

REASONS FOR EXTRACTION OF FIRST PERMANENT MOLARS IN AGE SIX TO SEVENTEEN YEARS VISITING PRIVATE DENTAL COLLEGE A CROSS-SECTIONAL STUDY

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ABSTRACT

Objective: To identify the main reasons for extraction of first permanent molars in children age 6-17 years visiting Department of Paedodontics Sardar Begum Dental College and Hospital.

Materials and Methods: This cross-sectional study was carried out in the Department of Paedodontics Sardar Begum Dental College and Hospital Peshawar. Data was collected for one year of patient's age 6-17 years who visited Department of Paedodontics from January - December 2016 for the treatment of permanent first molar. During this time period 128 children were selected, 68 were male patients and 60 were female patients. Those patients with grossly carious teeth, endodontic reason, broken down roots, periapical pathologies, and hypo mineralized enamel were included in this study, while uncooperative patients, handicapped patients and patients with missing first permanent molars were excluded from this study.

Results: Comparing the maxillary and mandibular arch, mostly extractions were done in mandibular arch 83.58% as compared to maxillary arch 16.39% due to reason that they are the first permanent tooth to erupt in the oral cavity and early exposed to oral environment.

In the reasons for extraction for first permanent molars, grossly carious teeth 35.15625%, and endodontic reasons, 32.03125% was the highest as compared to the rest of the inclusion criteria for these teeth.

Conclusion: Permanent first molar extraction with poor long term prognosis is one of the treatment choices of many dental professionals. Early diagnosis of this option usually gives better results if extraction is carried out during the recommended time of 8-10 years of age.

Keywords: First permanent molar FPM, reasons for extraction, grossly carious tooth,

INTRODUCTION

The first permanent molar tooth is considered as the most carious prone tooth in permanent dentition probably because of its early exposure to oral environment ¹Liverpool Dental Hospital and Charles

Clifford Dental Hospital (Sheffield). First permanent molar is derived from primary dental lamina. Hard tissue formation generally is started by birth. Development of crown is completed by third year of life. At the age of 6-7 years first permanent molar erupts and root completion occurs usually at 9-10 years^{2, 3}. Extraction of first permanent molars as treatment of choice might be considered in various clinical situations i-e extensive caries or restorations, endodontic and periodontal problems, orthodontic problems, periapical pathology, hypomineralization or hypoplasia⁴.

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Many children need to visit dental professionals in their early age needing extractions or restorations of these molars. This is one of the reasons of anxiety in children towards dental treatment and is often a reason for non-cooperation for the young child. Besides treatment is expensive and time consuming hence the prevention of dental caries remains a challenge for dental professionals⁵. There are different and conflicting opinions about the extraction of first permanent molar in the literature⁵. The ideal time for the extraction or loss of a FPM is with the initiation of calcification of the bifurcation of the second permanent molars⁶, which usually occurs at a chronological age of eight to ten years.^{4, 5}

There are very few data regarding the reasons and pattern for the extraction of first permanent molar. This study was conducted to evaluate and compare the reasons for extraction of first permanent molar in patients between the ages of 6-17 years visiting the Department of Paedodontics Sardar Begum Dental College

MATERIALS AND METHODS

This cross-sectional study was conducted by patients between ages of 6-17 years who visited Department of Paedodontics at Sardar Begum Dental Hospital from January 2016- December 2016 for treatment. All those patients in which first permanent molars were missing, uncooperative children and handicapped patients were not included in this study while those patients who came to the department for the treatment of first permanent molar which was either grossly carious or had some endodontic problem, periodontal problem, broken down roots, periapical pathologies, hypo mineralized enamel were included in this study during this period. Data was collected for one year during which 800 patients visited the department of Paedodontics for various treatments of permanent first molars. However after applying inclusion/exclusion criteria, 128 patients were selected for the study.

RESULTS

Figure 1 shows the number of patients who were included in this study visiting the department of Paedodontics per month. Among 128 patients who were assessed during the study period, 35.15625% were grossly carious, 32.03125% were due to endodontic reasons, 15.625% were broken down roots, 9.375%

were due to periapical pathologies, and 6.25% were hypo mineralized enamel while 1.5625% was due to other reasons. While no extraction was done in an uncooperative child, Figure 5.

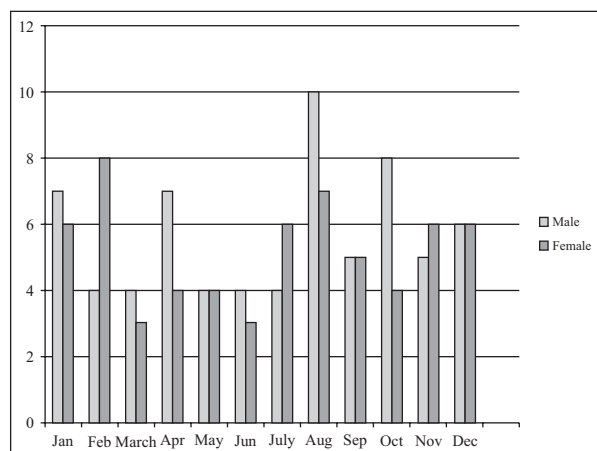


Figure 1 Number of patients per month

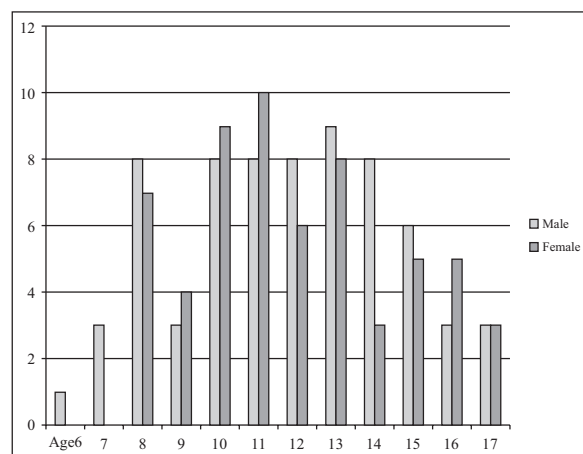


Figure 2 Number of patients and their age

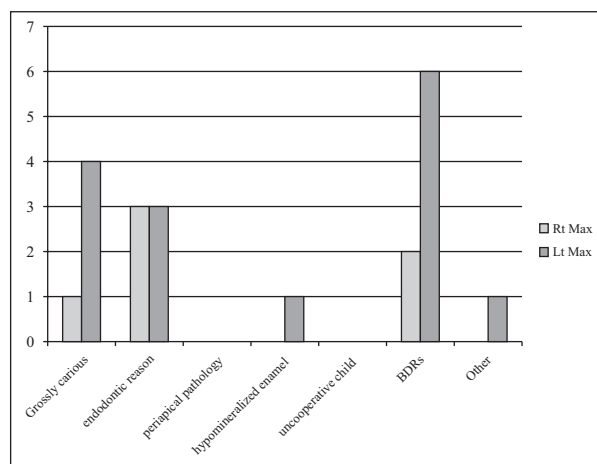


Figure 3 Right and left maxillary first permanent molar and reasons for extraction

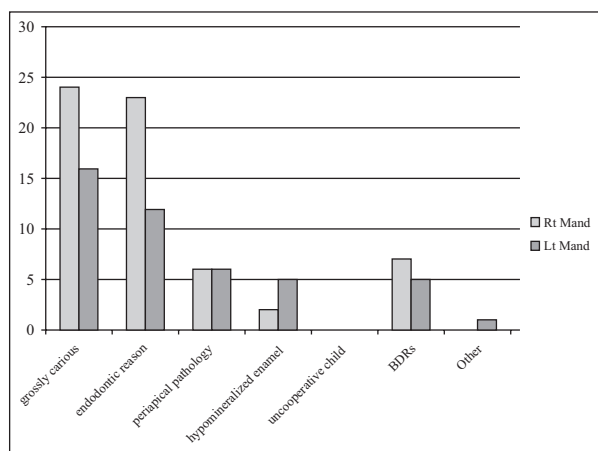


Figure 4 Right and left mandibular first permanent molars and reasons for extraction

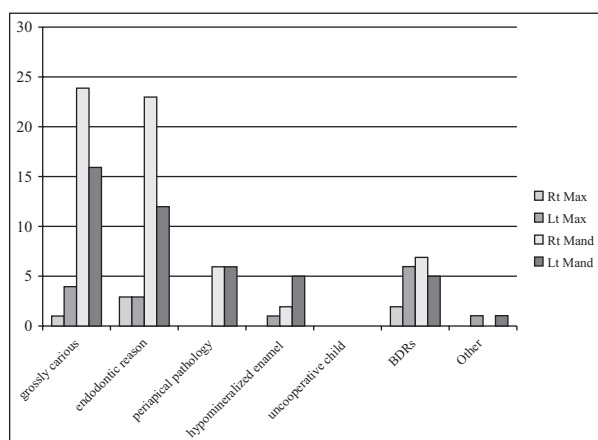


Figure 5 Number of teeth and reasons for extraction

Out of 128 patients, 53.125% were male, while 46.875% female children Figure 2. The age of the patients is also shown in Figure 2. In these patients, 48.4375% were right mandibular teeth, 35.15625% were left mandibular teeth, 11.71875% were left maxillary teeth and 4.687% were right maxillary teeth Figure 3 and Figure 4.

DISCUSSION

First Permanent Molar's extraction is the treatment of choice in teeth with poor long term prognoses like extensive or grossly carious tooth, periodontal or endodontic problems, apical pathologies, and molar incisor hypomineralization⁴.

Different eruption pathways might be the reason that apex of 2nd molar is placed mesially in relation to crown in maxilla. So during space closure after extraction of FPM in maxilla the crown will tilt forward in its more satisfactory position in the arch

with a little mesial rotation, tilting or spacing⁸. But the same initial position that is best for maxilla is unfavorable for mandible as the apex of second maxillary molar is distally placed and the crown will then tip further mesially as the 2nd molar bodily drifts forward⁸.

Third molars and crowding may have positive effect on spontaneous space closure in mandible but the tipping of 2nd premolar and 2nd molar i.e. the neighboring teeth might increase^{7, 9}. FPM'S extractions have favorable and positive effects on the earlier development and better positioning of 3rd molars¹⁰⁻¹³.

Comparing the studies previously done on the same topic resulted differently.

The results from three dental hospitals concluded that 45% and 48% of children had 4 FPM's extracted at Manchester and Sheffield respectively compared to 25% in Liverpool. Following were the main reasons of extraction i.e. caries with poor prognosis (70%) and molar incisor hypomineralization (11%). The main anesthetic used was general anesthesia in majority of cases 70%, 55%, and 47% of cases in Manchester, Liverpool, and Sheffield respectively. 40% of children had done previous extractions, 5% with fissure sealants and 68% didn't receive any previous treatment¹ Liverpool Dental Hospital and Charles Clifford Dental Hospital (Sheffield).

In our study, the main reasons for extraction of first permanent molars were caries with poor prognosis (35.15%) and teeth with exposed pulp due to caries in which root canal treatment could not be performed (32.03%). There were other reasons for extraction of FPM's as well like broken down roots (15.62%), periapical pathology (9.3%), and hypomineralized enamel (6.25%). The frequency of male patients (53.12%) as compared to female patients (46.87%) was more. It was seen during the study that the frequency of extraction among the patients beyond the recommended age (i.e. 8-10 years) was more. We have seen that the extractions were less in maxilla (11.71% on the left side and 4.6% on the right side) than in the mandible (48.43% on the right side and 35.15% on the left side). In our study almost all the FPM extractions after the age of seven years were done under local anesthesia.

Extractions of FPM's show more favorable results when performed between the ages of 8-10 years for both maxilla and mandibles. This option of FPM's extraction should always be performed in close association with the orthodontist to get much better results³Embase and Ovid, covering the period from January 1946 to February 2013. Two reviewers (JE and ME. The majorities of children who require extraction of FPMs because of caries have generally poor oral hygiene and are poor candidates for future orthodontic treatment as well¹⁴.

It is also recommended that extraction of FPM's is the treatment option it should be done before the eruption of 2nd molars in order to get good clinical results and less side effects on the developing occlusion³Embase and Ovid, covering the period from January 1946 to February 2013. Two reviewers (JE and ME.

CONCLUSION

Children should visit the dentist earlier to reduce the chances of caries, and the dentists may have preventive measures, which include fissure sealants, fluoride application, oral hygiene instruction to parents and patients, and dietary control as well as the importance of regular visits to the dentist¹⁵. Prenatal and postnatal counseling of mothers also plays an essential role in reducing caries.

Restrict the intact of sugar-containing food and drinks to mealtime and reduce the frequency of intake of sugar along with thorough cleaning of teeth and gums with fluoride toothpaste improves oral hygiene and reduce dental caries.

All these measures will help in improving oral hygiene and reducing the cost of dental treatment of children, especially if treatments are required under general anesthesia.

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