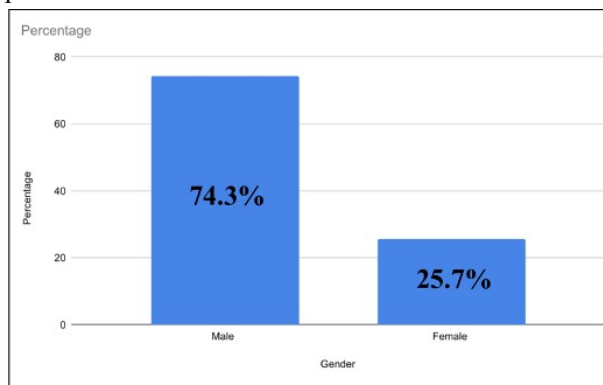


Figure 2: Represents the association between gender and the incidence of dentoalveolar fracture

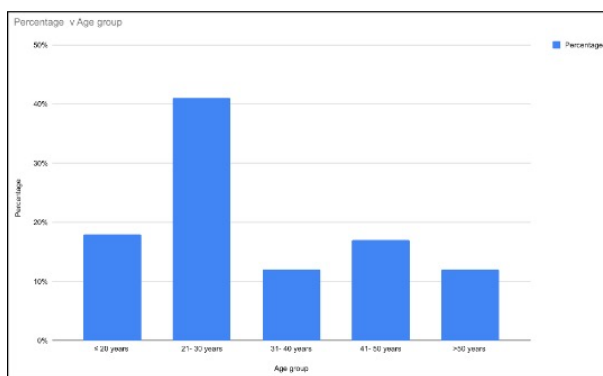


Figure 3: Represents the association between age groups and the incidence of dentoalveolar fracture

The results of the present study, reveals that dentoalveolar fractures were more predominant among males belonging to the age group of 21 to 30 years. From the results of Saulo Ellery et al., It was found that the majority of dentoalveolar fractures were recorded during the weekends and were associated with alcohol consumption. Dentoalveolar trauma was closely related to severe maxillofacial trauma. (15)

The results of Hilda Morris et al., revealed that the main traumatic injuries were concentrated between the second and third decade of life in both men and women, with the majority of the supporting tissues being compromised and leaving hard tissue in second place. The anterosuperior dentoalveolar group was also found to be the most compromised. Similarly, from the results of Gaujac et al., It was found that children aged 0 to 5 years were most commonly affected and the etiologic factor involved was traumatic fall. It was also reported that the incidence of dentoalveolar trauma decreased with age and the main etiologic factors in adult patients were traffic accidents and physical assault. (16)

The results of Andrea Veliz et al., revealed that the majority of dentoalveolar injuries during the first and second decades of their life are more common in men than in women. The most frequent dental traumas were complicated and uncomplicated crown fractures, followed by root fractures.(17) Previous studies have reported that the use of Rigid wire and the composite splint were the most preferred treatment option for dentoalveolar fractures. The purpose of dental splinting is to stabilize the tooth and to protect the new periodontal tissue attachment. (18) For the stabilization of complicated dentoalveolar fracture along with multiple teeth avulsions and extrusions, modified cap splint was found to be successful.

Successful management must include four major areas of consideration: dentoalveolar response to the forces of trauma, evaluation and management of changes in vitality of the dental pulp, control of infectious and inflammatory periodontal disease throughout the period of evaluation and management, and restoration of the dentition and supporting structures.(19) The limitations of this study were small sample size and the entire sample was taken from a similar geographic location. Further studies need to be done with a larger sample size to assess the prevalence of dentoalveolar fractures among the population.

DISCUSSION

CONCLUSION

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From the results of the present study, it can be concluded that 1/4th of the patients reporting due to trauma had dentoalveolar fracture. It was more common among male (74.3%) and among young individuals belonging to 21 to 30 years of age (41%). The most common treatment option for dentoalveolar fracture for these patients was closed reduction with arch bar placement.

CONFLICT OF INTEREST

The authors hereby declare that there is no conflict of interest in this study.

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