



First permanent Molars Managemet among Children

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ABSTRACT

Teeth loss is a major oral health problem in a population worldwide. There are many reasons for first permanent teeth extractions such as dental decay, periodontal disease, prosthetic consideration, traumatic injury, orthodontic consideration, failure of endodontic treatment and teeth impaction. The aim of this study is to determine the first permanent molar extraction and endodontic treatment that was conducted for the upper and lower arch of both gender aged between (6- 13) years old. The study was performed using the records of all patients who had visited one of the authors at the Pediatric Dentistry Department of Alma'amoon specialized dental center, the period from 2020 to 2022. The study sample will determine the patient of whom had endodontic treatment or extracted permanent first molars. Age range 6 to 13 years. The data collected from the patients' records were statistically tested using descriptive statistic. About 1732 children aged 6-13 years old, included in this study, all of them attended the health center complaining from first permanent molar. 821 of them were treated by either extraction or root canal treatment. Extraction and root canal treatment in age group (10-13), female and lower jaws is higher than age group (6-9), male and upper jaw, respectively. Most children with serious problems in first permanent molar may be related to neglects periodic dental visit, fear, and anxiety of the child from dental injections or the guardians were not knowing about eruption of permanent molar at all. Elevated chance of first permanent molar teeth pulp involvement.

keyword: Extraction, Endodontic treatment, First permanent molar.

INTRODUCTION

Oral health is an important part of a general health. The oral health is protected by reducing dental plaque, periodontal disease, tooth decay and tooth loss (Ozman, 2019). Dental caries is highly preventive diseases in children. Ttooth morphology, eruption time and tooth positioning inside oral cavity affect plaque control (Alsamadani et al, 2012). Especially in children, the extraction is the effortless way to treat dental pain is of the tooth inspite it should be the last selection in the treatment options. The rate of tooth extraction in developing countries was high which can negatively affect the general health and oral health and cause changes in dietary habits (Ashraf et

al, 2021; Alsaadi, 2018). The first erupted permanent tooth in the oral cavity is permanent first molar (PFM), which usually erupt at age of six years (Ozman, 2019; Răducanul et al, 2009; Marimuthu et al, 2010). It considered the most important permanent tooth because of their various roles in occlusion maintenance and development (Răducanul et al, 2009). Because of its anatomical structure and early eruption, it is considered the most caries susceptible teeth (Ozman, 2019; Alsamadani et al, 2012). The crown destruction, the presence or absence and nature of pulpal damage, the attitude of the patient's guardians; all these should be considered in treatment plan. Treatment ranges from tooth restoration to maintain its vitality to devitalization and root canal treatment (RCT), to extraction (Răducanul et al, 2009) Inappropriate extraction timing of PFM teeth may lead to undesirable rotation and mesial drifting of second permanent molars teeth (SPM). Also, extraction of PFM may affect whole occlusion and jaws development (Ozman, 2019).

Materials and Methods

This study was performed in Baghdad, Iraq, at Alma'amon specialized dental center. This retrospective study of healthy children who were admitted to the Pediatric Dentistry department seeking for a dental care for the period from 2020 to 2022. The patients' age ranges were 6 to 13. Patients with systemic diseases were excluded from the study. patient's age, treatment type (extraction and root canal treatment) of PFM teeth and jaws were recorded.

The data were collected retrospectively by one of the authors. Data was analyzed using Statistical Packages for Social Sciences (SPSS) ver. 17. All data were evaluated as frequency and percentage. Chi-square test was used to compare relative differences in PFM treatment in gender, age and jaws. $P < 0.05$ was accepted as statistically significant in comparisons.

Results and Discussion

About 1732 children aged 6-13 years old, included in this study, all of them attended the health center complaining from first permanent molar. As shown in figure-1, 841 of them are treated by either extraction or root canal treatment. Extraction percentage was (9%) while endodontic treatment (39%).

Table-1 illustrates study sample distribution according to variables. Male percentage was (42.1%) which was slightly lower than female percentage (57.9%). Most of study samples were from age group (10-13) which was (73.2%). Also, most of the affected FPM were in lower jaw (76.3%). Endodontic treatment percentage (81.1%) was higher than extraction treatment (18.9%).

Table-2 showed frequency of tooth extraction and endodontic treatment according to gender, age, and jaws. The percentage of extraction among male (20.9%) was a little bit higher than female (17.5%) but for endodontic its vice versa. For age group (10-13), the percentage of extraction and endodontic were (17.9%) and (82.1%) respectively, while the percentage of extraction in age group (6-9) was a little higher than older group and percentage of endodontic among this group was (87.2%) which was little lower than another group.

There was no significant correlation between tooth extraction and endodontic treatment and gender, age group and jaws according to pearson chi-square correlation test ($p < 0.05$).

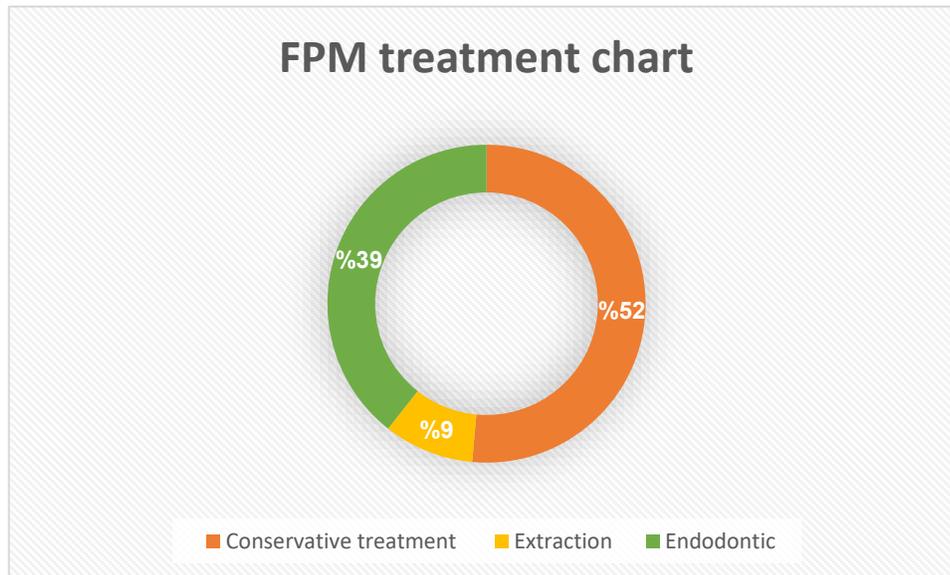
Table-1 Distribution of the study sample

		No.	%	Total (no.)
<i>Gender</i>	Male	354	42.1	841
	Female	487	57.9	
<i>Age (years)</i>	6-9	225	26.8	841
	10-13	616	73.2	
<i>Jaw</i>	Upper	199	23.7	841
	Lower	642	76.3	
<i>Treatment</i>	Extraction	159	18.9	841
	Endodontic	682	81.1	

Table-2 Frequency of tooth extraction and endodontic treatment by gender, age group and jaws.

		Extraction		Endodontic		Pearson Chi square	df	P value
		No.	%	No.	%			
<i>Gender</i>	Male	74	20.9	280	79.1	1.592	1	0.207
	Female	85	17.5	402	82.5			
<i>Age (years)</i>	6-9	49	21.8	176	78.2	1.652	1	0.199
	10-13	110	17.9	506	82.1			
<i>Jaw</i>	Upper	38	19.1	161	80.9	0.006	1	0.938
	Lower	121	18.8	521	81.2			

Figure-1 Treatment distribution in study sample.



Permanent first molar teeth are considered to be the most important permanent teeth because of their numerous roles in the normal development and maintenance of healthy occlusion (Răducanul et al, 2009; Alkhadra, 2017). About 1732 child included in the study, all of them suffering from FPM tooth. As shown in figure 1, 911(48%) of them were pulpally involved (18.9% of them extracted their teeth and 81.1% of them did endodontic treatment). The major reason for restoration and extraction of permanent teeth at early age is dental carriage according to epidemiological surveys in various countries (Alsamadani et al, 2012; Haydar, 2020). Also, guardians' knowledge about FPM presence in the oral cavity (they thought it is primary teeth) and their attitude about regular dental visit for early caries detection, the FPM highly affected with molar incisor hypomineralization, difficulties in local anesthesia delivering and difficulties in treatment because of its location at mandible angle, unpredictable behavior all these factors lead to early destruction of FPM (Eichenberger et al, 2015). In this study we analyzed FPM with endodontic treatment and extraction.

The percentage of female in our study was slightly greater than male percentage. This may be related to earlier tooth eruption in female (Anthropol et al, 2005). Also, may related to female nature about caring here health (Ozman, 2019; Alsaadi, 2018). Long time tooth exposure to plaque in oral cavity made FPM percentage in age group (9-13) extremely high. The percentage of affected FPM was higher in lower jaw than upper jaw. This is related to the plaque retentive nature (stagnated area and complex occlusal fissure system), gravity effect and weak cleansing action of the mandible in FPM area in children which considered the last tooth in the jaw until second permanent molar (SPM) eruption. Also, may related to earlier eruption of FPM in lower jaw (Ozman, 2019; Răducanul et al, 2009). This finding came in agreement with Răducanul et al in 2009 and disagreement with Ozman in 2019 (Ozman, 2019; Răducanul et al, 2009). Also, we noticed that elevated percentage of endodontic treatment over extraction, this indicated that there is awareness about the importance of dental treatment and the effect of dentist attitude. Even though the RCT is at higher rate than extraction, this is not particularly good news. Because

technical difficulties of RCT especially in children and its dependence on operator profession led to its failure and then the teeth get extracted (Udoye et al, 2018). The ideal time for FPM extraction is when SPM at the early bifurcation stage to get complete closure of the space created by the FPM extraction. To achieve spontaneous closure, the PFM should be extracted at 8 to 10 years of age for mandible or extracted at 10-11.5 years of age in maxilla (Răducanul et al, 2009; Patel et al, 2017; Alkhadra, 2017; Çiftçi, 2021).

In present study the percentage of extraction was higher in the age group (6-9) years than older group. The first period after FPM eruption is considered a risk period because it erupted with incomplete mineralization and their maturation is conducted in the oral cavity after its eruption, so caries attack is noticed at this period (Kushkhova et al, 2023). The consequences of FPM loss at this age group are shift the dental midline and overeruption of opposing teeth. Also, it may lead to uprighting effect on the front teeth, expressed by a small overjet and an increased interincisal angle. All the previous consequences depend on the amount of SPM root formation, and jaw (The extraction does not create great problems in the upper jaw) (Alkhadra, 2017). Gaps, tipping, and rotation of the neighboring teeth cannot always be avoided, and subsequent orthodontic treatment will be needed (Eichenberge et al, 2015). Many clinical situations should be considered in PMF extraction which include extensively carious PFMs, hypoplastic PFMs, heavily restored PFMs, healthy premolars, apical pathoses or endodontically treated PFMs, crowding at the distal aspects of the arches, and anterior open bite malocclusion (Ozman, 2019).

This may be due to parents or guardians' neglects to periodic dental visit, fear and anxiety of the child from dental injection and neglecting to their children toothache which lead to extensive tooth destruction, they take extraction as an easy way instead of RCT multiple visits or the guardians were not knowing about eruption of permanent molar at all. Lower pain threshold and tolerance in female than male may explained increased percentage of extraction among males (Legato et al, 2023). This result came in agreement with the findings of Alsaadi in 2018 (Alsaadi, 2018).

The suggestion for other studies was need more dental specialized centers in different Iraqi governorate to be incorporated in the study. Also, there is the need for more demographic patient information and follow up. Also, awareness should be increased about FPM presence and the importance of preservation of good oral hygiene. Increased awareness campaigns about dental preventive measures in social media, schools, visual and audio media.

Conclusions

Elevated chance of FPM to be pulp involvement which indicates neglected oral hygiene by children-guardians. This may lead to inappropriate FPM extraction time which may lead to occlusal discrepancies.

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