e ISSN 2277 - 3290
Print ISSN 2277 - 3282

Journal of Science

Prosthodontics

www.journalofscience.net

DENTURE HYGIENE: A SHORT NOTE ON DENTURE CLEANSERS

Ahmad Naeem[1]*, RaiAmrit[1], Mishra Sumit[2], Sharma Nisha[3], Kumar Pankaj[1], Bashir Taseer[4]

[1]Department of Prosthodontics, CPGIDS, Lucknow, Uttar Pradesh, India.
[2]Dept. of Prosthodontics, Teerthanker Mahaveer Dental College, Moradabad, Uttar Pradesh, India.
[3]Government District Hospital, Sandila, Uttar Pradesh, India.
[4]Dept. of OMDR, Career Post-Graduate Institute of Dental Sciences, Lucknow, Uttar Pradesh, India.

ABSTRACT

Denture base material and denture teeth collect deposits in the same manner as natural teeth do. The soft food debris that clinches on to the denture can easily be removed by light brushing or rubbing followed by rinsing. The hard deposits of calculus that can form on the denture are much more difficult to remove. In the present review article an overview about Denture hygiene using denture cleansers is presented.

Keywords: Denture, Polishing, Cleansers.

INTRODUCTION

Two methods are commonly used to remove both stains and calculus: Professional repolishing of the denture and & soaking in denture cleansers or brushing of the denture on a daily basis at home. The first method, repolishing the surface of the denture at extended time intervals, is not suitable for home care of dentures. Repolishing is a technique that follows much the same sequence recommended for the initial finishing and polishing of the denture base material. The technique can alter the surface of a denture made of acrylic polymer appreciably if it is applied too vigorously or too often, because acrylic denture bases have relatively poor resistance to abrasion [1].

The second method, soaking a denture in a solution or brushing it with powder or paste, is suitable for home care. If denture cleansers are properly used, the accumulation of dental plaque and stains can be controlled effectively.

The composition of the calcareous deposits varies from person to person but essentially they consist of: An inorganic portion, shown to contain calcium phosphate, calcium carbonate and lesser quantities of other phosphates i.e appr.60-90%. An organic portion, which bonds the deposit to the denture and is between 15-30%of the total deposit- this consists of mucoproteins [2].

REQUIREMENTS OF CLEANSERS

Ideally a material should have the following characteristics:

a. Non-toxic, easy to remove and leave no traces of irritant material,
b. The ability to attack or dissolve both the organic and inorganic portions of the denture deposits,
c. Harmless to all materials used in the construction of dentures, including denture base polymers and alloys, acrylic and porcelain teeth and resilient lining materials,
d. Not harmful to clothing, etc, if accidentally splashed or spilled,
e. Stability on storage,
f. Preferably bactericidal and fungicidal [3].

TECHNIQUES AND MATERIALS

Denture cleansing materials and techniques include mechanical brushing, the use of chemical cleansers or both. Patients use a wide variety of agents for cleaning artificial dentures. These include:

Corresponding Author:-**Ahmad Naeem** Email:-naeem_bds@yahoo.co.in

1. Abrasive cleansers,
2. Alkaline hypochlorite,
3. Alkaline perborates,
4. House hold cleansers,
5. Dilute acids and
6. Enzymes

Both immersion and brushing techniques are used with these materials.

The most common commercial denture cleaners use immersion techniques.

MECHANICAL TECHNIQUES

Patients are routinely instructed to clean their dentures by light brushing with a soft denture brush or a multi-fluted soft nylon brush with rounded ends and soap and water. The mechanical cleaning action of the brush is usually sufficient to remove loosely attached soft food debris, without abrading the denture base and teeth.[4]Gentle brushing with a soft denture brush and non-abrasive detergent is an effective cleaning method especially when combined with over night soaking.

However, it is ineffective for denture disinfection. The removal of hard calculus deposit, plaque and stains require more vigorous measures such as the daily use of immersion chemical denture cleansers or brush-on diluted acid cleansers [4].The use of hard bristle brushes, forceful brushing, or abrasive dentifrices, such as calcium carbonate or hydrated silica, may cause abrasion of polymeric material or results in scratches on their surface. The rough, irregular surface promote accumulation of denture deposits, increase staining and fouling with oral microorganisms and they dramatically compromise denture esthetics. Pastes with some gentle abrasiveness [sodium bicarbonate or acrylic resin] may be used. Similarly patient should be strongly advised against using abrasive household kitchen or bathroom cleansers such as scouring powder, to clean their dentures.

CHEMICAL DENTURE CLEANSERS

The most commonly used commercial chemical denture cleansers use immersion techniques; these include alkaline peroxides and hypochlorites. Advantages of immersion cleansers include full accessibility of the solutions to all areas of the denture minimum damage from mishandling dentures, minimum abrasion of denture bases and teeth and use simplicity of the technique.

OXYGENATING CLEANSERS

Alkaline peroxide is provided in powder and tablet forms. The material contains alkaline compounds, detergents, and sodium perborate and flavoring agents. When mixed with water, sodium perborate decomposes releases oxygen. Cleaning is result of oxidizing ability of peroxide decomposition and from the effervescent action of the evolved oxygen. This effectively breaks down, dissolves and floats away organic deposits and kills microorganisms. They are not effective in removing hard deposits such as calculus. Some are also not compatible with soft denture liners. Overnight immersion of dentures in an alkaline peroxide solution is safe, effective method of denture cleaning and sterilization, particularly among geriatric or disabled patients, whose limited manual dexterity may deter them from using mechanical brushing techniques.

HYPOCHLORITE SOLUTIONS

Diluted household bleaches are commonly used as denture cleansers, for removing plaque and light stains and are capable of killing denture adherent organisms. One technique involves the immersion of the denture in a solution of one part of 5% sodium hypochlorite in three parts of water.[1:3 water] followed by light brushing. Alternatively, the dentures can be immersed in household bleaches. Household bleaches can also be used as denture cleansers; these are inexpensive, safe and as effective as commercial cleansers. The formula is:

- 1 tea spoon (15 cc) sodium hypochlorite (house hold bleach)
- 1 teaspoon (4cc) calgon.
- 4 ounces (114cc) water.

This cleaning solution should only be used for complete acrylic dentures with resin or porcelain teeth. It is not recommended for any prosthesis containing Co-Cr or other metals as the sodium hypochlorite may pit, (or) corrode the metal. The sodium hypochlorite provides a bleaching action that when used in the above concentration, does not affect the color stability of the resin, denture base or teeth. The weak sodium hypochlorite solution is also an affective germicidal agent.

Calgon

A water softener provides a detergent action that effectively softens and loosens food debris. Patients should be encouraged to thoroughly brush their dentures with a soft brush under running water after chemical soaking. This ensures that the entire chemical cleaner is removed from the denture prior to insertion. To effectively remove calculus over night soaking with 4 ounces (114cc) white vinegar is recommended. The solution of vinegar provides a safe concentration of acetic acid that decalcifies calculus deposits.

OTHER TECHNIQUES/ MATERIALS

Ultrasonic units provide vibrations that can be used to clean denture. When this technique is used, the denture is placed into a cleaning unit, which is filled with a soaking chemical agent supplied by the manufacturer. The cleaning action of the soaking agent is supplemented by the mechanical debriding action of the ultrasonic vibration. This in turn creates areas of vacuum next to the denture surface and thus dislodges and dispenses debris.

Despite its effectiveness, this technique may not adequately remove plaque on the denture surfaces. It is mostly available for use in institutions such as nursing homes and hospitals [5].

Dilute acids (citric acid, isopropyl alcohol, hydrochloric acid or plain household vinegar) are available to remove obstinate deposits. The brush-on cleanser is swapped onto the denture surfaces with a brush. The materials attacked the inorganic phosphate portion of the denture deposits, thus reducing calculus accumulations. Vinegar can also kill microorganisms but less effectively than bleaching solutions. Brush-on materials must be used cautiously, and denture must be rinsed thoroughly to avoid contact of the material with the skin and the mucosa. Diluted acids may also cause corrosion of some alloys.

Denture cleansers containing enzymes (mutanase and protease) have been shown to reduce denture plaque significantly, with a daily 15-minute soak, particularly when combined with mechanical brushing of the dentures. Other materials and techniques include the use of silicon polymers. These cleansers provide a protective coating, which interferes with bacterial adherence of the denture surface until their next applications. Overnight air-drying and microwave radiation have been also used to disinfect and clean resin bases, mostly in conjunction with mechanical brushing.

Myerr and Krol found that sonic action cleaner was effective in removing calculus, cigarette and coffee stains. Nicholson, Stark and Scott demonstrated that the sonic action cleaner and sodium hypochlorite solution were more effective than sodium hypochlorite solution alone.

Cleansers	Main Constitute	Disadvantages
Oxygenating cleansers	Alkaline perborate	Ineffective for removal of heavy calculus deposits; harmful to soft liners.
Hypochlorite solutions	Dilute sodium hypochlorite	May bleach denture base resins May discolor soft liners Corrosion of base-metal alloys Unpleasant odor
Dilute acids	Hydrochloric acid	Corrosion of some alloys
Denture cleansing powder/paste	Abrasive agents	Abrasion of denture polymeric bases and teeth.

DISCUSSION AND CONCLUSION

Several techniques for cleaning dentures can be recommended. But precautions are to be maintained before advising cleansers to the patients. Hypochlorite cleansers are not advised for prosthetic appliances fabricated from base metals such as cobalt-chromium alloy because chlorine solution tends to darken these metals. Also never soak dentures in hot water because the heat may cause the acrylic to become distorted. Avoid brushing with hard stiff bristles because these bristles produce scratches on the surface of the denture. Do not use dentifrice to aid in cleaning a denture at home, though pastes with gentle abrasives [acrylic resin, sodium bicarbonate or $ZrSiO_4$-ZrO_2 system] can be used. Avoid organic solvents such as chloroform because these chemicals may dissolve or craze an acrylic denture. If the denture is not worn after cleaning, store it in water to retain its dimensional accuracy. Some soaking types of dentures cleansers may cause soft liners to change color. Certain commercial cleaners may also cause detrimental changes in the temporary lining materials. The recommended cleaning procedure for soft temporary lining material is gentle washing under cold running water with soft cotton. The external surface may be brushed in normal manner. If the denture is to be left out over night, it should be stored in plain water with teeth down. The denture should rest on the teeth not the denture border, where the weight of the denture could distort the soft lining material.

REFERENCES

1. Combe EC. Notes on dental materials; 7thed, 224-5
2. Craig, Powers, Wataha. Dental Materials properties and manipulation. 7th ed., 109-111.
3. Zarb – Bolender. Boucher's treatment of edentulous patients. 12th ed., 202-205.
4. Zarb – Bolender. Boucher's treatment of edentulous patients; 11th ed., 404-406.
5. Anusavice, Science of dental materials, 11th ed., 304-306.