

Restored Primary Molars in a Group of Children Presenting to the Pediatric Department of College of Dentistry, University of Baghdad in 2014-2015

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Objectives This study aimed to assess the distribution and classification of restored primary molars according to the tooth type, gender, jaw, quadrant, filling material and G.V. Black classification in children presenting to the Department of Pediatric Dentistry, College of Dentistry, and University of Baghdad.

Methods In this retrospective study, 1,341 patient records were retrieved from the archives of the Department of Pediatric Dentistry and reviewed for the presence of restored primary molars. If present, they were classified according to the tooth type, gender, jaw, quadrant, filling material, and G.V. Black classification. Data were statistically analyzed by SPSS version 24 using z-statistic, with 0.05 level of significance.

Results The frequency of filled primary second molars was significantly higher than that of primary first molars. The frequency of filled primary molars was the same in males and females. The frequency of restored primary molars in the mandible was significantly higher than that in the maxilla. Also, the frequency of restored primary molars in the right side was higher than that in the left side; however, this difference was not significant. According to the type of filling material used, amalgam was the most frequently used filling material followed by composite with no significant difference. According to the G.V. Black classification, class II had the highest percentage, followed by class I but the difference was not significant. Class V had the lowest percentage.

Conclusion The current findings regarding the filled primary molars provided baseline data for future achievements in the respective department and comparisons.

Keywords Dental Restoration; Permanent; Tooth; Deciduous; Iraq

Introduction

Restorative treatment is performed based on the results of clinical examination and is part of a comprehensive treatment plan^{1,2}. In general, review of the literature regarding the filled primary molars yielded controversial results and the frequency of restored or carious primary second molars was found to be more than that of primary first molars²⁻⁶.

In terms of gender, a previous study found that the frequency of restored primary molars in females was higher than that in males⁴. On the other hand, some researchers reported that males had higher rate of fillings in posterior teeth compared with females⁷. In terms of frequency of carious teeth in the maxilla and mandible, a higher prevalence of restored primary molars has been observed in the mandible^{3,8}. Regarding the quadrant of the jaw, primary molars in the right side often had more fillings than the left side as stated by a previous study⁸; whereas, some others reported no significant difference in the distribution of filled teeth in the right and left quadrants^{9,10}.

With regard to the type of filling material, previous studies revealed that amalgam continues to be the material of choice for class I and II restorations, and resin-based materials are considered as alternatives to amalgam^{4,11,12}. Composite resins can be used successfully for class II restoration of primary molars in children¹³. Glass ionomer is another filling material for tooth restoration in children^{14,15}. According to the G.V. Black classification, class I and II restorations have the highest prevalence^{7,16}.

Considering all the above, this study aimed to assess the performance of the undergraduate clinic of the Pediatric Dentistry Department of the College of Dentistry, University of Baghdad during 2014-2015 to collect information regarding the restored primary molars and classify them according to tooth type (first or second molar), gender (male or female), jaw (maxilla or mandible), quadrant (left or right), filling material (amalgam, composite, glass ionomer or temporary filling), and G.V. Black classification (class I, class II or class V).

Materials and Methods:

This retrospective study assessed the performance of the undergraduate clinic of the Department of Pedodontics of College of Dentistry, University of Baghdad during 2014-2015 concerning the restored primary molars.

The retrieved records of children were 1,341, which were collected from the department archives after obtaining approval from higher authorities. They were then reviewed for restored primary molars, and classified according to tooth type (first or second molar), gender (male or female), jaw (maxilla/mandible), quadrant (left or right), filling material (amalgam, composite, glass ionomer or temporary filling), and G.V. Black classification (class I, II or V).

The obtained data were subjected to statistical analysis using SPSS version 24, Z-statistic, and Bonferroni adjusted P-value

at 0.05 level of significance.

Results

The distribution of the total sample by age and gender demonstrated that 6-9-year-olds had the highest percentage. Generally, the number of boys was higher than girls in the total sample (Table 1).

Table 1- Descriptive statistics of the total sample by age and gender

Age (yrs.)	Gender	No.	Percentage	Total	
				No.	Percentage
2-5	Boys	94	7	167	12.44
	Girls	73	5.44		
6-9	Boys	307	22.89	636	47.42
	Girls	329	24.53		
10-13	Boys	288	21.48	516	38.48
	Girls	228	17		
14	Boys	15	1.11	22	1.63
	Girls	7	0.52		
Total	Boys	704	52.49	134	100
	Girls	697	51.97		

The percentage of filled primary second molars was significantly higher than primary first molars. The filled primary molars in boys and girls had almost equal

percentage. Furthermore, the percentage of boys with filled primary first molars was more than girls. Conversely, girls with filled primary second molars had a higher percentage than boys but this difference was not statistically significant (Table 2). The percentage of filled primary mandibular molars was significantly higher than that of filled primary maxillary molars (Table 3). The distribution of the filled primary molars by the quadrant and jaw demonstrated higher percentage on the right side than left side but this difference was not significant ($P>0.05$). Furthermore, the percentage of filled primary molars in the mandibular right/left quadrant was significantly higher than that in the maxillary right/left quadrant (Table 4).

Based on the type of filling material used, amalgam was the most commonly used filling material for filling of primary molars followed by composite, glass ionomer and temporary filling. The difference between the frequency of using amalgam and composite was not significant (Table 5). According to the G.V. Black classification, class II restorations had a higher percentage in primary molars, followed by class I, without a significant difference ($P>0.05$). Class V had the lowest percentage. The filled primary molars in the mandible had a higher percentage compared with the maxilla (Table 6).

Table 2- Filled primary molars by tooth type and gender

Tooth type	Gender	Number	Percentage	Total	Z- statistic	P-value	
				Number	Percentage		
primary first molars	Boys	48	19.83	94	38.83	0.21 ^a	0.83 ^c
	Girls	46	19.00				
Primary second molars	Boys	73	30.17	148	61.16	0.17 ^a	0.87 ^c
	Girls	75	30.99				
Total	Boys	121	50	242	100	3.64 ^b	0.00 ^d
	Girls	121	50				

^aBetween genders ^bBetween tooth types ^cNon-significant difference ^dSignificant difference

Table 3- Filled primary molars by the jaw

Tooth	Jaw	Number	Percentage	Total		Z- statistic	P-value
				Number	Percentage		
Primary first molar	Maxilla	30	12.40	94	38.84	3.57	0.00 ^a
	Mandible	64	26.45				
Primary second molar	Maxilla	49	20.25	148	61.16	4.23	0.00 ^a
	Mandible	99	40.91				
Total	Maxilla	79	32.65	242	100	5.66	0.00 ^a
	Mandible	163	67.37				

^aSignificant difference

Table 4- Filled primary molars by the quadrant and jaw

Quadrant	Jaw	Number	Percentage within the side	Total		Z- statistic	P-value
				Number	Percentage within total		
Left	Maxilla	40	37.04	108	44.63	2.75	0.00 ^b
	Mandible	68	62.96				
Right	Maxilla	39	29.10	134	55.37	4.96	0.00 ^b
	Mandible	95	70.90				
Total		242	100	242	100	1.75 ^a	0.08 ^c

^aBetween quadrants ^bSignificant ^cNon significant

Table 5- Filling material used for restoration of primary molars by gender

Classification	Jaw	Number	Percentage within material	Number	Percentage within total	Grouping		Z-statistic	Bonferroni adjusted P-value
Amalgam	Boys	53	50	106	43.80	Amalgam	Composite	0.51	0.10 ^c
	Girls	53	50			Amalgam	TF	8.34	0.00 ^d
Composite	Boys	53	53.54	99	40.91	Composite	GIF	7.29	0.00 ^d
	Girls	46	46.46			Composite	TF	7.91	0.00 ^d
GIF ^a	Boys	7	33.33	21	8.68	Amalgam	GIF	7.73	0.00 ^d
	Girls	14	66.67						
TF ^b	Boys	8	50	16	6.61	GIF	TF	0.83	0.07 ^c
	Girls	8	50						
Total				242	100	242	100		

^aGlass ionomer filling ^bTemporary filling ^cNon-significant difference ^dSignificant difference

Table 6- G.V. Black classification of filled primary molars by the jaw

Classification	Jaw	Number	Percentage within classification	Number	Percentage within total	Grouping		Z-statistic	Bonferroni adjusted P-value
CI I ^a	Maxilla	36	35.64	101	41.74	CI I	CI II	-2.13	0.03
	Mandible	65	64.36						
CI II ^b	Maxilla	41	31.06	132	54.55	CI II	CI V	10.64	0.00
	Mandible	91	68.94						
CI V ^c	Maxilla	2	22.22	9	3.72	CI I	CI V	8.96	0.00
	Mandible	7	77.78						
Total				242	100	242	100		

^aClass I ^bClass II ^cClass V

Discussion

The primary purpose of this study was to assess the occurrence and distribution of filled primary molars during a certain period of time (2014-2015) in the undergraduate clinic of Pediatric Department of College of Dentistry, Baghdad University. The results showed that the percentage of restored primary second molars was higher than that of primary first molars, and this was in agreement with the results of other studies^{2, 4-6, 17}. This may be due to the presence of deeper and less coalesced pits and fissures in primary second molars, leading to higher colonization by mutans streptococci; which results in initiation of dental caries¹⁸.

The results also showed that the percentage of restored primary molars in girls was higher than that in boys which was in agreement with a previous study⁴. These results may be due to higher level of care provided by parents for their girls compared with boys. Moreover, girls may be more concerned about their appearance and dental health than boys.

According to the results of this study, the prevalence of restored primary molars in the mandible was higher than that in the maxilla and this was in agreement with the results of other studies^{3, 8}, which showed higher prevalence of mandibular teeth treated as evidenced by the number of filled teeth. This may either be a reflection of the fact that most dental practitioners find it easier to treat the mandibular teeth than the maxillary teeth especially in their early stage of education as dental students (given that other teeth are sound and dental students have the option to choose the type of tooth to restore) and/or that the

progression of carious lesions in the mandibular molar teeth may be faster; thus, they require more urgent treatment than the upper teeth³.

Regarding the side of jaw, this study showed that the prevalence of filled primary molars on the right side was higher than that on the left side; this result agreed with the findings of another study⁸. However; other researchers^{9, 10} reported that there was no significant difference in distribution of caries in the right and left sides.

According to the type of filling material, the results showed that amalgam was the most commonly used filling material for restoration of primary molars; this can be due to the properties of amalgam and its high reliability, affordability, requiring less time and fewer procedural steps for fabrication, lower technical sensitivity and requiring less patient cooperation¹⁹. Moreover, correctly performed amalgam restorations often have higher longevity in posterior teeth when compared with composite resin, regardless of the tooth type, the number of restored surfaces or the restoration size²⁰. The use of amalgam as a filling material is not dangerous since the American Dental Association Council on Scientific Affairs concluded that "based on the available scientific information, amalgam continues to be a safe and effective restorative material" and that "there currently appears to be no justification for discontinuing the use of dental amalgam"²¹. This result disagrees with the findings of another study²² that showed superior performance of composite resin restorations in comparison with amalgam in posterior teeth. Meanwhile, our results showed that composite resin ranked the second most commonly used filling material but with non significant difference with amalgam, which may be

attributed to its high technical sensitivity and time required for placement, or because of the marginal staining which tends to increase over time in restorations made with self-etch adhesives²³. In this study, glass ionomers were the least commonly used material for filling of primary molars despite their hydrophilic properties and tolerating a moist environment. Their limited use in this study may be attributed to their lower physical properties. These results agree with other studies^{1, 11, 12, 24, 25} which may be because of the higher annual failure rate of glass ionomer filling material when compared with other materials^{26, 27}. But our results disagree with other studies^{14, 15} reporting that glass ionomer cement was the material of choice for restoration of teeth in children followed by composite resin and amalgam. According to the G.V. Black classification of filled primary molars, it was found that class II had the highest percentage, which could be due to the complex morphology of posterior teeth and the fact that enamel and dentin in primary teeth are thinner than they are in permanent molars. Also, the contact areas in primary teeth

are broad and flat compared with the small circular contact point in permanent teeth²⁸. Class II had the highest prevalence followed by class I, while class V had the lowest percentage. These results disagreed with those of some other studies^{7, 16}.

Conclusion

Dentists' knowledge about pulpal, periapical and periodontal lesions is usually satisfactory, but lack of attention to oral lesions, especially tooth-related radiopaque lesions, is problematic in some cases and results in delayed or missed diagnosis. Cementoblastoma is a rare benign odontogenic tumor that should be included in the list of differential diagnosis of dental pain and swelling.

Conflict of Interests

None Declared ■

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