



PERIODONTAL DRESSINGS



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PERIODONTAL DRESSINGS

DEFINITION

According to the glossary of periodontal terms by American Academy of Periodontology in 2001, periodontal dressing/pack is defined as a protective material applied over the wound created by the periodontal surgical procedure.



HISTORICAL REVIEW

- **Zentler** in the year 1918 first recommended the use of iodoform gauze as a periodontal dressing.
- Periodontal dressings were first introduced in 1923 when **Dr A.W Ward** advocated the use of packing material around teeth following gingival surgery. This material was called WONDRPAK consisted of zinc oxide eugenol mixed with alcohol, pine oil and asbestos fibers.
- **Kirkland** in year 1934 developed a cement which was used as a post operative periodontal dressing.



- **Box & Ham(1942)** described the use of a ZOE dressing to perform a chemical curettage in treatment of NUG. Tannic acid was included for haemostasis and astringency, while thymol was included as an antiseptic. It was claimed that this dressing destroyed 'spirillum' and 'fusiform' bacteria present in NUG and helped contain the infection.
- **Orban(1943)** described a ZOE dressing with paraformaldehyde to perform gingivectomy by chemosurgery.
- **Bernier and Kaplan (1947)** stated that the primary purpose of a periodontal dressing was wound protection and that constituents which may aid in healing are of secondary importance.



- **Ariaudo & Tyrell (1957)** recommended using a dressing to position and stabilize an apically positioned flap.
- **Gold(1964)** felt that a dressing could be used to splint teeth as long as it was a cement dressing that set hard.



IDEAL REQUIREMENTS OF PERIODONTAL DRESSINGS (Bernier and Kaplan, 1967)

- They should be inert, non allergic and non irritating to the tissues.
- After mixing they should be soft and remain plastic for a sufficient period of time to permit moulding by gentle pressure around the teeth and into the interdental spaces.
- The surfaces should be smooth so as not to irritate oral mucosa.



- Dressings should be resistant to pressure without fracturing and capable of withstanding displacement or distortion by cheeks lips and tongue.
- An acceptable taste and smell.
- It should provide hemostasis.
- It should be able to inhibit bacterial growth on the surface.



- It should adapt to the tissues well and be dimensionally stable and prevent the seepage of saliva and bacterial plaque to the wound surface.
- It should be economical and easily available.
- It should possess a good shelf life.
- It should have a reasonable setting time.



OBJECTIVE

- To protect wound post surgically
- To obtain optimal healing.
- To protect the wound from injury while healing.
- To obtain and maintain a close adaptation of the mucosal flap to the underlying bone (Specially apically positioned)

Contd.....



- Aid in immobilizing the graft by dissipating the pull from alveolar mucosa.
- For patient comfort
- Prevent the formation of excessive granulation tissue.



PROPERTIES OF PERIODONTAL DRESSINGS

- The dressing should be **soft**, but still have **enough plasticity and flexibility** to facilitate its placement in the operated area and to allow proper adaptation.
- The dressing should **harden within a reasonable time**
- After setting, the dressing should be **sufficiently rigid** to prevent fracture and dislocation.

Contd....



- The dressing should have a **smooth surface** after setting to prevent irritation to the cheeks and lips.
- The dressing should preferably have **bactericidal** properties to **prevent excessive plaque formation**.
- The dressing must **not** detrimentally **interfere with healing**.



FUNCTIONS AND ADVANTAGES OF A DRESSING (Baer 1969)

- The main purpose of a post surgical dressing is to provide patient comfort and to protect the wound from further injury by cheeks, tongue, food etc while it is healing.
- It is not the function of a periodontal dressing to control post operative bleeding. Bleeding should be controlled before dressing is placed.



FUNCTIONS AND ADVANTAGES OF A DRESSING (Baer 1969)

- It is not the function of a dressing to act as a splint. If teeth are mobile and require splinting this should be done before hand.
- The dressing however can aid in holding the flap in position after it has been sutured and can aid in immobilizing a gingival graft by dissipating the pull from the alveolar mucosa and lips.



FUNCTIONS AND ADVANTAGES OF A DRESSING

(Baer 1969)

- It prevents proliferation and growth of granulation tissue by filling up the 'dead spaces' primarily the interdental spaces.
- It helps in maintenance of oral hygiene so that the patient can brush the remaining teeth.



FUNCTIONS AND ADVANTAGES OF A DRESSING (Baer 1969)

- It gives a psychological feeling of healing to the patient.
- It helps the patient to come for recall visits to remove the dressing.
- It desensitize the root surface ie, protect newly exposed root surface from temp. changes.



CLASSIFICATION



- Periodontal dressings are majorly classified into
 - Eugenol containing
 - Non eugenol containing

- But according to Glickman in 1979, periodontal dressings can be classified into:
 - Eugenol containing
 - Wards wonder pack
 - Kirkland's pack
 - Non eugenol containing
 - Coe-pack
 - Peripac
 - Fat containing pack
- Cyanoacrylates
- Packs containing antibiotics
- Waxpack
- Periodontal varnish
- Collagen Dressing
- Chlorhexidine



Composition of periodontal dressings (A) with eugenol

POWER

- Rosin
- Tannic Acid
- Asbestos Fibers
- *Haemostatic Drugs
- Antibiotics

LIQUID

- Eugenol or
- Almond or
- Peanut or
- Mineral Oil
- *Tannic Acid

* Never incorporated together as it may induce liver damage (Gooman & Gillman 1965) and local foreign body reaction



SIDE EFFECTS

- Eugenol has unpleasant taste
- May result in mucosal irritation
- Hypersensitivity.
- Bone sequestration of denuded bone.



COMMERCIALLY AVAILABLE EUGENOL DRESSINGS

- Ward
- Kirkland – Kaiser



COMPOSITION OF PERIODONTAL DRESSINGS (B) WITHOUT EUGENOL

- Does not irritate
- No objectionable taste
- No sharp edges.

COMPOSITION

POWDER

Zinc Oxide 0.43 gm
Rosin 0.57 gm
Zinc bacitracin 3000

LIQUID

Zinc Oxide 42%
Hydrogenated fat 58%
or Crisco (veg. Oil)
(Mixed Together)



- Zno eugenol packs : packs based of the reaction of Zno & eugenol include – wondr pak developed by Ward
- The addition of accelerators such as zinc acetate gives the dressings a better working time
- It is supplied as a liquid and a powder that are mixed prior to use.
- Eugenol may produce allergic reaction (reddening of area and burning pain).



- Liquid and powder or paste
- These are mixed on a waxed paper pad using a spatula. The powder or Paste is gradually incorporated into the liquid until it reaches a dough like consistency.
- Setting time of ward's wondrpak under oral condition 24 minutes which was shown to be less than its working time under room conditions because both heat and moisture accelerate the reaction of ZOE.



COMMERCIALLY AVAILABLE NON-EUGENOL DRESSINGS

- Coe –pack : in two tubes
 - One tube:- oxides of various metals (ZnO) and Loroithidol (a fungicide)
 - Second Tube:- Non ionizing carboxylic acids & Chlorothymol (Bacteriostatic).



PERIPAC

- Peripac is a valuable help for treatment of necrotic gingivitis.
- Protection of non-specific lesions or sutured margins.
- Fixation of desensitising medicaments to cervical areas.
- Temporary rebasing of immediate dentures in periodontal surgery.



FAT CONTAINING PACK

- It is available in powder-liquid form.
- **POWDER** : Zinc oxide – 0.41 gms
- Rosin powder – 0.52 gms
- Zinc bacitracin – 3000 units
- **LIQUID**: Zinc oxide – 5%
- Hydrogenated fat – 95%
- It aids in healing and sets to a rubbery consistency, so no irritation occurs due to it.



COMPARISON OF EUGENOL AND NON-EUGENOL DRESSINGS

- Studies comparing the tissue irritating properties of periodontal dressings have mainly involved comparisons between eugenol containing and non eugenol dressings.
- Implant studies provide a more controlled environment to study the irritating effect of dressings some have shown that eugenol dressings are more irritating than non eugenol dressings.



- Peripac a non eugenol dressing was shown to be more irritating than Wonderpak due to dimensional changes which caused tissue irritation.
- The main disadvantage of eugenol dressings is that they are set hard often with sharp edges and leave a bad taste in the patients mouth.



3RD GROUP OF PERIODONTAL DRESSINGS CONTAINING NEITHER ZINC OXIDE NOR EUGENOL

- Light Cure dressing (Barricaid)
- It is a visible light cured periodontal dressing based on :
 - Polyetherurethane Dimethacrylate
 - Silanated Silica
 - Light cure Photoinitiator
 - Accelerator
 - Stabilizer
 - Colorant
 - Favourable esthetic appearance
 - Limited use.



- Barricaid : Available in syringe form for direct placement
- The syringe also suitable for an alternative indirect technique.
- Use of visible light curing unit, is required for an acceptable dressing.
- The single component, light activated periodontal dressing eliminates time consuming mixing of pastes.



- The dressing is tintled pink , is tasteless, and has a translucent character which allows for superior esthetics as well as site monitoring.



USE OF ANTIBACTERIAL AGENTS

- Should be incorporated to prevent bacterial growth during healing
- Most of commercial dressings exhaust antimicrobial properties. Long before 7-14 days (O'neil 1975, Haugen et al 1977) Antibiotics recommended are Neomycin, Tetracyclines, Nitrofurazone.



USE OF ANTIBACTERIAL AGENTS

- Antimicrobial rinse (Controversial) Plyss et al 1975 feel these cannot prevent formation of plaque under dressing
- Not needed if dressing is changed after 5 days.
- Dressing ARE NOT USED TO CONTROL BLEEDING or splinting.



PERIODONTAL DRESSING TO USE OR NOT TO BE USED

- Unnecessary - clinical studies show.
- Can be replaced by rinsing with chlorhexidine (Sanz et al 1989, Vaughan & Garnik 1989)
- If antimicrobial agents are used it should be – Zinc bacitracin.



Periodontal dressing to use or not to be used

- Zinc bacitracin is not inactivated in presence of enzymes, not inhibited by organisms which produce penicillinase, wide spectra of antibiotic activity, bacteriostatic as well as bacteriocidal, not inhibited by necrotic tissues, pus, exudates and blood serum. Rarely produces sensitivity.



PREPARATION & APPLICATION OF COE-PACK

- Equal lengths of the material from both the tubes should be taken and mixed well till a homogenous mixture for 15 seconds.
- There is a reaction between metallic oxide and non-ionizing carboxylic acid by the process of saponification. The material is adhesive and is therefore kept in water for 2 to 3 minutes to lose its tackiness and sets to a smooth, firm consistency. The working time is about 20 minutes.



- After the pack is prepared (after mixing as mentioned earlier) it is then rolled into 2 strips approximately the length of the treated area. The end of 1st strip is bent in to a hook shape and fitted around the distal surface.
- The remainder of the strip is brought forward along the facial surface to the midline and gently pressed onto place along the gingival margin and interproximally.



- The 2nd strip is applied from the lingual surface. It is joined to the pack at the distal surface of the last tooth, then brought forward along the gingival margin to the midline.
- The strips are joined interproximally by applying gentle pressure on the facial and lingual surfaces of the pack. For isolated teeth separated by edentulous spaces, the pack should be made continuous from tooth covering the edentulous areas.
- It has a powerful antimicrobial property due to presence of lorcetamol (O'Neil, 1971). It adapts closely to the tissues and forms a barrier to saliva and oral bacteria.





APPLICATION TECHNIQUE

- Ensure bleeding stops
- Dry teeth and soft tissues
- Moisten surgical gloves to avoid sticking to material
- Must fill interproximal areas
- surface of dressing should be smooth
- Dressing should not cover more than apical one third of tooth surface.
- Extension into mucobuccal fold should be checked, to prevent dislodgement.



INSTRUCTIONS TO PATIENTS

Never dismiss patient so long as bleeding completely stops.

- Avoid eating for 4-5 hours following placement of dressing.
- Not to use operated side for eating.
- To report, if there is bleeding/ hemorrhage
- Chill over operated area from outside for 2-3 hrs.
- To report if dressing comes off. Dressing need to be kept at least for one week.
- Use antimicrobial mouth wash 8 hourly.



REMOVAL OF THE PACK

- Insert a tip of Plastic instrument under the border of the dressing and apply lateral pressure.
- Remove fragments of dressing gently with cotton pliers to avoid scratching the thin epithelial covering of the healing tissues.
- Use a curette for particles near the gingival surface.
- Syringe with a gentle stream of warm water.



CYNOACRYLATES

- Cynoacrylates is a generic name meaning an adhesive agent consisting of an acrylic resin and binds two moist surfaces.
- It is available in a spray gun from which can be sprayed directly on the oral tissues and solidifies within 5 - 10 sec. also available in liquid form which is applied on the wound.



CYNOACRYLATES

- It sets by polymerization in presence of moisture and even blood with release of heat and pressure.
- When cyanoacrylate adhesive is used after sutures have been placed to position the tissues in place, the sutures can be removed immediately after polymerization as they act as an irritant to the tissues. (Ochstein et al 1969)



- **WAX PACK:**

- It is a mixture of coca butter and paraffin which is mixed in equal amounts and is cut in strips and applied over the wound area.

- **PERIODONTAL VARNISH:**

- It consists of gum or copal dissolved in organic solvents like ether and chloroform.



COLLAGEN DRESSINGS

- Collagen dressings (e.g., Colla product from Zimmer Dental, Carlsbad, CA, USA) are biological dressings which create a physiological interface between the wound and the environment and encourage healing.
- The advantage over other dressings include ease of application, non-immunogenic, non-pyrogenic, hypoallergenic properties.
- Moreover, an inherent property of native collagen is the ability to promote hemostasis.



- Additionally, the structure of absorbable collagen provides a 3-dimensional matrix for strengthening the blood clot.
- Commercially available collagen dressings have three forms: tape (colla tape; Zimmer Dental, Carlsbad, CA, USA), cote (Collacote; Zimmer Dental, Carlsbad, CA, USA), and plug (collaplug; Zimmer Dental, Carlsbad, CA, USA).

Steer et al 2002

- *It is type I collagen derived from bovine tendon.*
- *The sponge is approximately 3 mm thick & can be cut to fit the graft site (Trisha and young 1993).*



DRESSINGS AND CHLORHEXIDINE

- Chlorhexidine is an established antibacterial agent.
- In 1989, most commercial periodontal dressings claiming to have initially good antimicrobial activity, lost this activity shortly after application.
- Thus the addition of chlorhexidine of dressings to improve their properties was proposed.



- As early as Addy and Douglas tested the antibacterial properties of a chlorhexidine – containing gel in vitro and in vivo – Metacrylate gel.
- Chlorhexidine salts were also incorporated into the dressings in the form of a powder mixed along with the dressing material.
- Pluss et al 1975 incorporated 15-20mg of chlorhexidine dihydrochloride in a periodontal dressing (Peripac) and documented a significant reduction in the amount of plaque formation.
- In a study by Zyskind et al – Chlorhexidine varnish.



DISADVANTAGES OF DRESSINGS

- Dressings might displace the flap.
- They entrap the sutures beneath it.
- They force the dressing material under the flap during placement.
- It promotes plaque retention.



TO SUMMARIZE:

- Thus based on recent studies it appears the periodontal dressings do not improve post operative healing and do not provide a significantly greater degree of patient comfort.
- Furthermore, a dressing will play some part in the retention of an apically positioned flap preventing undesirable coronal movement. As regards comforts opinion are in conflict as to whether a dressing is required and this problem is not easily studied because of the subjective phenomena involved.



THANK YOU!!