

Review Article

History of Periodontal Dressing

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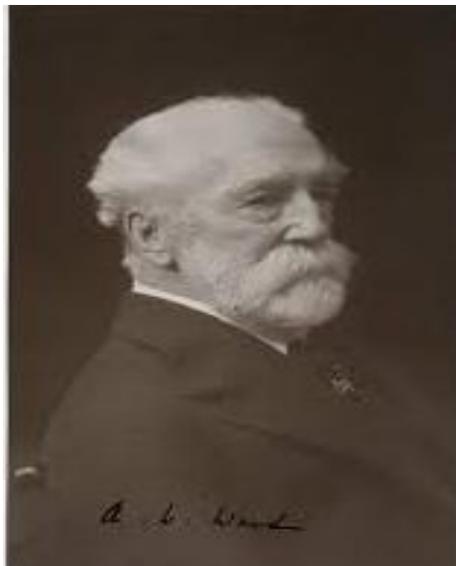
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Abstract: The aim of this review article is to have a thorough knowledge about different types of periodontal dressings. Periodontal surgeries cause tissue injury, triggering hemorrhage & leading to blood clot. Blood clot consists of inflammatory cells & prevents bacterial colonization/wound infection that requires time to heal. For protection of such wounds various dressings have been suggested in the past with the purpose of immobilizing the tissue and eradication of pain. These days application of periodontal dressing after periodontal therapy has been utilized not only for surgical but for non-surgical mechanical therapy as well. Periodontal dressing has 3 classification 1) zinc oxide eugenol, 2) zinc oxide non-eugenol 3) other types.

Keywords: Periodontal dressing, triggering hemorrhage, Blood clot.

INTRODUCTION



Periodontal surgeries cause tissue injury, triggering hemorrhage & leading to blood clot. Blood clot consists of inflammatory cells & prevents bacterial colonization/wound infection that requires time to heal. For protection of such wounds various dressings have been suggested in the past.⁸

First intraoral wound dressing Introduced was “WONDER PACK” by AW WARD in 1923 which was zinc oxide eugenol based, with the purpose of immobilizing the tissue and eradication of pain.⁸

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AW WARD

Periodontal dressing has 3 classification 1) zinc oxide eugenol, 2) zinc oxide non-eugenol 3) other types. 5

1918	Zentler <i>et al.</i>	Periodontal dressing Using idoform gauge
1923	Dr. A w ward	Zno eugenol +alcohol, pine oil, asbestos, fibers.
1942	Box & ham	Zno eugenol + tannic acid (haemostasis) + thymol (astrigents)
1943	Orban	Zno eugenol + paraformaldehyde
1947	Bernier & kaplan	For wound protection
1962	Blanquie	1) Control post-operative bleeding 2) Splint loose teeth 3) Prevent reestablishment of pockets 4) Desensitize cementum
1964	Gold	Splint teeth as it was cement dressing that set hard.
1964	Weinreb shapiro	Zno eugenol impregnated cords in periodontal pockets but found to be less effective.
1969	Baer <i>et al.</i>	Stated that primary purpose of a dressing 1) Patient comfort. 2) Protect wound from further injury healing 3) Hold flap in position.

Ideal charecterstics of periodontal dressings

The properties of periodontal dressing depend on the composition of dressing materials.

1. Periodontal dressing should be soft enough to facilitate the placement of material in operative site and also to prevent distortion and displacement of the material.
2. Periodontal dressings with adequate setting time it become easy to manipulate the dressing material and to remove irregular surfaces which cause irritation to oral tissues.
3. Periodontal dressing should have antimicrobial properties so that it can prevent excessive plaque formation due food lodgment and bacterial colonization and also prevents secondary infections.
4. Periodontal dressings should aid in hemostasis and facilitate healing, refreshes taste after surgical procedure, prevent salivary leakage.

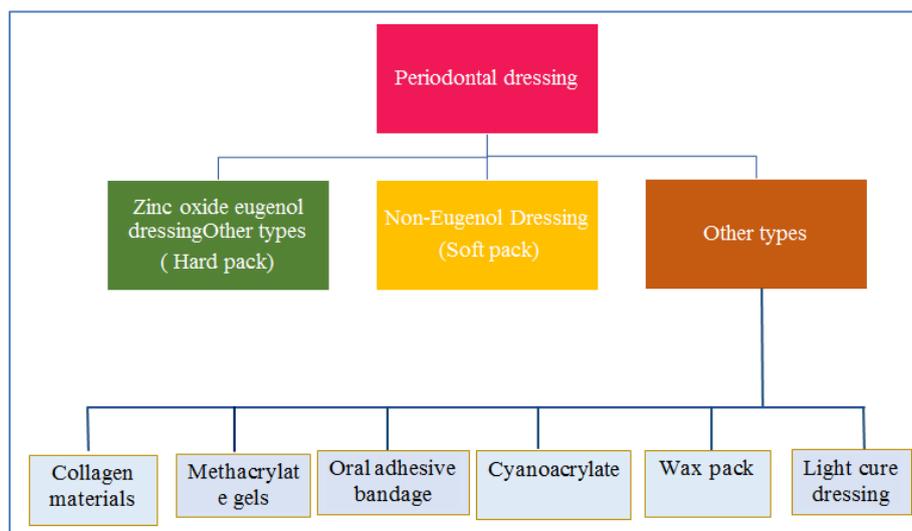
RATIONALE

- A. Bandage over the surgical site.
- B. Holding the flap in the place.
- C. Reduce post-operative pain, infection and hemorrhage.
- D. Aids in hemostasis and fast wound healing.
- E. Protecting the surgical site from trauma during eating and drinking.
- F. Supporting mobile teeth.

Controversy on terms periodontal pack / periodontaldressing

Periodontal pack and periodontal dressing are the terms used for periodontal bandages. In the development of periodontal therapy, periodontal packing materials mere used as a therapeutic material to eliminate the periodontal pocket, but with advent of modified surgical technique for pocket elimination & post-surgical periodontal dressing are used to cover the exposed wound surface 1.

Classification of Periodontal Dressing



Zinc oxide eugenol dressing (hard pack)

Brand Names: - Wonder Pack, Kirkland- Kaiser Pack, Box Pack, Peridress, Ppc.

Zinc oxide eugenol packs were popular periodontal pack since 1923. Eugenol has an obtundent effects on exposed dentin and connective tissue. Zoe is an antiseptic and an antringent, which retards the bacterial growth and helps in contraction of mucosal cells. However, zoe irritates oral mucosa, causes allergic reactions and necrosis(bone). This leads to delayed healing.

It is supplied in two forms

In a 2-component material

POWDER

- | | |
|---------------------|-----------------------------------|
| A. Zinc oxide resin | Improves setting. |
| B. Tannic acid | Improve setting. |
| C. Cellulose fibers | Improves setting. |
| D. Zice acetate | Accelerator, better working time. |
| E. Asbestos | Binders and fillers. |

LIQUID

- A. Isopropyl alcohol (10%).
- B. Clove oil.
- C. Resin.
- D. Pine oil.
- E. Peanut oil.
- F. Camphor.
- G. Colouring agents.

Paste form

- A. Impression paste
- B. As a periodontal dressing e.g.: Ward's wonder pack.

Histologically, eugenol containing dressing produces greater tissue destruction with more inflammatory cells and connective tissue. At higher concentration eugenol has proven to be cytotoxic with adverse effects on fibroblast and osteoblast like cells.

Non-eugenol dressing (soft pack)

Brand names: - Coe Pack, Peripac, Vaco Pack, Perio Care

COE PACK

Manufactured by: -

(Coe Laboratories Inc., Chicago)

Supplied as: -

1. Paste form (Base, Accelerator)
2. Auto mixing system in syringe.

PASTE FORM: - The setting reaction takes place between metallic salt and long- chains fatty acids. Coe pack doesn't contain asbestos and eugenol; this eliminates the problem which associates with the composition of zinc oxide eugenol. The manufacturers claim that setting time is from 3 to 7 mins.

Composition

ACCELERATOR	BASE
<ul style="list-style-type: none"> A. Zinc oxide – Antiseptic, astringent. B. Veg oil – Plasticity C. Loroithidol- Fungicide D. Magnesium oxide- Helps in setting reaction E. Gum cohesiveness 	<ul style="list-style-type: none"> A. Liquid coconut fatty acids – helps in chemical reaction B. Colophony resin- regulates the setting time. C. Chlorothymol- bacteriostatic

Auto mixing system in syringe: - Setting time - 30 seconds. Contains 2 cylinders in a syringe, one cylinder is of accelerator and another is for base. It dispenses both the pastes together. Auto mixing system hardens much faster than manually mixed system.



PERIPAC

Manufactured by
(Gc America Inc., Chicago, USA)
Supplied as:-

Single paste form

It is a single paste set by a loss of glycol solvent; a small quantity is dispensed on a paper to apply.

Composition

Single paste

- Calcium sulphate
- Zinc oxide
- Acylate
- Zinc sulfate
- Poly methylmethacrylate
- Di methoxy tetra ethylene glycol
- Ascorbic acid an organic solvent as a



VACOPAC

Manufactured by:
Voco, Cuxhaven, Germany.

Supplied as: -
1. Pastes form (base and catalyst)

Composition

Purified colophonium
Zinc oxide
Zincacetate
magnesium oxide
Fatty acids
natural : -resin
naturaloils and colorant

PERIO CARE

Manufactured by
(Voco, Cuxhaven, Germany)

Supplied as:-
Paste-gel form

Setting time of periocare is 45-60 second. Equal amount of paste and gel should be mixed together on a mixing pad, untill it shows a uniform colour.

Composition

Resins	Zinc-oxide
Fatty acids	Magnesium oxide
Ethyl cellulose	Calcium hydroxide
Lanolin	Vegetable oils
Calcium hydroxide.	
PASTE	GEL

Other Types

(Collagen Materials, Methacrylate Gels, Light Cure Dressing, Oral Adhesive Bandage, Wax Pack)

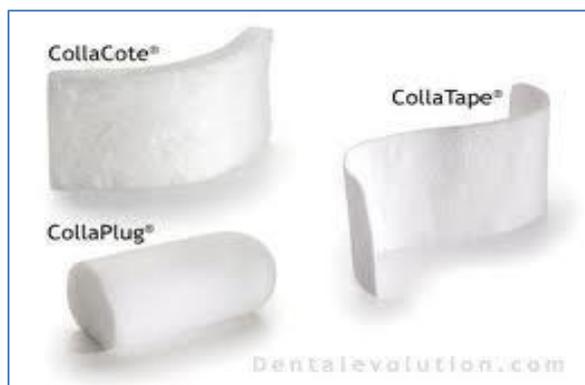
Collagen material
Manufactured by

(Colla products from Zimmer Dental, Carlsbad, CA, USA)

Supplied as:

Collagen sponge (3 mm thickness)

It is a Type -I Collagen dressing. Collagen dressing disintegrate on its own and is derived from bovine Achilles tendon. Collagen dressing creates a physiologic interface between the wound and the environment it also encourages healing by deposition and organization of the fibers in granulation tissues formed freshly in the wound bed.



Methacrylate gels

Primarily methacrylate gels were used in dentistry as a tissue conditioner or as a denture liner, later methacrylate gels were used as periodontal dressing with increase adhesion and rigidity and with the addition of antibacterial substances. Advantage of this material was close adaptation and constant flow for 3 days. Methacrylate gel showed an outstanding compatibility with the wound. Methacrylate gels when used with chlorhexidine (vehical) to soft tissues. Disadvantage with this material was it can't be used solitary, lacked retention, stiffer with zinc oxide powder.

Light cure dressing (barricaid)

Tinted pink, tasteless, translucent material. This material cures with visible light curing unit this forms a non-brittle, firm, protective elastic covering. This is designed for both direct and indirect placement. The syringe is used in direct intra oral placement. The syringe must be discarded to avoid cross infection. In suspectable patients polymerization monomers may cause skin sensitization.

Composition

Polyether -urethane dimethacrylate resin-silanated silica
visible light cure photo initiator and accelerator
Stabiliser
Colorant



Oral adhesive bandage

Composition

Polyisobutylene
sodium carboxy methylcellulose
pectin
Gelatin and a polyethylene

Cyanoacrylate

In 1965 Dr S.N. Bhaskar formulated cyanoacrylate as a periodontal dressing. Chemical formula is $H_2C=C(CH)COOR$. It has a property of strong adhesion to the tissue in the presence of saliva with adequate polymerization time. Cyanoacrylate dressing is biodegradable and is transparent. It may cause toxic effect to nasal mucous membrane, throat and eyes. Applied as drops and sprayed on the tissue.

WAX PACK

Asboe-Jorgensen *et al.* 1974 reported that a dressing containing chlorhexidine promotes healing as it decreases the bacterial colonization at the wound site. This pack is the mixture of coca butter and paraffin in equal amounts. Available in strips that can be cut in desirable size. 1

CONCLUSION

Periodontal dressings are intra oral dressing. This literature briefly introduces the physical properties, types, composition, availability, biocompatibility and the therapeutic effects of periodontal dressings. However, all materials have potential to cause some amount of local and systemic effects. It is therefore, important to know the composition and effects of these materials intraorally. Although, Post-surgical healing is probably not affected by the periodontal dressing but it shows numerous beneficial effects like reduction in post-operative pain, swelling, aids in hemostasis, prevent secondary infections; also protect suture thread from irritation. We believe that further research will introduce newer material and improve in biomaterial properties that may lead it to universally acceptable.

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