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RETROSPECTIVE ANALYSIS INTO EDENTULOUS SPACE AVAILABLE BONE WIDTH AND THE PROSTHETIC OUTCOME

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ABSTRACT

To evaluate the type of available bone width and relevant Prosthetic associated outcome. Prosthodontic treatment aims toward restoring function and esthetics of edentulous patients without compromising oral and psychological health of the individuals. The goal of modern dentistry is to restore normal function, comfort, esthetics, speech, and health to individuals who are missing teeth. Given that our population is both aging and growing, an increasing number of people are being affected by the loss of teeth provisional restoration must satisfy the requirements of pulpal protection, positional stability, occlusal function, ability to be cleansed margin accuracy, wear resistance strength and esthetics. Data was & collected from DIAS. dental Information Archiving software. Data was entered in a methodological manner and data was verified by FPD diagnostic appointment, ACP Sieberts classification incomplete data was managed by excluding data without notes. In this study, we deserved that out of total 778 cases FPD cases 43% was the incidences above 45 years. The bar graph depicts the below mentioned parameters analysed among the patients diagnosed for FPD under 50 years. The present study indicates a more common type of ridge defect in line of buccolingual width post extraction of the teeth the ridge defect is more commonly associated in the age group of 35 to 45. The pink aesthetic score recorded indicates no significant difference with relation to ridge defect.

Keywords: Prosthodontic, edentulous patients, buccolingual

INTRODUCTION

Prosthodontic treatment aims toward restoring function and esthetics of edentulous patients without compromising oral and psychological health of the individuals **[1]**. Prosthetic rehabilitation is done to regain function, speech and esthetics **[2]**. For teeth requiring crowns or replacement in the form of fixed dental prosthesis, gingival retraction becomes a mandatory procedure which aids in recording the prepared and unprepared surfaces of the abutment tooth **[3]**.

The goal of modern dentistry is to restore normal function, comfort, esthetics, speech, and health to individuals who are missing teeth. Increased life expectancy and increase in population, creates high demand in dental care especially in the field of prosthodontics **[2, 4]**. For decades partially edentulous patients are either treated with fixed prosthesis or removable prosthesis **[5]**. Recently fixed prosthesis is more popular than removable prosthesis due to comfort, function and aesthetics **[6]**. Fixed prosthesis either restored taking support from teeth or using implants. Replacing the anterior teeth with good aesthetics is a complex procedure. Given that our population is both aging and growing, an increasing number of people are being affected by the loss of teeth.**[7]** provisional restoration must satisfy the requirements of pulpal protection, positional stability, occlusal function, ability to be cleansed margin accuracy, wear resistance strength and esthetics **[8]**. The comfort, function, and esthetics must be restored altogether while treating a edentulous patient **[9]**. In recent times increased social awareness among the general public about the general dental health has opened scope for opting to the dental prosthesis for replacement of missing teeth, including dental implants even in the rural population **[10]**. Modern Dentistry has changed tremendously with implant therapy **[11]**, fixed partial dentures have been the treatment of choice for the replacement of missing teeth for some years **[12]**. Dental implant treatment prosthetic rehabilitation of people with missing teeth is one of the most complex topics in dentistry due to its gnathological, psychosocial, esthetic, and functional implications **[13]**. Implant treatment has become the treatment of choice and the most desirable treatment option for replacing missing teeth in partially as well as completely edentulous patient **[14, 15]** Bone resorption following the extraction of posterior maxillary teeth sometimes results in severe loss of bone in vertical and/or horizontal dimensions, which may preclude

the use of dental implants **[16]**. Integrity at the implant–abutment interface plays an important role in reducing stress transfer to the bone, maintaining the screw joint stability and to prevent movements at the deep implant–abutment interface **[17]**. For successful implant therapy and its clinical longevity, the condition of the periodontium and systemic conditions are not the only determining factors. Material aspects and mechanical features of the implant and its abutment screw also play a vital role in it **[18]**. The marginal fit is of paramount importance for long term success of all ceramic restorations. Discrepancy in marginal fit facilitates, salivary infiltration and microleakage resulting in dissolution of the luting cement; thus, increasing the susceptibility to caries, eventually leading to pulpal damage **[18, 19]**. The marginal fit is of paramount importance for long-term success of all-ceramic restoration **[20]**. Abutment modifications dictates the shape and form of the prosthesis **[21]**.

Edentulism and dental disease have been shown to affect patients adversely. For successful treatment a proper treatment plan - both Surgical and prosthetic parts are required. The increased needs and use of implant and fixed dental prosthesis, is a combined effect of number of factors including Psychological aspects of tooth loss, aging population, tooth loss related to ageing anatomic consequences of edentulism poor performance of removable prosthesis and predictable long term results of implant supported prosthesis **[22]**. This provisional fixed partial denture is an essential and key step in fixed prostheses **[23]**. Long span edentulous spaces (three or more missing adjacent teeth) make it difficult to provide fixed prostheses resulting in poor prognosis. In these situations, tooth-supported RPDs or implants provide alternative long-term solutions. The endentulous space post extraction undergoes changes in terms of bone loss and tissue loss which may again change the choice of prosthesis or desired esthetic result **[24]**.

MATERIALS AND METHODS

The present study was done in Saveetha Dental College, Chennai with required approval from the Ethical board. .Retrospective study data analyzed from June 2019- feb20. Number of case sheets reviewed was 778. Evaluation was done using documented photographs, classification of the available ridge form, what type of prosthesis opted, relevant pink esthetic score. To minimize sampling error all available data was included and no sorting processing was done. Data was entered in a methodological

manner and data was verified by FPD diagnostic appointment, ACPSieberts classification incomplete data was managed by excluding data without notes. The Analysis was statistically tested using SPSS software- chi squared test with confidence level set at 95%.

RESULTS AND DISCUSSION

In this study, we observed that out of total 778 cases FPD cases the highest prevalence was with the age group of 25-35 (28.15%)followed by (24.42%) in 35-45 age group, (19.67%)45-55 age group, (16.45%) 18-25 and the least in (11.31%) in 55 and above. And sieberts classifications prevalence was female (33.40%) 168 class I,(2.58%) 13 Class II,(2.19%)11 Class III, (4.17%) 21 class N. Male (44.53%) 224, class I, (3.38%) 17 classII, (3.98%)20 classIII, (5.77%) 29 **(Figure 1, 2)**. (There is a significant difference in responses between the Age group and sieberts classification and Pearson chi square value - 50.55 , P value - 0.00 (< 0.05), Hence statistically significant. Pink aesthetic score of 1 poor stood at 21.05%, excellent 6.84% and with certain other entries being incomplete were excluded. P value - .278 (greater than 0.05) which is statistically not significant. This can be due to lesser sample size or due to missing datas of pink aesthetic score.

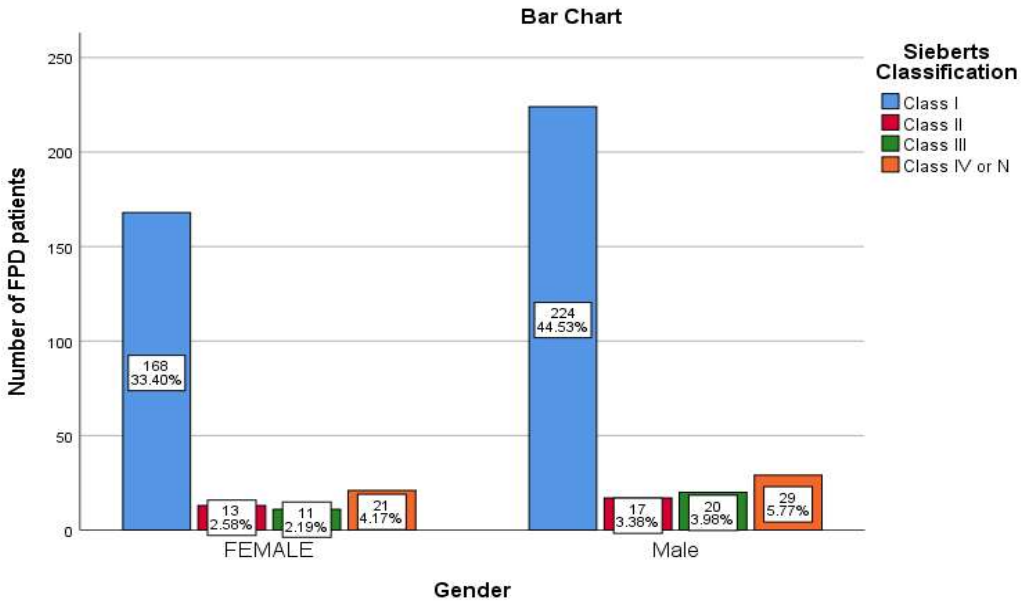

Figure 1: Bar chart showing the association between gender (x-axis) and sieberts classification (Y- axis), where Blue colour denotes Class I, Red denotes Class II, Green colour denotes Class III and orange denotes Class N, female has (33.40%)168 class I, (2.58%) 13 Class II,(2.19%)11 Class III,(4.17%) 21 class N. Male (44.53%)224, class I,(3.38%)17 classII,(3.98%)20 classIII,(5.77%)29 Class N, class I sieberts classification is more common in males (22.43%) than females (33.40%), however there is no statistically significant difference. (Chi-square test, p value - 0.36 (>0.05 which is not statistically not significant))

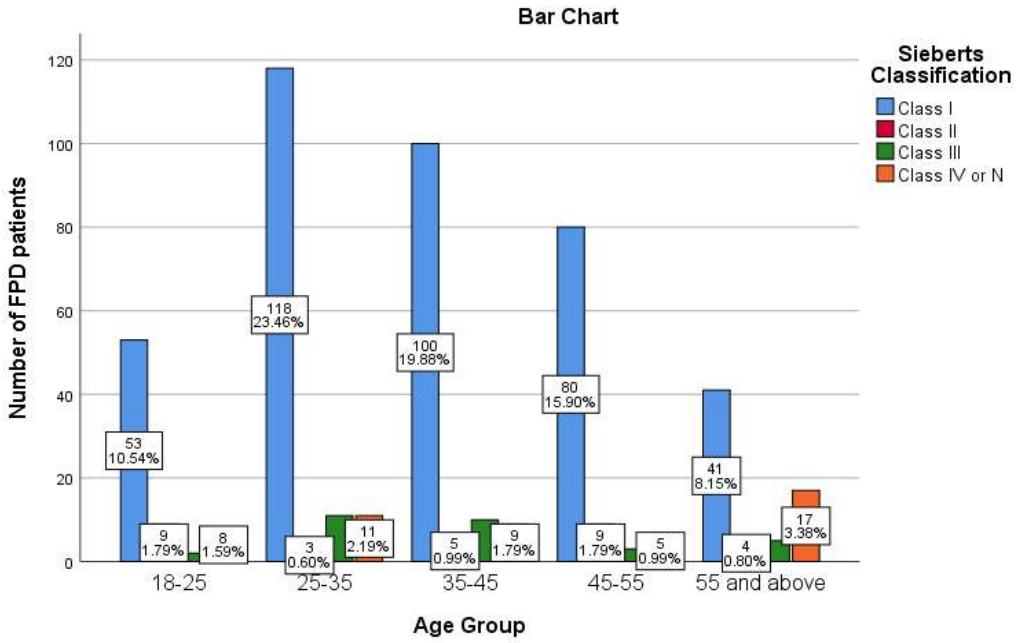

Figure 2: Bar chart showing the association between Age group (x-axis) and sieberts classification (Y- axis), where Blue colour denotes ClassI, Red denotes Class II, Green colour denotes Class III and orange denotes Class N, and the age group of 25-35 has highest prevalence of class I (28.15%), Class II (3.86%) Class III (3.96%) Class N(6.43%). Class I sieberts classification is significantly associated with the patients in the age group of 25-35 years (23.46%) (Chi-square test, p value - 0.00 (p< 0.05 which is statistically significant)).

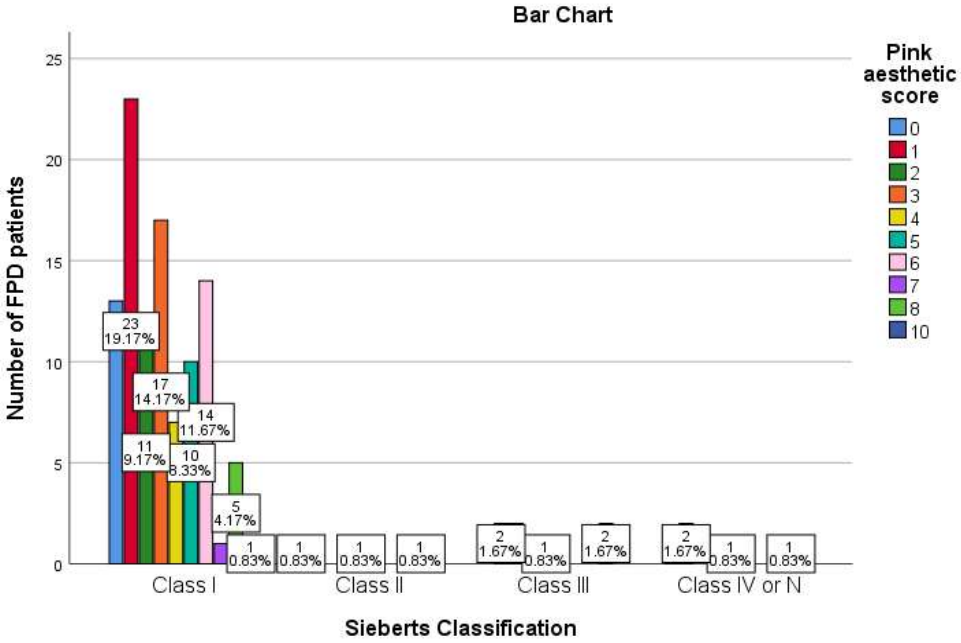

Figure 3: Bar chart showing the association between sieberts classification (x-axis) and pink aesthetic score (Y- axis), where Blue colour denotes score of 0, red colour denotes 1, green denotes 2, orange denotes 3,yellow denotes 4 sky blue denotes 5, pink denotes 6, purple denotes 7, green denotes 8 and blue denotes 10., in which class 1 is of highest prevalence with 50.39%, followed by class III (3.96%), classII (3.86%) ,classN (6.43%) Pink aesthetic score of 1 is more common in class I sieberts classification (19.17%) than any other class. However there is no statistically significant difference. (Chi-square test, p value - 0.278 (p>0.05 which is not statistically significant))

The classification of ridge is based on compromised width, length or both. As the bone level changes there is also a relevant change in height with relation to interdental bone present around the abutment teeth. This can lead to change in papilla height on both mesial and distal abutments. The prosthesis pontic design makes a mucosal or non mucosal contact, but the deficient ridge height or width may unilaterally vary the pontic design. The tissues associated with the bone loss may also be sometimes displaceable making a difference during impression making and further prosthesis construction. Such prosthesis although might look alright on cast with good pontic to tissue contact, clinically it may vary to a different level. Studies which support tissue displacebilty have accepted the fact that as more or increased crestal bone loss has always led to flabby tissues which are compressible to great degree. The present study was looking at the retrospective details of crestal bone loss which indicated for more buccolingual width deficiency and the next most common was combined loss of height and width. The association of Sieberts classification with gender the results obtained suggest females with more class 1 or class 2 condition whereas Male had more class 1 or class 3 condition. The possible negligence of replacement can be a factor in male gender with high prevalence in having Alveolar ridge deformities with 54.5% class III deformity is more common with significant height and width deformity **[25] (Figure2)**. The association of sieberts classification with ages revealed 18-25 years is 13% and 26-35 years 24% 35-45 years 20% 45-55 years is 15 6% and above 55 years 28% out of which classI is 50%. Patients in the age group of 40-49 year old have a high incidence of alveolar ridge defect with 50.9% **(Figure 3), (Figure 2)**.

The statistical test was significant $p<0.05$ when comparing age to Sieberts classification with 39-42 age people falling in class I category Monolithic types of bridges are more commonly opted for posterior teeth. This reveals that post extraction the teeth is not replaced immediately or any other untreated periodontal conditions too leading to ridge deficiency seen at mid age group, similar reports associating long term edenulous ness and bone loss are favoring the current outcomes **[27]**. The association of pink esthetic score with incidence of type of sieberts classification revealed was not significant $p>0.05$ **(Figure 1)**. Although some data were unclear of certain pink aesthetic score reporting. Again this can be

planned as a prospective study to analyse the impact of ridge deficiency, associated interdental papilla and relevant gingival scores. Studies in literature have shown that pink esthetic score depends on treatment planning and executing **[28]** required procedures which may include minor surgical procedures. But due to systemic or local conditions or patients acceptance to minor surgical procedures the prosthetic construction overrides the ridge condition or health **[29]**.

CONCLUSION

The present study indicates a more common type of ridge defect is loss of buccolingual width- seibert's class I condition post extraction of the teeth. This class I ridge defect is more commonly associated in the age group of 25 to 35. Within the limitation of study the pink aesthetic score recorded indicates no significant difference in comparison to type of ridge defect.

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