ANALYSIS OF REASONS FOR EXTRACTIONS OF 1149 TEETH IN A UNIVERSITY CLINIC

**ABSTRACT**

**Background and Aim:** Determine the reasons of tooth extraction and duration of the procedure in patients admitted to Hacettepe University Faculty of Dentistry, and discuss the results regarding age, gender, and education level.

**Subjects and Methods:** Over a four-month period, 1149 teeth extractions from 850 patients were assessed regarding patients’ age, gender and education level, procedural duration, reasons and complications.

**Results:** The top indications for the group under 25 years old were: caries (47.4%), persistent tooth (25.9%), and infection (16.8%). For the group over the age of 25 the top indications of extraction were: periodontal disease (47.2%), caries (26.5%), and infection (17.8%). The extraction took 2.1±0.07 minutes for patients under 25 years old, and 3.6±0.12 minutes for those above that age. The most common complications were apical, mesial and distal root fractures.

**Conclusions:** The top indication was caries for patients under 25 years old and periodontal disease for those above that age. Extraction duration was longer in patients older than 25.

**Key words:** Caries, Periodontal Disease, Root Fractures, Tooth Extraction

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INTRODUCTION

In order to improve oral health, understanding the reasons for tooth extraction is of great importance. There are several studies investigating the reasons for tooth extraction in different countries. These reasons vary with location, culture, gender, age, education, and time. It is a commonly held view that older patients lose more teeth as a result of periodontal disease, and younger patients as a result of caries.

The survey aimed to determine the reasons for teeth extraction indications in patients admitted to the University of Hacettepe over a period of four months. As an addition to the studies in literature, this study also determined and discussed the extraction duration and root fracture distribution according to fracture position.

SUBJECTS AND METHODS

All patients admitted to the University of Hacettepe, Faculty of Dentistry, Department of Oral Surgery, for tooth extraction over a continually period of four months were included in the study. The age, gender, and education level of the patients were recorded. The anesthesia or the postoperative instructions given to the patient was not included in the extraction duration. The aim was to determine the difficulty level of the teeth extractions. The general indications for the procedure were caries that can not be treated, severe periodontal diseases that has to be extracted, infections that can be treated with tooth extraction, persistent teeth, dysfunctions, orthodontic treatment, and malocclusions.

Third molar extraction was also performed in patients with dysfunction and for orthodontic treatment. Fractures arising during teeth extractions were classified based on the region and ratio of root fractures.

Department staff was informed about the study. A questionnaire was prepared and explained to the postgraduate students who were assigned for the extractions.

Questionnaire consisted of four sections:

1. Age and gender of the patient,
2. Main reasons for the extraction,
3. If happens, region and ratio of the root fracture,
4. Duration of extraction.

Statistical Analysis

Descriptive analysis was performed for the patients’ demographic data, teeth extraction indications, duration and fracture complications. The comparison in duration was performed using the Mann Whitney U test with a significance level of p<0.05.

RESULTS

The extractions of 1149 teeth from 850 patients were recorded in this study. Mean age of the patients was 31.1 years, ranging from 2 to 86 years. As there is a statistical significance between the groups over and under 25 years old, we decided to form two groups according to this criteria. A total of 445 (52.3%) subjects were over the age of 25, and 405 (47.6%) were under the age of 25.

The top three reasons for teeth extractions in the group of patients under the age of 25 were caries (47.4%), persistent tooth (25.9%) and infection (16.8%) (Figure 1). This order in the group of patients over the age of 25 was periodontal disease (47.2%), caries (26.5%) and infection (17.8%) (Figure 2).

Teeth extraction duration in the group of patients under the age of 25 was 2.1±0.07 (Median: 2, Interquartile Range (IQR): 2) minutes, and in the group of patients over the age of 25 it was 3.6±0.12 minutes (Median: 3, IQR: 3, Figure 3). This difference was found to be statistically significant (p<0.001).

Education level according to gender is presented in Figure 4. Root fracture ratio to total extracted teeth was 7.3% and most common root fracture complications were apical root fractures (%2.6) (Table 1).

DISCUSSION

In Turkey, similarly to the rest of the world, the distribution of tooth extraction indications varies with time and treatment approach for each diagnosis. In this study, the differences between tooth extraction reasons of the patient groups under and over the age of 25 were presented. Questionnaires were used to collect the data. The patients who referred to our clinic in determined time periods were evaluated. Therefore, it was not possible to have the evaluation of extracted teeth performed by one examiner directly. However, the participating practitioners consisted of postgraduate students attending the oral surgery doctorate program. This minimized the differences among tooth extractions and data evaluation when compared to studies conducted by practitioners in a restricted area.

The number of extracted teeth was found to be around 1000 in most related studies. Identically, from 850 patients in our study, 1149 teeth were extracted and their reasons were evaluated.
The patients were categorized into two groups, under and above the age of 25 years, to represent the younger and older populations. Similar number of patients was included in both groups. Chestnutt et al.\(^6\) evaluated patients in the time periods of 1984 and 1994, and determined that the highest number of tooth extractions was in the ages of 21-30 years. However, they also detected that the total number of patients over the age group of 21-30 years was three times higher than the one under this age group.\(^6\)

The tooth extraction reasons were investigated. Reich and Hiller's\(^7\) study was about tooth extraction reasons in the western states of Germany. Groups were created for...
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each ten years. While the primary extraction factor was caries in the age groups of 15, 25, and 35; periodontal diseases were the primary factor in the age groups of 55, 65, 75 and 85. Additionally, in a study by Morita et al., caries was the main reason in the age group of 15 years and older; however, between the ages of 46-65 years, periodontal diseases were recorded as the main indication for tooth extraction. Ong et al., McCaul et al. and several other authors showed that the tooth extraction due to periodontal diseases increased with age. Accordingly, in our study, periodontal disease indication took the first place in tooth extraction reasons, with a ratio of 46% in the patient group over the age of 25 years. Differently from the mentioned studies, Fure and Zickert, who investigated the tooth extraction reasons of patients in the ages of 60, 70 and 80 years, found that the main reason was dental caries with a ratio of 60%. Another study including patients aging between 14-91 years, by Stephens et al., identified dental caries as the main factor, and found no increase in the number of tooth extractions in older ages due to periodontal diseases.

According to our study, it was noticed that younger age groups and older age groups have a higher risk of tooth loss due to caries and due to periodontal diseases, respectively. Considering these results, we can differentiate the protective medical approaches that will be applied into early and further ages, and inform the patients accordingly.

The accounted procedural period only comprised the starting and finishing points of extraction, not the preparation time. It was longer in the patient group over the age of 25 years. This result was considered to be associated with the older ages’ systemic diseases increase, and bone elasticity decreases, which causes harder extractions and increased root fracture rates.

Another assessment not mentioned very often in the literature is the evaluation of patients undergoing tooth extraction according to gender and education level. In this study, the female/male ratio was approximately equal, and most of the patients had low education level. The latter result can be explained by the facts that lower education individuals prefer tooth extraction rather than further treatments, and are not aware or do not give sufficient relevance to dental health care as much as patients with higher education.

When extraction duration was evaluated by considering the education levels, it was observed that increasing education level increases the duration of extraction. With increasing education level, individuals become more conscious about teeth health, and regard the extraction as a last choice, which might justify the poor dental state of the patients who referred to our clinic. Reason might be that the patients in this group were more comfortable with expressing their fears and discomforts during the procedure.

There are various studies about the root fracture in the literature but none of them is about the root fracture as an extraction complication. Majorana et al.’s study about root fractures in a series of patients with dental trauma and Matsuda et al. study about root fractures after prosthetic treatment are some examples about the root fracture studies. This study is unique as it is about root fractures which were occurred during tooth extraction. After all extracted teeth, total root fracture rate was found to be 7.3%. The most common fracture complication was apical region root fracture with 2.6%, followed by distal region root fracture with 1.1%. The placement of the dental forceps in the mesial in such a way for dentists to be more comfortable, and the effect of the unbalanced force in the distal root could underlie these results.

This study is important for determining the different tooth extraction reasons with respect to the different age groups which will contribute to appropriate planning and direction of the protective health services. Improvement of the preventive care, which is the most economic approach, is depending on these studies. During extraction, it is important to perform a more detailed assessment comprising not only the teeth, but also the patient himself. Analyzing each tooth and its type, as well as recording the patients’ age and their sociodemographic and clinical characteristics, constitute the necessary elements for complete information.

CONCLUSION

Study indicates that, patients under 25 have a higher risk of tooth loss with an indication of caries and patients over 25 has higher risk of periodontal disease. Preventive treatments can be oriented by this way.

REFERENCES


