Original Research Article

ASSOCIATION OF ELLI'S CLASS 1 FRACTURE IN CHILDREN IN BETWEEN THE AGE GROUP OF 13-18 YEARS

ABSTRACT:

Children nowadays are exposed to the world from a much earlier age than their forefathers, rendering them more vulnerable to multiple trauma risk factors such as falls, injuries, peer battle, and so on. Depending on where the tooth is fractured, different physical and clinical findings are present. Take note of the extent of the fracture as well as the patient's age. For obvious fractures, the Ellis classification was created. Ellis I fractures involve only the enamel. make the diagnosis. A visual-tactile caries classification is the Nyvad classification. Data was collected from the patient record system used in a private dental institution and following parameters such as gender, Children with elli's class 1 fracture in the age group of 13-18 years was recorded. 86000 patient details were analyzed between September 2020 to March 2021 out of which 34 patients who fulfilled the inclusion and exclusion criteria were included in the study. This data was statistically analyzed using SPSS version 23. Predominantly 32.35% of males and 35.29% of females had ellis class 1 fracture in relation to the tooth number 11 i.e upper right central incisor. An attempt was made to collect data in a prospective manner and to include a wide range of ages in the population. So, from our study we can conclude that ellis class 1 fracture was predominantly seen in the tooth number 11 which was around 67.65% and females were most affected which was around 55.88%.

Keywords: Dental trauma, Elli's class 1 fracture, Endodontists, Root canal treatment, Tooth coloured restorations, innovative.

INTRODUCTION:

Physical damage to the teeth, gums, alveolar bone (the bone that contains the tooth sockets), or soft tissue of the mouth, including the lips and tongue, is referred to as dental trauma(1). A dentist should examine any injuries to the mouth or teeth, especially if a tooth or teeth has become loose or has been damaged(2,3). More serious injuries, such as split teeth, may necessitate the extraction of the tooth entirely(4). Teeth that have become dislodged (luxated) should be stabilised by a dentist, and root canal treatment may be required. Root canal treatment may not be necessary for children under the age of 12 because their teeth are still developing and may be able to heal on their own(5). You should see your dentist or an endodontist right away; if you get treatment within 30-40 minutes, you have a good chance of saving the tooth; if you wait any longer, your chances of saving the tooth are slim to none(6). Dentists treat a wide range of tooth problems, and if you've had dental trauma, your dentist will most likely be your first port of call. Endodontists are dentists who specialise in treating tooth injuries and saving them using advanced skills and techniques(7).

Children nowadays are exposed to the world from a much earlier age than their forefathers, rendering them more vulnerable to multiple trauma risk factors such as falls, injuries, peer battle, and so on(8). Traumatic dental injuries in the primary dentition are linked to permanent succedaneous tooth sequelae, with malformation occurring in 25 to 69 percent of instances(9).

Depending on where the tooth is fractured, different physical and clinical findings are present. Take note of the extent of the fracture as well as the patient's age. For obvious fractures, the Ellis classification was created(10). Ellis I fractures involve only the enamel. Tooth fractures are frequently accompanied by swelling of the gums, lips, and other body parts(11). Cold packs applied to the injured area can help to reduce pain and swelling before beginning specific dental treatment for fracture restoration(12–14). When a tooth fracture extends into the dentin, the exposed dentinal tubules can be covered with glass ionomer cement or a permanent restoration can be made using composite resins or other tooth-colored restorative materials(15). Pulp capping or partial pulpotomy are used to treat tooth fractures involving the pulp of developing teeth(1). Root canal treatment is used to treat tooth fractures involving the pulp of mature teeth. Without involving the pulp, crown root fractures can be treated by removing the crown root fragment and then restoring the apical tooth fragment(16).

The objective of this present study is to investigate or assess the association of Class 1 ellis fracture in the age group of 13-18 years.

MATERIALS AND METHODS:

It's a single-center retrospective analysis that took place in a private dental clinic in Chennai. The information was gathered from the dental hospital's computer system between September 2020 and March 2021.

Study sample size:

Total sample data was 20,376 and after analysis of the inclusion and exclusion criteria, the sample size was minimised to 34. All the cases were collected in specified time and from patients with Ellis class fracture under the age group of 13-18 years were included and were verified. I selected Maxillary central incisors for my study which was the most commonly involved area. Ethical clearance for this study was obtained from the Institutional review board.

Data collection:

The DIAS Software was used to collect patient records and analysed the data from September 2020 to March 2021. The data was cross verified with photographs. Both internal and external validity is available. Data collection was done using the following parameters like age and patients with Ellis class 1 fracture. The data collected was compiled in a Microsoft excel spreadsheets. The age was categorised into 13-14 years, 15-16 years and 17-18 years. It was analysed using SPSS software version 23 with chi-square test. The Pearson correlation and the chi-square test were used. Statistical significance was described as a p-value of more than 0.05.

RESULTS AND DISCUSSION:

Predominantly 32.35% of males and 35.29% of females had ellis class 1 fracture in relation to the tooth number 11 I.e upper right central incisor (fig:1). Patients in the age group of 13-14 years experienced ellis class 1 fracture equally in both teeth number 11 and 21 which was 23.53%, 15-16 years experienced ellis class 1 fracture in the tooth number 11 and 17-18 years predominantly had ellis class 1 fracture In relation to tooth number 11 (fig:2). 55.88% of the patients with Ellis class 1 fracture were females (Fig:3). Around 47.06% of the children who experienced ellis class 1 fracture belonged to the age group of 13-14 years (fig:4). Most commonly involved tooth number was 11 which was around 67.65% (fig:5).

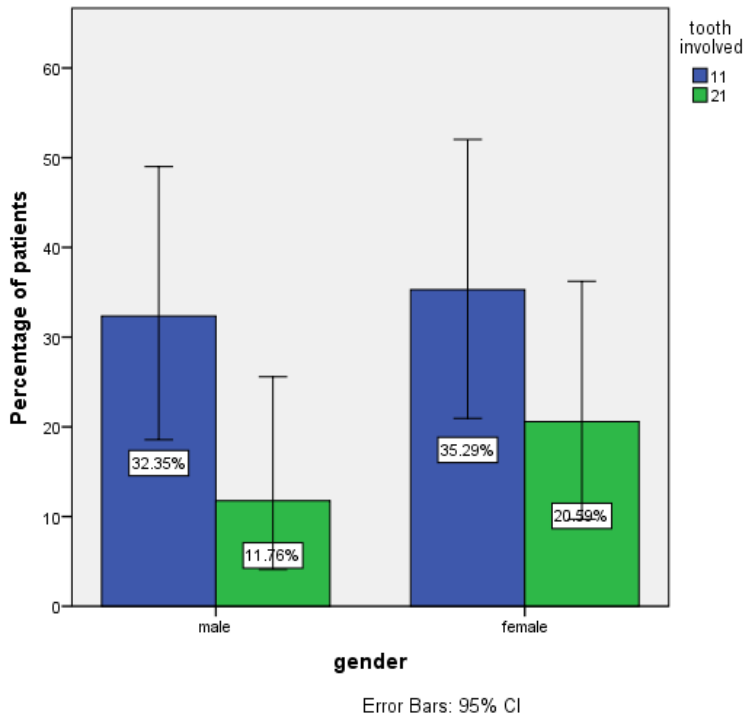

Figure: 1: The above graph represents the association between gender and tooth number. X-axis indicates gender and Y-axis indicates the tooth number. Blue represents ‘tooth number 11’ and green is ‘tooth number 21’. 32.35% of male and 35.29% of female patients had ellis class 1 fracture associated with the tooth number 11. 11.76% of male and 20.59% of female patients had ellis class 1 fracture associated with the tooth number 21. P value= 0.114, (>0.05) hence, statistically not significant.

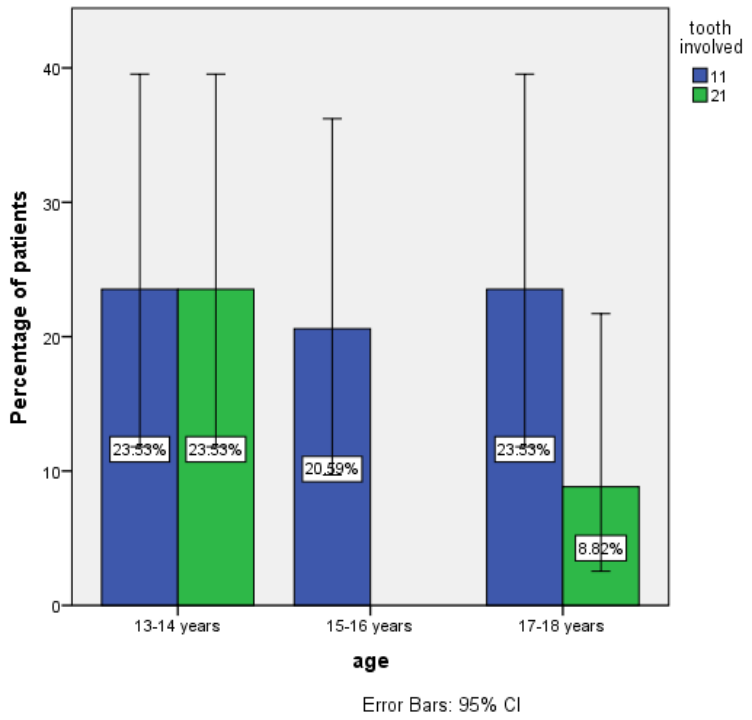

Figure: 2: The above graph represents the association between different age groups and tooth number. X-axis indicates age and Y-axis indicates the tooth number. Blue represents 'tooth number 11' and green is 'tooth number 21'. 23.53% of 13-14 years, 20.59% of 15-16 years and 23.53% of 17-18 years old group patients had ellis class 1 fracture associated with the tooth number 11. 2353% of 13-14 years, 8.82% of 17-18 years old group of patients had ellis class 1 fracture associated with the tooth number 21. P value= 0.110, (>0.05) hence, statistically not significant.

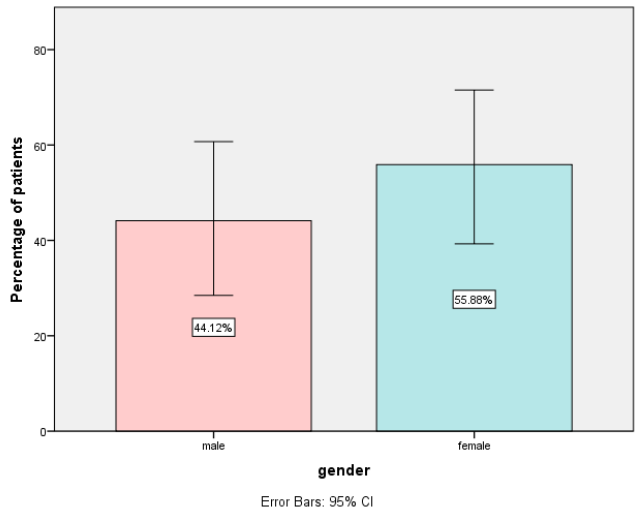

Figure: 3: The above graph represents the association between gender. X-axis indicates gender and Y-axis indicates the participants. Pink indicates ‘male’ and light blue is ‘female’. 44.12% were males and 55.88% were female participants.

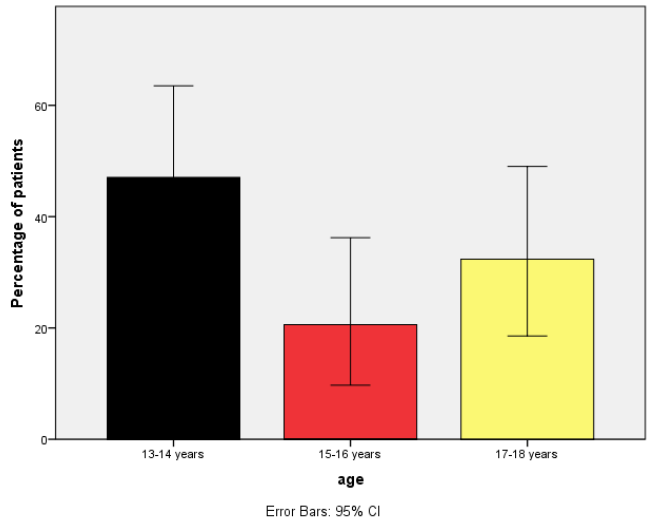

Figure: 4: The above graph represents the association between different age groups. X-axis indicates age and Y-axis indicates the participants. Black indicates ‘13-14 years’, red is 15-16 years and yellow is 17-18 years. 47.06% were 13-14 years old, 20.59% were 15-16 years and 32.35% were 17-18 years.

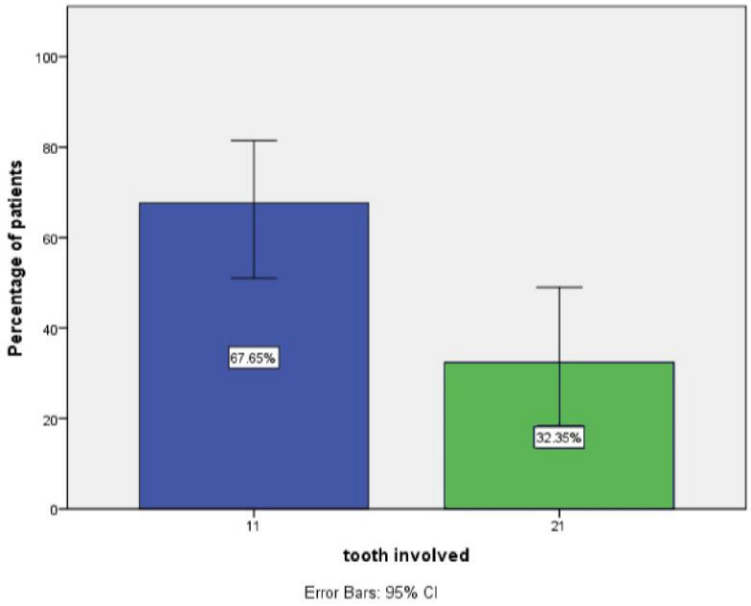

Figure: 5: The above graph represents the association between teeth involved. X-axis indicates tooth number and Y-axis indicates the participants. Blue indicates ‘tooth number 11’ and green indicates ‘tooth number 21’. 67.65% ellis class 1 fracture was found in tooth number 11 and 32.35% was tooth number 21.

Teeth are unable to heal on their own. The goal of providing treatment is to keep the tooth and its pulp healthy. Consult your dentist to determine the best course of action for you(17). The treatment will be determined by the extent of the tooth damage. Among the possibilities are: A crown is like a cap which covers the tooth. To begin, a temporary crown will be placed to ensure that the problem is corrected(17,18). A permanent crown will be fitted at some point. If you have a small chip in the surface of your tooth, a dental veneer is a thin covering that is placed over it.

If the pulp is severely damaged, a root canal may be required(19). A root canal removes the damaged pulp and replaces it with a new filler. We can also reduce the chances of teeth getting fractured by following the various precautions given here like, Chewing on hard objects like ice, hard candy, popcorn kernels, or pens is not a good idea which can be avoided(20). Keep an eye out for temperature differences between foods and beverages when your children have it. When participating in sports or recreational activities, wear a mouthguard to your kid. Don't encourage your kid to cut things with your teeth or open plastic bags with your teeth. Do not let your child clench or grind their teeth(21). If your child has a habit of grinding your teeth during night time, inform your dentist, so that he/she can give you a remedy for that. Previously done studies say that children's in between the age group of 9-12 years are likely to fracture their teeth which was around 70% because of the following reasons like falls and collisions, due to emotionally stressful situations, presence of illness, inappropriate usage of teeth, oral piercing, at times iatrogenic injuries, road traffic accidents, risks in getting exposed to various sports and few intentional dental injury trauma's are more common in this age group which is in turn the reason for Ellis class 1 fracture(22). In our study it is the children in the age group of 13-14 years i.e around 47.06%, affected by this ellis class 1 fracture.

CONCLUSION:

After considering the limitations of our study, An attempt was made to collect data in a prospective manner and to include a wide range of ages in the population. Dental trauma in children is most commonly faced in young children who are still learning to walk and in adolescents who participate in sports. Orofacial injuries can cause pain, tooth loss, dysfunction, and a reduction in a patient's quality of life. From the study we can understand that ellis class 1

fracture was predominantly seen in the tooth number 11 which was around 67.65% and females faced more ellis class 1 fracture when compared to males which was 55.88% and 44.12% respectively. As we saw our results above when associated with age it was 23.53% involvement of 11 and 21 in the age group of 13-14 years. Another association graph of gender with tooth number doesn't show much difference I.e males had 32.35% of tooth number 11 involvement whereas females had 35.29%, so there was not much significant difference. Chi square test also showed a p value of >0.05 , which was statistically not significant.

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