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ASSESSMENT OF MOST COMMONLY EXTRACTED TEETH DUE TO PERIODONTAL DISEASE

HEMASHREE J[1], RAJASEKAR A[2] AND CHAUDHARY M[3]

1: Saveetha Dental College & Hospitals, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai 77

2: Senior Lecturer, Department of Periodontics, Saveetha Dental College & Hospitals, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai 77

3: Senior Lecturer, Department of Oral Medicine and Radiology, Saveetha Dental College & Hospitals, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai 77

***Corresponding Author: E Mail: Dr. Arvina Rajasekar: arvinar.sdc@saveetha.com**

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ABSTRACT

The aim of the present study was to assess the teeth most commonly extracted due to periodontal disease. A retrospective study was conducted using the case records of patients in a private institution between June 2019 to March 2020. A total of 250 patients including 117 males and 133 females, diagnosed with periodontitis were recruited. The patients were categorized based on their age as: 35-40 years, 41-45 years, 46-50 years, 51-55 years, 56-60 years and 61-65 years. Data regarding the periodontal status and tooth extracted were collected from their records. Descriptive and inferential statistics were done using SPSS software. Out of 250 patients, mandibular posteriors were extracted for 116 patients (46.4%), mandibular anteriors for 54 patients (21.6%), maxillary posteriors for 52 patients (20.8%) and maxillary anteriors for 28 patients were extracted (11.2%). The association between age groups and teeth extracted due to periodontitis was assessed and was found to be statistically significant (p=0.002). Also, the association between gender and teeth extracted due to periodontitis was assessed and was found to be not statistically significant (p=0.32). The findings of the present study showed that teeth most commonly extracted due to periodontal disease were mandibular posteriors (46.4%).

Keywords: Age; Extraction; Gender; Periodontitis

INTRODUCTION

Periodontitis is an inflammatory disease caused by the bacteria of the dental plaque, resulting in the prgressive destruction of the tissues that support the teeth i.e. the gingiva periodontal ligament, cementum and alveolar bone **[1, 2]** It is usually characterised by periods of exacerbation and periods of remission and presents a local microbial burden that initiates a local inflammatory response and tissue destruction **[3]**.

There are certain clinical features starting from plaque accumulation, calculus formation, gingival inflammation, bleeding followed by suppuration causing pocket formation and surrounding alveolar bone loss. If the disease is intervened at an earlier stage, restoration to health. However, more than 60% of bone loss can lead to mobility and the teeth are indicated for extraction **[4, 5]**.

Extraction of tooth, regardless of the progress of modern dentistry causes serious implications and dysfunction of the masticatory apparatus. It is considered to be a complex problem for both the dentist as well as the patient. Generally, the number of teeth extracted might serve as an indicator of the socio-economic status and the oral hygiene level among patients. Reduced number of teeth usually results in poor dietary habits and deterioration of quality of life. Therefore, it is important to investigate the reasons for permanent tooth extraction and it is one of the most common variables considered in much research **[6]** The study of missing teeth in periodontal patients can be useful in determining whether their level of oral hygiene or oral care is adequate **[7]**. There can be numerous reasons for tooth loss. It includes caries, periodontal diseases, orthodontic purpose, impactions etc. Passarelli *et al* **[8]** reported that periodontitis is the second most common cause of tooth extraction next to various diseases. According to the site of extraction, there can be variations. It can be either more prevalent in the maxilla or the mandible or it can be either in the anterior or posterior region.

Previously our team had conducted numerous clinical studies **[9–18]** and systematic review **[19–23]** over the past 5 years. Now we are focussing on retrospective study. The aim of this study was to investigate the most common teeth extracted due to periodontitis.

MATERIALS AND METHODS

A retrospective study was conducted to assess the most common teeth which were extracted due to periodontal disease. The study was done using the case records of patients in a private institution between June

2019 to March 2020. Prior permission to utilize the data for study and analysis was obtained from the Institutional Research Committee and ethical approval number of the study is:
SDC/SIHEC/2020/DIASDATA/0619-0320.
A total of 250 patients diagnosed with periodontitis were recruited for the study. Patients with systemic diseases, patients under long term medications were excluded from the study. Data regarding the periodontal status and tooth extracted were collected from their case records. Descriptive (frequency distribution and percentage) and inferential statistics (chi-square test) were done using SPSS software.

RESULTS

A total of 250 patients were included in the present study. The most common teeth extracted due to periodontal disease were the mandibular posteriors. Out of 250 patients, mandibular posteriors were extracted for 116 patients (46.4%), mandibular anteriors for 54 patients (21.6%), maxillary posteriors for 52 patients (20.8%) and maxillary anteriors for 28 patients were extracted (11.2%). It is seen that maxillary anterior teeth were the least common to be extracted due to periodontitis **[Figure 1]**.

The study population of the present study was divided based on their age as follows: 35-40 years, 41-45 years, 46-50 years, 51-55 years, 56-60 years and 61-65 years. Among 35-40 years, mandibular anteriors (7.6%) were the most common teeth extracted due to periodontitis followed by mandibular posteriors (5.6%), maxillary posteriors (2.4%) and maxillary anteriors (1.2%). Among 41-45 years, mandibular posteriors (17.2%) were the most common teeth extracted due to periodontitis followed by maxillary posteriors (4.8%), maxillary anteriors (1.2%) and mandibular anteriors (1.2%). Among 46-50 years, mandibular posteriors (7.6%) were the most commonly extracted teeth followed by mandibular anteriors (4.8%) and maxillary posteriors (4.8%).Among 51-55 years, mandibular posteriors (7.6%) were the most common teeth extracted due to periodontitis followed by mandibular anteriors (4.4%), maxillary posteriors (3.2%) and maxillary anteriors (2.8%). Maxillary posteriors (2.8%) were the most commonly extracted teeth followed by mandibular posteriors (2.4%), mandibular anteriors (2.4%) and maxillary anteriors (1.6%) among the age group 56-60 years of age. Among 61-65 years, mandibular posteriors (7.6%) were the most commonly extracted teeth followed by maxillary anteriors (4.4%), maxillary posteriors (2.8%) and mandibular anteriors (1.2%)

The study population consisted of 117 males and 133 females. Among the males, mandibular posteriors (21.2%) were the most common teeth extracted due to periodontitis followed by mandibular anteriors (12.0%), maxillary posteriors (10.0%) and maxillary anteriors (3.6%). Among the females included in the study, mandibular posteriors (25.2%) were the most common teeth extracted due to periodontitis followed by maxillary posteriors(10.8%), mandibular anteriors (9.6%) and maxillary anteriors (7.6%).

The association between gender and teeth extracted due to periodontitis was assessed by chi square test and was found to be statistically not significant with the p value of 0.32 **[Figure 2]**. Also, the association between different age groups and teeth extracted due to periodontitis was assessed and was found to be statistically significant with the p value of 0.002 **[Figure 3]**.

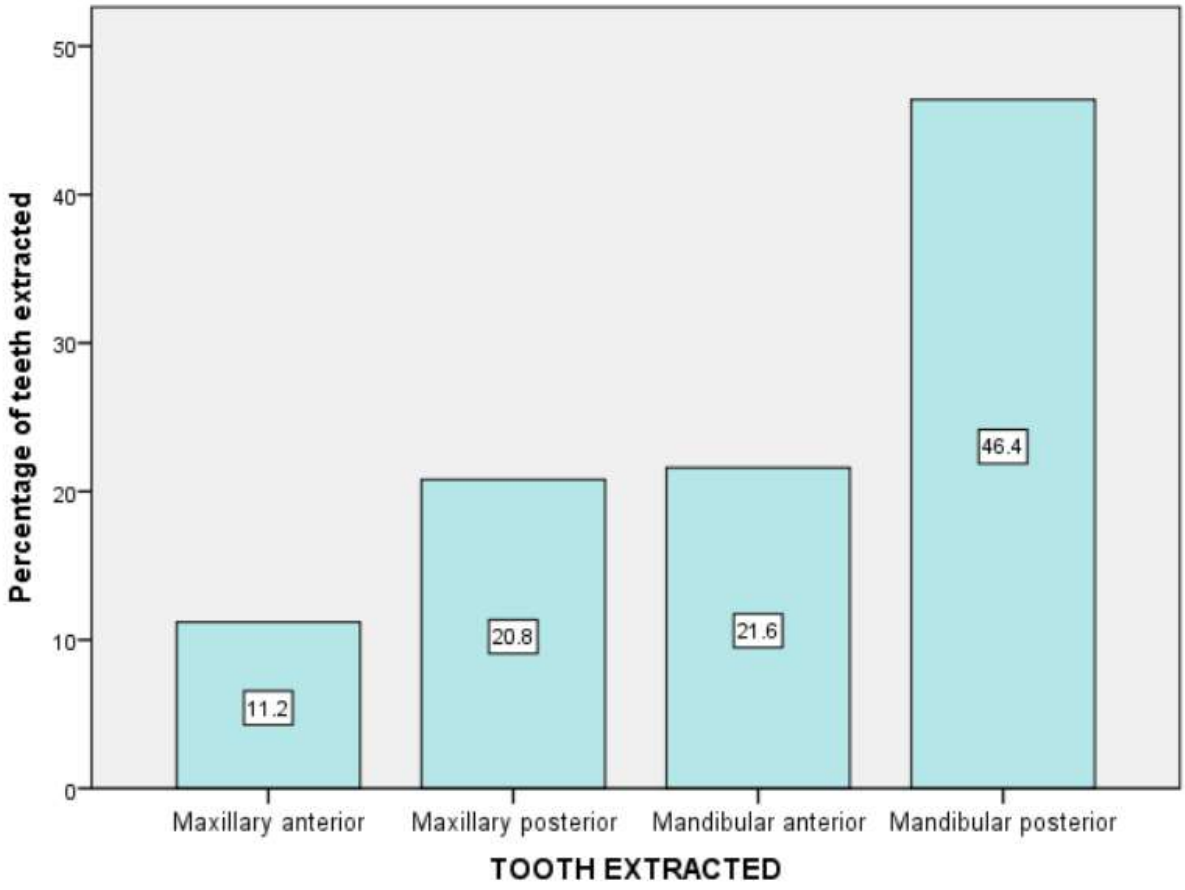

Figure 1: Bar graph depicting the percentage distribution of tooth extracted due to periodontitis. X-axis denotes the tooth extracted and Y- axis denotes the percentage of extracted teeth. It was seen that mandibular posteriors (46.4%) were the most common teeth extracted due to periodontitis followed by mandibular anteriors (21.6%), maxillary posteriors (20.8%) and maxillary anteriors (11.2%).

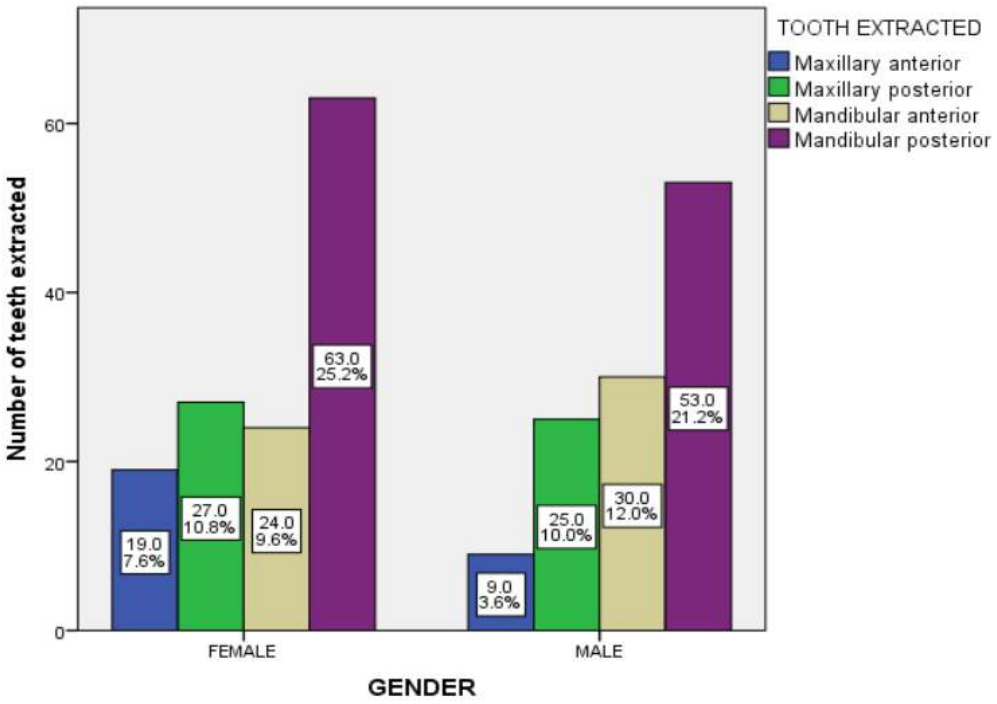

Figure 2: Bar graph depicts the association between gender and tooth extracted due to periodontitis. X- axis represents the gender and Y- axis represents the number of teeth extracted. Mandibular posteriors(purple colour) were the most common teeth extracted and maxillary anteriors (blue colour) were the least common teeth extracted due to periodontitis in both males and females. However, it was not statistically significant (Chi square analysis value: 4.170 , p value=0.32)

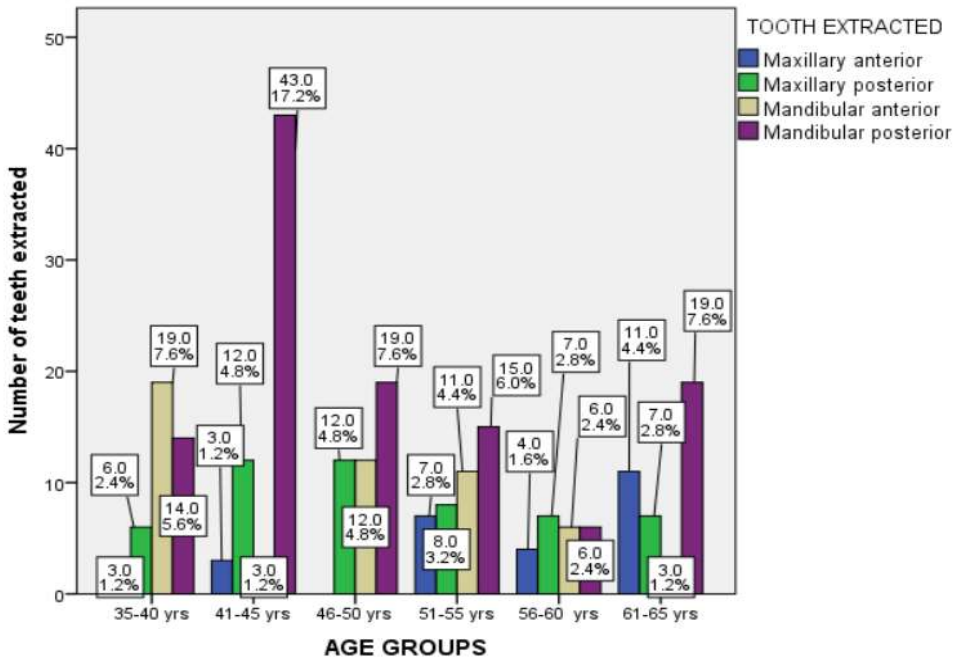

Figure 3: Bar graph depicts the association between age group and tooth extracted due to periodontitis. X- axis represents different age groups and Y- axis represents the number of teeth extracted. Mandibular posteriors (purple colour) were the most common teeth extracted among the age group of 41-45 years. The association between different age groups and tooth extracted due to periodontitis was statistically significant (Chi square analysis value-8.387, p value=0.002)

DISCUSSION

This present retrospective study was done to evaluate the teeth most commonly extracted due to periodontitis. It was seen the 46.4% of mandibular posterior teeth were extracted due to periodontitis in this study. A study done by Ali *et al* **[24]** reported in his literature that teeth that were commonly extracted due to periodontitis was the posterior mandible (33.5%). Similar results were reported by Aila, Qutersh, Chestmett **[25–27]** in their studies. This might be because of the involvement of furcation in posterior teeth which favours increased calculus accumulation leading to early tooth loss. However, a study done by Mathews *et al* **[28]** reported that maxillary posterior teeth were the most common teeth extracted due to periodontitis. Our finding is consistent with the previous studies.

Tooth extracted due to periodontitis was higher in females compared to males in the present study. This is contradictory to the study done by Jafarian *et al* **[29]** who reported that males have a higher incidence. This was because the males have habits such as smoking, pan chewing etc. which is an associated risk factor for periodontitis. Also, neglect of oral health might be higher in males. Our finding is contradictory to the previous study. This might be due to the limited sample size taken into consideration for this study.

Upadhyaya and Humagain **[30]** in their study reported that there is an increased incidence of tooth extraction due to periodontitis in the age group of 41- 60 years. This is in agreement to the results of the present study as the majority of the teeth were extracted in the age group of 41 - 45 years. This might be because of the increased prevalence of periodontitis and systemic diseases in this age group which results in early tooth loss.

Least common teeth extracted due to periodontitis is the maxillary anterior teeth. Mcfall *et al* **[31]** in his study reported that maxillary cuspids were least extracted due to periodontitis. However Alesia and Khalil **[32]** in their study reported that maxillary anteriors have been extracted in increased numbers due to caries involvement. Our study is in agreement with the findings of the previous studies.

The limitations of the present study is the minimum sample size and cross- sectional study design. Further, long term studies need to be done to evaluate the periodontal disease initiation and progression and correlate with the associated clinical features. This will be helpful in understanding the consequences of tooth loss which includes alveolar ridge resorption, unaesthetic appearance, difficulty

to speak and masticate, leading to functional and aesthetic deficits to the patient. This present study reported that periodontitis is a common reason for extraction of posterior teeth in permanent dentition. This information will help clinicians in further emphasizing on the need for implementation of measures for preventing periodontitis caries to avoid or at least delay tooth loss.

CONCLUSION

Within the limitations of this study, it was seen that mandibular posterior teeth (46.4%) were most commonly extracted due to periodontitis.

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AUTHORS CONTRIBUTIONS

Hemashree J carried out the retrospective study, participated in the sequence alignment, statistical analysis and drafted the manuscript. Arvina Rajasekar and Manjari Chaudhary conceived the study, participated in its design and coordinated and provided guidance to draft the manuscript. All the authors had equally contributed in developing the manuscript.

CONFLICT OF INTEREST

There were no conflicts of interest as defined by the authors.

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