REASONS AND PATTERN OF FIRST MOLAR EXTRACTION – A STUDY

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ABSTRACT

The aim of this cross sectional prospective study was to determine reasons and patterns of permanent 1st molar extraction in patients reporting to oral and maxillofacial surgery department at Armed Forces Institute of Dentistry, Rawalpindi. All patients referred to oral and maxillofacial surgery department for extraction of permanent first molar teeth from 1st of January 2009 till 31st of December 2009 were included in the study irrespective of their age and gender. The primary reason of extraction was recorded along with other relevant information. The pattern of extractions of the permanent first molars was also noted. A total of 470 patients were included in the study. Out of these 291 (61.9%) were males (M: F 1.6:1). Caries was the most common cause with 281 extractions (59.8%) in all age groups in both genders followed by periodontitis, which was responsible for 109 (23.2%) of permanent first molar extractions. Mandibular molars were more frequently extracted (62.7%) as compared to the maxillary molars (37.3%), with the mandibular left molar being the most frequently extracted tooth in the sample population.

Key words: Caries, First molar loss, Periodontal disease

INTRODUCTION

The permanent first molar is the first permanent tooth to erupt into the oral cavity around six years of age hence also called the 6-year molar. The permanent first molar is the largest and strongest of all the teeth. It plays an important role in mastication and guiding eruption of other posterior teeth into proper occlusion.

Numerous studies have investigated causes of extraction of permanent teeth with the conclusion that caries are the most common reason for dental extractions in the first four decades of life and that the periodontal diseases are more frequent than all other reasons for tooth extraction for the age group beyond 40 years. However, no study exists which has exclusively investigated the causes and patterns of extraction of permanent first molars and this study was carried out to explore this domain, as it was our observation that a lot many patients were presenting to the oral surgery department for getting their permanent molars extracted.

The results of this study will hopefully instigate general dentists and specialists to emphasize on the need for improvement in oral hygiene measures especially in mixed and permanent dentitions to avoid...
caries in permanent 1st molars and other permanent teeth, thereby reducing their early extractions and consequent adverse sequelae.

**METHODOLOGY**

A cross sectional study was carried out examining the causes and pattern of extraction of permanent first molars. All the patients who reported to oral and maxillofacial surgery department of AFID for extraction of permanent first molars from 1st of January 2009 to 31st of December 2009 (over a period of one year) were included in the study irrespective of age and gender. The patients who had their first molar extracted earlier and presented for extraction of other teeth were not included in the study because it was difficult to elicit the exact cause of 1st molar extraction on the basis of history only. Informed consent was obtained from all the study participants.

The study questionnaire took into account patient’s age, gender, medical and dental history, socioeconomic status, frequency and methods of oral hygiene maintenance apart from eliciting the causes and pattern of extraction. Data entry and analysis were done using SPSS version 17.

**RESULTS**

Out of total 470 patients 291 (61.9%) were males and 179 (38.1%) were females with a male to female ratio of 1.6:1. The reasons for extraction of permanent first molars and their distribution according to age groups are summarized in Table 1 and show that caries was the most common cause (59.8%) for extraction of permanent first molar in all the age groups in both genders. Periodontal disease was the second most common cause of extraction of first molars resulting in almost 23.2% of molar extractions. Apart from periodontal problems, endodontic failures (4.9%), fractured teeth (4.3%) and association with pathological lesions such as tumor or cysts (3.2%), prosthodontic reasons (1.7%), orthodontic reasons (1.3%) and socioeconomic reasons (1.1%) were the other less frequent causes of first permanent molar loss (Table 1).

In patients younger than 40 years of age caries was the predominant cause of extraction accounting for almost 73.66% of the molars extracted. Endodontic failures, tooth fractures and association with pathologies such as tumors, cysts etc collectively resulted in 12% of first molar extractions (Table 2).

The distribution of different causes of first permanent molar loss according to gender is summarized in Table 2 and shows that relatively greater percentage of male patients (64.2%) had their first molar extracted because of caries as compared to female patients (52.5%). On the contrary, a greater percentage of female patients (26.8 %) lost their first molar because of periodontal disease as compared to male patients (20.9%).

The pattern of first molar extraction in the sample population is elicited in figure 1. The results showed that the mandibular 1st molars were more frequently extracted in the study population with the left side

<table>
<thead>
<tr>
<th>Age</th>
<th>Caries</th>
<th>Periodontal</th>
<th>Tooth fracture</th>
<th>Endodontic failure</th>
<th>Associated with pathology</th>
<th>Orthodontic reason</th>
<th>Malopposed/prosthetic reason</th>
<th>Maloccluded</th>
<th>Other</th>
<th>Socioeconomic reason</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 20 years</td>
<td>35</td>
<td>4</td>
<td>0</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>47</td>
</tr>
<tr>
<td>21-30 years</td>
<td>86</td>
<td>17</td>
<td>4</td>
<td>10</td>
<td>8</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>128</td>
</tr>
<tr>
<td>31-40 years</td>
<td>86</td>
<td>35</td>
<td>4</td>
<td>5</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>134</td>
</tr>
<tr>
<td>41-50 years</td>
<td>50</td>
<td>33</td>
<td>7</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>100</td>
</tr>
<tr>
<td>51-60 years</td>
<td>11</td>
<td>10</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>32</td>
</tr>
<tr>
<td>Over 60 years</td>
<td>13</td>
<td>10</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>29</td>
</tr>
<tr>
<td>Total</td>
<td>281</td>
<td>109</td>
<td>20</td>
<td>23</td>
<td>15</td>
<td>6</td>
<td>8</td>
<td>5</td>
<td>3</td>
<td>3</td>
<td>470</td>
</tr>
</tbody>
</table>
being predominantly affected in both the jaws of the sample population.

Regarding oral hygiene practices it was found that only 17% of the patients brushed their teeth twice daily, 48% of the patients brushed their teeth once daily whereas 21% of the patients did not brush their teeth regularly. Thirty five percent of the patients, all of whom were males gave positive history of smoking. Diabetes was the predominant medical condition affecting the sample population and was reported in 11% of the patients.

DISCUSSION

Permanent first molar is one of the most significant tooth in the oral cavity as it plays an important role in mastication and it also guides the eruption of permanent posterior teeth into occlusion thereby establishing and maintaining harmonious occlusion.10

This study showed that caries (and its sequelae) was the most common cause of first permanent molar extraction accounting for 59.8% of the extractions in the sample population. This association was even stronger in sample population below 40 years of age in which 73.66% of the population lost their permanent first molars as a consequence of non salvageable carious lesions. This percentage is significantly greater than those reported in other studies which have investigated reasons of permanent tooth loss, for instance studies by Chestnut et al and Reich et al have reported figures of 51% and 49.4% respectively.11-13 Very high percentage of permanent first molar loss as a result of caries which were deemed unrestorable by department of restorative dentistry is alarming and shows the

![Fig 1: Pattern of Extraction of Permanent 1st Molars](image_url)
ignorance and lack of oral hygiene care in the sample population which is also supported by the fact that only 17% of the patients were brushing twice daily regularly. The lack of awareness is also evident by the fact that the patients sought treatment at very late stages when little could be done to salvage the carious molars.

Periodontal diseases were the second most common cause of first molar loss accounting for 23.2% of the teeth extracted. This finding is in accordance with the studies done by Chestnut et al and Reich et al which investigated reasons for extraction of permanent teeth and showed that periodontal diseases are the most frequent cause of tooth loss after caries. In patients below 30 years of age a relatively small percentage of patients (12%) lost their first molars due to periodontal reasons. However, the percentage of patients losing permanent first molar as a result of periodontal problem gradually increased with increasing age. This shows that there is increased incidence of periodontitis with age leading to increased loss of molars. This finding is commensurate with findings of Angelillo et al who showed that periodontal disease increases with age, resulting in greater loss of permanent teeth and after 45 years of age becomes the primary reason for tooth extraction, however, in the present study caries remained the principal cause of molar extraction even after 45 years of age. Chestnut et al also showed that with increasing age more and more teeth are extracted as a result of periodontal disease.

A higher percentage of female population had permanent first molar extracted as a result of periodontal problem (26.8%) as compared to the male population (20.9%). Contrary to this Morita et al observed in their study that more females had their teeth extracted due to caries.

CONCLUSION

Caries is the most common cause of permanent 1st molar extraction in all age groups followed by periodontal problems. Mandibular molars are more adversely affected by caries as compared to maxillary molars.

REFERENCES