

## GENDER BASED ANALYSIS OF PATIENTS UNDERGOING COMPOSITE RESTORATIONS FOLLOWING FRACTURED TEETH

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### ABSTRACT

**AIM-** To analyse the gender based analysis of patients undergoing composite restoration following fractured teeth.

**INTRODUCTION-** Uncomplicated to complicated crown fracture is the most common traumatic dental injury to permanent teeth. Most dental injuries involve just one tooth, and the majority of the affected teeth are maxillary central incisors. This study evaluates the gender based analysis of composite restorations done in saveetha dental college for the management of anterior tooth fractures.

**MATERIALS AND METHOD-** The study was conducted in Saveetha Dental College and Hospitals, with patients visiting for a period between June 2019 and August 2021. The data was collected by reviewing the case sheets of patients who had undergone direct composite restoration for the management of fractured teeth. The obtained data was entered in Ms Excel spreadsheet and the tabulated data was subjected to statistical software IBM SPSS version 20.0. Descriptive inferential statistics were done.

**RESULT-** The study showed that 894 patients reported to the out patient ward of saveetha dental college with class 1 and class 2 Ellis fracture. Out of these patients 590 patients were males and 304 patients were females which is found to be statistically significant ( $p < 0.05$ ). Mesial surface of the teeth are more likely to fracture compared to the distal surface because of the position of the teeth in the arch. Predominantly Ellis class 2 fractures are more compared to Ellis class 1 amongst both the genders ( $p < 0.05$ ).

**CONCLUSION-** This study shows that male patients had more anterior fractures compared to females. Younger individuals had more fractures compared to older age groups. As aesthetics is of main concern, the patient is keen on restoring the teeth without any time delay.

**KEYWORDS** -Aesthetics, Composite restorations, Ellis classification, Fractured teeth.

### INTRODUCTION

Uncomplicated and complicated crown fracture is the most common traumatic dental injury to permanent teeth. (1) Most dental injuries involve just one tooth, and the majority of the affected

teeth are maxillary central incisors, and mostly the upper anterior teeth region.(2) Several factors influence the management of coronal tooth fractures, including extent of fracture (biological width violation, endodontic involvement, alveolar bone fracture), pattern of fracture and restorability of fractured tooth (associated root fracture), secondary trauma injuries (soft tissue status), presence/absence of fractured tooth fragment and its condition for use (fit between fragment and the remaining tooth structure), occlusion, aesthetics, finances and prognosis.(3)

Management of patients with anterior tooth fracture provides great challenge to the clinicians both from a functional and an esthetic perspective.(4) In general people wish to have white pearly teeth. The general appearance is an important feature for determining the attractiveness of the face and plays a key role in human social interactions. Treatment objectives may vary depending on the age.(5) Various techniques were considered to restore the tooth with composite restoration which includes direct technique; free hand composite restorations; indirect technique; usage of preformed crowns/ thermoplastic moulds as templates.socio-economic status of the patient and intraoral status at the time of treatment planning.(6) Reattachment of the original tooth fragment also gives an emotionally and socially positive response due to the protection of the natural tooth structure. The patient and parents are at least satisfied with the original fragment being used in the restoration of their fractured tooth. This led to the evolution of composite resins for the restorative purposes of anterior teeth.(5) Restoration of the fractured tooth with composite resin with the help of the acid etch technique is considered to be a highly aesthetic treatment for restoring fractured anterior teeth.(7) Although composite resins do not have hydroxyapatite crystals, dentin tubules or enamel rods, these newer formulations possess secondary optical properties such as translucency, opacity, opalescence, iridescence, fluorescence and surface gloss. There is, however, no synthetic restorative material that can replicate the aesthetic characterization or color stability of the natural tooth structure.(8)

Thus, this study evaluates the gender based analysis of composite restorations done in saveetha dental college for the management of anterior tooth fractures.Our team has extensive knowledge and research experience that has translate into high quality publications(9–18) (19–22) (23–27) (28)

## **MATERIALS AND METHOD**

The study was conducted in Saveetha Dental College and Hospitals, with patients visiting for a period between June 2019 and August 2021.. The data was collected by reviewing the case sheets of patients who had undergone direct composite restoration for the management of fractured teeth. The study setting was approved by the Institutional ethics committee SDC/SIHEC/2020/DIASDATA/0619-0320. Two examiners were involved in the study.Total of patients case sheets reviewed , Patient gender, composite restorations done for the management of ellis fractures was collected. Telephonic and photographic cross verification of data was done by two examiners. If there was no response from the patient, the particular data was excluded. The dependent variables and independent variables were set. The obtained data was entered in Ms

Excel spreadsheet and the tabulated data was subjected to statistical software IBM SPSS version 20.0. Descriptive inferential statistics were done. Chisquare test applied and the p value was set at  $p < 0.05$ .

## RESULTS

The study showed that 894 patients reported to the out patient ward of saveetha dental college with class 1 and class 2 ellis fracture. Out of these patients 590 patients were males and 304 patients were females.

Association of gender with patients undergoing composite restoration following fractured teeth showed that 174 Males and 113 females had class I Ellis fracture, 416 Males and 191 females had class II Ellis fracture. Chi square showed ( $p = 0.20$ )  $p < 0.05$ , male patients had more Ellis class 1 and Class 2 fracture compared to female patients (Figure 1).

Association of fracture sites with patients undergoing composite restoration following fractured teeth showed that 210 were mesially fractured and 77 were distal in class I ellis fractures. 437 were mesially fractured and 170 were distal in ellis class II fracture. ( $P = .713$ ) The study was not statistically significant. more number of Ellis class 1 and class 2 fractures occurred in Mesial surface of the tooth. But class 2 ellis mesial fractures was the most commonly occurred fracture (Figure 2).

Association of fractured tooth number with patients undergoing composite restoration following fractured teeth showed that 210 were mesially fractured and 77 were distal class I ellis fractures. 437 were mesially fractured and 170 were distal ellis class II fracture. Chi square showed ( $P = .879$ )  $p > 0.05$ , the study was not statistically significant, as more fracture reported only in maxillary central incisors compared to other teeth (Figure 3).

Association of age with patients undergoing composite restoration following fractured teeth showed that 92 patients below 20 years, 154 patients from 20-40 years and 41 patients above 40 years of age showed ellis class I fracture. 249 patients below 20 years, 272 patients between 20-40 years and 86 patients above 40 years showed ellis class II fractures. ( $p = 0.020 < 0.05$ ) The study was statistically significant. Ellis class 2 fractures was most prevalent in patients between 20-40 years of age (Figure 4).

## DISCUSSION

It has been reported that some of the systems for classification are non-applicable in epidemiological studies, due to some particular characteristics, i.e. radiographic examination as a part of the clinical examination; diagnosis of root fractures, pulp vitality and sinus tracts. Moreover, some of them include many broad terms, detailed terms, or very controversial ones. In addition, it has been concluded that Ellis' classification system is the most suitable for epidemiological studies. There are numerous factors associated with dental aesthetics such as

colour, shape of the tooth, etc. In this study a total of 894 patients were recorded. Out of this 590 patients were males and 304 patients were females.

This study shows that males are more prone to traumatic injuries when compared to females. Nik hussein, et al showed that Boys experienced more injuries 21.9% than girls 20%. They reported that falls (63.8%) and collisions (24.5%) were the main causes of dental trauma.(29) The study by gaur,et al stated that males were more prone to ellis fractures when compared with females correlating with the present study. The study also showed that young males are more prone to traumatic injuries when compared to females.(30) The prevalence of dental traumatic injury however was more frequent in males than in females. dentoalveolar trauma prevalence showed that enamel fractures were the most frequent trauma type (67.0%), followed by enamel-dentine fractures (19.3%) Restoration with composite resin with the help of the acid etch technique is considered to be a highly aesthetic treatment for restoring fractured anterior teeth.(31) Treatment objectives may vary depending on the age, socio-economic status of the patient and intraoral status at the time of treatment planning.(32) Various techniques were considered to restore the tooth with composite restoration which includes direct technique; free hand composite restorations; indirect technique; usage of preformed crowns/ thermoplastic moulds as templates.(33)

The future scope of this study includes, to understand the perception of tooth colour is a complex phenomenon that is influenced by many factors which include light conditions and the optical properties of teeth. Achieving that in a restoration is a challenging aspect as a patient's preference towards a lighter shade should be addressed during the treatment planning to match the patients expectation for aesthetics and the patients satisfaction.

## CONCLUSION

This study shows that male patients had more anterior fractures compared to females. Younger individuals had more fractures compared to older age groups. As aesthetics is of main concern, the patient is keen on restoring the teeth without any time delay.

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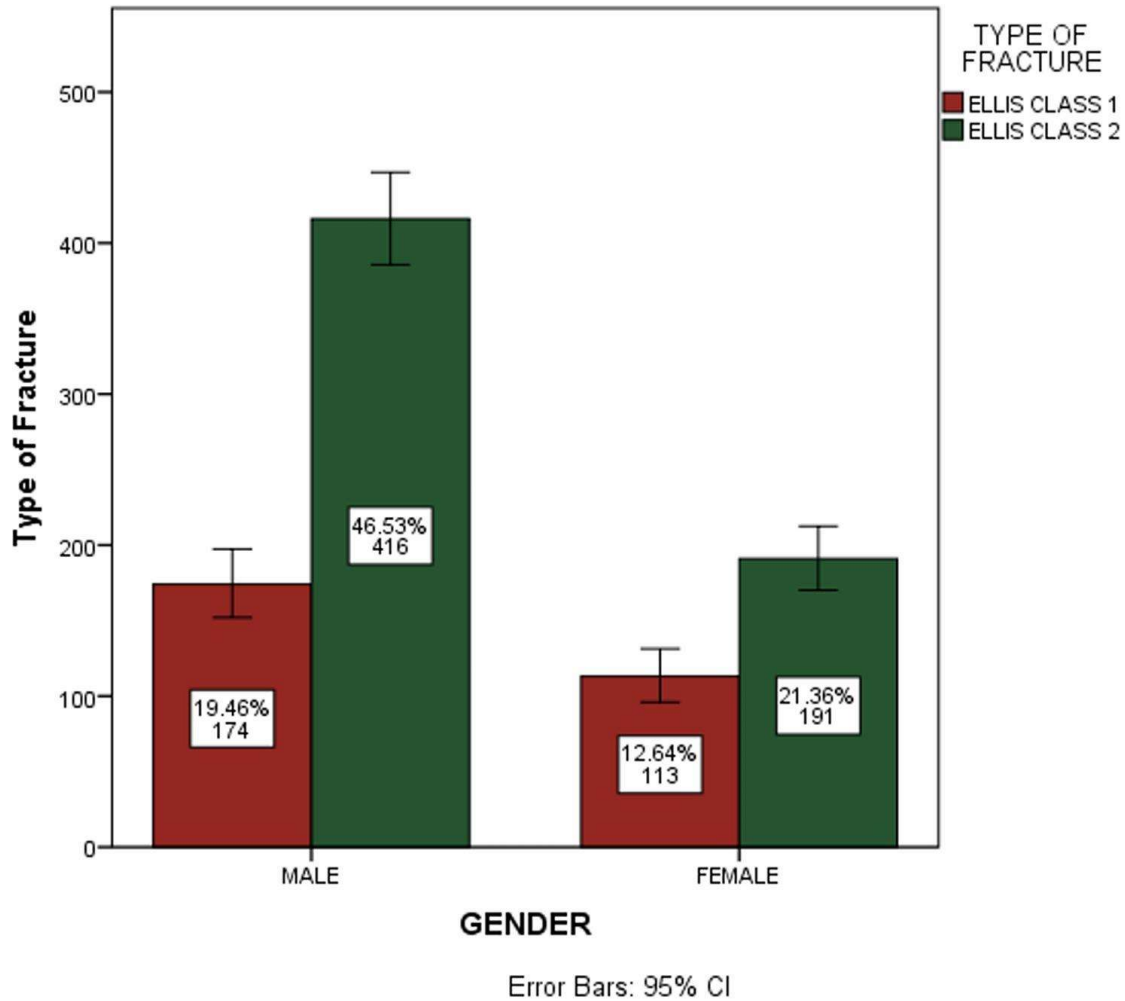


Figure 1 - This graph shows the association of gender with patients undergoing composite restoration following fractured teeth. X axis shows the gender distribution and Y axis shows the frequency of the type of fracture. Red colour showed class I ellis fractures and green colour shows class II ellis fractures. Over all 590 fractures in male patients and 304 fractures in female patients reported. In which 174 Males and 113 females had class I Ellis fracture, 416 Males and 191 females had class II Ellis fracture. Chi square showed ( $p=0.20$ )  $p<0.05$ , male patients had more Ellis class 1 and Class 2 fracture compared to female patients.



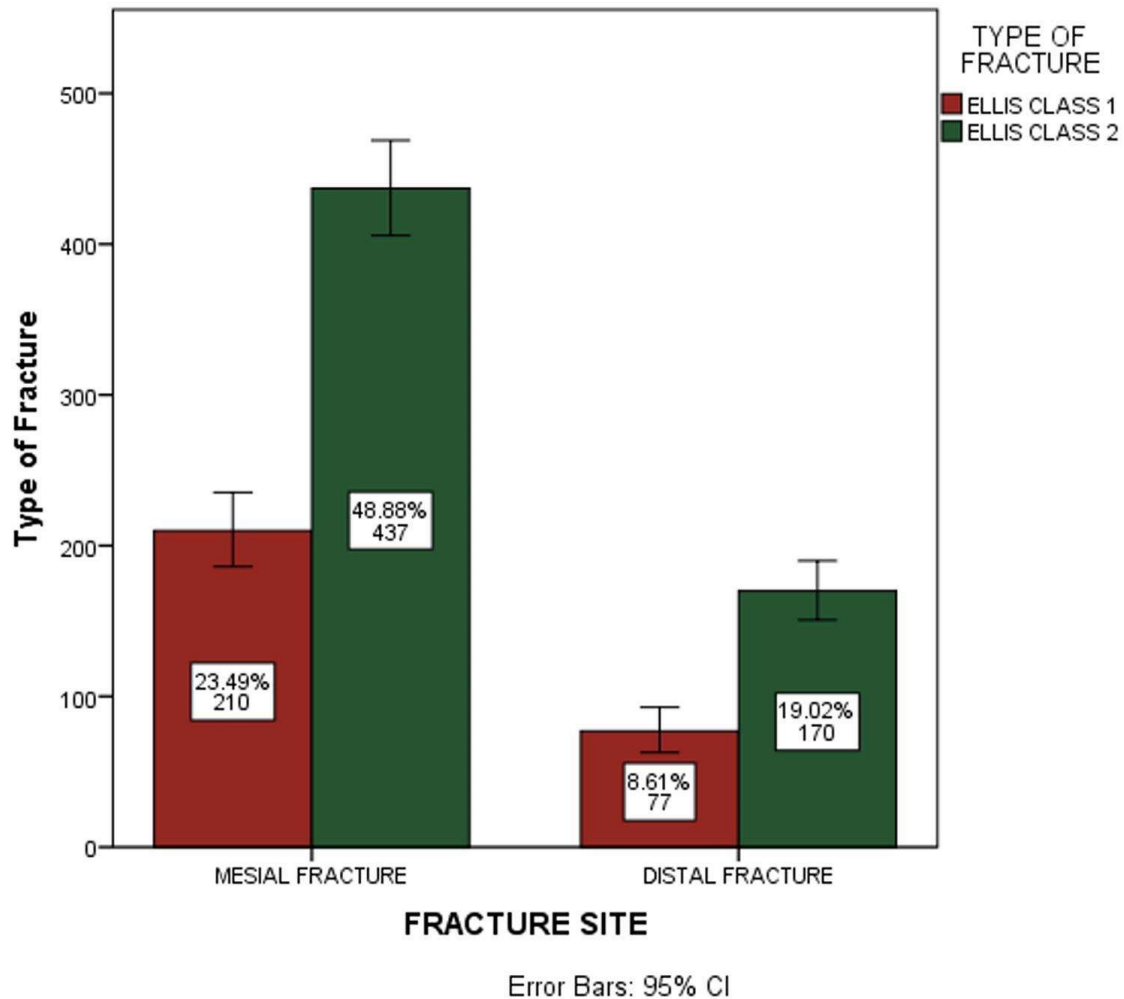


Figure 2- This graph shows the association of fracture sites with patients undergoing composite restoration following fractured teeth. X axis shows the distribution of the site of fracture and Y axis shows the frequency of the type of fracture. Red colour showed class I ellis fractures and green colour shows class II ellis fractures. 210 were mesially fractured and 77 were distal in class I ellis fractures. 437 were mesially fractured and 170 were distal in ellis class II fracture. (P = .713) The study was not statistically significant.more number of Ellis class 1 and class 2 fractures occurred in Mesial surface of the tooth.

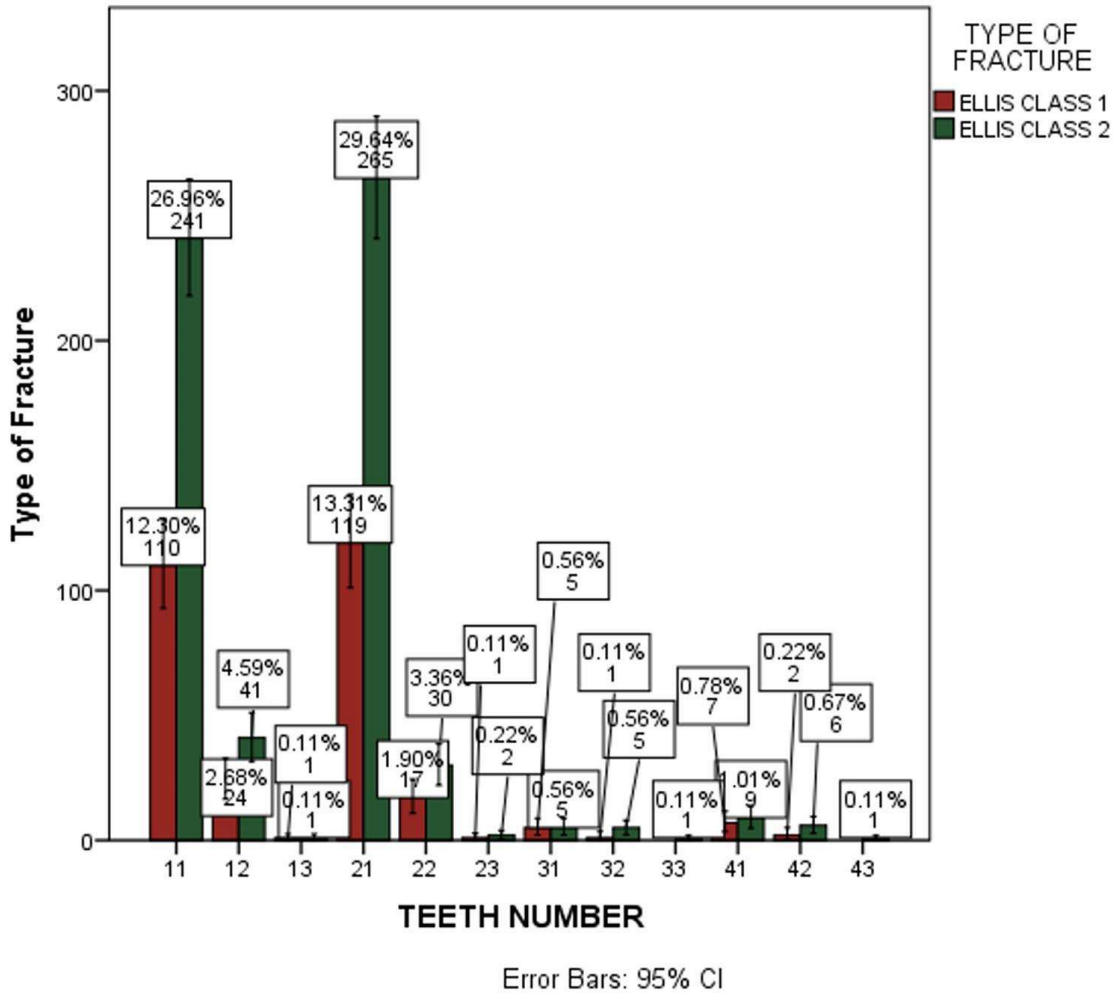
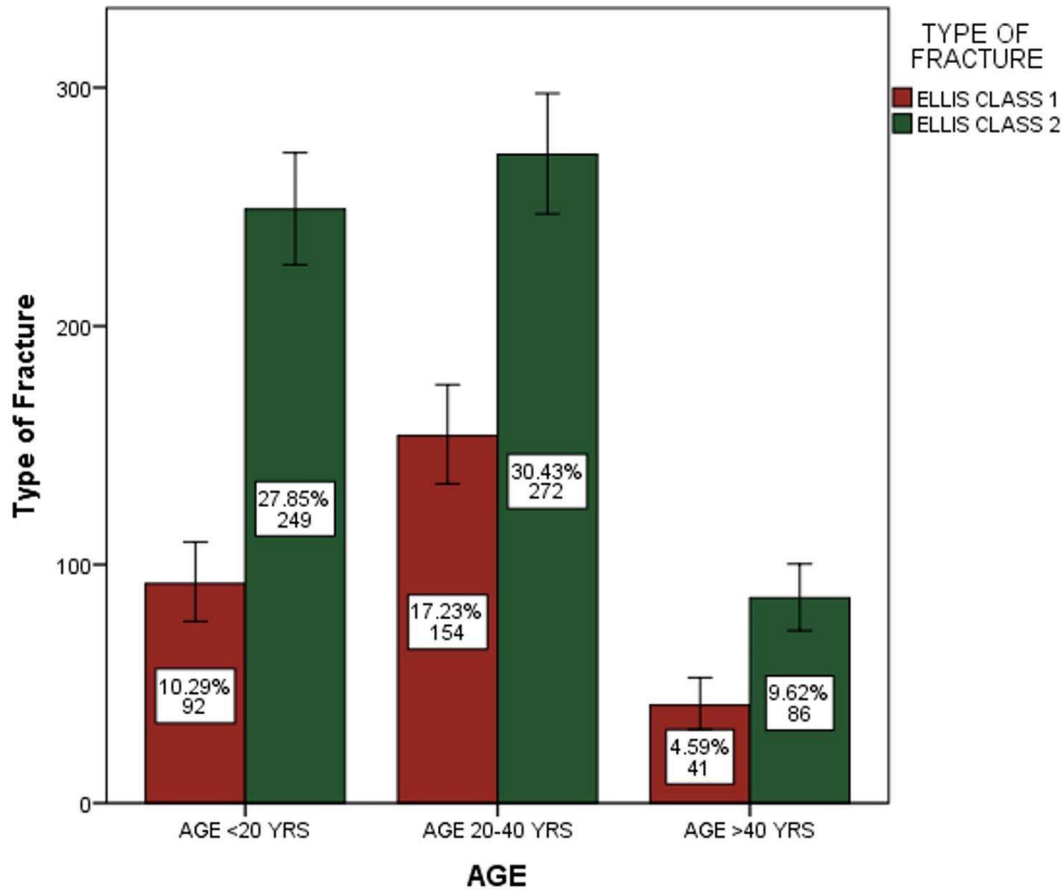


Figure 3- This graph shows the association of fractured tooth number with patients undergoing composite restoration following fractured teeth. X axis shows the distribution of the tooth number and the Y axis shows the frequency of the type of fracture. Red colour showed class I ellis fractures and green colour shows class II ellis fractures. 210 were mesially fractured and 77 were distal class I ellis fractures. 437 were mesially fractured and 170 were distal ellis class II fracture. Chi square showed (P =.879 )  $p > 0.05$ , the study was not statistically significant, as more fracture reported only in maxillary central incisors compared to other teeth.



Error Bars: 95% CI

Figure 4- This graph shows the association of age with patients undergoing composite restoration following fractured teeth. X axis shows the distribution of the age and Y axis shows the frequency of the type of fracture. Red colour showed class I ellis fractures and green colour shows class II ellis fractures. This graph shows that 92 patient below 20 years, 154 patients from 20-40 years and 41 patients above 40 years of age showed ellis class I fracture. 249 patients below 20 years, 272 patients between 20-40 years and 86 patients above 40 years showed ellis class II fractures.( $p=0.020 < 0.05$ ) The study was statistically significant.