THE NEED AND AWARENESS OF AUTOTRANSPLANTATION OF THE THIRD MOLAR IN SAUDI ARABIA.

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ABSTRACT: *Autotransplantation is an option to replace missing permanent first molar in patients. The research was conducted within the department of Maxillofacial Diagnostic Sciences, College of Dentistry, Majmaah University, AlZulfi. The study included 200 patients visiting the college of dentistry, Zulfi, Majmaah university. The DMFT was recorded for the permanent first molars and the panoramic radiographs were examined for the third molar with the help of 2 experts with more than 5 years of experience. 50 dental practitioners with experience over 5 years were randomly approached for completion of a short survey through social media like WhatsApp, Snapchat. The results showed 39% of the study subjects had impacted third molar. The prevalence of impacted lower third molars is high as compared to upper third molars. The prevalence of DMFT is 78.63%. The mean total DMFT was 3.15± 1.28, which includes decayed 1.6± 0.490, missing 0.90±0.42, and filled 0.65± 0.37. The survey shows a lack of exposure to autotransplantation procedures to dental practitioners. The study concluded that the prevalence of both impacted third molar and missing first molar is high. There is a need for more workshops and training programs for autotransplantation for undergraduate students and dental practitioners.*

Keywords: DMFT, first molar, third molar, panoramic radiograph.

INTRODUCTION

Dental decay has been the foremost common oral health problem within the world [1]. In Saudi Arabia, a study[2] was done regarding the prevalence dental decay, and in 1999 the first nationwide survey was conducted to determine dental decay in children of 2-13 years old[3] and in 2010 the second national study was performed correlate dental decay and fluorosis 6-18 years old children[4] and the prevalence of dental decay was reported 72.9% with highest DMFT scores in the posterior segment (90.7%). In previous studies, the prevalence of caries was found to be highest for first permanent molar in all quadrant [5, 6].

The prevalence of missing first permanent molars is high in Saudi Arabia [2,3]. The best prosthesis for a missing tooth is a natural tooth; which can be achieved by auto-transplantation of third molars or protraction of second molar orthodontically [7]. Autotransplantation is the surgical transplantation of a vital or endodontically treated tooth from its initial position in the oral cavity to another location in the same person [8]. Transplantation technique for molars was described initially in 1956, and till today, the surgical technique principles are practically the same [9]. Even though this technique is very old and not practiced very commonly. This research intends to determine the prevalence of cases eligible for autotransplantation of 3rd molars among patients visiting the hospital of the college of dentistry Zulfi. Additionally, also to assess the awareness of autotransplantation among the dental practitioners of Zulfi.

MATERIAL AND METHODS

It is a cross-sectional study with a simple random sampling technique carried out in the department of maxillofacial Diagnostic sciences, College of Dentistry, Majmaah University, AlZulfi. The study included 200 patients 18-25 years visiting to the college of dentistry. Since our study includes examination of impacted third molars, patients under 18 years years not included in the study because the estimated time of eruption of

wisdom tooth is 17-21 years. Other exclusion criteria were history of extraction of wisdom tooth, sndromes (e.g. Down's syndrome, cledocranial syndrome), craniofacial anomalies.

The DMFT was recorded for the permanent first molars and the panoramic radiographs were examined for the third molar with the help of 2 experts with more than 5 years of experience.

WINTER`s classification used to determine the angulation of the impacted third molar. It was measure as the angle formed between the long axes of the second and third molar. Queket et. al. guidelines were used to classify impacted tooth as horizontal (80° to 100°), vertical (10° to -10°), mesioangular (11° to 79°), and distoangular impaction (-11° to -79°) [10].

50 dental practitioners with experience over 5 years were randomly approached for completion of a short survey through social media like WhatsApp, Snapchat. The survey consists of five questions (Table 1). The results of the study were presented in form of descriptive statistics (Table 1).

No	Question	Responses	
		Yes	No
1	Are you aware of transplantation?	168 (84%)	32 (16%)
2	Have you studied in your bachelor degree transplantation?	124 (62%)	76 (38%)
3	Have you seen or assisted this procedure?	28 (14)	172 86%)
4	Have you done of it?	16 (8%)	184 (92%)
5	Do you think you need training or workshop to learn this procedure?	156 (78%)	44 (22%)

Table 1: Questionnaire for survey and responses.

RESULTS

The overall prevalence of impacted wisdom teeth in our study population was found to be 39 % (78 out of 200). The prevalence of impacted maxillary third molar is 22.8% (45) and the mandibular third molar is 77.12% (152). The ratio of impacted lower to upper third molar is 3.38. Among the impacted maxillary third molars, 51.11% were vertical which constitutes the majority followed by distoangular 28.89 %, mesioangular 17.78%, and are horizontal 2.22%. 47.37% of the impacted lower third molars had mesioangular impaction followed by vertical 35.53%, horizontal 15.78%, and distoangular 1.32% (Table 2).

The prevalence of dental decay was reported to be 78.63%. The mean total DMFT was 3.15 ± 1.28, which includes decayed 1.6 ± 0.490, missing 0.90 ± 0.42 and filled teeth 0.65 ± 0.37 (Table 3).

The results of the survey showed that 84% of practitioners are aware of transplantation. 62% studied about transplantation during the bachelor program but only 14% of them had assisted or seen the procedure and 8% had done the procedure. 78% of them think that need for training or workshop to learn this procedure (Table 1).

Table 2: Prevalence of impacted third molars

	Maxillary		Mandibular	
Tooth	Right	Left	Right	Left
Horizontal	1	0	12	12
	2.22%	0%	7.89%	7.89%
Vertical	10	13	28	26
	22.22%	28.89%	18.42%	17.11%
Mesioangular	4	4	34	38
	8.89%	8.89%	22.37%	25.00%
Distoangular	7.00	6.00	1.00	1.00
	15.56%	13.33%	0.66%	0.66%
Total	45(100%)		152(100%)	

Table 3: Mean DMFT scores of the study population

DMFT score	No.	Mean ± SD	%
Decayed teeth (D)	320	1.6 ± 0.490	50.87
Missing teeth (M)	179	0.90 ± 0.42	28.46
Filled teeth (F)	130	0.65 ± 0.37	20.67
DMFT- total	629	3.15 ± 1.28	100

DISCUSSION

The most commonly impacted tooth is the upper and lower third molar followed by upper canines, premolars, and supernumerary teeth. There are different types of third molar impaction like horizontal, buccal, lingual, vertical, and inverted. An impacted tooth may be due to tooth bud rotation, crowding, and premature loss of deciduous teeth, which results in lack of space [11]. Since the most commonly impacted teeth in humans is the lower third molars hence the most frequent dentoalveolar surgical procedure is the surgical extraction of third molars [12]. Impacted teeth may be associated with caries, periodontal disease, odontogenic tumors and cyst, jaw fracture, pain, and root resorption of the adjacent tooth [13].

In our study total of 197 (24.63%) impacted teeth were found in which comprised 39 % of the study population. The prevalence of impacted molars is found to be higher as compared to the other studies. In literature; the prevalence for impacted third molars was reported in wide range i.e. from 16.7% to 72% [11,14,15,16,17,18]. This wide range may be due to variability in the sample characteristics or research pattern such as age of subjects or size of sample. The age group of our study population was 18-25 years, which is a relatively younger age for estimation of impacted wisdom tooth as the chances of impacted teeth decreases with age [11]. This factor may have contributed to the higher prevalence reported in our study.

The prevalence of dental decay in the study population is high 78.63 and our results are in agreement with previous studies [19, 20, 21, 22]. The missing teeth component of DMFT is also high as compared to previous studies [20, 21, 22]. It is evident from this research work that the carious activity in the first permanent is high and results in extraction. The reasons for the more caries in the first permanent may be due to the deep pits and fissures, wide crown which easily 2cid produced by bacteria, and the early eruption of the tooth [22]. The mean 0.90 ± 0.42 for missing teeth in DMFT indicates a high prevalence of missing teeth. The treatment options for missing teeth are either removable or fixed partial denture, implant, orthodontic space closure, or autotransplantation.

In our study as we found a high prevalence of missing permanent first molars and impacted third molar. When a proper donor tooth is available, then auto transplantation is a simple and reasonable preference for replacing the missing teeth [23]. It is the removal and transplantation of a tooth to a surgically prepared alveolus or at an extracted-tooth socket in the same person [24,25]. The success rate of auto transplantation was less initially (50% in 1950's) [26,27] but it increased with advancement in technique as it is reported in 1990's by different authors to be 82% [28] and 94% in cases with incomplete roots, and 84% in cases with completely formed roots [29]. These results show that the success rate is increased with time and it is a good alternative as compared to other methods to replace a missing tooth. In our study the prevalence of impacted third molar and missing first permanent molar is high. Hence autotransplantation of an impacted third molar good option in this population. Therefore, we conducted a survey to find out the need for an awareness of autotransplantation among dental practitioners. We found that though participants are aware of autotransplantation few of them had seen or assisted the procedure. Very few of them had done the procedure. The majority of participants were agreed that training or workshop is required to learn this procedure. The results of the survey indicate a lack of training and workshops for autotransplantation (Table

1). We recommend the inclusion of autotransplantation in the dental curriculum and training workshops should be conducted to increase awareness for autotransplantation.

CONCLUSION

The prevalence of both missing permanent first molars and impacted third molars is high; hence third molars can be used for autotransplantation. But there is a lack of training for autotransplantation among dental practitioners. Hence there is a need for more training and workshops for this procedure.

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