Tissue Conditioners, denture cleansers and fixatives

Tissue Conditioning

Definition: Non-surgical methods of improving the patients' denture foundation tissues. Include the use of:

1. tissue rest
2. occlusal correction
3. temporary soft liners
4. and/or improvement of hygiene.

Tissue conditioning is usually considered prior to performing a permanent reline and or making final impressions for complete or partial dentures.

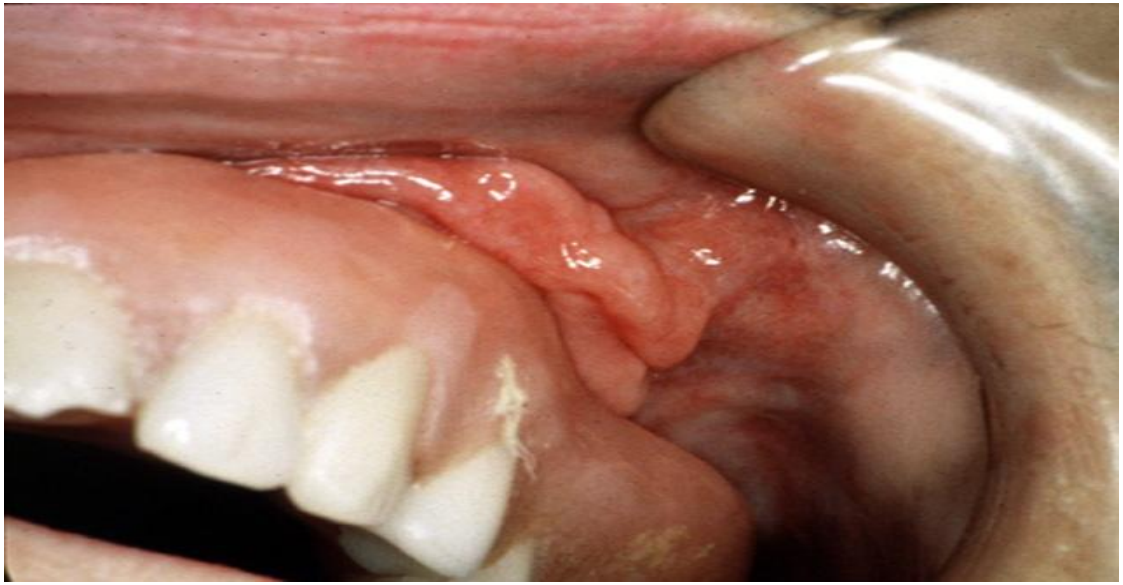
Local factors that requires tissue conditoner

1. Occlusal disharmony

2. Tissue abuse – ill-fitting dentures, poor oral hygiene, no tissue rest.
3. Temporary Relining of immediate denture,immediate surgical splint.
4. Relining of cleft palate speech aid.
5. Tissue conditioning during implant healing.

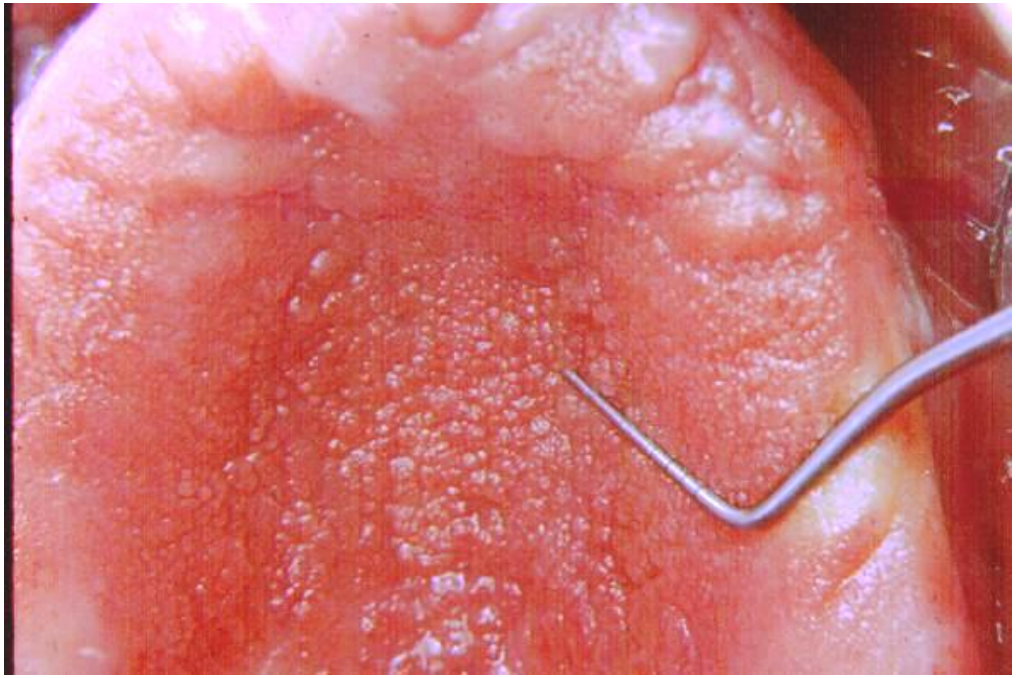
Tissue rehabilitation is limited to reversible tissue changes such as:

- Red inflamed, oedematous tissues
- Ulcerations
- Denture induced stomatis
- Epulis fissuratum (limited – may require surgery if extensive)
- Papillary hyperplasia (limited – may require surgery if extensive)



Epulis Fissuratum is an overgrowth of tissue in the mucobuccal or labial fold, induced by chronic trauma from ill-fitting dentures.

Abused tissues - trauma



Inflammatory
papillary hyperplasia

Tissue conditioners

- temporary denture liner that provides a cushioning effect. The sponginess of this material absorbs (partially absorbs) load to the underlying residual ridge, provide for a more advantageous distribution of imposed stresses to its basal seat, and allows those tissues to heal during function.

Tissue Conditioning Techniques:

1. Oral hygiene

- Plaque causes inflammation and oedema
- Demonstrate how to brush all denture surfaces
-Have patient massage tissues with a soft tooth brush twice a day - morning/night; begin with 30 seconds and increase to 2 minutes.
- Clinical reports suggest regular finger massage/tooth brushing of mucosa with a warmed, soft brush may be useful to improve tissue health

2. Tissue Rest

Lytle (JPD, 7:27, 1957; JPD 9:539, 1959)
- Abused tissues were treated by removing dentures for periods of 48 - 72 hours
- Tissue inflammation disappeared, then recurred if faulty dentures were replaced

Kydd, Daly, Wheeler, (JPD 32:323,1974)
- When tissue was loaded, recovery was affected by age:
a. 10-30 years old: 90% had immediate recovery when load released.
b. 72-86 years old: 61% had recovery after 10 minutes; some took ½ to 4 hr.

3. Occlusal Correction

Lytle showed improper occlusion can cause poor tissue health

****This is one of the most overlooked causes of tissue irritations****

Methods for correction:

1. Add to occlusal surfaces of acrylic teeth with acrylic resin,
- improves vertical dimension, balances occlusion – occlusal pivots
2. Clinical remount and occlusal adjustment, if necessary

Occlusal pivot

Acrylic resin added to the lower denture to convert it to a pivot appliance, to provide occlusal contact in posterior region (some use first molar region only). Additions made using light-cured/cold cure acrylic resin.

Then adjust to remove all indentations of the opposing teeth to provide flat surfaces for the upper teeth to occlude on. We only need occlusal cusp tip contacts (point contacts) between the upper denture and the flat acrylic resin pivot.

If necessary a tissue conditioner was added to the fitting surface of the dentures.

4. Temporary Soft Liners

(Reference: Dent. Clin. N.A. 28(2): 239, 1984)
(Lynal, Viscogel, Coe-Comfort, Tru-Soft, Soft-Tone)

- Can improve comfort, retention, occlusal vertical dimension (minor changes), and extension of denture bases (minimal). Use manufacturers recommendation for mixing, usually 1:1.5-2.0 powder/liquid.

- Typical composition:

Powder - polyethyl methacrylate, pigments – most are white

Liquid
10% Ethyl Alcohol
90% Pthalate ester (dibutyl pthalate) - Plasticizer

- These materials are soft and resilient and flow under pressure.
- Material becomes rigid after a week - plasticizer leeches out into the saliva
- Change the soft liner as necessary (7-14 days)

Tissue Conditioning Treatment Protocols

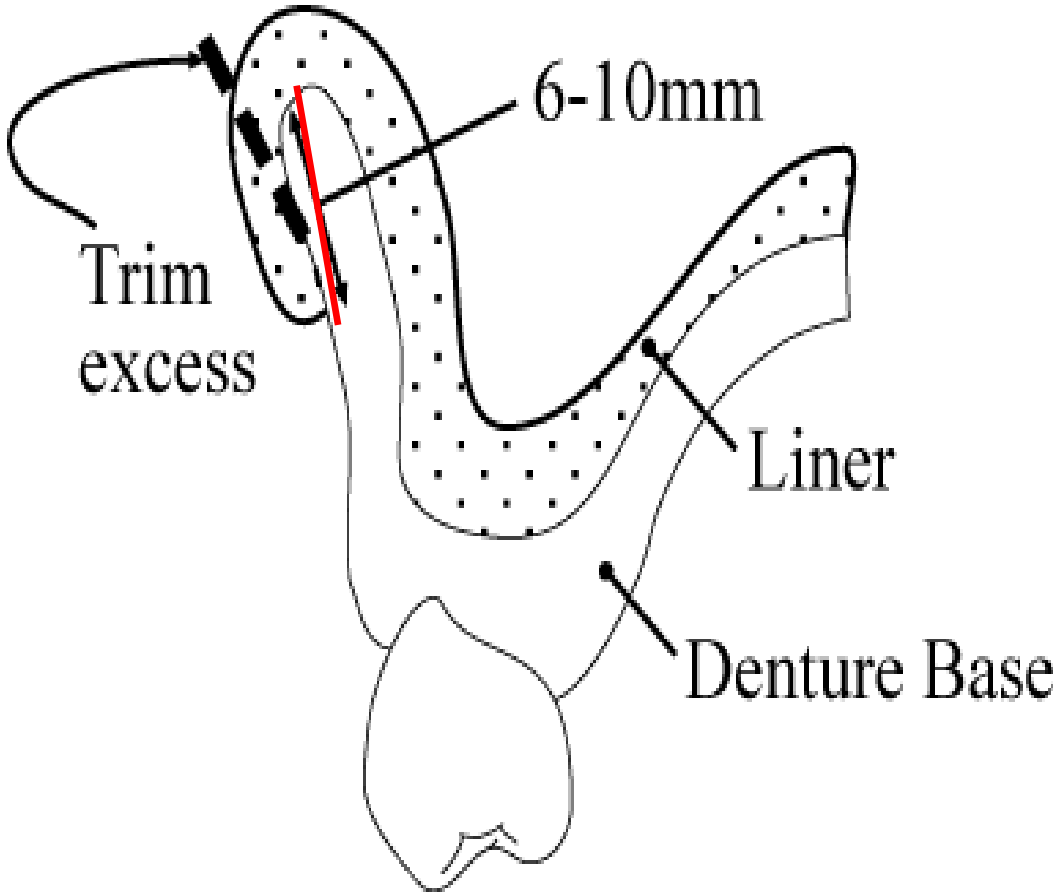
All patients requiring tissue conditioning:

1. Clean denture for patient (ultrasonic and cleanser)
2. Educate the patient concerning the condition and home care
   - brushing denture
   - oral hygiene - brush, massage tissues
   - tissue rest - 8 hrs./day
   - tissue rest - 24 hours prior to final impressions

Technique:

1. Disinfect the denture prior to placement of the liner. This will help to minimize the presence of microbes, which might subsequently colonize the liner, thereby shortening liner lifespan.
2. When relining opposing dentures, reline the least stable denture first (normally the lower) so that the more stable denture can be used as reference for positioning the relined denture, using the occlusal contacts.
3. Determine if the denture base needs to be reduced prior to the placement of the liner. Flanges that are excessively long or areas that are causing severe inflammation or ulceration should be reduced.
4. Normally, patients have excessive interocclusal distance or freeway space), so there may be room to place the liner without reduction of the denture base, otherwise trim the fitting surface slightly. If the denture base is not reduced, the incisal display will probably be increased once the liner has been placed

5. Remove slightly the polished surface around the denture periphery where the conditioner will terminate on the denture (at least 6 mm past the edge of the flange, and create a bevelled surface). This helps ensure that the conditioner will adhere to the denture to minimize separation, leakage and microbial colonization.



Gel formation **not** polymerization

Alcohol swells polymer beads permitting penetration of large plasticizer molecules which act as lubricant to increase distance between polymer chains of the PEM powder – cushioning effect of the tissue conditioners.

Must be **thick cushion** to work

Tissue Conditioners- Chemistry

Formation of gel:

1. Initially, the powder-liquid combination forms a free-running fluid which increases in viscosity as the ethanol and plasticizer penetration occurs.
2. The material becomes sufficiently viscous for insertion into the mouth within 2 to 3 minutes, and it reaches final **gelation** within 15 to 20 minutes.

1. Clean denture first
2. Pt should have left dentures out for at least 24h

Check if borders require trimming

Check if fit surface requires trimming

Kit:

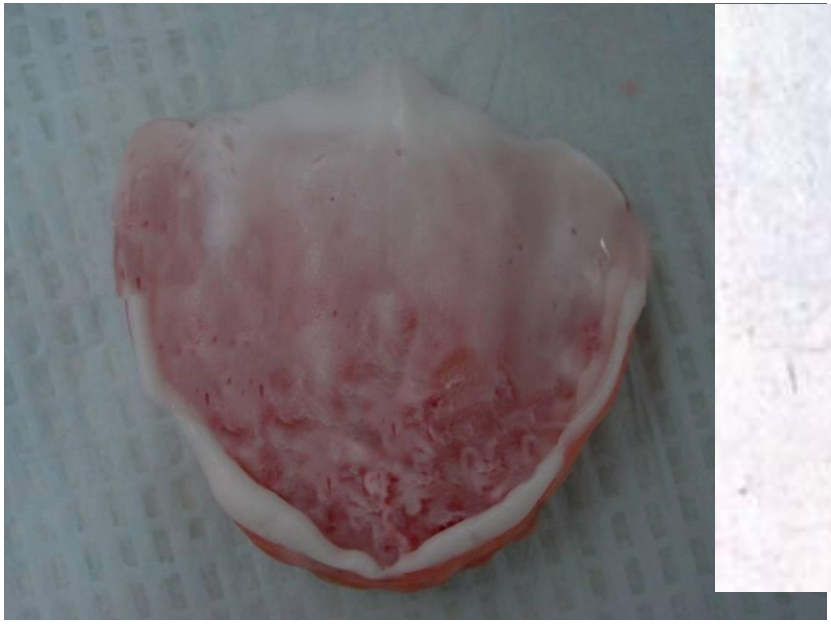
powder, liquid, plastic cup, steel spatula

- Mix powder and liquid for 45-60 seconds

Put a thin layer of TC on the denture at this stage to ensure TC sticks to the denture

Wait for the rest of the mix to be thicker/more viscous or doughy before putting rest of mix in the denture or in the mouth

Insert in mouth and seat to ensure even pressure by closing in CR. Border Mould. Hold in light contact for 15 mins



After removal:

Check:

Even thickness – at least 2 mm thick

No bare spots, If so may add and repeat insertion

Peripheral Roll

Maintain VDO vertical dimension occlusion

Remove excess with warmed scalpel blade

DETNURE CLEANERS

Objectives:

- Remove stain and deposits
- Simple to use
- Compatible with all denture base material
- Inexpensive
- Easy to remove and harmless to patient
- Exhibit bactericidal and fungicidal effect.

Methods:

- **Brushing:** mechanical cleaning with abrasives
  - NOTE: Toothpastes are too abrasive for the acrylic denture. DON'T USE!
- **Immersion Cleaner:** chemical cleaning.
  - Mechanism of action: dissolve one tablet inside a denture container/bath/cup then soak according to guidelines. To save money, break tablet into two, it still works!
  - Types:

Immersion Cleaner	Advantages	Disadvantages	Notes
Hypochlorites (Sodium Hypochlorite)	- Antibacterial agent; mild concentration can kill organisms. - Mild concentration can remove adherent proteins - Mild concentration can remove calculus buildup and stain	- Highly corrosive to the metallic parts of the denture - Discoloration of the denture base leading to whitening of denture.	- Most common; household solution (bleach) with a concentration of 1:10 in tap water
Alkaline Peroxide	- Efficient against Candida	- Not compatible with certain permanent or temporary resilient lining	- Patients should be cautioned to minimize the duration they soak soft-line dentures.
Oxygenating Agents (Peroxides, perborate, percarbonate)	- Bubbling activity (from tablet dissolution) creates agitation that helps clean debris from denture	- Cleaning power is superficial; denture base should still be cleaned by mechanical brushing **- OXYGENATING AGENTS SHOULD NOT BE USED IF DENTURE CONTAINS SOFT LINER (Will cause irreversible hardening)**	- Available in dissolving tablets/powders in water
Mild Acids (Hypochloric, phosphoric acids)	- Dissolve calculus deposits	- Attack metals used in partial dentures - Not recommended for routine use	- Mechanism relies on creating mildly acidic solutions
Enzymes (Proteolytic enzyme-containing cleansing agents)	- Break down protective mucin deposits on dentures	- Inferior to Alkaline Peroxide's efficiency against candida.	

Commercially available denture cleansers similar mechanism (Dilute and soak according to guidelines. Some require warm water some are metal corrosives so avoid using them)

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Denture cleansers

Ideally these solutions should:

1. be effective in removing stains and deposits from the denture
2. Should be simple to use
3. compatible with all denture base materials
4. Inexpensive
5. Easy to remove and harmless to the patient.
6. Exhibit a bacteriocidal and fungicidal effect.

Routine methods commonly used for denture cleaning:

1. Brushing – mechanical cleaning with abrasives
2. the use of immersion cleansers –chemical cleaning

The immersion type denture cleansers may be classified as:

1. alkaline peroxides and hypochlorites
2. Oxygenating agents
3. Mild Acids
4. Enzymes

Out of 234 denture wearers:

1. Only 11.9% of subjects had clean dentures. (In a similar study of 42 elderly denture wearers, only 16.7% had clean dentures)
2. 12% used denture cleansing tablets.
3. 52% brushed their dentures with toothpaste or regular soap.
4. 29% used household bleach to clean their dentures. (Household bleach has been linked to denture discoloration.)
5. 4% were brushing with water alone and one patient used mouthwash as a denture cleanser.

Dikbas I, Koksal T, Calikkocaoglu S. Investigation of the cleanliness of dentures in a university hospital. Int J Prosthodont 2006;19(3):294-298.

Abrasive cleaners

– special pastes for cleaning dentures – not ordinary toothpaste – too abrasive for the acrylic resin.

Use soft bristled brush

Hypochlorites

Sodium hypochlorite – well known antibacterial agent. In mild concentration can be used to remove adherent proteins from the denture surface as well as kill organisms present.

However, this fluid is highly corrosive to the metallic parts of the denture and should not be used for these dentures.

In addition discolouration of the denture base occur leading to loss of colour and general whitening of the denture.

The most common household solution is bleach (sodium hypochlorite), diluted 1:10 in tap water.
This concentration is adequate for killing adherent organisms but will be ineffective against calculus buildup and stain.

Alkaline peroxide

The alkaline peroxide solutions may not be compatible with certain permanent or temporary resilient lining materials, however, and patients should be cautioned to minimize the duration they soak soft-line dentures

Oxygenating agents:

(Solutions of oxygenating agents such as peroxides, perborates and percarbonates)

- made by dissolving tablets or powders containing these compounds into water, in which these dentures are immersed for a period of time. The bubbling activity developed from the tablet dissolution also creates a small agitation that helps clean the debris from the denture surface.

However the cleaning power of these agents are only superficial, and the denture base should still be cleaned by mechanical brushing. These oxygenating agents should not be used if the denture contains a soft liner, as the reaction of this type of cleanser tends to irreversibly harden the softliner.

Mild acids

The mechanism of cleaning of some of these products relies on creating mildly acidic solutions: hypochloric or phosphoric acids.

These agents dissolve calculus deposits, however they may also attack metals used in partial denture frameworks and therefore not recommended for routine use.

Enzymes

Proteolytic enzyme-containing cleansing agents were designed to break down protective mucin deposits on dentures.

However, there were studies that indicate their efficacy against Candida was inferior to the action of alkaline peroxide compounds

How to use denture cleansers

Tablet

1. Dissolve one effervescing tablet inside a container of warm water either in denture bath, denture container or a cup.
2. Soaking duration differs with products. Soak the denture from 3 minutes to overnight following manufacturer's guidelines.
3. *If you want to save more on spending you can break the tablet into two so that you can use half tablet at a time. It is still functional.*

The dominant approach to denture cleansing in the United States is through the use of an effervescent commercial denture cleansing product dissolved in water.

Industry estimates are that close to 80% of persons with a denture use one of these products at least weekly.

Simply dilute the solution in water.
Soak the denture in the solution.
Be aware that some solution requires warm water. For instance Sparkle-Dent Concentrated Denture Whitener.
Some are corrosive to metal so do not use with metal incorporated denture.

Denture adhesives or fixatives

If the fit surface of the denture is not in intimates contact with the denture supporting tissues (through a thin layer of saliva), the denture becomes unstable and easily dislodged.

Increased space between denture and underlying tissues arises from bone resorption or improper denture construction. Relining the denture is often the best method to resolve this problem. However, this is not always possible.

Therefore a variety of products exists to fill this gap, as well as to adhere to the denture and overlying mucosa

In the majority of cases, adhesives are not needed if careful attention is given to the entire denture fabrication process. However they may be used in emergency situations or where immediate stabilization is required. They are usually self prescribed.

Patients who used these products should be educated about the frequent removal of these materials from their dentures and tissues upon which they rest. It is not uncommon that patients pile up the adhesives to help tighten their teeth and not remove old material. These materials usually work best in a thin layer – therefore more is not best.

Types:

different types – paste or cream, powder, sheet wafer and woven cloth like material.

No advantage of one type over the other, whatever is convenient is used.


SECURE
SECURE
Great for Uppers. Designed for Lowers


Cushion Grip


NEW
SUPER
POLIGRIP
Comfort Seal
STRIPS
STRONG ALL-DAY HOLD
WITHOUT
the MESS
OR OOZE
of creams
for UPPERS,
LOWERS & PARTIALS
40 STRIPS


Fixodent
Fixodent
Complete


SUPER
POLI
GRIP
Denture Adhesive Powder
EXTRA STRENGTH
POWDER


SUPER
POLIGRIP
Ooze-
Control
Tip
SUPER Strong, All-Day Hold
POLIGRIP
Denture Adhesive Cream
FREE
Free of Artificial
Flavors & Colors
FREE
Free of Artificial
Flavors & Colors


15 LOWERS
SEA-BOND
DENTURE ADHESIVE WAFERS
NO OOZE

Denture adhesive removal

There are various ways to remove denture adhesives depending on its form.

Wafer, woven cloth and strip type are easily removed by peeling them off.

For powder, cream or paste type, you can buy denture adhesive removers and followed their manufacturer's instructions.

Use cold water and handsoap to wash the denture surface. Sometimes a soft denture brush would help as well. Use warm or hot water may help in certain cases.

Remove the wipes from its packaging and wipe the denture. Easy to remove denture adhesives. Fast cleansing of dentures, but cannot remove stains and tartar

*READ

While some clinicians accept that denture fixatives have a valuable function in certain situations and contribute significantly to denture retention and stability, others disapprove of their use, believing that there is no substitute for a properly constructed, accurately fitting denture.

It is also believed that their inappropriate use can lead to problems such as impairment of the development of the neuromuscular system which is important for the retention and stability of dentures.

However, because these fixatives are available over the counter, it is important that clinicians, whatever their opinion, can give patients informed advice.