

# Denture Adhesives in Prosthodontics: A Review

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## Abstract

Denture adhesives have long been recognized by the denture wearers as a useful adjunct to denture retention and stability. Several studies reported that the denture adhesives are effective in increasing the retention of complete dentures, regardless of their brand or form. Although denture adhesives were used in the later part of the 18<sup>th</sup> century, they were not acknowledged in the dental literature until 1930's. The long-term use of denture adhesives without professional advice is contraindicated for many reasons. This review report discusses the review of literature, indications, mode of application, and contraindications for the use of denture adhesives.

**Key words:** Adherents, Denture adhesives, Denture retention, Fixatives

## INTRODUCTION

Contrary to the negative approach toward denture adhesives, their use can be a justifiable, therapeutic, effective augmentative procedure in denture fabrication, and treatment plan.<sup>1</sup> The main active components in today's denture adhesives are a blend of polymer salts with various degrees of water solubility. The desired attributes of a denture fixative are sensitivity to hydration, rapid onset of action, sufficient duration of action, washout resistance, and ease of cleansibility.<sup>2</sup> Dental professionals have been slow to accept the use of dental adhesives for denture retention, despite the knowledge that the use of denture adherents is a fact of life for a large number of denture wearers.<sup>3</sup> Patient comfort and ease of use are the major factors that influence a patient to select a particular denture adhesive product.<sup>4</sup> Neill and Roberts, Fujimori *et al.* observed an increase in the masticatory efficiency of CD wearers by using different denture adhesives in comparison with control groups.<sup>5,6</sup>

## REVIEW OF LITERATURE

Many researchers also have evaluated different aspects of denture adhesives in patients with well-fitting complete dentures.<sup>7-10</sup> Although manufacturers' instructions guide the patient, the experience of the patient with the adhesives influences its correct application. The use of denture adhesives began during the age of modern dentistry in the late 18<sup>th</sup> century.<sup>1</sup> The patent issued for the earliest adhesives was in 1913.<sup>11</sup> The early denture adhesives washed out readily from beneath the denture, rendering the fixative useful for only a relatively short period.<sup>12</sup>

Denture adhesives when properly used are beneficial to the patients in improved fit, comfort, function, and psychological security.<sup>13</sup> An ideal denture adhesive should be nontoxic, biocompatible and nonirritating to the oral mucosa. It should not promote growth of microbes, and should be odorless, tasteless, and easy to administer and to remove from the tissue-bearing surface of prostheses.<sup>1</sup> The patients wearing dentures should be instructed to consult the dentist for periodic examinations of their prostheses and the health of the oral cavity. The two critical issues associated with the use of a denture adhesive is its efficacy in improving function and its effect on the health of the underlying oral tissues.<sup>14</sup> Denture adhesives improve the digestion of complete denture wearers and let such patients to

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chew foods of a harder consistency. Therefore, denture adhesives may improve the general health of complete denture wearers.<sup>15</sup>

## MODE OF APPLICATION<sup>1</sup>

Several studies reported that the denture adhesives are effective in increasing the retention of complete dentures, regardless of their brand or form.<sup>16-19</sup> Clean the food debris, saliva and residual adhesive material from the tissue-bearing surface of the denture. Apply small quantities of denture adhesive to the tissue bearing surfaces of the denture. Wet the denture ahead of applying the denture adhesive powder. Apply the adhesive to the anterior alveolar ridge, center of the hard palate, and posterior palatal seal regions of maxillary dentures and to the sulcus of the denture over the crest of the alveolar ridge extending from the anterior sulcus to the distal extension of mandibular dentures. After seating the denture, hold it firmly with hand pressure for 5-10 sec. Advise the patient to close the jaw into centric occlusion a few times to distribute the adhesive in a thin layer between the mucosa and denture base.

## INDICATIONS<sup>2</sup>

1. To stabilize trial bases
2. To augment retention and stability of immediate dentures
3. To secure an existing or interim prosthesis in patients undergoing intraoral surgical procedures
4. Psychologic support
5. Compromised anatomic structures
6. Elderly patients
7. Physically/mentally challenged patients
8. Xerostomia
9. New dentures
10. Osseointegrated implants
11. Removable partial dentures.

## CONTRAINDICATIONS

Patients having allergy toward any of the components of denture adhesive should refrain from using it. Hedera *et al.* evaluated the hypocupremic complete denture patients and observed that all patients studied with copper deficiency had ingested large amounts of zinc from denture adherents.<sup>20</sup> Excessive zinc ingestion from the overuse of zinc-containing denture adhesives can cause elevation of serum zinc levels that result in reduction of serum copper which leads to bone marrow depression along with widespread sensory and motor neuropathies.<sup>21</sup> The use of

denture adhesive is contraindicated in patients with severe ill-fitting dentures, midline fractured maxillary dentures and in cases of pathology or tissue hyperplasia. Also long-term, the use of a denture adhesive without periodic professional advice is contraindicated.<sup>2</sup>

## CONCLUSION

Some dentists and patients consider denture adhesives a useful aid for denture retention and function, whereas others observe them as a poor substitute for a proper fitting denture. The denture adhesive when used properly should provide comfort, sufficient retention and stability to the denture, ensuring the patient's ability to function with freedom during speech, chewing and smiling. Dentists need to explain the need for periodical denture relining procedure to minimize the use of denture adhesives. The advantages of implants on denture stability should also be stressed.

## REFERENCES

1. Adisman IK. The use of denture adhesives as an aid to denture treatment. *J Prosthet Dent* 1989;62:711-5.
2. Grasso JE. Denture adhesives. *Dent Clin North Am* 2004;48:721-33, vii.
3. Tautin FS. Dental adhesives – a problem. *Dent Surv* 1978;54:24-6.
4. DeVengencie J, Ng MC, Ford P, Iacopino AM. *In vitro* evaluation of denture adhesives: Possible efficacy of complex carbohydrates. *Int J Prosthodont* 1997;10:61-72.
5. Neill DJ, Roberts BJ. The effect of denture fixatives on masticatory performance in complete denture patients. *J Dent* 1973;1:219-22.
6. Fujimori T, Hirano S, Hayakawa I. Effects of a denture adhesive on masticatory functions for complete denture wearers – Consideration for the condition of denture-bearing tissues. *J Med Dent Sci* 2002;49:151-6.
7. Chew CL, Boone ME, Swartz ML, Phillips RW. Denture adhesives: Their effects on denture retention and stability. *J Dent* 1985;13:152-9.
8. Polyzois G, Partalis C, Lagouvardos P, Polyzois H. Effect of adaptation time on the occlusal force at denture dislodgement with or without denture adhesive. *J Prosthet Dent* 2014;111:216-21.
9. Leite AR, Mendoza-Marin DO, Paleari AG, Rodriguez LS, Rocca AA, Policastro VB, *et al.* Crossover clinical trial of the influence of the use of adhesive on biofilm formation. *J Prosthet Dent* 2014;112:349-56.
10. Mañes JF, Selva EJ, De-Barutell A, Bouazza K. Comparison of the retention strengths of three complete denture adhesives: An *in vivo* study. *Med Oral Patol Oral Cir Bucal* 2011;16:e132-6.
11. Yankell SL. Overview of research and literature on denture adhesives. *Compend Contin Educ Dent* 1984;Suppl 4:S18-21.
12. Shay K. Denture adhesives. Choosing the right powders and pastes. *J Am Dent Assoc* 1991;122:70-6.
13. Weidner-Strahl SK. Clinical multicenter testing of various indications for denture adhesives. *Quintessenz* 1984;35:1547-51.
14. Grasso JE, Rendell J, Gay T. Effect of denture adhesive on the retention and stability of maxillary dentures. *J Prosthet Dent* 1994;72:399-40.
15. Grasso JE. Denture adhesives: Changing attitudes. *J Am Dent Assoc* 1996;127:90-6.
16. Panagiotouni E, Pissiotis A, Kapari D, Kaloyannides A. Retentive ability of various denture adhesive materials: An *in vitro* study. *J Prosthet Dent* 1995;73:578-85.
17. Tarib NA, Bakar MT, Murat MD, Ahmad M, Kamarudin KH. Masticatory effect and bite force in complete dentures: A study of denture adhesive. *Hong Kong Dent J* 2010;7:67-73.
18. Pradies G, Sanz I, Evans O, Martnez F, Sanz M. Clinical study comparing

- the efficacy of two denture adhesives in complete denture patients. *Int J Prosthodont* 2009;22:361-7.
19. Tarbet WJ, Boone M, Schmidt NF. Effect of a denture adhesive on complete denture dislodgement during mastication. *J Prosthet Dent* 1980;44:374-8.
20. Hedera P, Peltier A, Fink JK, Wilcock S, London Z, Brewer GJ. Myelopolyneuropathy and pancytopenia due to copper deficiency and high zinc levels of unknown origin II. The denture cream is a primary source of excessive zinc. *Neurotoxicology* 2009;30:996-9.
21. Tezvergil-Mutluay A, Carvalho RM, Pashley DH. Hyperzincemia from ingestion of denture adhesives. *J Prosthet Dent* 2010;103:380-3.

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