



Prevalence of Tooth Fracture in a Population of Hyderabad: A Cross-Sectional Study

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ABSTRACT:

Background: One of the most widespread dental issues is tooth fracture, although little is known about how frequent they are in different populations.

Aim: The aim of this study is to ascertain the frequency and distribution of fractured teeth in adult patients in the city of Hyderabad.

Materials and Methods: This study was conducted by OroGlee Solutions Private Limited. A total of 2546 subjects aged 18-50 years were examined. Oral examination was done using intraoral camera.

Result: The prevalence of fractured tooth in the population of Hyderabad is 21.3%.

Conclusion: The fractured teeth are ignored often and left untreated by many people. Unmet treatment demands of tooth fractures have recently surfaced in dental literature, revealing that some of them come late for treatment, potentially creating complications in treatment. This shows the necessity of the awareness among the public about the need of treatment to restore the function and aesthetics or to relieve the pain if it persists.

KEY WORDS: Tooth Fractures, Prevalence, Intraoral camera, Hyderabad.

I. INTRODUCTION:

Traumatic oral injuries provide a difficulty for clinicians everywhere. Dental trauma may lead to functional impairment, appearance, which leads to lower self-esteem, particularly in adolescents and teenagers. (1)

In 2003, Guertsen noted that the occurrence of fractured teeth had increased over previous ten years. Additionally, splits, cracks, or fractures have recently been identified as the third most frequent reason for tooth loss in industrialised nations. This, together with variances across other populations and the upward trend, demonstrate its significant clinical value. (2)

Fractured tooth is most commonly seen in people who grind their teeth at night (Bruxism), who chew on hard foods, play contact sports and in weakened tooth with large dental fillings. Minor fractures which involve only the outer layer can

heal on its own. Severe forms of fracture cannot be healed but needs a proper treatment. Depending on the location and symptoms various treatments are available for fractured tooth like dental fillings, crowns, root canal treatment, extraction etc. An individual can protect their teeth by avoiding biting on hard foods, maintaining good oral hygiene and wearing mouthguards.

There is data regarding prevalence of cracked tooth in adults and prevalence of fractured tooth in school children. But there is the limited evidence on prevalence of fractured tooth in adults. Such information about the situation in many areas is still lacking. The availability of such information on early and precise identification of fractured tooth offers possibilities for saving such teeth as well as a better prognosis.

The aim of this study is to ascertain the frequency and distribution of fractured teeth in adult patients in Hyderabad, for better diagnosis and treatment.

II. MATERIALS AND METHODS:

A cross-sectional survey was conducted by Oroglee Solutions Private Limited among the people of corporate offices in the city of Hyderabad.

A survey questionnaire was prepared to acquire personal details such as age, gender, relevant dental and medical history and habits. Oral examination was done using an intraoral camera connected to a laptop to record videos of all aspects of teeth. Informed oral consent of the participants was obtained before examination.

INCLUSION CRITERIA:

Participants in the age group of 18 to 50 years were included in the study.

EXCLUSION CRITERIA:

Participants below the age of 18 years and above 50 years were excluded in the study.

III. RESULTS:

A total of 2546 participants were screened in the age between 18 to 50 years for the



prevalence of fractured teeth. Out of 2546 participants, 543 of them have fractured teeth. This

accounts for 21.3% of the total population examined.

CATEGORY	TOTAL NUMBER [2546]	PERCENTAGE
Participants with fractured tooth	543	21.3%
Participants without fractured tooth	2003	78.7%

IV. DISCUSSION:

Dental traumatology expertise has to be updated often. Traumatic dental injuries are identified as a public dental health hazard globally. The prevalence of traumatic dental injuries differs by country. According to available statistics, they are more common in permanent dentition than in primary dentition.

Oral trauma often only damage one tooth, however some trauma-inducing situations, such as sports, violence, and road traffic accidents, can cause numerous tooth injuries. The maxillary incisors (66.7%) and lateral incisors (17.4%) were the most severely affected teeth. (3)

Types of injury (code according to WHO) (3)

1. Cracked tooth
2. Enamel fracture
3. Enamel- dentin fracture
4. Complicated crown fracture
5. Uncomplicated crown- root fracture
6. Complicated crown-root fracture
7. Root fracture

Crown fractures account for the greatest proportion of all dental traumatic injuries.

The most prevalent kind of trauma is enamel fracture (63.7–80%), followed by enamel–dentin fracture (15.9–17.2%). (3)

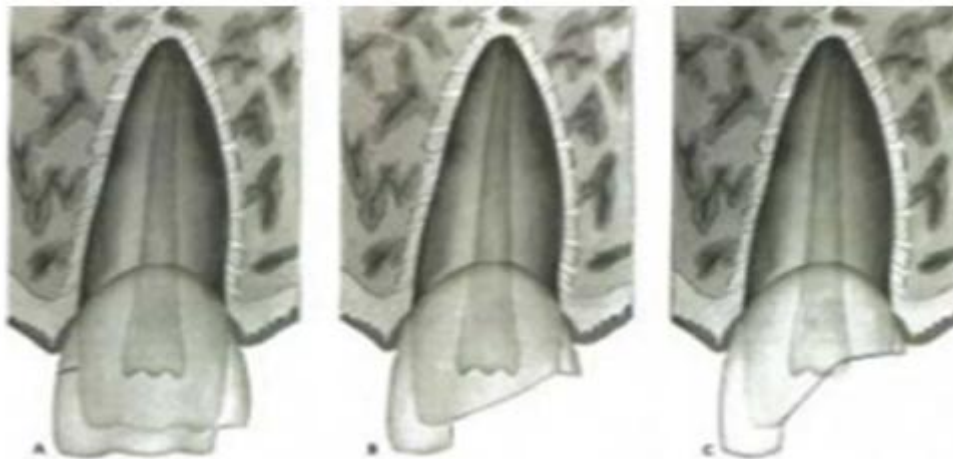


Figure 1

The figure 1 shows the fractures which are seen clinically: (3)

- A. Enamel fracture: A fracture in which the loss of tooth material is limited to the enamel.
- B. Enamel-dentin fracture: A fracture of the tooth that solely affects the enamel and dentin, excluding the pulp.
- C. Complicated crown fracture: Pulp-involved enamel-dentin fracture.

Aetiology:

The aetiology reveals that falls are the most common cause, followed by traffic injuries, acts of aggression, accidents, and sports injuries. (1)

Pre-disposing factors:

Dental trauma risk factors may be associated to a person's anatomic features like, increased overjet, insufficient lip covering of the



upper anterior teeth, and even with the smallest trauma, dental cavities predispose a tooth to fracture. (3)

Progression of the condition:

The outcome of a fractured tooth relies on the type of damage, whether treatment was delayed, how well it was treated, and other factors. (3)

First stage of the tooth fractures are cracks which are defined as a type of incomplete tooth fracture by The American Association of Endodontist. The crack plane often begins on the coronal part of the tooth and advances apically with or without symptoms according to the severity of the fracture. The majority of crack lines are seen in the centre. Peripherally situated fractures are more likely to result in cuspal fracture, whereas centrally located cracks and those running mesiodistally are more likely to generate pulpal involvement. (2)

The fractured tooth has the easy invasion of bacteria into the dentinal tubules which results in dental sensitivity to the individual. If left untreated, the bacteria may reach the pulp and compromises the neurovascular supply, which results in disruption of defence mechanism, leading to infection and pain. Even if the individual ignores at this stage, the pulp gets necrosed leading to a nonvital tooth with discolouration. (3)

The proper repair of the pulp and periodontal tissues is a positive result of the tooth fracture. The fractured tooth needs one to two weeks to fully recover. The prognosis of minor fractures limited to the enamel is typically better than that of deeper, untreated fractures, which can lead to infection and abscess. (4)

Complications of tooth fracture if left untreated:(4)

Pulp necrosis

Crown discolorations

Peri-apical abscess

Pulpal obliteration

Fistulas

Internal and external root resorptions.

In the present study, 2546 participants between the age of 18-50 years were screened out of which 21.3% of the people were affected with tooth fractures i.e., 543. Following are the similar studies showing their prevalence in different regions.

In a study conducted by Bratteberg, M *et al.*, on “prevalence of traumatic dental injuries”, among 16-year-old high school pupils in the County of Hordaland, Western Norway, there were a total of 2055 participants. The prevalence of

traumatic dental injuries was 16.4% (338 students), with the maxillary central incisors being the most afflicted. (64.7%) (5)

A study “Prevalence and Distribution of Cracked Posterior Teeth, among Adult Patients attending the dental clinic of OAUTHC, Ile-Ife, Osun State, Nigeria” was conducted by Temiloluwa Olawale Ogundare, *et al.*, wherein a total of 3345 patients participated in the study, which included 1642 men and 1703 females ranging in age from 18 to 92 years. 152 of these patients were identified with cracked tooth in the posteriors with an outcome of 4.54% of prevalence rate. (2)

In school children, a study “Prevalence of Traumatic Injuries to Permanent Anterior Teeth and Predisposing Risk Factors among Government and Private School Children of Kakinada and Rajanagaram of East Godavari District” was conducted by Panangipalli SS, Vasepalli M, Punithavathy R, *et al.*, among 2,325 students aged 7 to 13 years. Results shows that the frequency of trauma was 12.1% and the most frequently affected teeth are the maxillary central incisors, and the most common fracture is enamel fracture. (6)

A study “Prevalence and severity of traumatic dental injuries among young amateur soccer players” by Muawia A. Qudeimat *et al.*, was conducted on 667 male participants in total, with a mean age of 13.4 ± 2.6 years. There were 169 players with injured teeth which accounts for 25% of the participants. The most frequently injured teeth were the maxillary central incisors (91%), while enamel-only fractures accounted for (60%) of all the injured teeth. (7)

V. CONCLUSION:

Dental fractures are still one of the most overlooked conditions. Because of the increase in sports activities and accidents, the incidence of broken teeth is projected to rise in the next years. This necessitates increased knowledge and awareness at the public level through the implementation of prevention initiatives, the organisation of adequate emergency services and first aid, and the development of acceptable population-level awareness campaigns.

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