

Alveolar Bone Loss in Adult Young Patient Seeking Periodontal Treatment (Radiographic Study)

Dr. Sana'a Jamal Al-Qassab *

Abstract

Thorough clinical and radiographic examination is necessary to detect, evaluate and diagnose periodontal disease. The aim of present study is to evaluate interdental bone loss in patients with chronic adult periodontitis radiographically. One hundred eighty sites (for maxillary anterior teeth only) were examined for type and severity of alveolar bone loss. The results reveal that 80% of all examined sites had different severity of bone loss. Mild bone loss was more frequent than Moderate or Severe and horizontal more than vertical or angular bone loss. Interdental bone between central and lateral incisors was the most affected site in this study.

Key words: bone loss, periodontal, interdental, horizontal, vertical, angular, radiographic

Introduction

Periodontal disease refers to a group of diseases that affects the tissues that invest and support teeth (1)

Thorough clinical and radiographic examination is necessary to detect, evaluate, and diagnose periodontal disease. The clinical examination alone may not provide enough information about supporting bone, so the radiographic examination is mandatory. (2) In addition to that radiographs can be used to document periodontal disease and determine the success or failure of periodontal therapy (3).

Also interpretation of periodontal disease on dental radiographs should include an evaluation of the alveolar bone. The bony changes can be described in terms of pattern (horizontal, vertical or angular), distribution (localized or generalized) and severity (Mild, Moderate and Severe) with considering that (Mild refers to only crystal bone loss, while moderate refers to bone loss of 10-33% and severe bone loss is 33% or more)

(4). Radiographs can also be used to detect local irritants, such as calculus and defective restorations specially over hung, that contribute to periodontal disease as they may be considered as plaque retentive factors(5).

Finally radiographs can be used in the classification of periodontal disease, based on the amount of bone loss. (6).

Many studies were carried out on radiographic assessment of periodontal disease.

Comparative studies were carried out on different radiographic procedures to evaluate the most accurate radiographic procedure for assessment of alveolar bone loss in Periodontitis cases, so some authors concluded that the periapical and panoramic radiography are in great agreement for assessment of alveolar bone level in periodontal disease(7-10).

While others used series of digital periapical radiograph for assessment of the relation of (alveolar bone height/root length) which is in disagreement with others who

*Assistant lecturer. University of Al_Mustansyria College of Dentistry Dental radiology

concluded that digital radiographs are not a substitute for conventional radiographs in evaluating alveolar bone levels (11,12).

The aim of present study is to evaluate bone loss in patients with chronic adult periodontitis radiographically.

Material and methods

Sample in this study was selected from patients attending periodontal clinic complaining from bleeding on brushing, dentin hypersensitivity, or just discomfort on eating.

The population sample was selected depending on following criteria

1. Site of periodontitis was confined to maxillary anterior teeth.

2. The patient is systematically fit.

Patients out of these criteria were excluded from this study. Total sites number was 180 site. X –ray using (bisecting angle technique) was taken for the affected teeth for each patient.

Then the type of bone loss (horizontal, vertical and angular) was recorded in each of the following sites: between centrals, between central and lateral (both sides), and between lateral and canine (both sides).

The severity of bone loss (Mild, Moderate and Severe) was also estimated depending on the amount of bone loss.

Finally the resultant data was arranged in tables according to site, type and severity of alveolar bone loss.

Results

Results of this research revealed that 80% of all examined sites (144 out 180) had different severities of bone loss.

Horizontal bone loss seems to be more than vertical and angular types; it

constitutes 39.58% of total bone loss in comparison to 37.48% for vertical and 22.99% for angular bone loss.

On the other hand it was found that the interdental bones between central and lateral incisors were more affected by vertical bone loss (22.90%) than horizontal (12.50%) and angular (6.95%) types.

Horizontal bone loss seems to affect all sites in comparable percentages, while the angular bone loss affect the interdental bone between the central incisors (12.52%) more than other sites. Table 1.

Regarding the severity of interdental bone loss, it was found that majority of sites had undergone mild bone loss (58.33%) in comparison to moderate (34.02%) and severe (7.64%) bone loss. The interdental bone between central and lateral incisors were affected by all types of bone loss (41.66%) more than other sites. Table 2.

In more detailed figure the mild vertical bone loss was found to affect the interdental bone between central and lateral incisors (25%) which is more than the other sites, while the interdental bone between lateral and canine is the least site to be affected by all types of bone loss especially mild angular type (1.19%). Table 3.

In regard to moderate bone loss, one can see that this type of bone loss affect the interdental bone between the central and lateral incisors more (42.86%) than the other sites. Table 4

Findings related to the severe bone loss showed that as the bone loss become sever the percentages in differences between the affected sites become smaller. Table 5.

Discussion

This study shows that 80% of examined sites were affected by interdental bone loss that may give an

idea that the alveolar bone loss is a common finding in patients with periodontal disease and may indicate that seeking of periodontal treatment may be slightly delayed the matter that can be explained by painless progression of periodontal disease. Fortunately most of this bone loss was mild (58.33%) which give us a chance for carrying out a successful periodontal treatment. The results also showed that horizontal type of bone loss was more than the other types and this finding also can be explained by the nature of periodontal disease, where the upper most part of interdental bone seems to be firstly affected by microbial dental plaque action, as it is growing downward in the sub gingival area.

Vertical bone loss tend to affect the interdental bone between central and lateral incisors more than the other sites, may be due to anatomical configuration of interdental bone in this area, or due to occlusal trauma or abnormal occlusion specially when we know that bone loss may enhanced by occlusal trauma.

The interdental bone between lateral incisor and canine was the least affected site by alveolar bone loss, may be due to dense bone that found around the canines (canine eminence).

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Table 1 bone loss by type and site

Site of bone loss	Between centrals		Between central and lateral		Between lateral and canine		Total	
Type of bone loss	No	%	No	%	No	%	No	%
Horizontal	19	13.20	18	12.50	20	13.88	57	39.58
Vertical	9	6.25	33	22.90	12	8.33	54	37.48
Angular	18	12.52	10	6.95	5	3.47	33	22.94
Total	46	87.97	61	42.35	37	25.68	144	100

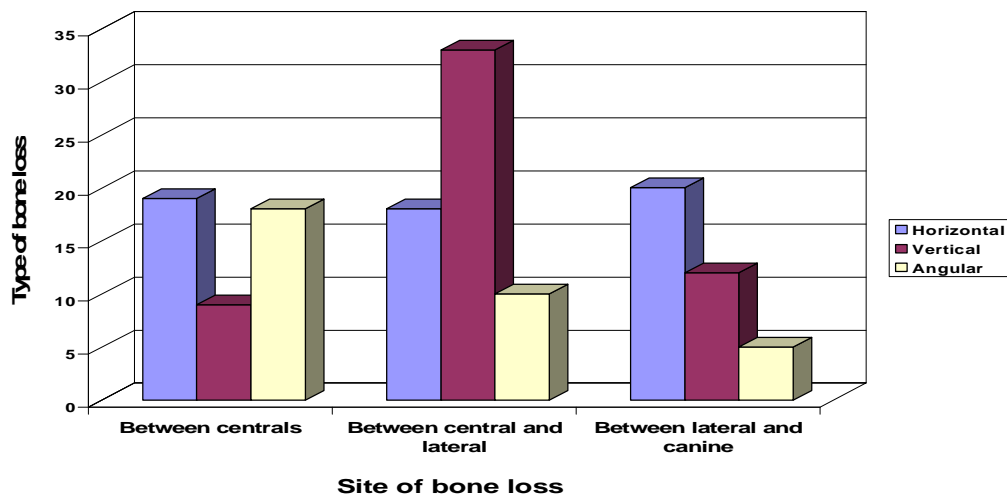


Table 2 bone loss by severity

Site of bone loss	Between centrals		Between central and lateral		Between lateral and canine		Total	
Severity of bone loss	No	%	No	%	No	%	No	%
Mild	31	21.53	35	24.30	18	12.50	84	58.33
Moderate	14	9.72	21	14.58	14	9.72	49	34.02
Severe	2	1.39	4	2.78	5	3.47	11	7.64
Total	47	32.64	60	41.66	37	25.69	144	100

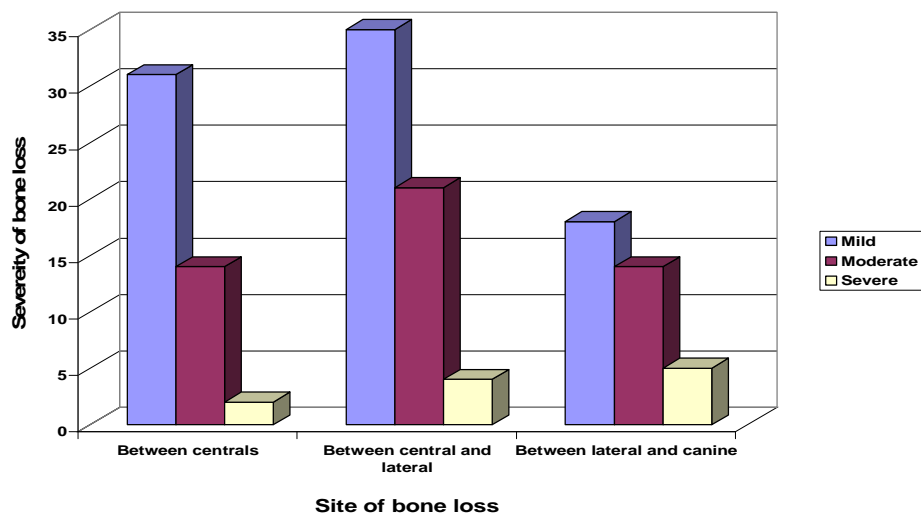


Table 3 Mild bone loss by type and site

Site of bone loss	Between centrals		Between central and lateral		Between lateral and canine		Total	
Type of bone loss	No	%	No	%	No	%	No	%
Horizontal	17	20.24	11	13.10	13	15.48	41	48.82
Vertical	6	7.14	21	25	4	4.76	31	36.90
Angular	8	9.52	3	3.57	1	1.19	12	14.28
Total	31	36.90	35	41.67	18	21.43	84	100

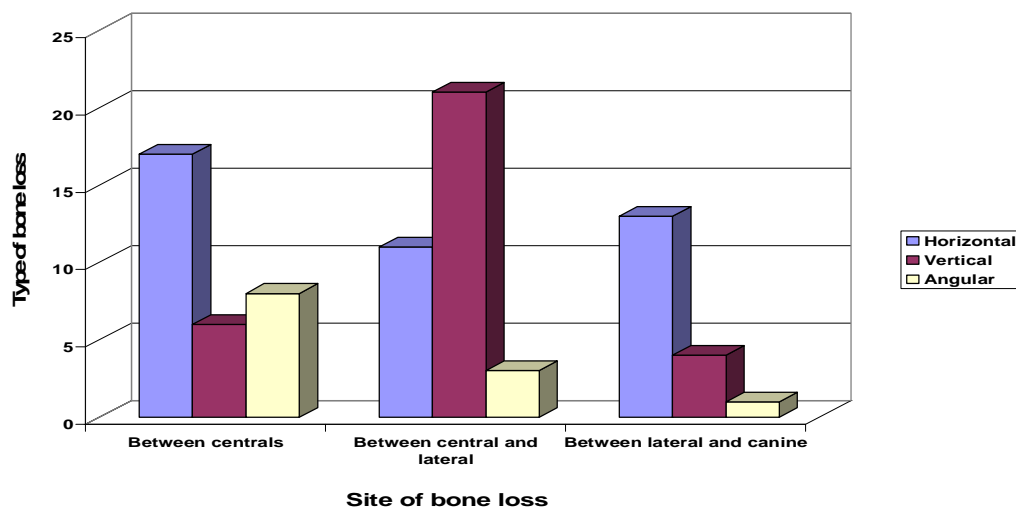


Table 4 Moderate bone loss by type and site

Site of bone loss	Between centrals		Between central and lateral		Between lateral and canine		Total	
Type of bone loss	No	%	No	%	No	%	No	%
Horizontal	2	4.08	5	10.20	5	10.20	12	24.48
Vertical	3	6.12	10	20.41	6	12.25	19	38.78
Angular	9	18.37	6	12.25	3	6.12	18	36.74
Total	14	28.57	21	42.86	14	28.57	49	100

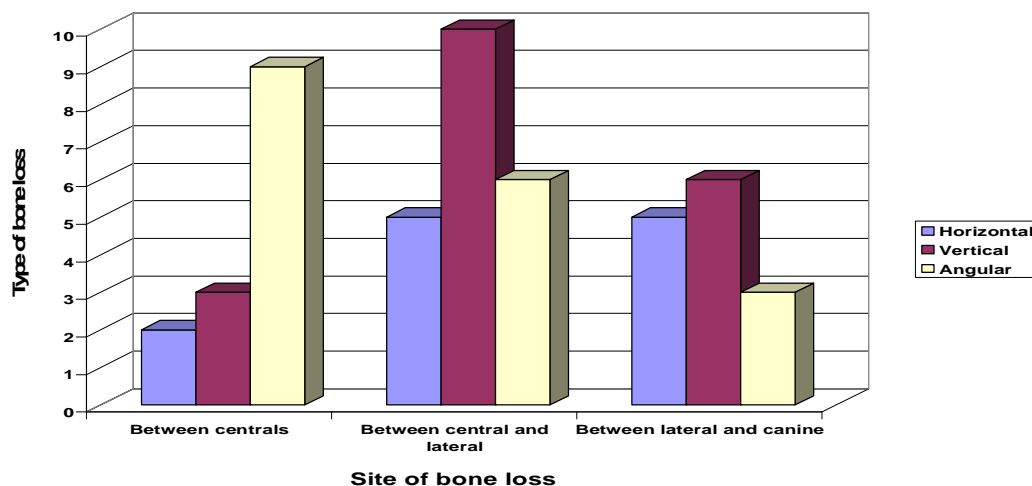


Table 5 Severe bone loss by type and site

Site of bone loss	Between centrals		Between central and lateral		Between lateral and canine		Total	
Type of bone loss	No	%	No	%	No	%	No	%
Horizontal	1	9.09	1	9.09	2	18.18	4	36.36
Vertical	0	0.0	2	18.18	2	18.18	4	36.36
Angular	1	9.09	1	9.09	1	9.09	3	27.28
Total	2	18.18	4	36.36	5	45.46	11	100

