

Prevalence and distribution of gingival recession and root caries in a group of dental patients in Ramadi city, Iraq

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ABSTRACT

Background: With respect to increase in the rate of gingival recession in the adults and elderly people which is considered as a risk factor for root caries ,the prevalence and attack rate of root caries may differ This study determine the prevalence of both alterations among a group under study .

Subjects and methods: Three hundred and thirty six subjects ranging in age from 20 – 49 years divided into three age groups of both genders (176 males and 160 females). Four surfaces were examined in each tooth. Gingival recession was regarded as present when ever more than 1mm of root surface was exposed and its vertical width was measured in millimeters from the cemento-enamel junction to the gingival margin in addition to the presence of caries on the exposed surface.

Results: Gingival recession was observed in 52.4 % of the total sample (52.8 % in males and 51.9 % in females) and at least in one dental surface in the affected teeth. The prevalence was found to increase with increasing age. First molar teeth exhibit more surfaces with gingival recession. The average value was (21.6 %). 18.5 % of the sample have root caries .It increases as age and recession increase, it affects males (19.3 %) more than females (17.5 %) and first molar teeth (32.3) was mostly affected.

Conclusion: The high prevalence of gingival recession and root caries demonstrate attention must be provided by dentist and people themselves, preventive measures must be conducted among population to control their increase.

Key word: Gingival recession, root caries, epidemiology (J Bagh Coll Dentistry 2009; 21(1): 84-87)

INTRODUCTION

Gingival recession is an undesirable condition resulting in exposure of root surfaces of teeth on which the gingival margin is located apical to cemento – enamel junction⁽¹⁾. It affects aesthetic and leads to cervical dentin hypersensitivity and considered as a risk factor of root caries because of the exposure of the root surface to the oral environment⁽²⁾. The occurrence of gingival recession associated with effects of several factors⁽³⁾, include dental plaque⁽⁴⁾, calculus⁽⁵⁾, Mechanical trauma by hard bristled toothbrush⁽⁶⁾, and its technique⁽⁷⁾, frequency of tooth brushing⁽⁸⁾ Orthodontic treatment and trauma from removable partial denture⁽⁹⁾, and chemical trauma related smoking⁽¹⁰⁾, also associated with periodontal attachment loss⁽¹¹⁾, with abnormal tooth position and with inflammation of gingival margin⁽¹²⁾.

Regarding root caries, studies showed that it is located adjacent to the crest of gingiva where dental plaque accumulated on the proximal and buccal surfaces, its location was positively associated with age and gingival recession affected by dietary habits and decreased salivary flow⁽¹³⁾.

Regarding prevalence, in Brazil⁽²⁾ reported that gingival recession in USA in middle age individuals affected 22–53 % of the teeth, in

Norway, it affects 51% of 18 years adult, and in New Guinea, 11–40% of the adults present this alteration, as in Finland reported 68%. Studies indicate that maxillary canine, premolars, first molars and mandibular central incisors are the most affected teeth⁽⁵⁾. Regarding root caries,⁽²⁾ reported that 98.9% had root caries and gingival recession and 78.1% had at least one root caries lesion and maxillary canine, first premolars and mandibular molars presented the greatest root caries index and was greater in buccal and proximal surfaces. Hellyer etal⁽¹⁴⁾ reported 88.4% in 55 years MacEtee etal⁽¹⁵⁾ reported 36–67%. while Imazto etal⁽¹³⁾ concluded that 39% had one or more decayed roots and 53.3% had one decayed root lesion and canine teeth were more frequently affected followed by first premolars, they found that 56.9% of males had one or more root caries and 53.3% in females and concluded that canine most commonly affected by root caries was canine in maxilla and premolar in mandible. In addition they found that 17.5% of the exposed surface in males affected by root caries and 11.5% in females.

SUBJECTS AND METHODS

Three hundred and thirty six subjects ranging in age from 20–49 years dividing into three age groups (20-29, 30-39 and 40-49 years) of both genders (176 males and 160 females) were examined. Four surfaces were examined in each tooth: mesial, distal, buccal and lingual or palatal. Measurement of the gingival recession was obtained from the cemento– enamel junction up to the gingival margin in the affected teeth, three categories were established according to the

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apicocoronal dimension of the root surface exposed, this was done according to criteria suggested by Miller⁽¹⁶⁾:

1- Small recession: less than 3mm of root surface exposed.

2-Moderate recession: 3 to 4 mm of root surface exposed.

3-Advanced recession: more than 4mm of root surface exposed to the dental environment.

Measurement of root caries was done using root caries index (RCI)

$$(R - D) + (R - F) \times 100$$

$$RCI = \frac{(R - D) + (R - F) + (R - N)}{(R - D) + (R + F) + (R - N)}$$

R - N= Recession present (root surface normal or sound)

R - D= Recession present (with a decayed root surface)

R - F=Recession present (with a filled root surface)

Measurement was done according to age group and gender. The association between root caries and gingival recession was evaluated using logistic regression (LR).

RESULTS

Table 1 presented the number and percentage of subjects with gingival recession and root caries with the value of root caries index (RCI) measured according to age groups and gender. It shows that 52.8% of males affected by gingival recession in comparison with that of female 51.9, the age group 40-49 years old constitute the mostly affected group (76.5% of males and 71.7% of females). The difference was statically not significance. Regarding root caries, 19.3% of males who have gingival recession was affected, where it is 17.5% in females in the total sample, the difference was statically not significance; in addition, RCT in males (29.1) was more than that of females (27.7). This table demonstrated that both gingival recession and root caries are increased with increasing age but not significant.

Table 2 shows the distribution of subjects with gingival recession according to depth (in millimeter), age group and gender. It shows that 37.5% of the 20-29 years old have gingival recession of 3-4mm in depth which constitute the highest percentage among this age group and it was the same among all other age group. According to gender, males have the highest percentage of gingival recession of the 3-4 mm depth which constitutes 39.8 in comparison with that of female (39.1). The difference was highly significant (F = 53.21 , P = 0.000).

Table 1: Number and percentage of subjects with gingival recession (GR) and root caries (RC) according to age group and gender with the value of root caries index (RCI)

Age group and gender *

Age	20 - 29		30 - 39		40 - 49		Total		All
	F	M	F	M	F	M	F	M	
Sample	60	68	54	57	46	51	160	176	336
With GR	22	26	28	30	33	37	83	93	176
% GR	36.7	38.2	51.9	52.6	71.7	76.5	51.9	52.8	52.4
With RC	6	8	10	12	12	14	28	34	62
% RC	10.1	11.8	18.5	21.1	26.1	27.5	17.5	19.3	18.5
RCI	13.6	10.0	27.8	30.8	48.0	50.0	27.7	29.1	27.9

* Not significant according to age group

** Association between GR and RC was highly significant (F = 62.59 , P = 0.001)

*** According to gender not significant

Table 3 demonstrated the number and percentage of surfaces affected by gingival recession and root caries according to age group It shows that buccal surface was the highest surface affected by gingival recession which constitute 33.8 % followed by proximal surfaces (23.0 % in mesial and 22.2 % in distal surfaces) .

Table 2: Number and percentage of subject with gingival recession according to age groups, gender and depth in mm

Age group	Gender	Number	Less than 3mm	3 - 4 mm	4mm & more*
			No. %	No. %	No. %
20- 29	M	26	11 42.3	10 38.5	5 19.2
	F	22	10 45.5	8 36.4	4 18.2
	T	48	21 43.8	18 37.5	9 8.8
30- 39	M	30	7 23.3	13 43.3	8 26.7
	F	28	8 28.6	10 35.7	7 25.0
	T	58	15 25.9	23 39.7	15 25.9
40- 49	M	39	3 8.1	14 37.9	12 32.4
	F	33	3 9.1	12 36.4	10 30.3
	T	70	6 8.6	26 37.1	22 31.4
All	M	93	21 22.6	37 39.8	25 26.9
	F	83	21 25.3	30 36.1	21 25.3
	T	176	42 23.9	67 38.1	46 26.1

F = 53.21, P = 0.000, highly significant according to depth.

Regarding root caries, mesial and distal surface found to be more affected (34.8% for mesial and 30.4% for distal surfaces) followed by buccal surfaces which constitute 28.3%. Lingual

surfaces are least affected. The difference was statically significance (F = 4.79, P 0.05).

Table 4 demonstrated the number and percentage of teeth affected by gingival recession and root caries according to age group. It shows that first and second molar teeth was the mostly affected by gingival recession among all teeth 21.6 % for first molar , 19.3% for second molar followed by 17.6% for canine and 15.3% for central incisors. Regarding root caries, first and second permanent molar constitute the highest percentages which affected by root caries (32.3 and 24 .2 respectively) followed by first premolar (16.1%) and canine (14.5%) whereas the lateral incisor was the least tooth to be affected by root caries (3.2 %).Regression analysis showed highly significant association between gingival recession and root caries (F = 62. 59, P = 0 .001).

Table 3: Number and percentage of surfaces affected by gingival recession (GR) and root caries (RC) according to age group and surfaces

Age group	Buccal No. %	Gingival No. %	Mesial No. %	Distal No. %	Total No. %
20-29	65 32.5	20 20	49 24	46 23	200 28
GR	7 29.2	1 4.2	9 37.5	7 29	24 17
RC					
30 - 39	73 32.9 14	49 22.1	51 23	49 22	222 31
GR	28.0	3 6.0	17 34	16 32	50 36
RC					
40 - 49	103 5.5 18	60 22.1	64 22	63 21	290 41
GR	8.1	5 7.8	22 34	19 29.7	64 46
RC					
Total	241 3.8 39	149 21	164 23	158 22	712 100
GR	28.3	9 6.5	48 35	42 30	138 100
RC					

* According to surfaces not significant

** According to age group not significant

X2 = 10.01, F = 6, P = 0.12 Not significant

DISCUSSION

The current study demonstrates levels of gingival recession among a group of people lived in Ramady city to the west of Iraq , dental health services is available there throw several of health centers with good equipment and dental materials in addition to good number of dentist but people still suffer from oral and dental diseases . This study was conducted to determine the prevalence of gingival recession and root caries among a group of 20–49 years old dentally attendance people which considered part of parameters used to evaluate gingival health condition. The main

findings of the currents study were that 52.4% of the total samples have gingival recession, this was in agreement with that found by Albander and Kingman ⁽⁵⁾ and this problem was affected young adult of 20–29 years old.

Table 4: Number and percentage of teeth affected by gingival recession (GR) and Root caries (RC) according to age group

Age group	20 - 29 GR RC	30-39 GR RC	40-49 GR RC	Total GR RC
Central incisor	7 14.6	9 15.5	11 15.7	27 15.3
	2 14.3	3 13.6	3 11.5	8 12.9
Lateral incisor	2 4.2	4 6.9	6 8.6	12 6.8
	0 0.0	1 4.5	1 3.8	2 3.2
Canine	9 18.8	10 17	12 17.1	31 17.6
	0 0.0	2 9.1	2 7.7	4 14.5
First premolar	6 12.5	7 12.1	9 12.9	22 6.8
	2 14.3	3 13.6	5 19.2	10 16.1
Second premolar	3 6.3	4 6.9	5 7.1	12 6.8
	1 7.1	1 4.5	1 3.8	3 4.8
First molar	11 23	13 22	14 20	38 21.6
	5 33	7 31.8	8 31	20 32.3
Second molar	10 21	11 19	13 18.9	34 19.3
	4 28.6	5 22.7	6 23.1	15 24.2
Total	48 27	58 33	70 39.7	176 100.0
	14 2.6	22 35	26 41.9	62 100.0

This percentage indicated that this alteration could occur in people with good oral hygiene and in those with bad oral hygiene. Those of good oral hygiene have brushed away gingival tissue to have 0.5 mm or more exposed cementum on the buccal surfaces of one or more teeth. Many studies concluded that traumatic mechanical tooth brushing was considered a factor in the etiology of gingival recession ^(6,9), while those with poor oral hygiene, periodontitis play a role in its occurrence and the loss of attachment which was the result of localized Inflammatory process ⁽¹⁷⁾. When compared the result of this study with other, it was found to be in agreement with that found by Kallestal etal ⁽¹⁸⁾. According to age, results of this study indicated that prevalence of gingival recession was increased with increasing age; this was in agreement with that found by Kallestal etal ⁽¹⁸⁾ and Pimenta etal ⁽¹⁹⁾. This was due to the longer period of exposure to the factor which cause gingival recession ⁽⁶⁾, also due to cumulative affect of the lesion itself ⁽³⁾, as concluded by many studies that the prevalence of gingival recession was depend on the type of agent or the cause ⁽²⁾. Data of this study showed that molar teeth display the highest frequency of gingival recession due to aggressive periodontal disease and pocket formation when provide the accumulation of food

debris and dental plaque and cause bone destruction, lead to root surface exposure in addition to incorrect traumatic tooth brushing. These surfaces with gingival recession are less favorable to self cleansing, lead to formation of root caries. This indicated that interproximal and buccal surfaces are the most frequent site affected by gingival recession and this was in agreement with that found by Albander and Kingman⁽⁵⁾, Marlivia and Watanabe⁽²⁾, Pimenta et al⁽¹⁹⁾.

Regarding root caries, this study found that 18.5 % of the subjects affected by root caries. The Root Cries Index proposed by Katz⁽²⁰⁾ compete a true attack rate for root caries. Results of this study found that root caries prevalence and root caries index was lower than that found by MacEntee et al⁽¹⁵⁾ and Imazato et al⁽¹³⁾. This was due to variation in the sample, the country where the study was conducted, their habits and environments. The prevalence of root caries was found to be increased with increasing age of the people and results of this study was in agreement with that found by Katz et al⁽²⁰⁾, regarding prevalence of root caries, while in case of Root caries index, results of this study was in agreement with that found by MacEntee et al⁽¹⁵⁾, and Imazato et al⁽¹³⁾. Root caries was seen most frequently on roots of molar teeth and this was in agreement with that found by Imazato et al⁽¹³⁾. Exposed root caries will develop root caries and the increase in prevalence of root caries in the manifestation of gingival recession. The increasing prevalence of root caries with increasing age is an indicator of increased root exposure to the oral environment. This study concluded that these alterations could increase among population so it is important to conduct oral dental health care. Programs including dental health education and periodontal health care in addition to fluoride preventive measures to control this increase.

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