

PREVALENCE OF TISSUE BIOTYPE IN PATIENTS REPORTING TO AFID

Amna Amjad¹, Abdul Rehman², Mubashir Sharif³, Sajjad Hussain⁴

¹ Resident Prosthodontics, Armed Forces Institute of Dentistry, Rawalpindi

² Army Medical College / Armed Forces Institute of Dentistry, National University of Medical Sciences (NUMS), Islamabad

³ Army Medical College / Armed Forces Institute of Dentistry, National University of Medical Sciences (NUMS), Islamabad

⁴ Department of Prosthodontics, Margalla Institute of Health Sciences, Rawalpindi

ABSTRACT

Objective: This study aims to identify the prevalence of gingival tissue biotype in patients reporting to the Armed Forces Institute of Dentistry.

Materials and Methods: This descriptive cross sectional study was carried out at Prosthodontics department, Armed Forces Institute of Dentistry, Rawalpindi after approval from the ethical committee. A total of 500 subjects were evaluated clinically. All patients, both males and females with ages between 18-40 years having permanent Maxillary central incisor present were included in the study. Patients not included were those with crowned maxillary central Incisor; patients with malocclusion, anterior open bite, patients on medications e.g phenytoin, those with supernumerary tooth in the anterior region, those with retained primary teeth in the anterior region, poor Oral hygiene, periodontal disease or with history of Orthodontic treatment. The gingival thickness will be assessed by the Probe transparency (TRAN) method with the help of a number 15 UNC/CP periodontal probe. The measurement recorded will be filled in the Performa for gender separately.

Results: A total n= 500 patients were selected. Out of these 500 patients n= 271 were females and n=229 were males. According to the results obtained from the above study, Table 1 and 2 shows that prevalence of thin and thin gingival biotype of the right and left central incisor, respectively.

Figure 1 illustrates the age distribution histogram of the sample. Figure 2 shows the number of males and females participating in the study.

Conclusion: By understanding the nature of tissue biotype (thickness), a practitioner can employ appropriate clinical procedures to minimize soft tissue loss and alveolar resorption and provide a more favorable tissue environment. Different gingival biotype can influence the diagnosis and treatment planning for different patients.

Keywords: Tissue bio types, Probe transparency, Chi square test

INTRODUCTION

Esthetics has been an important factor in dictating the direction of development in Prosthodontics

Correspondence:

Dr. Abdul Rehman

Assistant Professor, Army Medical College / Armed Forces Institute of Dentistry, National University of Medical Sciences (NUMS), Islamabad

Email: abrehmankt@gmail.com

Contact: +923377500065

since the last few decades. It encompasses not only natural-looking restorations, but also the state of the adjacent tissue architecture. Previous studies have highlighted tissue loss as a common presentation, its etiology has been identified as multifactorial.^{1,2,3} Multiple techniques have been developed over time, in order to prevent or minimize the consequences of tissue loss. Papilla loss, black triangles, facial gingival recession are few of the esthetically challenging

situations. The term “tissue preservation” is therefore conceived to enhance the esthetic outcome.^{3,4}

The term “periodontal biotype” was later introduced by Seibert and Lindhe⁷ to categorize the gingiva into “thick-flat” and “thin-scalloped” biotypes. Claffey and Shanley⁸ defined the thin tissue biotype as a gingival thickness of less than 1.5mm and thick tissue biotype as a gingival thickness of more than 2mm.

Many methods have been proposed to measure gingival tissue thickness. These include direct measurements, probe transparency (TRAN), ultrasonic devices and most recently, cone-beam computed tomography (CBCT).^{5,6} Thickness of less than 1.5mm was considered to be thin, while thickness of more than 2mm was considered to be thick. Measurement using a probe had a few limitations such as the precision of the probe, which is to the nearest 0.5 mm, the angulation of the probe during the transgingival probing, and the distortion of the tissue during probing.^{7,8,9} This study aims to identify the prevalence of gingival tissue biotype in patients reporting to the Armed Forces Institute of Dentistry. It shall help determine the type of gingival biotype among our population and its relevance to the success of dental implants in the anterior region.

MATERIALS AND METHODS

This descriptive cross sectional study was carried out at Prosthodontics department, Armed Forces Institute of Dentistry, Rawalpindi after approval from the ethical committee. A total of 500 subjects were evaluated clinically. All patients, both males and females with ages between 18-40 years having permanent Maxillary central incisor present were included in the study. Patients not included were those with crowned maxillary central Incisor, patients with malocclusion, anterior open bite, patients on medications eg phenytoin, those with supernumerary tooth in the anterior region, those with retained primary teeth in the anterior region, poor Oral hygiene, periodontal disease or with history of Orthodontic treatment. The gingival thickness will be assessed by the Probe transparency (TRAN) method with the help of a number 15 UNC/CP periodontal probe. The measurement recorded will be filled in the Performa for gender separately.

Data Analysis Procedure

Data will be analyzed using SPSS version 21.0. Descriptive statistics will be calculated for both qualitative and quantitative variables. For qualitative variable like gender and gingival tissue biotype frequency and percentage will be calculated. For quantitative variables like age, mean will be calculated. Chi square test will be used to compare qualitative variables like gingival tissue biotype between both the genders. P values of less than 0.05 will be considered significant. Confounding factors or effect modifiers will be controlled through stratification.

RESULTS

A total n= 500 patients were selected. Out of these 500 patients n= 271 were females and n=229 were males. According to the results obtained from the above study, Table 1 and 2 shows that prevalence of thin and thin gingival biotype of the right and left central incisor, respectively.

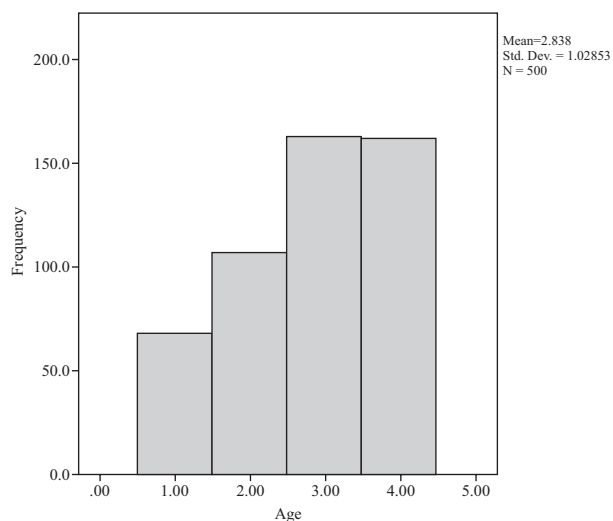


Figure 1: Histogram Of Age Distribution n=500

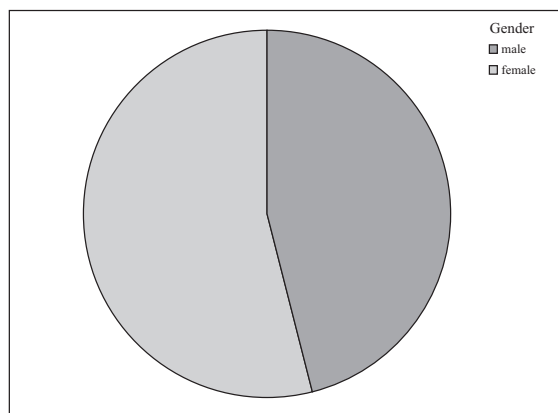


Figure 2: Gender Distribution n= 500

Table 1: Prevalence Of Gingival Biotype Of Right Central Incisor:

	Frequency	Percent	Valid Percent	Cumulative Percent
thick	256	51.2	51.2	51.2
Valid thin	244	48.8	48.8	100.0
Total	500	100.0	100.0	

Table 2: Prevalence of gingival biotype of left central incisor:

	Frequency	Percent	Valid Percent	Cumulative Percent
thick	256	51.2	51.2	51.2
Valid thin	244	48.8	48.8	100.0
Total	500	100.0	100.0	

Figure 1 illustrates the age distribution histogram of the sample. Figure 2 shows the number of males and females participating in the study.

This shows that at this point there was underestimation of bone but was not significant. A similar study by Perez et al.¹⁰ suggested that both ridge mapping and Linear tomography significantly underestimated the posterior mandibular ridge width when compared to direct measurements.

DISCUSSION

One of the most important outcomes of a prosthesis that is being provided to the patient is the esthetic outcome of the prosthesis. Certain patients consider the esthetic superior to that of function. In this regard, the patient does not only have to be satisfied in terms of proper loading and functioning of the prosthesis, rather the outlook of the replacement has to meet the esthetic demands of the patient.^{11,12} A preexisting thin gingival biotype can impede ideal esthetic result of many therapies. In such a scenario, gingival biotype can be enhanced. The gingival biotype can be improved to a thick- flat biotype in order to meet the esthetic demands of the patient. A pseudo thick gingiva is when an originally thin gingiva is converted to a thick gingiva. This can be done to achieve more stable results to avoid soft tissue relapse. Thin gingival biotype has been associated with increased chances of gingival recession and thus poorer esthetic results. This shall aid in achieving more esthetic outcomes. A study demonstrated that bone loss can be controlled in thin biotype patients, if the biotype is augmented prior to the placement of implant.^{13,14,15}

Patients with thin gingival biotype are pre-

disposed to resorption in the gingival and lingual direction, chances of which are rare in patients with thick gingival biotype. The resulting loss of peri-implant tissues leads to greyish hue of the implant that shows through the gingival margin and leads to poor esthetic outcome in the long run. In a study by Jung et al, the gingival color was measured using a spectrophotometer. It was concluded that all the materials resulted in change in color of the thin mucosa with Titanium resulting in the most change, while the thick mucosa resisted change in color due to the decreased transparency.

Tooth loss is a determinant of the general wellbeing comfort and health of any population.¹⁶ Socio-economic, physiological and psychological factors also influence the tooth loss in elderly adults.^{16,17} Loss of teeth in the elderly population significantly impairs masticatory ability.¹⁸ Decreased masticatory efficiency is linked with decreasing the quality of natural dentition. The masticatory efficiency with natural dentition is much superior to that of a denture wearer. Root coverage surgeries, one of the common periodontal surgeries performed to achieve the required esthetic outcomes of anterior teeth, a flap thickness of 0.8-1.2 mm produced more predictable outcomes. An initial gingival thickness was found to be the most predictable factor for predicting the success of complete root coverage procedures. A significant correlation between flap thickness and complete root coverage was noted.

The thick and thin biotypes have different osseous and soft tissue forms and these distinctions would significantly influence implant site preparation and treatment planning. The stability of the osseous crest and soft tissue is directly proportional to the thick-

ness of the bone and gingival tissue. Thick biotypes are associated with thick bony plates and thin biotypes are associated with thin bony plates, with potential for fenestrations and dehiscence and respond differently to extraction and have a different pattern of osseous remodeling following implant placement. Proper care should be taken during extraction in thin biotype cases to prevent labial plate fracture. During postoperative healing phase, more dramatic alveolar resorption is seen in apical and lingual direction for the ridge associated with thin biotype.

Prevention of post extraction alveolar bone loss is critical in assuring implant success. Thin periodontal biotype is associated with thin alveolar plate, so it is usual to see more ridge remodeling when compared with thick periodontal biotype which is associated with thick alveolar plate. In thin biotypes, it's not only a traumatic extraction is critical in ridge preservation, it is important to consider strategies to preserve the alveolar bone such as socket preservation or ridge preservation procedures.¹⁹ This loss can be 1.5–2.0 mm over the first 12 months with most loss occurring during the initial 3 months.²⁰

CONCLUSION

By understanding the nature of tissue biotype (thickness), a practitioner can employ appropriate clinical procedures to minimize soft tissue loss and alveolar resorption and provide a more favorable tissue environment. Different gingival biotype can influence the diagnosis and treatment planning for different patients.

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