Journal of Advanced Medical and Dental Sciences Research

@Society of Scientific Research and Studies

Journal home page: www.jamdsr.com doi: 10.21276/jamdsr ICV 2018= 82.06

(e) ISSN Online: 2321-9599; (p) ISSN Print: 2348-6805

Original Research

A Clinical Study to evaluate effectiveness of Denture Adhesives for Dentures

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***ABSTRACT*:**

Background: Dental adhesives are used in prosthodontics to provide a binding layer on the surface of complete dentures. The present study was conducted to determine effectiveness of commercial complete denture adhesives. **Materials & Methods:** The present study was conducted in the department of Prosthodontics. It comprised of 60 complete denture wearer patients. Three denture adhesives were divided into group I with Benfix, group II with Fittydent and group III with and Supercoreg denture adhesives. Each group had 15 complete dentures. Group IV comprised of control (No adhesive). **Results:** Group I had mean retention value of 812.4 gram, group II had 1092.8 gram, group III had 580.2 gram and group IV had 236.8 grams. The difference was significant (P< 0.05). **Conclusion:** Authors found that maximum retention strength was found with Fiftydent denture adhesive as compared to other.

Key words: Denture adhesive, Fiftydent, Supercoreg

Received: 4 October, 2019 Revised: 1 November, 2019 Accepted: 5 November, 2019

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This article may be cited as: Kumar B, Kumar N, Priyadarshi V, Kumari A, Kumar A, Prasad RK. A Clinical Study to evaluate effectiveness of Denture Adhesives for Dentures. J Adv Med Dent Scie Res 2019;7(12): 206-208.

INTRODUCTION

One of the main problems posed by complete dentures is retention and stability of the mandibular dentures. In order to solve this problem, dentists and the dental industry for a long time have attempted to improve denture adhesion by developing a range of "glues" of highly varied composition and efficacy.[1] Dental adhesives are used in prosthodontics to provide a binding layer on the surface of removable complete dentures, thus allowing the latter to adhere to the supporting tissues of the edentulous patient.

Technical excellence during the fabrication of the prosthesis and effective management of patient are the two important features for a successful complete denture therapy.[2] Even the most accomplished practitioners find difficulty in satisfying the patient's expectations for stability and retention of the denture and it is often considered appropriate to prescribe a denture adhesive for these patients. Denture adhesives may also give psychological confidence for the patient as it supplements retention and stability especially during occasions of public interaction.[3] However, denture adhesives should not be used as a method to improve retention in an improperly fabricated ill-fitting denture, and under any circumstances excessive amounts of denture adhesive should be indicated. Standardized guidelines are needed for the application, use and removal of denture adhesives.[4] The present study was conducted to determine effectiveness of commercial complete denture adhesives.

MATERIALS & METHODS

The present study comprised of 60 complete denture wearer patients. The study protocol was approved from institutional ethical committee.

Data such as age, gender etc. was recorded in performa. Three denture adhesives were divided into group I with

Benfix, group II with Fittydent and group III with and Supercoreg denture adhesives. Each group had 15 complete dentures. Group IV comprised of control (No adhesive).

the patients were instructed to maintain maximum, non-forced intercuspidation during 5 minutes. After this time, and with the mouth open and the lower lip relaxed in order to avoid losing peripheral sealing, the tip of a spring scale was placed at the margin of the dentures, in the recess of the lower lingual frenulum. Traction was then applied until the dentures detached - the maximum retention force being registered by the spring scale. After recording retention of the mandibular dentures, one of the study adhesives was applied. The same amount of adhesive was used in all tests, distributing the material in three equivalent portions in the anterior and lateral zones, in compliance with the instructions of the manufacturers.

The dentures were then placed in the mouth, and the patients were again instructed to maintain maximum, non-forced intercuspidation during 5 minutes. After this time retention force was again recorded. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Gender	Group I	Group II	Group III	Group IV
Adhesive	Benfix	Fiftydent	Supercoreg	No adhesive
Number	15	15	15	15

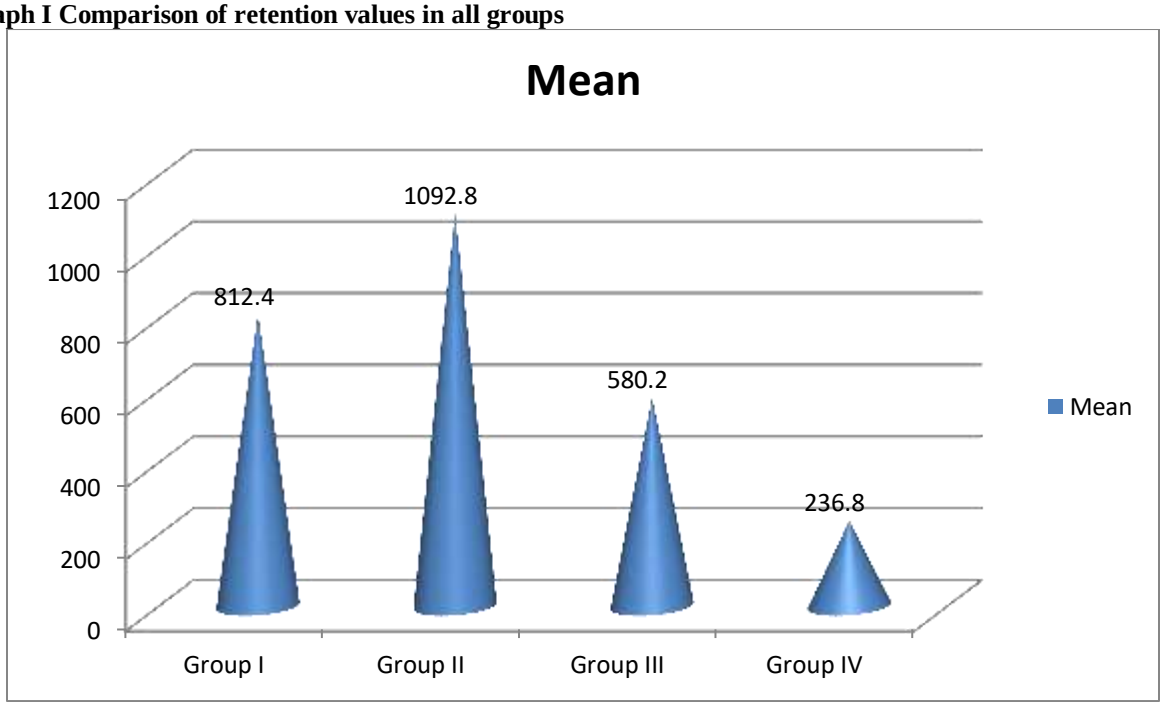
Table I shows that group I used Benfix, group II used Fiftydent, group III used Supercoreg denture adhesive and group IV was control. Each group had 15 complete dentures.

Table II Comparison of retention values in all groups

Groups	Mean	P value
Group I	812.4	0.01
Group II	1092.8	
Group III	580.2	
Group IV	236.8	

Table II, graph I shows that group I had mean retention value of 812.4 gram, group II had 1092.8 gram, group III had 580.2 gram and group IV had 236.8 grams. The difference was significant (P< 0.05).

Graph I Comparison of retention values in all groups



DISCUSSION

Denture adhesives are supplied as a paste, powder or cream. As the Adhesive powders absorb water, they swell to many times their original volume and the anions so formed, interact with cations in the proteins in the oral mucous membrane.[5] The viscosity of the adhesive is increased by the thick saliva formed, thereby increasing the denture retention. Newer adhesive materials provide stronger bio-adhesive and cohesive forces.[6] Free carboxyl groups formed by the hydration of adhesive such as methyl cellulose, hydroxyl methyl cellulose, sodium carboxyl-methyl cellulose or poly methyl vinyl-ether maleic anhydride, etc. form electrovalent bonds that produce stickiness or bio adhesion. The increased viscosity of the adhesive creams results in their lateral spread excluding air and saliva thereby increasing the retention.[7] The present study was conducted to determine effectiveness of commercial complete denture adhesives.

In present study, group I used Benfix, group II used Fiftydent, group III used Supercoreg denture adhesive and group IV was control. Each group had 15 complete dentures. Kikuchi et al[8] in their study included 30 patients with complete mandibular dentures to evaluate the retention afforded by three commercial complete denture adhesives (Benfix®, Fittydent® and Supercorega®). A spring scale was used to measure retention strength (in grams). The purpose was to determine whether the use of complete denture adhesives is effective, and to establish which commercial brands offer the highest retention strengths. The results obtained indicate that retention is enhanced by the use of such adhesives, and that Fittydent® offers the best retention performance, followed by Benfix® and Supercorega®.

We found that group I had mean retention value of 812.4 gram, group II had 1092.8 gram, group III had 580.2 gram and group IV had 236.8 grams. Mirza et al[9] examined the initial viscosity and adhesive strength of modern denture adhesives in vitro. Three cream-type denture adhesives (Poligrip S, Corect Cream, Liodent Cream; PGS, CRC, LDC) and three powder-type denture adhesives (Poligrip Powder, New Faston, Zanfton; PGP, FSN, ZFN) were used in this study. The initial viscosity was measured using a controlled-stress rheometer. The adhesive strength was measured according to ISO-10873 recommended procedures. The initial viscosity of all the cream-type denture adhesives was lower than the powder-type adhesives. Before immersion in water, all the powder-type adhesives exhibited higher adhesive strength than the cream-type adhesives. However, the adhesive strength of cream-type denture adhesives increased significantly and exceeded the powder-type denture adhesives after immersion in water. For powder-type adhesives, the adhesive strength significantly decreased after immersion in water for 60 min, while the adhesive strength of the cream-type adhesives significantly decreased after immersion in water for 180 min.

Chew et al[10] investigated three cushion-type denture adhesives and found them to be effective in improving patient satisfaction and masticatory ability; however, the dental professional should not neglect the risk of alveolar bone resorption caused by inappropriate use of home reliners (cushion-type denture adhesives). Good instruction from a dental professional and careful attention to the manufacturer's instructions is very important when using cushion-type denture adhesives.

CONCLUSION

Authors found that maximum retention strength was found with fiftydent denture adhesive as compared to other.

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