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PREVALENCE OF BONE LOSS AND ALTERATIONS IN PERIODONTAL LIGAMENT SPACE AMONG THE PATIENT POPULATION VISITING A PRIVATE DENTAL COLLEGE

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ABSTRACT

Aim: To evaluate the prevalence of bone loss seen in intraoral periapical (IOPA) radiographs among the patient population visiting a private dental college.

Materials and methods: The study population included 141 subjects in the age group of 35-70 years. Intraoral periapical radiographs (IOPA) were taken for evaluation of interdental alveolar bone loss (ABL). Data of patients was retrieved from dental hospital patient management software. IOPA showing bone loss and PDL widening was compared with age and gender. Statistical significance was checked using the chi-square test in SPSS software.

Results: It was seen that there was no significant statistical association between age groups, gender and bone loss and root PDL space widening. Also, it was seen that there was no significant association between bone loss and root PDL space widening.

Conclusion: No significant statistical association between gender and bone loss and root PDL space widening was noted. Similarly, no significant statistical association between age group and bone loss and root PDL space widening was recorded. Finally, there was no significant association between bone loss and widening of root PDL space.

Keywords: Alveolar bone, bone loss, PDL space, IOPA, Innovative technique

INTRODUCTION

Bone loss seen in IOPA at the crest of the alveolar bone is a frequent presentation of periodontal disease. Diagnosing bone loss and establishing the pattern of bone loss before surgery requires a careful clinical examination combined with good quality radiographs. Radiographs are a valuable aid to the clinical examination, as they provide information about the quantity and quality of the residual bone covered by soft tissues. IOPA radiographs are used to assess the alveolar bone destruction, thus helping in determining the prognosis, so that a comprehensive treatment plan can be formulated [1, 2]. There are various radiographs which are used for diagnosis of periodontal pathology like intraoral periapical (IOPA), bitewing and panoramic radiographs. Radiovisiography (RVG) is one of the digital imaging techniques that have become widely popular among dentists as an alternative to film-based radiography because of many advantages like superior image quality, reduced time and less radiation exposure to the subject [3-8]. There are Contradictions regarding the accuracy of digital and conventional radiographs in respect to the amount of bone loss as seen through the radiographs [9-14]. Our team has extensive knowledge and research experience that has translate into high quality publications [2, 4, 6, 12, 14-29]. In this light,

the present study was designed to see prevalence of bone loss seen in an IOPA and RVG in detection of interdental bone loss.

MATERIALS AND METHODS

Patients who underwent IOPA and had bone loss were included in this study and were checked whether widening of periodontal ligament space is present or not. These were compared with their age and gender. Data was retrieved from Dental hospital patient management software. The raw data was entered in Microsoft excel sheet and analysis performed with Statistical Package for the Social Sciences (SPSS) software version 19 (Armonk, New York: IBM. Corporation). Chi-square tests were used to see the significant differences, where p-value <0.05 was considered significant.

RESULTS AND DISCUSSIONS

After statistical analysis done in SPSS, the results of this study are - There was no significant association between age and bone loss, age and root PDL space (since, p value >0.05) and there was no significant statistical association between gender and bone loss, gender and root PDL space (since, p value >0.05). There was also no statistically significant association between bone loss and root PDL space widening (since, p value >0.05) [30].

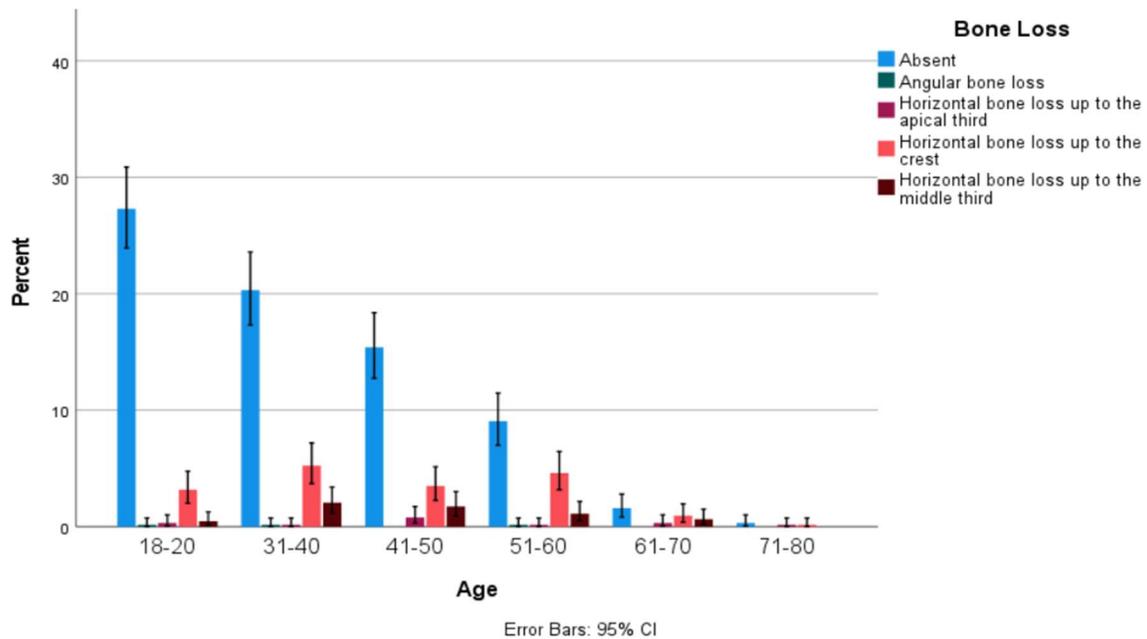


Figure 1: Bar graph represents the association between age group and bone loss. X-axis represents the age group and Y-axis represents the different types of bone loss seen in an IOPA where green colour denotes angular bone loss, brown colour denotes horizontal bone loss upto the apical third, violet colour denotes horizontal bone loss upto the crest and yellow colour denotes horizontal bone loss upto the middle third. Chi-square test was done and association was found to be statistically insignificant (p value < 0.005), proving there is no statistical association between age and bone loss

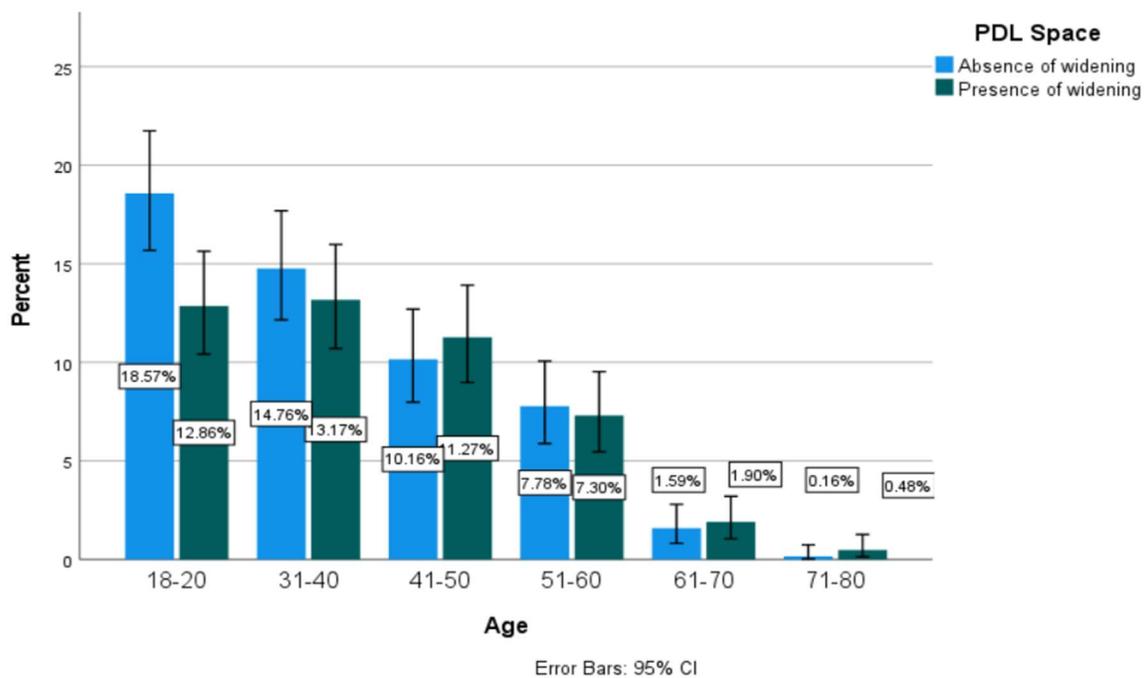


Figure 2: Bar graph represents the association between age group and widening of root PDL space. X-axis represents the age group and Y-axis represents the widening of root PDL space seen in an IOPA where green colour denotes absence of widening and brown colour denotes presence of widening. Chi-square test was done and association was found to be statistically insignificant (p value < 0.005), proving there is no statistical association between age and PDL space widening

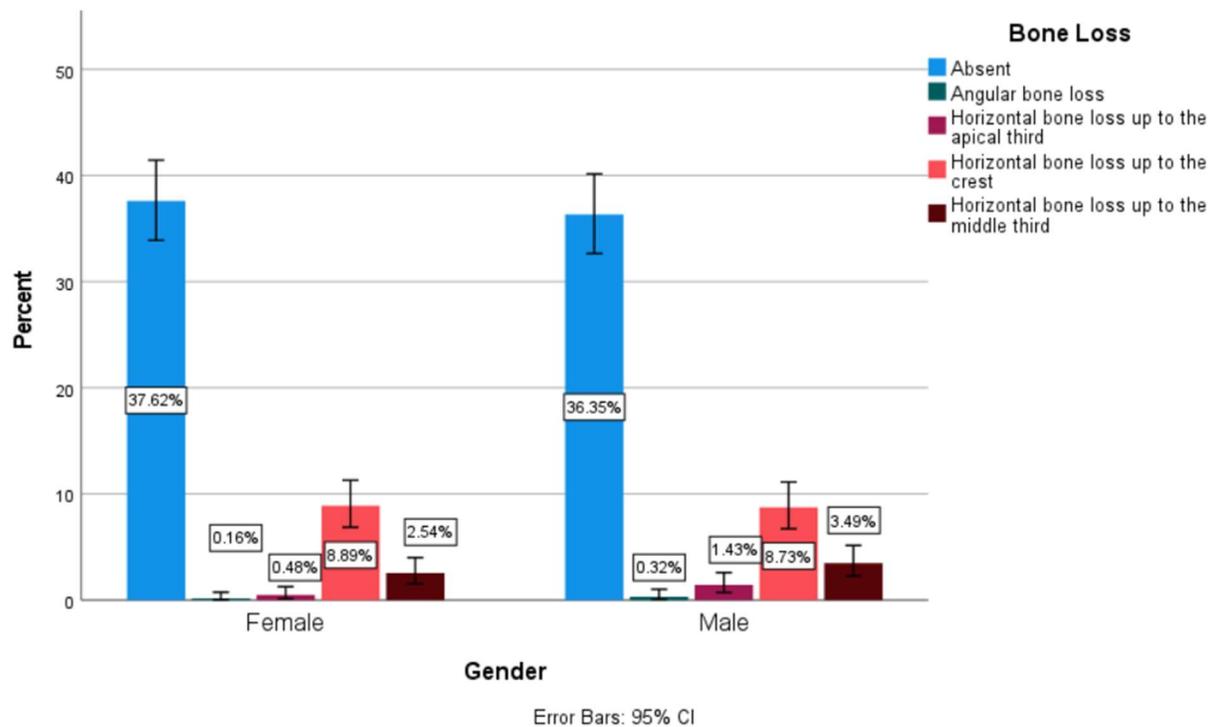


Figure 3: Bar graph represents the association between gender and bone loss. X-axis represents the gender and Y-axis represents the different types of bone loss seen in an IOPA where green colour denotes angular bone loss, brown colour denotes horizontal bone loss upto the apical third, violet colour denotes horizontal bone loss upto the crest and yellow colour denotes horizontal bone loss upto the middle third. Chi-square test was done and association was found to be statistically insignificant (p value < 0.005), proving there is no statistical association between gender and bone loss

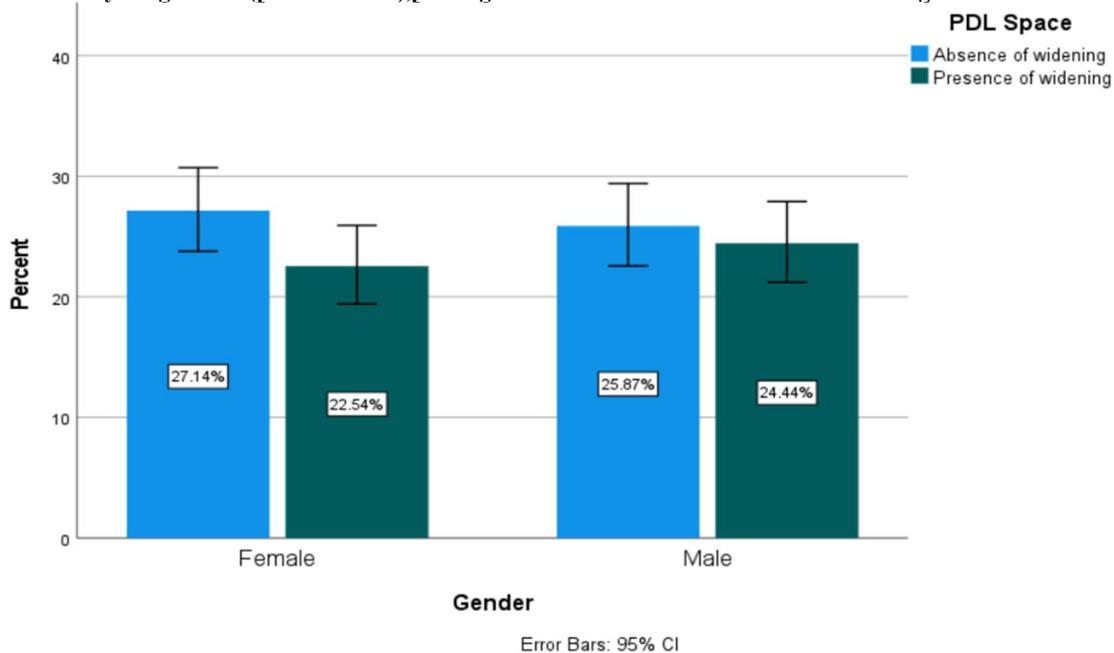


Figure 4: Bar graph represents the association between gender and widening of root PDL space. X-axis represents the gender and Y-axis represents the widening of root PDL space seen in an IOPA where green colour denotes absence of widening and brown colour denotes presence of widening. Chi-square test was done and association was found to be statistically insignificant (p value < 0.005), proving there is no statistical association between gender and root PDL space widening

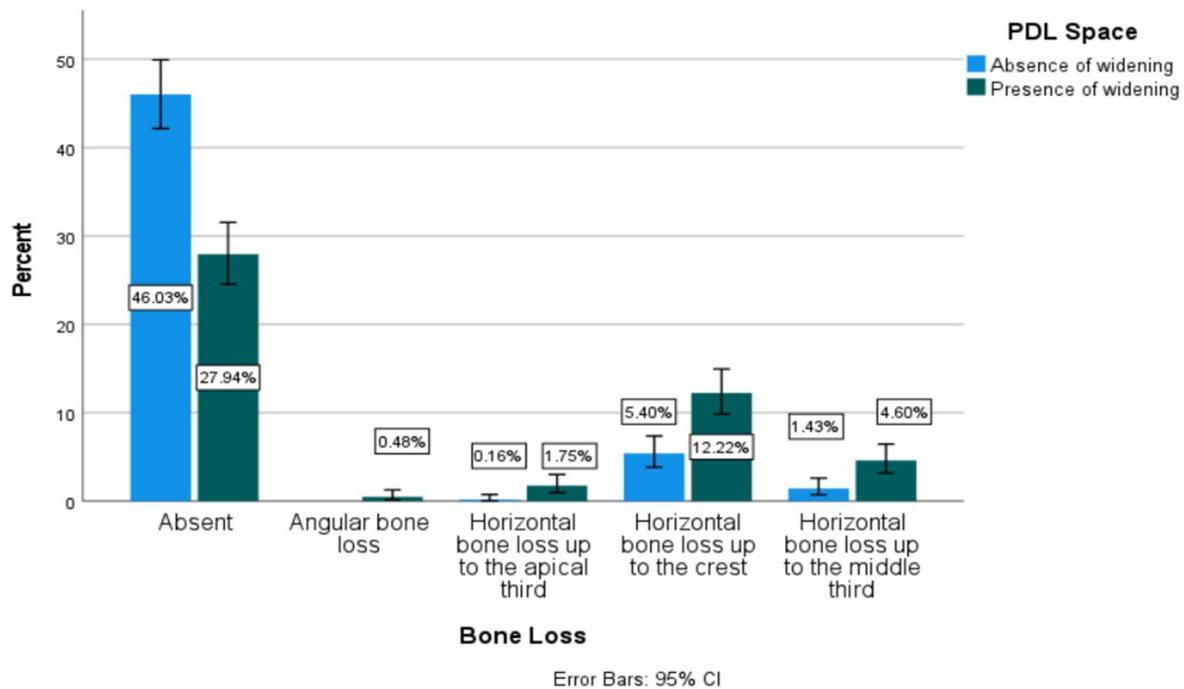


Figure 5: Bar graph represents the association between bone loss and widening of root PDL space. X-axis represents the different types of bone loss seen in an IOPA and Y-axis represents the widening of root PDL space seen in an IOPA where green colour denotes absence of widening and brown colour denotes presence of widening. Chi-square test was done and association was found to be statistically insignificant (p value < 0.005), proving there is no statistical association between bone loss and root PDL space widening [18, 23]

Various possibilities and theories have been suggested to explain the mechanism of periodontal ligament (PDL) widening in patients, however, none has yet been proved. Determining the cause of PDL widening in these patients requires more research.

In our study, we found out that there is no statistically significant association between age groups, gender and bone loss and root PDL space widening. PDL widening occurs in trauma from occlusion, but not in association with angular bone defects.

CONCLUSION:

Within the limitations of the study the conclusion can be summarized as follows:

1. No significant statistical association between gender and bone loss and root PDL space widening.
2. No significant statistical association between age group and bone loss and root PDL space widening.
3. No significant association between bone loss and widening of root PDL space.

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Conflict of interest: None to declare.

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