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# ESTHETICS IN REMOVABLE PARTIAL DENTURE PATIENTS VISITING UNIVERSITY DENTAL HOSPITAL

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**Abstract**

*Removable cast partial dentures are considered a definite removable prosthesis but the location of the clasp may affect the aesthetic.A well-constructed removable partial denture can be an excellent treatment alternative for replacement thearpy .Yet, these patients deserve the best esthetic and functional results possible.The aim of this study is to evaluate the esthetic outcome of removable partial denture.In this retrospective study, the data was collected from case sheet records of 86,000 patients were postoperative removable partial denture insertion images were analyzed and score was given.The obtained data were analysed. Total of 1195 patients out of which female patients accounts for 42.19% and male patients accounts for 57.8%.Poor esthetics accounts for 26.1%,moderate esthetics accounts for 46%,and partial denture with good esthetics accounts for 27.6%.With the limitations of our study we would conclude that more number of patients receive removable partial denture with a fair amount of aesthetics. There are esthetics concerns that are still to be addressed in patients with removable partial denture.*

**Keywords** -*Removable partial denture, aesthetics, satisfaction.*

## Introduction

Denture esthetics is defined by the glossary of prosthodontics in terms produced via dental processes that affect the beauty and attractiveness of the person(1–3).It is very unfortunate for patients to lose their teeth at a very young age. The reason for loss of the tooth may vary from person to person, implant has become the treatment of choice for the dentist for their patient over removable partial processes but, the various other factors such as anatomical , physiological, psychological, medical and financial consideration of the patient begin the reason for deciding. It is a cost effective and best treatment option for partial edentulism(4–6). But, patients are concerned about the metal exposure in cast partial denture and hence worried about the esthetic appearance(7–10).

Removable cast partial dentures are considered a definite removable prosthesis but the location of the clasp may affect the aesthetic. Hence, when the patient is more concerned about the aesthetic and appearance flexible partial denture which are aesthetically superior to flippers and cost partial denture. However for the success of flexible RPD proper diagnosis, treatment planning and insertion technique of the processes it's very important. Which may not be accepted by the patient due to the cost. Dissatisfaction of the denture was related mainly to age, health, prior experience with the prosthetics and type of opposing dentition and aesthetics(11–14). Denture

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has proven to be an improvement over conventional complete prostheses with respect to chewing efficiency, patient comfort level, and esthetics satisfaction .(15–18).The context for increasing the life spans and evidence from various national dental health surveys in industrialized countries indicate that the proportion of edentulous people will continue to decline and that more people will retain more teeth into old age(19)

A well-constructed removable partial denture can be an excellent treatment alternative for replacement thearpy (20–23).Yet, these patients deserve the best esthetic and functional results possible. In these cases, a limited number of strategically placed dental implants in conjunction with the remaining natural teeth can establish a favorable removable partial denture design by significantly reducing the effect of the reciprocal arm and improving the fulcrum line position. When an implant or a limited number of implants is used to support the removable partial denture, additional retention is achieved, and the need for anesthetic buccal retentive arm clasps are avoided in the esthetic zone(24,25).The concepts of need and demand are central in studies on dentistry. Need has been defined as "the quantity of dental health care which expert opinion judges ought to be consumed over a relevant time period, in order to remain or become as dentally healthy as is permitted by existing knowledge.(26)However, such a definition gives little attention to the individual's personal comfort and quality of life. Need, however defined, does not always lead to demand for treatment,(27) depending on factors such as individual preferences, cost, cultural differences, psychosocial considerations, comfort, age, and accessibility of services. In most industrialized countries, the demand for prosthodontic treatment is influenced more by esthetic demands rather than by a few missing teeth in the posterior regions.(28,29) Therefore, so-called sociodental factors, social and cultural background, socioeconomic aspects, oral comfort, and appearance must be included and evaluated when dealing with need and demand for prosthodontic treatment. The professional attitude toward need must be that there is no true objective or subjective need. Need is established only in communication with mutual respect between the professional and the patient. (30).The aim of this study is to evaluate the esthetic outcome in patients wearing removable partial denture .

## .MATERIALS AND METHOD

### Study design on study setting

Retrospective study where 86,000 patients case sheets were analysed.The postoperative images of removable partial denture insertion were graded and scoring was given.

### Participants

All the patients who receive removable partial denture Saveetha dental college and hospital from June 2019-March 2020

### Inclusion criteria

- Patients with partial edentulism
- Removable denture wearers within one year period of time
- Patients aged between 20 years old and above

### Exclusion criteria

- Removable denture wearer for more than one year
- Patients with major physical disabilities



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- Syndromic patients

**Study size**

The sample size was 1159 Patients.

**Ethical approval**

The ethical approval for the research(SDC/SIHEC/2020/DIASDATA/0619-0320) was obtained from the ethical committee of Saveetha Dental college ,Saveetha Institute of medical and Technical science,Saveetha University,Chennai

**Data Analysis**

The data was collected from patient reports in hospitals,The obtained data was entered in microsoft excel 2012 .Then exported to statistical package for social science for windows (version 20.0.SPSS Inc.,Chicago III,USA)and all subjected to statistical analysis.

**RESULTS**

In our present study there are total of 1195 patients out of which 42.19% account for female patients and male patients accounts for 57.8%.So,male population is higher than the female population(Figure-1).In Figure 2 its shows the age of the patients involved in the study.20 years old and below patients accounts for 4.9%,21-30 years old patients accounts for 6.9%,31-40 years old patients accounts for 13.8%,41-50 years old patients accounts for 26.2%, 51 years old and above accounts for about 48%.This is it clearly depicted that patients with the age range of 51 years old and above were found more in our study.Figure 3 represents the main idea of the study the esthetic status of the removable partial denture.Grading was given to the removable partial denture depending on poor,moderate and good.Poor esthetics accounts for 26.1%,moderate esthetics accounts for 46%,f partial denture with good esthetics accounts for 27.6%.In Figure 4 association of gender and removable partial denture esthetics status was done where in female patients with removable partial denture with poor esthetics accounts for 10.5%,moderate esthetics accounts for 19.6%,good esthetics accounts for 12%.Among male population patients with poor removable partial denture esthetics accounts for 15.5%,moderate esthetics removable partial denture accounts for 26.5%,patients with good removable partial denture esthetics accounts for 15.6%.In both male and female population moderate esthetics in removable partial denture seems to be higher when compared to the others.However,no statistically significant differences between both the groups were observed.(Pearson Chi square test; P= 0.718 ,P>0.05).

In Figure 5 association of age and esthetic status of removable partial denture was done.In patients aged between 20 years old and below patients with poor esthetics stand for 0.9%,moderate esthetics stand for 2.7%,good esthetics stand for 1.2%.In patients aged between 21-30 years old poor esthetics stand for 1.3%,moderate esthetics stand for 3.3%,good esthetics stand for 2.1%.In patients aged between 31-40 years old poor esthetics stand for 4.1%,moderate esthetics stand for 6.9%,good esthetics stand for 2.7%.In patients aged between 41-50 years old poor esthetics stand for 6.7%,moderate esthetics stand for 11.6%,good esthetics stand for 7.8%.In patients aged between 51 years old and above poor esthetics stand for 12.9%,moderate esthetics stand for 21.4%,good esthetics stand for 13.6%.However,no statistically significant differences between the groups were observed.(Pearson Chi square test; P= 0.235 ,P>0.05.

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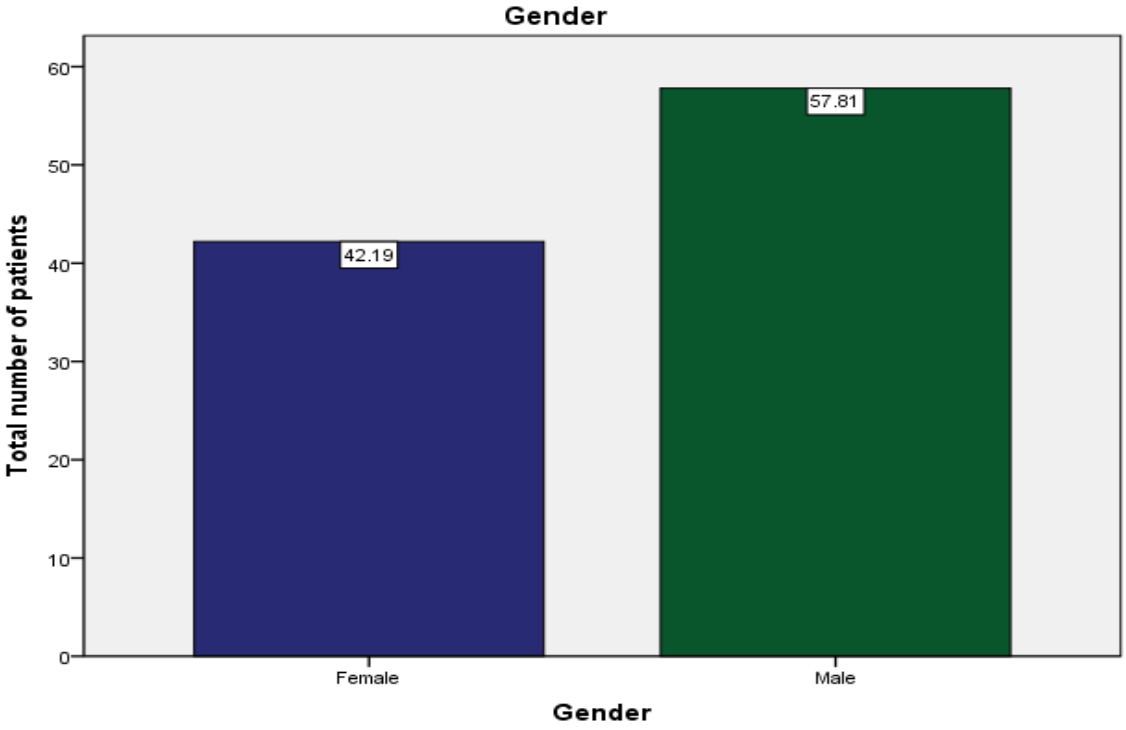


Figure 1 :Distribution of gender of the patients in our study.X axis denotes the Gender of the patients and Y-axis shows the total number of patients.Male patients(Green;57.81%) were more compared to female patients(Blue;42.19%).

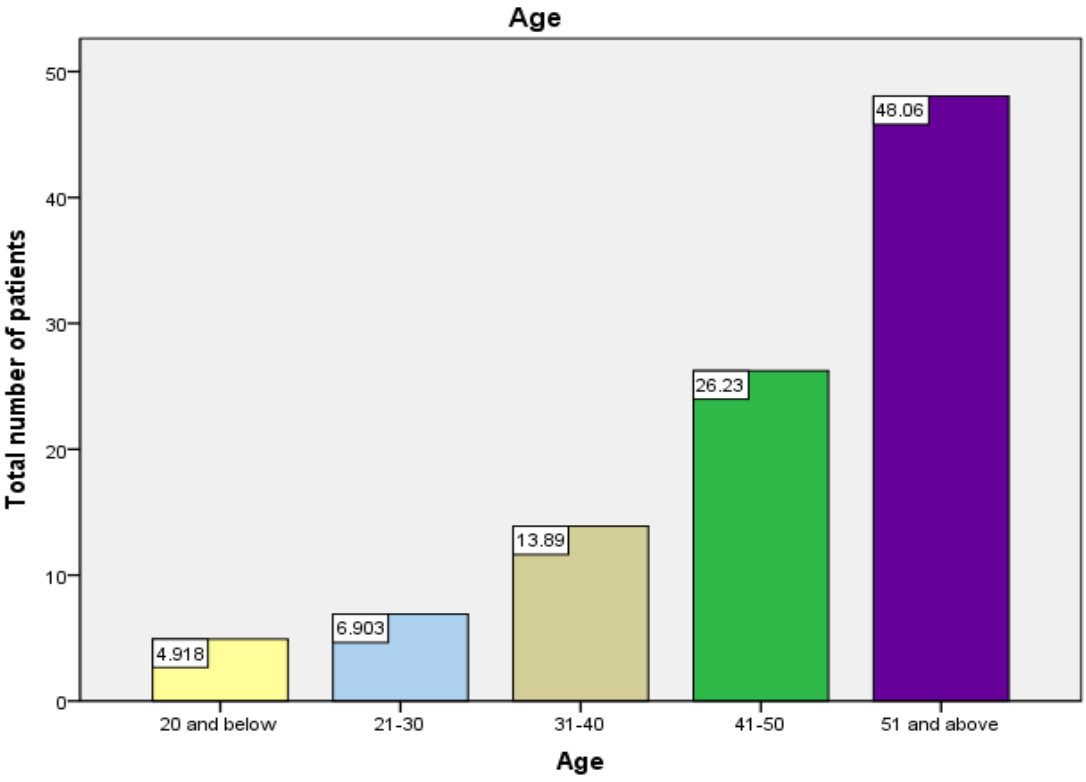


Figure 2 shows the distribution of age of patients involved in our study.X axis represents the age range of the patients,Y axis shows the total number of patients.It is shown that patients aged 51 years old and above (violet;48.06%) were found more when compared to other age groups.



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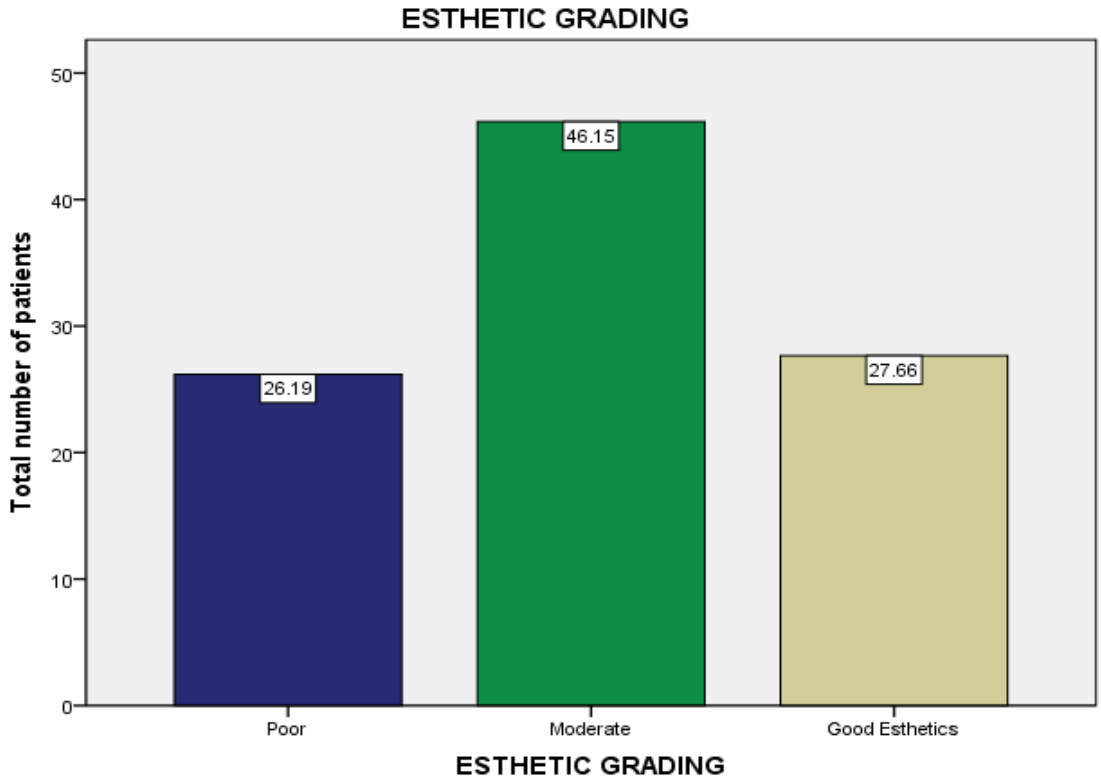


Figure 3 shows the esthetics status of the Removable Partial Denture.X axis shows the esthetic grading and Y axis shows the number of patients in percentage .Poor esthetics(Blue) accounts for 26.19%,Moderate esthetics(Green) accounts for 46.16% and patients with Good esthetics (Beige)

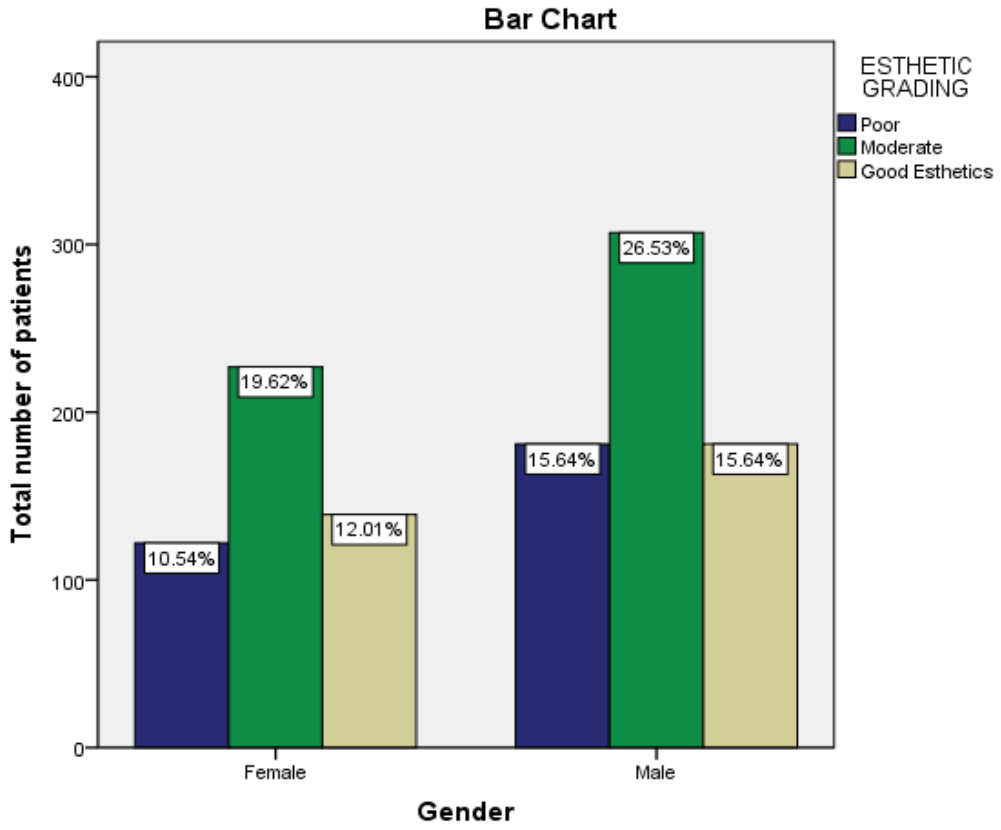


Figure 4 shows the association between gender and esthetics grading.X axis shows the gender and the esthetic grading of the patients Y axis shows the total number of patients.In both female and male patients moderate esthetics for fixed partial denture accounts for 19.62% and 26.53% respectively.However,no statistically



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significant differences between both the groups were observed.(Pearson Chi square test; P= 0.718 ,P>0.05).

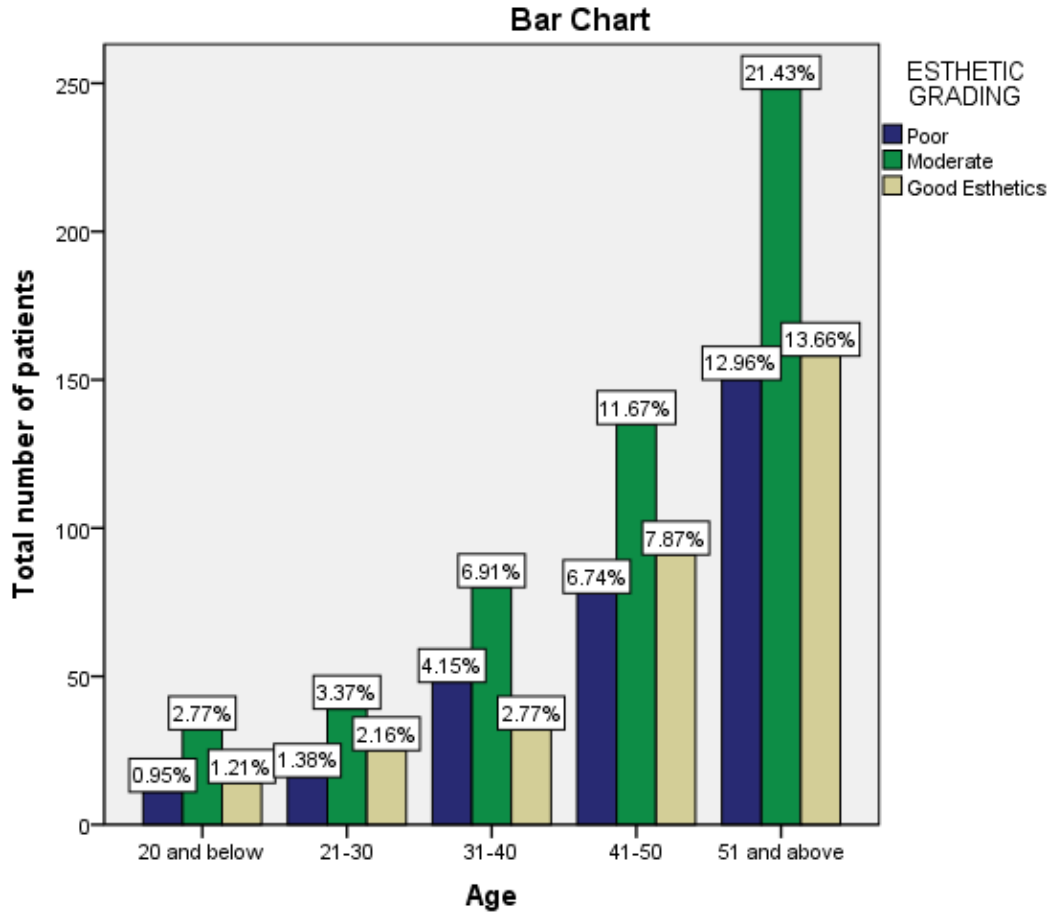


Figure 5 shows the association between age of the patients and esthetic status of fixed partial denture.In 51 years old and above patients they have received fixed partial denture with moderate esthetics (21.43%).However,no statistically significant differences between the groups were observed.(Pearson Chi square test; P= 0.235 ,P>0.05).

## DISCUSSION

Dental treatment of partially edentulous patients is becoming more important because people are saving more teeth, and the complete edentulous population diminishes(19,31,32).Almost all partially edentulous patients desire the benefits of implant restorations; but, unfortunately, many of them cannot or will not meet all the criteria to have fixed implant supported restorations because of anatomical, medical, financial, or personal reasons. In situations when financial, systemic, or local conditions preclude the use of a fixed partial denture, a well-constructed removable partial denture can be a valid treatment alternative(21,23,33,34).In this context, it must be clearly recognized that practical problems with removable partial dentures (lack of stability and retention, unesthetic retentive clasping, and discomfort upon loading) are common and may be the reason why so many patients stop wearing their removable partial dentures. Yet, these patients deserve the best esthetic and functional results possible. In these cases, a limited number of strategically placed dental implants in conjunction with the remaining natural teeth can establish a favorable removable partial denture design by significantly reducing the effect of a reciprocal arm and improving the fulcrum line position. When an implant or a limited number of implants are used to support the removable partial denture, additional retention is achieved, and the need for anesthetic buccal retentive arm clasps is avoided at the esthetic zone(35,36).

Our study there were a total of 1159 patients out of which 489 were female patients and 670 where male patients. 303 patients received removable partial denture with poor aesthetics, 535 had their removal partial denture with fair amount of aesthetics and 321 patients had received their removable partial denture with good aesthetics.



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Agerberg and Carlson reported that cosmetic and aesthetic were the primary reason for prosthodontics treatment expressed by their patients, which involves mastication being the second most common reason(37). God has to be taken during designing the symmetry of the class assembling to both the maxillary and mandibular arch is crucial for their reasons(9).Numerous patients fail to wear removable partial dentures as they find the display of the clasp assembly is aesthetically unacceptable(38–41). Clasp are used as direct retainers for removable partial denture. The flexible clasp engages the undercut of the abutment to provide retention for the removal of partial denture(11,42–44).A prototype nonmetal class denture should be fabricated using CAD CAM technology(45,46). The CAD CAM clasp made by reporting a laser sintering on high speed milling can be used effectively as a removable partial denture component(47,48). Aesthetics constitute its major advantages as several two chairs are available for use anteriorly but long-term studies still need to be contacted to be used on a long scale(49–51).

## CONCLUSION

With the limitations of our study we conclude that more number of patients receive removable partial denture with a fair amount of esthetics. There are esthetics concerns that are still to be addressed in patients with removable partial denture.

## AUTHORS CONTRIBUTION

Author1(Amanthi Ganapathi) Carried out the retrospective study by collecting the data and drafting the manuscript after performing the necessary statistical analysis.Author 2(Dr.Dhanraj.G) aided in the conception of the topic,participated in the study design,statistical analysis and supervised the preparation of the manuscript and helped in study design and has coordinated in developing the manuscript.All the authors have equally contributed in developing this manuscript.

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## CONFLICT OF INTEREST

Nil

## REFERENCES

1. Academy of Prosthodontics. The Glossary of Prosthodontic Terms. Mosby Journal Reprint Department; 1994. 70 p.

2. Jain AR, Nallaswamy D, Ariga P, Ganapathy DM. Determination of correlation of width of maxillary anterior teeth using extraoral and intraoral factors in Indian population: A systematic review. World J Dent. 2018;9:68–75.

3. Jyothi S, Robin PK, Ganapathy D, Others. Periodontal health status of three different groups wearing temporary partial denture. Research Journal of Pharmacy and Technology. 2017;10(12):4339–42.

4. Shah R, Aras M. Esthetics in removable partial denture--a review. Kathmandu Univ Med J . 2013 Oct;11(44):344–8.

5. Duraisamy R, Krishnan CS, Ramasubramanian H, Sampathkumar J, Mariappan S, Nagarasampatti Sivaprakasam A. Compatibility of Nonoriginal Abutments With Implants: Evaluation of Microgap at the



**Received: Sep 2019 | Revised: Oct 2019 | Accepted: Nov 2019**

Implant-Abutment Interface, With Original and Unoriginal Abutments. Implant Dent. 2019 Jun;28(3):289–95.

6. Selvan SR, Ganapathy D. Efficacy of fifth generation cephalosporins against methicillin-resistant Staphylococcus aureus-A review [Internet]. Vol. 9, Research Journal of Pharmacy and Technology. 2016. p. 1815.

7. Cowan RD, Gilbert JA, Elledge DA, McGlynn FD. Patient use of removable partial dentures: two- and four-year telephone interviews. J Prosthet Dent. 1991 May;65(5):668–70.

8. Donovan TE, Derbabian K, Kaneko L, Wright R. Esthetic Considerations in Removable Prosthodontics [Internet]. Vol. 13, Journal of Esthetic and Restorative Dentistry. 2001. p. 241–53.

9. Ganapathy D, Sathyamoorthy A, Ranganathan H, Murthy Kumar K. Effect of Resin Bonded Luting Agents Influencing Marginal Discrepancy in All Ceramic Complete Veneer Crowns. J Clin Diagn Res. 2016 Dec;10(12):ZC67–70.

10. Subasree S, Murthy Kumar K, Dhanraj. Effect of Aloe Vera in Oral Health-A Review [Internet]. Vol. 9, Research Journal of Pharmacy and Technology. 2016. p. 609.

11. Frank RP, Milgrom P, Leroux BG, Hawkins NR. Treatment outcomes with mandibular removable partial dentures: a population-based study of patient satisfaction. J Prosthet Dent. 1998 Jul;80(1):36–45.

12. Kokich VO Jr, Kiyak HA, Shapiro PA. Comparing the perception of dentists and lay people to altered dental esthetics. J Esthet Dent. 1999;11(6):311–24.

13. Ranganathan H, Ganapathy DM, Jain AR. Cervical and Incisal Marginal Discrepancy in Ceramic Laminate Veneering Materials: A SEM Analysis. Contemp Clin Dent. 2017 Apr;8(2):272–8.

14. Vijayalakshmi B, Ganapathy D. Medical management of cellulitis [Internet]. Vol. 9, Research Journal of Pharmacy and Technology. 2016. p. 2067.

15. Mericske-Stern R. Treatment outcomes with implant-supported overdentures: clinical considerations. J Prosthet Dent. 1998 Jan;79(1):66–73.

16. Burns DR, Unger JW, Elswick RK, Beck DA. Prospective clinical evaluation of mandibular implant overdentures: Part I—retention, stability, and tissue response [Internet]. Vol. 73, The Journal of Prosthetic Dentistry. 1995. p. 354–63.

17. Cune MS, de Putter C, Hoogstraten J. Treatment outcome with implant-retained overdentures: Part I—Clinical findings and predictability of clinical treatment outcome [Internet]. Vol. 72, The Journal of Prosthetic Dentistry. 1994. p. 144–51.

18. Cune MS, de Putter C, Hoogstraten J. Treatment outcome with implant-retained overdentures: Part II—Patient satisfaction and predictability of subjective treatment outcome [Internet]. Vol. 72, The Journal of Prosthetic Dentistry. 1994. p. 152–8.

19. Na NA. Adult Dental Health Survey (1998): Oral Health in the United Kingdom 1998. Palgrave Macmillan UK; 2000. 577 p.

20. Kapur KK. Veterans Administration Cooperative Dental Implant Study — Comparisons between fixed partial dentures supported by blade-vent implants and removable partial dentures. Part I: Methodology and comparisons between treatment groups at baseline [Internet]. Vol. 58, The Journal of Prosthetic Dentistry. 1987. p. 499–511.

21. Kapur KK. Veterans administration cooperative dental implant study—comparisons between fixed partial dentures supported by blade-vent implants and removable partial dentures. Part IV: Comparisons of patient satisfaction between two treatment modalities [Internet]. Vol. 66, The Journal of Prosthetic Dentistry. 1991. p. 517–29.

22. Bergman B, Olsson C-O, Hugoson A. Periodontal and Prosthetic Conditions in Patients Treated with Removable Partial Dentures and Artificial Crowns: A Longitudinal Two-Year Study [Internet]. Vol. 29,



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Acta Odontologica Scandinavica. 1971. p. 621–38.

23. Rissin L, Feldman RS, Kapur KK, Chauncey HH. Six-year report of the periodontal health of fixed and removable partial denture abutment teeth [Internet]. Vol. 54, The Journal of Prosthetic Dentistry. 1985. p. 461–7.

24. Budtz-Jorgensen E, Bochet G. Alternate framework designs for removable partial dentures [Internet]. Vol. 80, The Journal of Prosthetic Dentistry. 1998. p. 58–66. Available from

25. Carvalho WR de, de Carvalho WR, Barboza EP, Caúla AL. Implant-Retained Removable Prosthesis with Ball Attachments in Partially Edentulous Maxilla [Internet]. Vol. 10, Implant Dentistry. 2001. p. 280–4.

26. Chee WWL. Treatment planning: implant-supported partial overdentures. J Calif Dent Assoc. 2005 Apr;33(4):313–6.

27. Oral health in America: a report of the Surgeon General. J Calif Dent Assoc. 2000 Sep;28(9):685–95.

28. Kayser AF, Witter DJ. Oral functional needs and its consequences for dentulous older people. Community Dent Health. 1985 Dec;2(4):285–91.

29. Oosterhaven SP, Westert GP, Schaub RM. Perception and significance of dental appearance: the case of missing teeth. Community Dent Oral Epidemiol. 1989 Jun;17(3):123–6.

30. Kronstrom M, Palmqvist S, Soderfeldt B, Carlsson GE. Dentist-related factors influencing the amount of prosthodontic treatment provided [Internet]. Vol. 28, Community Dentistry and Oral Epidemiology. 2000. p. 185–94.

31. Douglass CW, Watson AJ. Future needs for fixed and removable partial dentures in the United States [Internet]. Vol. 87, The Journal of Prosthetic Dentistry. 2002. p. 9–14.

32. Wostmann B, Budtz-Jorgensen E, Jepson N, Mishimoto E, Palmqvist S, Sofou A, et al. Indications for removable partial dentures: a literature review [Internet]. Vol. 95, The Journal of Prosthetic Dentistry. 2006. p. 70.

33. Kapur KK. Veterans administration cooperative dental implant study—comparisons between fixed partial dentures supported by blade-vent implants and removable partial dentures. Part III: Comparisons of masticatory scores between two treatment modalities [Internet]. Vol. 65, The Journal of Prosthetic Dentistry. 1991. p. 272–83.

34. Bergman B, Hugoson A, Olsson C-O. A 25 year longitudinal study of patients treated with removable partial dentures [Internet]. Vol. 22, Journal of Oral Rehabilitation. 1995. p. 595–9.

35. Mijiritsky E, Ormianer Z, Klinger A, Mardinger O. Use of dental implants to improve unfavorable removable partial denture design. Compend Contin Educ Dent. 2005 Oct;26(10):744–6, 748, 750 passim.

36. Brudvik JS. Advanced Removable Partial Dentures. Quintessence Publishing Company; 1999. 164 p.

37. Agerberg G, Carlsson GE. Chewing Ability in Relation to Dental and General Health [Internet]. Vol. 39, Acta Odontologica Scandinavica. 1981. p. 147–53.

38. Beaumont AJ Jr. An overview of esthetics with removable partial dentures. Quintessence Int. 2002 Nov;33(10):747–55.

39. Fitton JS, Davies EH, Howlett JA, Pearson GJ. The physical properties of a polyacetal denture resin [Internet]. Vol. 17, Clinical Materials. 1994. p. 125–9.

40. Ganapathy DM, Kannan A, Venugopalan S. Effect of Coated Surfaces influencing Screw Loosening in Implants: A Systematic Review and Meta-analysis [Internet]. Vol. 8, World Journal of Dentistry. 2017. p. 496–502.

41. Ashok V, Suvitha S. Awareness of all ceramic restoration in rural populations [Internet]. Vol. 9, Research Journal of Pharmacy and Technology. 2016. p. 1691.



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42. Owen CP. Fundamentals of Removable Partial Dentures. Juta and Company Ltd; 2000. 146 p.

43. Sato Y, Hosokawa R. Proximal plate in conventional circumferential cast clasp retention. J Prosthet Dent. 2000 Mar;83(3):319–22.

44. Ashok V, Nallaswamy D, Benazir Begum S, Nesappan T. Lip Bumper Prosthesis for an Acromegaly Patient: A Clinical Report [Internet]. Vol. 14, The Journal of Indian Prosthodontic Society. 2014. p. 279–82.

45. Takahashi Y, Hamanaka I, Isshi K. CAD/CAM-Fabricated Nonmetal Clasp Denture: In Vitro Pilot Study [Internet]. Vol. 30, The International Journal of Prosthodontics. 2017. p. 277–9.

46. Venugopalan S, Ariga P, Aggarwal P, Viswanath A. Magnetically retained silicone facial prosthesis. Niger J Clin Pract. 2014 Mar;17(2):260–4.

47. Nakata T, Shimpo H, Ohkubo C. Clasp fabrication using one-process molding by repeated laser sintering and high-speed milling [Internet]. Vol. 61, Journal of Prosthodontic Research. 2017. p. 276–82.

48. Kannan A, Venugopalan S. A systematic review on the effect of use of impregnated retraction cords on gingiva [Internet]. Vol. 11, Research Journal of Pharmacy and Technology. 2018. p. 2121.

49. Davenport J, Baskar R, Heath J, Ralph J, Glantz P-. Retention [Internet]. Vol. 189, British Dental Journal. 2000. p. 646–57.

50. Basha FYS, Ganapathy D, Venugopalan S. Oral Hygiene Status among Pregnant Women [Internet]. Vol. 11, Research Journal of Pharmacy and Technology. 2018. p. 3099.

51. Farhat Yaasmeen Sadique Basha, Rajeshkumar S, Lakshmi T, Anti-inflammatory activity of Myristica fragrans extract . Int. J. Res. Pharm. Sci., 2019 ;10(4), 3118-3120 DOI: https://doi.org/10.26452/ijrps.v10i4.1607

52. Ajay R, Suma K, Ali SA, Kumar Sivakumar JS, Rakshakan V, Devaki V, et al. Effect of Surface Modifications on the Retention of Cement-retained Implant Crowns under Fatigue Loads: An In vitro Study. J Pharm Bioallied Sci. 2017 Nov;9(Suppl 1):S154–60.



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