

A Randomized clinical trial study Patient satisfaction by two types of denture adhesives in complete dentures at Bolan Medical College

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Abstract

Background: Complete denture is a removable prosthesis that replaces the form and function of missing teeth along with the associated structure without causing much of the damage to the remaining structures of the masticatory apparatus. **Objective:** To compare two types of denture adhesives in complete dentures. **Duration and Setting:** This Randomized clinical trial study was done Dentistry Department Bolan Medical College Quetta, Balochistan from 24/10/2018 to 24/10/2019. **Materials and Methods:** In this study a total of 80 (40 in each group) patients were observed. The participants were explained about the powder (Ultra corega powder tasteless) and paste (ultra corega paste tasteless) form of the denture adhesives. Patient were requested to rate their satisfaction level in the term of Good fair and Poor in the following categories. like (Retention in upper dentures, retention in lower dentures, chewing ability, test of adhesive, removal of adhesive) **Results:** Group A (Powder) was 63 years with $SD \pm 11.39$ while mean age in Group B (Paste) was 65 years with $SD \pm 10.81$. In Group A (Powder) 58% patients were male and 42% patients were female while in Group B (Paste) 60% patients were male and 40% patients were female. In Group A (Powder) 33% patients had found good taste of adhesive while in Group B (Paste) 37% patients had found good taste of adhesive. **Conclusion:** the concludes that denture adhesive in paste was found better as compare to

*denture adhesive in powder form in the treatment of complete dentures in term
of patients satisfaction.*

Keywords: powder, denture adhesives, complete dentures.

INTRODUCTION:

The world Health Organization (WHO) defines health as “a state of complete physical, mental and social well-being, not merely the absence of disease or infirmity”. This modern approach to health lends itself to Oral health as well. Loss of teeth results in compromised facial aesthetics and loss of function¹. Complete denture is a removable prosthesis that replaces the form and function of missing teeth along with the associated structure without causing much of the damage to the remaining structures of the masticatory apparatus. Fabrication of complete denture has to satisfy certain fundamental principles about stress distribution and optimum tissue preservation.²

Dentists have an important role to play in providing good quality complete dentures and in encouraging their edentulous patients to improve the quality of their diet. There are many factors involved in success of a good quality complete denture, one of them is retention. There are some forcing situations where providing desirable (optimal) retention may be a problem.³ Poor fitting denture is one of the most annoying problems among the complete denture wearers.⁴ Denture adhesives are used to improve the retention and stability of denture in large number of patients without any advice from dentist. First use of denture adhesive was reported in 1935. 15% denture wearers in United States used denture adhesives. 1990, 30% denture wearers used or had used denture adhesives.⁵

Denture adhesive is a material These products were used to bond and retain dentures in their designated suitable denture-bearing areas and significantly reduce the displacement of dentures during chewing, biting and speaking.⁶ These products are prepared by pharmacist who mixed plant gums to produce a material that could absorb the humidity of saliva and swell to form a mucilaginous layer adhering to the oral mucosa and dentures. Denture adhesives are classified according to manufacturing type i.e. powder, paste, tape or cushion. Denture adhesives are used for the best retention in complete

dentures. In our setup patients who are satisfied with their dentures are mainly implant retained which is very expensive and lengthy procedure. Adhesives are not prescribed routinely to conventional denture wearers’.

MATERIAL AND METHODS

All patients were selected according to inclusion criteria from outpatient department Bolan Medical College Quetta, after taking permission from ethical committee. The principal operator of the study was Dentistry and post graduate trainees of the institute. The patient underwent history and complete oral examination after a verbal and written informed consent. Confounders were excluded to prevent biases in the results. The participants were explained about the powder (Ultra corega powder taste less) and paste (ultra corega paste taste less) form of the denture adhesives. Patient was advised to use for a week the paste form and for a week the powder form. Patient had recalled after 15 days. The retentive performance of these was assessed on their follow up visit using a simple questionnaire filled in by the investigator according to patients answers. Patient were requested to rate their satisfaction level in the term of Good fair and Poor in the following categories. like (Retention in upper dentures, retention in lower dentures, chewing ability, test of adhesive, removal of adhesive)

Data was entered and analyzed with the help of SPSS 20.0. Descriptive statistics were used to analyze quantitative and qualitative variables. For qualitative variable like gender, response frequency and percentage was calculated. For quantitative variable like age, function and comfort score mean±standard deviation was calculated for satisfaction scores among patients. Chi square test was used to compare the score of satisfaction in each group. Effect modifiers like age, gender were controlled through stratification. Post stratification chi square test was applied taking P value ≤ 0.05 as significant value.

RESULTS

In this study age distribution among two groups was analyzed as in Group A (Powder) 2 (5%) patients were in age range 40-50 years, 9 (23%) patients were in age range 51-60 years, 29 (72%) patients were in age range 61-70 years Mean age was 63 years with $SD \pm 11.39$. Where as in Group B (Paste) 2 (5%) patients were in age range 40-50 years, 11 (28%) patients were in age range 51-60 years, 27 (67%) patients were in age range 61-70 years Mean age was 65 years with $SD \pm 10.81$. (table no 1)

Gender distribution among two groups was analyzed as in Group A (Powder) 23 (58%) patients were male and 17 (42%) patients were female. Where as in Group B (Paste) 24 (60%) patients were male and 16 (40%) patients were female (table no 2)

Taste of adhesive among two groups was analyzed as in Group A (Powder) 13 (33%) patients had found good taste of adhesive, 21 (52%) patients had found fairly taste of adhesive while 6 (15%) patients had found worse taste of adhesive. Where as in Group B (Paste) 15 (37%) patients had found good taste of adhesive, 22 (55%) patients had found fairly taste of adhesive while 3 (8%) patients had found worse taste of adhesive (table no 3)

Retention among two groups was analyzed as in Group A (Powder) 10 (25%) patients had very satisfied retention, 26 (65%) patients had fairly satisfied retention while 4 (10%) patients had not quite retention. Where as in Group B (Paste) 20 (50%) patients had very satisfied retention, 18 (45%) patients had fairly satisfied retention while 2 (5%) patients had not quite retention (table no 4)

Comfort among two groups was analyzed as in Group A (Powder) 14 (35%) patients had well comfortable, 19 (47%) patients had comfortable while 7 (18%) patients were uncomfortable. Where as in Group B (Paste) 24 (60%) patients had well comfortable, 13 (32%) patients had comfortable while 3 (8%) patients were uncomfortable (table no 5)

Chewing ability among two groups was analyzed as in Group A (Powder) 13 (33%) patients had better chewing ability, 21 (51%) patients had no difference in chewing ability while 6 (15%) patients had worse chewing ability. Where as in Group B (Paste) 23 (58%) patients had better chewing ability, 15 (37%) patients had no

difference in chewing ability while 2 (5%) patients had worse chewing ability (table no 6)

Speech among two groups was analyzed as in Group A (Powder) 15 (38%) patients had well satisfied speech ability, 25 (62%) patients had satisfied speech ability while in Group B (Paste) 21 (52%) patients had well satisfied speech ability, 19 (48%) patients had satisfied speech ability. (table no 7)

Table No 1. Age Distribution

AGE	GROUP A	GROUP B
40-50 years	2(5%)	2(5%)
51-60 years	9(23%)	11(28%)
61-70 years	29(72%)	27(67%)
Total	40(100%)	40(100%)
Mean and SD	63 year ± 11.39	65 year ± 10.81

Group A: Powder (Ultra corega powder taste less)

Group B: Paste (ultra corega paste taste less)

T Test was applied in which P value was 0.4230

Table No 2. Gender Distribution

GENDER	GROUP A	GROUP B
Male	23 (58%)	24 (60%)
Female	17 (42%)	16 (40%)
Total	40 (100%)	40 (100%)

Group A: Powder (Ultra corega powder tasteless)

Group B: Paste (ultra corega paste tasteless)

Chi Square test was applied in which P value was 0.8203

Table No 3. Taste of Adhesive

TASTE OF ADHESIVE	GROUP A	GROUP B
Good taste	13(33%)	15(37%)
Fairly taste	21(52%)	22(55%)
Worse	6(15%)	3(8%)
Total	40(100%)	40(100%)

Group A: Powder (Ultra corega powder tasteless)

Group B: Paste (ultra corega paste tasteless)

Chi Square test was applied in which P value was 0.5582

Table No 4. Retention

RETENTION	GROUP A	GROUP B
Very satisfied	10(25%)	20(50%)
Fairly satisfied	26(65%)	18(45%)
Not quite	4(10%)	2(5%)
Total	40(100%)	40(100%)

Group A: Powder (Ultra corega powder tasteless)

Group B: Paste (ultra corega paste tasteless)

Chi Square test was applied in which P value was 0.0654

Table No 5. Comfort

COMFORT	GROUP A	GROUP B
Well satisfied	14(35%)	24(60%)
Satisfied	19(47%)	13(32%)
Dissatisfied	7(18%)	3(8%)
Total	40(100%)	40(100%)

Group A: Powder (Ultra corega powder tasteless)

Group B: Paste (ultra corega paste tasteless)

Chi Square test was applied in which P value was 0.0687

Table No 6. Chewing Ability

CHEWING ABILITY	GROUP A	GROUP B
Much better	13(33%)	23(58%)
No difference	21(51%)	15(37%)
Worse	6(15%)	2(5%)
Total	40(100%)	40(100%)

Group A: Powder (Ultra corega powder tasteless)

Group B: Paste (ultra corega paste tasteless)

Chi Square test was applied in which P value was 0.0556

Table No 7. Speech

SPEECH	GROUP A	GROUP B
Well satisfied	15(38%)	21(52%)
Satisfied	25(62%)	19(48%)
Total	40(100%)	40(100%)

Group A: Powder (Ultra corega powder tasteless)

Group B: Paste (ultra corega paste tasteless)

Chi Square test was applied in which P value was 2.1983

DISCUSSION

Our study shows that mean age in Group A (Powder) was 63 years with SD \pm 11.39 while mean age in Group B (Paste) was 65 years with SD \pm 10.81. In Group A (Powder) 58% patients were male and 42%

patients were female while in Group B (Paste) 60% patients were male and 40% patients were female. In Group A (Powder) 33% patients had found good taste of adhesive while in Group B (Paste) 37% patients had found good taste of adhesive.

Similar results were observed in another study conducted by Kamran MF et al⁸⁻¹² in which mean ages of the patient in group A and B were 59.32±9.16 years and 55.84±8.80 years respectively. The majority of patients were in the age range of 51-60 years, 20 (40%) patients in tested with denture adhesive powder group and 23 (46%) patients in tested with denture adhesive paste group. There were 33 males (66%) and 17 females (34%) in group A with male to female ratio was 1.9:1. While in group B there were 29 males (58%) and 21 females (42%) with male to female ratio 1.4:1. The majority of patients were in the pre-procedure retention strength between 101-200 grams, 22 (44%) patients in group A. However in group B it was between 23.33-100 grams, 24 (48%) patients. The majority of patients were in the post-procedure retention strength between 401-800 grams, 28 (56%) patients in group A and 36 (72%) patients in group B

In another study conducted by Shamsolketabi S et al^{13,14,15} had reported that Of the 90 participants, 48 (53.3%) individuals were men and 42 (47.7%) were women. 85.6% of patients reported that denture adhesive enhanced the retention of their dentures, 37.8% reported moderate enhancement, and 36.7% reported an enhancement for a limited time (6 h). Chi-square test showed no significant difference in enhanced retention between the 3 groups with different alveolar bone resorption ($P = 0.24$). By applying denture adhesive, 79.1% of patients reported comfort in using their dentures, 8.27% reported decreased pain, 77.8% reported no change in taste, and 4.64% reported improved self-esteem. Only 2.2% reported allergy to adhesive, 4.24% difficulty in cleaning the dentures and oral mucosa. Nearly 64.4% of patients were keen to keep using the adhesive following 2 months of applying. Chi-square test showed no significant difference in willing to use adhesive between groups ($P = 0.28$). Increased retention and fitness was the most frequent reason (87.93%) for using the adhesive voluntarily.

In another study conducted by Psillakis JJ et al¹⁶⁻²⁸ had reported that in powder group 36% patients had found good taste of adhesive and in paste group 40% patients had found good taste of

adhesive. In powder group 32% patients had very satisfied retention and in paste group 57% patients had very satisfied retention. In powder group 31% patients had well comfortable and in paste group 64% patients had well comfortable. In powder group 38% patients had better chewing ability while in paste group 62% patients had better chewing ability. In powder group 43% patients had well satisfied speech ability and 57% patients had satisfied speech ability while in paste group 65% patients had well satisfied speech ability and 35% patients had satisfied speech ability.

CONCLUSION

In this study denture adhesive in paste was found better as compare to denture adhesive in powder form in the treatment of complete dentures in term of patients' satisfaction.

REFERENCES

1. MeKawy N, Gomaa A, Habib A. Comparison of three different forms of denture adhesive: Direct measurement of denture retention and study of patient satisfaction. *Eur J Dent* 2012;58: 1-9.
2. Kumar S. M, Thombare R. U. A Comparative analysis of the effect of various denture adhesives available in market on the retentive ability of the maxillary denture: an in vivo study. *J Indian Prosthodont Soc* 2011; 11:82-88.
3. Pachore N. J, Patel J. R, Sethuraman R, Naveen Y. G. Comparative analysis of the effect of three types of denture adhesives on the retention of maxillary denture basis :an in vivo study. *J Indian Prosthodont Soc* 2014;14:369-375.
4. Usman M, Ahmed AR, Kamran MF. Awareness of dentist and complete denture wearer towards denture adhesives. *Pak Oral Dental J* 2009; 33:192-194.
5. Tarib N. A, Bakar M. T, Murat M. D. T, Ahmed M, Kamarudin K. H. Masticatory efficiency and bite force in complete dentures: study of denture adhesive. *Hong Kong Dent j.* 2010; 7: 67-73.
6. Chiapasco M, Casentini P, Zaniboni M. Bone augmentation procedures in implant dentistry. *Int J Oral Maxillofac Implants* 2009;24:237-59
7. Reddi AH, Weintraub S, Muthukumaram N. Biologic principles of bone induction. *Orthop Clin North Am* 1987;18:207-12.
8. Verhoeven JW, Ruijter J, Cune MS, Terlou M, Zoon M. Onlay grafts in combination with endosseous implants in severe mandibular atrophy: One year results of a prospective, quantitative radiological study. *Clin Oral Implants Res* 2000;11:583-94.
9. Block MS, Almerico B, Crawford C, Gardiner D, Chang A. Bone response to functioning implants in dog mandibular alveolar ridges augmented with distraction osteogenesis. *Int J Oral Maxillofac Implants* 1998;13:342-51.
10. Zaffe D, Bertoldi C, Palumbo C, Consolo U. Morphofunctional and clinical study on mandibular alveolar distraction osteogenesis. *Clin Oral Implants Res* 2002;13:550-57.

11. McAllister BS. Histologic and radiographic evidence of vertical ridge augmentation utilizing distraction osteogenesis: 10 consecutively placed distractors. *J Periodontol* 2001;72:1767-79.
12. Hallman M, Mordenfeld A, Strandkvist T. A retrospective 5-year follow-up study of two different titanium implant surfaces used after interpositional bone grafting for reconstruction of the atrophic edentulous maxilla. *Clin Implant Dent Relat Res* 2005;7:121-6.
13. Dahlin C, Linde A, Gottlow J, Nyman S. Healing of bone defects by guided tissue regeneration. *Plast Reconstr Surg* 1988;81:672–6.
14. Blomqvist JE, Alberius P, Isaksson S. Two-stage maxillary sinus reconstruction with endosseous implants: A prospective study. *Int J Oral Maxillofac Implants* 1998;13:758-66.
15. Kassolis JD, Rosen PS, Reynolds MA. Alveolar ridge and sinus augmentation utilizing platelet-rich plasma in combination with freeze- dried bone allograft: Case series. *J Periodontol* 2000;10:1654-61.
16. Krekmanov L. A modified method of simultaneous bone grafting and placement of endosseous implants in the severely atrophic maxilla. *Int J Oral Maxillofac Implants* 1995;10:682-8.
17. Thaller SR. Fractures of the edentulous mandible: a retrospective review. *J Craniofac Surg.* 1993 Apr;4(2):91-4
18. Allen PF, McCarthy S. *Complete Dentures from Planning to Problem Solving*. London, UK: Quintessence Publishing; 2003.
19. Carlsson GE. Clinical morbidity and sequelae of treatment with complete dentures. *Journal of Prosthetic Dentistry.* 1998;79(1):17–23
20. Al Faleh W. A radiographic study on the prevalence of knife edge residual ridge at proposed dental implant site. *Saudi Dental Journal* 2009;21:23-7.
21. Pietrokovski J, Starinsky R, Arensburg B, Kaffe I. Morphologic Characteristics of Bony Edentulous Jaws. *Journal of Prosthodontics* 2007;16:141-7.
22. Fenlon MR, Sherriff M. An investigation of factors influencing patients' satisfaction with new complete dentures using structural equation modelling. *J Dent* 2008;36:427-34.
23. Atwood D A: Reduction of residual alveolar ridges: A major oral disease entity. *J Prosthet Dent* 1971;26:266-79.
24. Tallgren A. The continuing reduction of the residual alveolar ridges in complete denture wearers: A mixed-longitudinal study covering 25 years. *J Prosthet Dent* 1972;27:120-32.
25. McCartney JE. Prosthetic problems resulting from facial and intraoral changes in the edentulous patient. *J Dent* 1981;9:71-83.
26. Felton DA. Edentulism and comorbid factors. *J Prosthodont* 2009;18:88-96.
27. Grasso JE, Rendell J, Gay T. Effect of denture adhesive on the retention and stability of maxillary dentures. *J Prosthet Dent* 1994;72:399- 405.
28. Moriyama N, Hasegawa M. The history of the characteristic Japanese wooden denture. *Bull Hist Dent.* 1987;35:9-16.