



## Age and gender based distribution of Edentulous Ridges based on Siebert's Classification among FPD patients - A retrospective study

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### ABSTRACT

The long term edentulous space among the patients can lead to the alveolar ridge defect that mainly occurs due to the injury, trauma, denture wears and the periodontitis. Based on the seibert's classification they are classified into 4 classes ; Class I (buccolingual loss of the tissue), class II (apicoronal loss of the tissue), Class III (Both loss of the tissue), Class IV (Normal). According to the classification, a proper treatment plan and alternative can be determined for the successful outcomes. The main aim of this study is to determine the age and gender based distribution of the edentulous patients according to seibert's classification. The study was conducted in Saveetha Dental College. Statistical analysis was done by using chi-square test with SPSS software version 23. Based on the results , the age group distribution was about 18-35 years(43%), 36-54 years (42%) and 55-83 years (15%), the distribution of the Seibert's classification of class I (78%), Class II (6%), Class III (6%) and Class IV (10%), the gender distribution was about males (58%) and females (42%). The most prevalent type of edentulous ridge type is Class I among the age group of 36-54 years which has the higher male predilection. They are statistically significant ( $p < 0.05$ ). The prevalence of Siebert's Classification of the edentulous ridges helps in the suggestion of the various management techniques and the treatment planning to the patient to ensure the prognosis and the treatment outcomes to be successful.

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### INTRODUCTION

In the course of prosthetic dentistry, the dentist mainly faces many challenges in treating the patients with the longer term of the edentulous area (Ariga, 2018). They mainly lead to the alveolar ridge defect. They can be of a localized alveolar ridge defect of a limited extent (Jyothis, 2017). The edentulous area may be due to the tooth loss either due to trauma during extraction or congenital defects which lead to the alveolar bone loss (Selvan and Ganapathy, 2016). The alveolar bone defect causes the soft tissue to collapse into the bone during healing which creates the contour (Subasree *et al.*,

2016). This contour makes it difficult to produce an esthetic prosthesis (Ajay, 2017). Besides, it may also lead to food impaction and difficulty in speech due to the percolation of the saliva (Gupta *et al.*, 2010). As the dentist faces such cases, it is required for them to replace the missing tooth and close the defect for the patient to achieve esthetic, phonetic and the mastication (Kannan and Venugopalan, 2018).

It is important to assess the factors such as the type and the amount of destruction among the different age groups and the gender for the better treatment planning, clinical outcome and the prognosis (Shah-room and Jain, 2018). The Siebert's classification of the edentulous ridges based on the amount of the destruction as, Class I : Buccolingual loss of alveolar soft tissue with normal apico-coronal height, Class II : Apico-coronal loss of alveolar tissue with normal buccolingual width, Class III : Both buccolingual width and apico-coronal height loss of tissue and Class IV or N : Normal height and width.

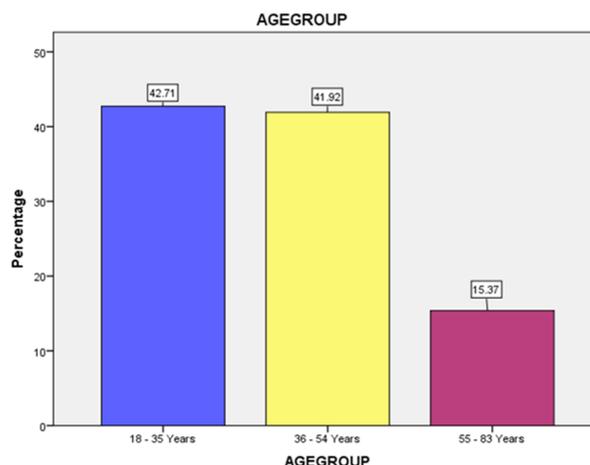
It can be categorized under the soft tissue augmentation and hard tissue augmentation procedure (Ganapathy, 2016). Soft tissue augmentation procedure, includes the role technique for the class I defects, interproximal graft technique for class II and Class III defects and free gingival grafts. Ridge augmentation is preferably done for Class I ridge defects (Venugopalan, 2014). Besides, for Class II and Class III ridge defects, bone augmentation technique by inlay and onlay grafting with either autogenous grafts, allografts or xenografts (Ganapathy *et al.*, 2017). The other procedures include the removable partial denture, fixed partial denture with pink ceramic, and the Andrew's bridge (Duraisamy, 2019) The main advantage of the Andrew's bridge is that it has a flexibility and stabilizing qualities of the fixed prosthesis (Ashok and Suvitha, 2016).

Few studies have been done on the prevalence of the edentulous ridges based on the Seibert's Classification of different age and gender groups. Many studies have been presented as the case reports on the various treatments of the ridge defect patients. Therefore, the purpose of this study is to assess the prevalence of the age and gender distribution of the edentulous ridges using the Seibert's Classification among fixed partial denture patients in the indian population to achieve a good treatment outcome for the most prevalent ridge defect.

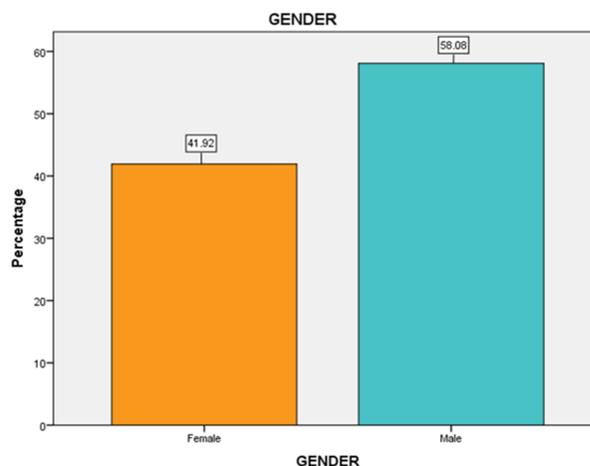
## MATERIALS AND METHODS

The study setting was mainly a university setting and it was single centred study. The various advantages are the available data and similar ethnicity

and the disadvantages of this particular study was mainly the geographical limitations and the isolated populations.



**Figure 1: Bar graph showing the distribution of age among the edentulous patients for FPD treatment**



**Figure 2: Bar graph showing the distribution of gender among the edentulous patients for FPD treatment**

Inclusion criteria for the study were, Patients undergoing fixed partial denture treatment and no medical history and systemic complications. Exclusion criteria for the study were, Patients below the age group of 18 years and patients with medical complications.

## Sampling method

The non-probability convenience sampling method has been used. The study was conducted in Saveetha Dental College. The data collection has been done from the department of Prosthodontics for patients undergoing fixed partial denture treatment. A total sample data of 479 patients were obtained for a

**Table 1: Table showing the distribution of the age with each of the edentulous patients for FPD treatment**

		Number of participants	Percentage
Age Group	18-35 years	214	42.6
	36-54 years	211	42.0
	55-83 years	77	15.3
	Total	502	100.0

**Table 2: Table showing the distribution of gender among the edentulous patients for FPD treatment**

Gender		Number of participants	Percentage
Valid	Female	211	41.9
	Male	292	57.9
	Total	503	99.8
Total		504	100.0

**Table 3: Table showing the distribution of Seibert's classification among the edentulous patients for FPD treatment**

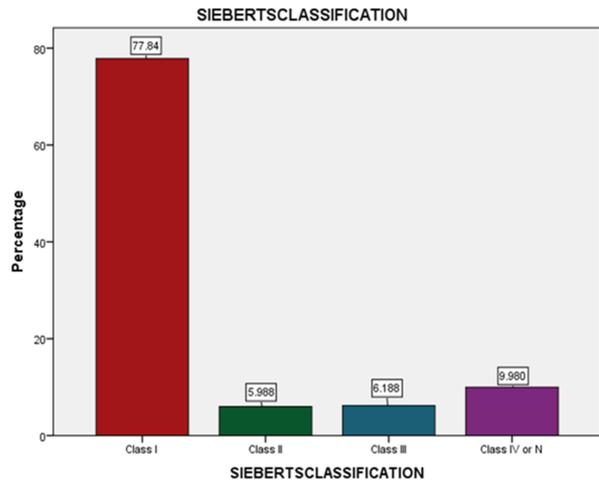
		Number of participants	Percentage
Classification	Class I	392	78.1
	Class II	29	5.8
	Class III	31	6.2
	Class IV or N	50	10.0
	Total	502	100.0

**Table 4: Table showing the correlation between the age group and the type of edentulous ridge present with Seibert's Classification**

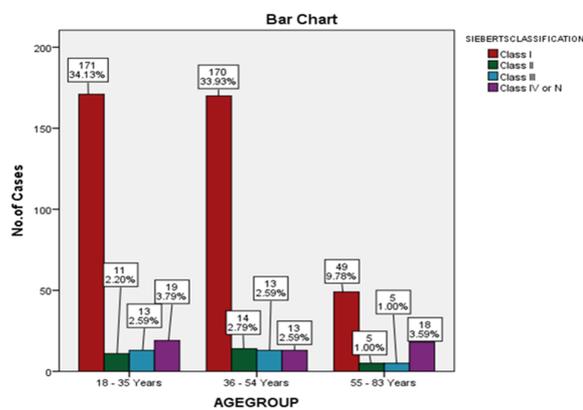
		Siebert Classification				Total
		Class I	Class II	Class III	Class IV or N	
Age group	18-35 years	171	11	13	19	214
	36-54 years	170	13	13	13	210
	55-83 years	49	5	5	18	77
Total		392	29	31	50	501

**Table 5: Table showing the correlation between the gender and the type of edentulous ridge present with Seibert's Classification**

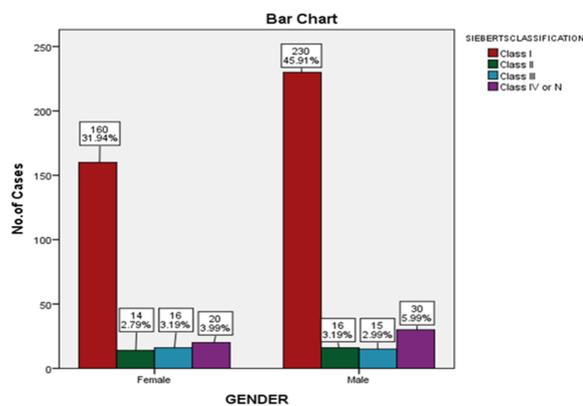
		Siebert Classification				Total
		Class I	Class II	Class III	Class IV or N	
Gender	Female	157	13	17	23	210
	Male	235	16	14	27	292
Total		392	29	31	50	502



**Figure 3:** Bar graph showing the distribution of Seibert’s classification among the edentulous patients for FPD treatment



**Figure 4:** Bar Graph depicting the association between the different age groups and the edentulous ridge type of the patients



**Figure 5:** Bar Graph depicting the association between the gender and the edentulous ridge type of the patients

period of nine months ( June 2019 – April 2020.). Ethical approval was obtained from the institutional ethical committee (ethical approval number: SDC/SIHEC/2020/DIASDATA/0619-0320). The case sheet verification was done using the photographic method. To minimize sampling bias simple random sampling was done. The variables are defined. The parameters that are to be assessed are the patient’s age, gender and the type of the edentulous ridge.

**Statistical Analysis**

The collected data are subjected to the statistical analysis using the SPSS software by IBM of version 23 in which both the descriptive and the inferential test has been done which is Chi-square test.

**RESULTS AND DISCUSSION**

From the above done study, the results are obtained, among the patients undergoing the fixed partial denture treatment, the distribution of the edentulous ridges based on the age groups in which 18-35 years patients are commonly involved for the treatment [Table 1, Figure 1] and the males gender are more commonly involved that the females for the FPD treatment [Table 2, Figure 2], the distribution the edentulous ridges among the FPD patients which mainly has Class I type of ridge was more common [Table 3, Figure 3]. The correlation between the age and the edentulous ridges of the patients based on the Seibert’s classification shows that the age group of 18-35 years with 214 patients shows that Class I type of ridge was more prevalent [Table 4, Figure 4]. X axis represents the patients of different age groups and Y axis represents the number of patients with an edentulous ridge. Patients of age group 18-35 years (34.13%) are more prevalent with Class I type of edentulous ridge for the patients. There is a significant difference between the age groups and edentulous ridge type ( Chi-Square test; p-value = 0.003 -significant).

Based on the Chi-Square test they are found to be statistically significant [p=<0.05]. The correlation between the gender and the edentulous ridge based on the seibert’s classification shows that the males have the higher predilection than the females with the Class I type of ridge more prevalent. Based on the Chi-square test this is not statistically significant [p=>0.05] [Table 5, Figure 5]. X axis represents the patients with gender differences and Y axis represents the number of patients with an edentulous ridge. Males (45.91%) are more prevalent with Class I type of edentulous ridges than the females. There is no statistically significance between gender and edentulous ridge type. (Chi-Square test; p-value =

0.642 - not significant).

The study of the Seibert's classification was mainly intended to give a clear image on the treatment choice and alternatives to achieve successful outcomes. As the primary goal to determine the age and gender distribution of the edentulous ridges in order so that the proper treatment planning of the present situation can be done.

In the study done by the (Abrams *et al.*, 1987) they reported that the prevalence of the anterior ridge deformities of the partially edentulous patient was 91% which was similar to the current study which is 78%, Class I defects were the highest followed by the class IV 10% and then the Class II and Class III with 6% each. In a study done by (Vrotsos *et al.*, 1999), the bone defects in the posterior mandibular tooth region show a maximum posterior 19.9%. In most of the studies Class III defects were more common which was a tradictory finding to this particular study (Vrotsos *et al.*, 1999; Vijayalakshmi and Ganapathy, 2016).

In this study the Class I defect was more prevalent with 78% and followed by the Class IV which is 10% and then the Class II and Class III with 6% each, among the age group of 18-35 years are with 34.13% Class I type of ridge which is more prevalent and 36-54 years with 33.93% and the 55-83 years with 9.78% this is mainly similar to the findings of the previous studies (Ashok, 2014).

According to these studies also male gender has a higher prevalence of the edentulous ridge of about 58% when compared with the females of about 42%, these are mainly similar towards the findings of the previous studies (Basha *et al.*, 2018).

The reports (Vrotsos *et al.*, 1999; Amberkar and Iyer, 2017) suggests that soft tissue augmentation with the subepithelial connective tissue graft is a promising treatment in a condition with the Class I defect. The main advantages are maintenance of the adequate blood supply and healing by first intention which provides greatest comfort to the patient post-operative (Jain *et al.*, 2017). The disadvantages are limited volume of the graft which depends on the size of the graft and increases prone necrosis in case of the large grafts. In the another study done by Parikh et al, roll flap technique is suggested to be the most predictable and the simplest method for the management of the patient with alveolar ridge defect.

The main limitations of this study was a single centred study with a geographical limitation and provided with the lesser sample size. The future scope was to determine the proper treatment outcomes of

the fixed partial denture patient with a higher success rate. The study when it is done with a higher sample size and with various ethnicities can provide better results for the study.

## CONCLUSION

It is very essential to assess the edentulous ridge status of the patient who has reported with a complaint of loss of teeth. According to the amount of destruction they can be classified based on the Seibert's Classification through this age group and the gender predilection the various treatment planning can be suggested to the patients to ensure the prognosis and the treatment outcomes becomes successful. From this study, the patients of age group 18-35 years had higher prevalence for Class I type of edentulous ridge with higher male predilection. The suitable treatment for the Class I type of ridge defect is soft tissue augmentation.

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The authors declare that they have no funding support for this study.

## Conflict of Interest

The authors declare that they have no conflict of interest for this study.

## REFERENCES

- Abrams, H., Kopczyk, R. A., Kaplan, A. L. 1987. Incidence of anterior ridge deformities in partially edentulous patients. *The Journal of Prosthetic Dentistry*, 57(2):191-194.
- Ajay, R. 2017. Effect of surface modifications on the retention of cement-retained implant crowns under fatigue loads: An In vitro study. *Journal of Pharmacy And Bioallied Sciences*, pages 154-154.
- Amberkar, S. C., Iyer, J. V. 2017. Reconstruction of Localized Horizontal Maxillary Ridge Defect with Subepithelial Connective Tissue Graft. *JSM Oro Facial Surgeries*, 2(1):1-4.
- Ariga, P. 2018. Determination of Correlation of Width of Maxillary Anterior Teeth using Extraoral and Intraoral Factors in Indian Population: A Systematic Review. *World Journal of Dentistry*, pages 68-75.
- Ashok, V. 2014. Lip Bumper Prosthesis for an Acromegaly Patient: A Clinical Report. *Journal of Indian Prosthodontic Society*, 14:279-282.
- Ashok, V., Suvitha, S. 2016. Awareness of all ceramic restoration in rural population. *Research Journal of Pharmacy and Technology*, 9(10):1691-1691.
- Basha, F. Y. S., Ganapathy, D., Venugopalan, S.

2018. Oral Hygiene Status among Pregnant Women. *Research Journal of Pharmacy and Technology*, 11(7):3099–3099.
- Duraisamy, R. 2019. Compatibility of Nonoriginal Abutments With Implants: Evaluation of Microgap at the Implant-Abutment Interface, With Original and Nonoriginal Abutments. *Implant dentistry*, 28(3):289–295.
- Ganapathy, D. 2016. Effect of Resin Bonded Luting Agents Influencing Marginal Discrepancy in All Ceramic Complete Veneer Crowns. *Journal of clinical and diagnostic research*, 10(12):67–70.
- Ganapathy, D. M., Kannan, A., Venugopalan, S. 2017. Effect of Coated Surfaces influencing Screw Loosening in Implants: A Systematic Review and Meta-analysis. *World Journal of Dentistry*, 8(6):496–502.
- Gupta, A., Dhanraj, M., Sivagami, G. 2010. Status of surface treatment in endosseous implant: A literary overview. *Indian Journal of Dental Research*, 21(3):433–433.
- Jain, A., Ranganathan, H., Ganapathy, D. 2017. Cervical and incisal marginal discrepancy in ceramic laminate veneering materials: A SEM analysis. *Contemporary Clinical Dentistry*, 8(2):272–272.
- Jyothi, S. 2017. Periodontal Health Status of Three Different Groups Wearing Temporary Partial Denture. *Research Journal of Pharmacy and Technology*, pages 4339–4339.
- Kannan, A., Venugopalan, S. 2018. A systematic review on the effect of use of impregnated retraction cords on gingiva. *Research Journal of Pharmacy and Technology*, 11(5):2121–2121.
- Selvan, S. R., Ganapathy, D. 2016. Efficacy of fifth generation cephalosporins against methicillin-resistant *Staphylococcus aureus*-A review. *Research Journal of Pharmacy and Technology*, 9(10):1815–1815.
- Shahroom, N. S. B., Jain, A. R. 2018. Prevalence of (alveolar ridge defect) using Seibert's classification in fixed partial denture patient. *Drug Invention Today*, (5):10–10.
- Subasree, S., Murthykumar, K., Dhanraj 2016. Effect of Aloe Vera in Oral Health-A Review. *Research Journal of Pharmacy and Technology*, 9(5):609–609.
- Venugopalan, S. 2014. Magnetically retained silicone facial prosthesis. *Nigerian journal of clinical practice*, 17(2):260–264.
- Vijayalakshmi, B., Ganapathy, D. 2016. Medical management of cellulitis. *Research Journal of Pharmacy and Technology*, 9(11):2067–2067.
- Vrotsos, J. A., Parashis, A. O., Theofanatos, G. D., Smu-  
low, J. B. 1999. Prevalence and distribution of bone defects in moderate and advanced adult periodontitis. *Journal of Clinical Periodontology*, 26(1):44–48.