Impression making in fixed prosthodontics is an important procedure to get an accurate cast and thereby an accurate prosthesis. A vital component in impression making is retraction of gingiva. This step exposes the prepared margin and unprepared tooth structure to impression material. Many new methods are available, which make gingival retraction quick, painless, and atraumatic.

Retraction Cord

The classic method for tissue retraction involves using retraction cord. The cords are packed with cord plugger to retract the gingiva and leave the prepared tooth margin exposed to the impression material.[1]

The use of retraction cord has certain disadvantages. These are as follows:
2. A significant amount of time may be spent positioning the cord properly when making impression of multiple abutments
3. Leaving the retraction cord for an extended time, especially when an impression is being made for multiple abutments, may cause damage to gingiva, postoperative discomfort, and gingival recession
4. Removal of retraction cord before impression making may cause bleeding of gingiva.[3]

Newer methods are now available, which are relatively atraumatic for the patient.

Expasyl

Expasyl (Kerr Corporation, Orange, CA) is a clay-like material that is dispensed from a syringe apparatus through a narrow needle-like tip. It is available in vials and dispensed directly into the sulcus with a heavy duty delivery gun loaded with a syringe. Expasyl

ABSTRACT

The success of any fixed prosthesis depends on the accuracy of impressions. Finish line exposure has to be adequate during impression making. The goal of gingival retraction is to atraumatically displace gingival tissues to allow access for impression material to record the finish line and provide sufficient thickness of gingival sulcus so that the impression does not tear off during removal. Numerous advanced materials are available for gingival retraction. This article describes the different advanced materials available.

KEY WORDS: Finish line, gingival retraction, gingival sulcus, hemostasis

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has no chemical or setting reaction. It does not go through an expansion phase. The material is left in place for up to 2 min and is then rinsed off with an air/water syringe. The sulcus is then ready for the impression. The material contains aluminum chloride, a potent hemostatic agent. Hence, no violation occurs to the gingival complex. Gingival recession is also not encountered. After removal of Expasyl, sulcus is clean which reduces artifacts during making of digital CAD/CAM impressions. It provides the best outcome of chemical choices available.

**Composition**

- Kaolin 66.75%
- Aluminum chloride 6.54%
- Oil of lemon 0.33%
- Water 25.36%
- Colorant 1.02%
- pH = −3.

**Advantages**

1. Minimal or no physical damage to the gingival tissues
2. Time saving in situations where multiple teeth are being impressed
3. Minimal cost
4. Predictable hemostasis is achieved.

**Disadvantages**

1. More expensive
2. Inhibits set of polyvinyl siloxane and polyether impressions
3. Less effective with very subgingival margins.

**Magic Foam Cord**

Magic foam cord is a new nonhemostatic method. It is a vinyl polysiloxane material designed for retraction of the gingiva. The material is syringed around the margins of tooth preparation and pressure is maintained using a cap. The material expands, and after 5 min, impression can be made. The material expands (160%) after 5 min.

**Advantages**

1. Less traumatic to tissues than retraction cord
2. Color of foam makes it easy to see during use
3. Easy to remove material from preparation and sulcus
4. Adequate working time.

**Disadvantages**

1. No hemostasis provided
2. Expensive when compared to cord
3. No improvement in speed or quality of retraction compared to cord
4. Less effective on subgingival margins
5. Intraoral tips too large to inject material adequately into the sulcus.

**Matrix Impression System**

Matrix impression system is a new system in which impression procedure includes three steps. First, a matrix of occlusal registration elastomeric material is done over the prepared tooth. The retraction cord is removed and a definitive impression is recorded in the matrix using a high viscosity elastomeric impression material. After the matrix impression is positioned, medium viscosity elastomeric material is loaded in an impression tray and is seated over the matrix and remaining teeth to create impression of the entire arch. The design of the matrix also forces the high viscosity impression material along the preparations and into the sulcus. The matrix impression system uses three impression materials of different viscosities.

**Advantages**

1. Eliminates chances of tearing of the sulcus
2. Cleans blood and debris from the sulcus area
3. Delivers impression material in the gingival sulcus slowly and with more accuracy and speed
4. Holds the sulcus open for an increased time.

**Disadvantages**

1. Increased chairside time.

**Merocel Strips**

Merocel is a new retraction material to displace gingiva with no tissue injury before making impression. Merocel retractions strips are synthetic material, which are specifically chemically extracted from a polymer hydroxylate polyvinyl acetate that creates a net-like strip without debris or free fragments. Placement of Merocel retraction technique does not require use of local anesthesiа. Merocel retraction strip provides very excellent gingival retraction when compared to conventional retraction cord. The porous and sponge-like microstructure of Merocel produces a dry field for the impression to accurately capture the details. The absence of fibers decreases the risk of postoperative problems.

**Advantages**

1. It is shaped easily
2. It effectively absorbs oral fluids
3. The sulcus is clean without the presence of any debris.

**Gingitrac**

Gingitrac is a paste system that uses a syringe to apply the paste around the margins. The syringe is preloaded with the paste. The paste contains aluminum sulfate as an astringent. If necessary, a hemostatic agent can be applied before its use. The cap is first filled with the paste and then placed over the tooth for 5 min. The paste is applied with a syringe in the sulcus. For impressions of more than one tooth, a plastic tray is used to carry a firm paste matrix over which the Gingitrac paste is syringed. The tray is
then positioned and removed after 3–5 min. For both single and multiple tooth preparations, retraction of gingiva is by pressure application. The paste is removed prior to impression making.

**Advantages**

1. Easier to express from automix gun
2. Longer shelf life
3. Faster setting time
4. Controls oozing of blood
5. Removal is fast and easy

**Racegel**

Racegel is a new hemostatic agent. Before impression making, it is used to obtain hemostasis and dry field in the sulcus. Racegel becomes more viscous on tissue contact because of its thermodynamics. It contains 25% aluminum chloride, oxyguinol, and excipients. Aluminum chloride is an astringent. The bright orange color makes it easy to dispense, place, and rinse. The gel can be used with or without gingival retraction cords. Racegel produces finish line exposure with minimum bleeding. It is easily rinsed, leaving no irritation of the surrounding tissue. Its thermal effect is reversible when rinsed with water.

**Stay put**

Stay put impregnated combines the advantages of both an impregnated and braided cord with the adaptability of an ultrafine copper filament. Aluminum chloride hexahydrate is used for impregnation. Nonimpregnated stay put cord is also available which can be impregnated with hemostatic agent as needed.

**Advantages**

1. Hemostasis is fast
2. Possible to be preshaped
3. Pliable and can be adapted
4. Relatively safe for cardiac patients.

**Laser**

Use of lasers is adjunctive in fixed prosthodontics. The laser produces minimal damage of collateral tissue when laser energy of the correct wavelength is used. Neodymium: yttrium-aluminum-garnet lasers are not used as their use can result in loss of bone. Erbium: yttrium-aluminum-garnet (Er: YAG) lasers are fairly safe to use as they penetrate soft tissues minimally. CO₂ lasers are used around implants. The primary chromophore for CO₂ lasers is H₂O. These lasers take in less energy close to metal implant surfaces, producing less temperature increases (<3°C) and less collateral damages. The soft-tissue structure is not altered by these lasers.

**Advantages**

1. Excellent hemostasis is provided by CO₂ laser
2. There is reduced shrinkage of tissue
3. There is comparatively less pain and the sulcus is also sterilized.

**Disadvantages**

1. Er: YAG lasers are not good for producing hemostasis
2. CO₂ laser provides no tactile feedback, leading to risk of damage to junctional epithelium.

**Conclusion**

Finish line exposure in fixed prosthodontics is no longer difficult. Various advanced materials are available for gingival retraction. Using these materials, we can definitely improve the quality of impressions in fixed prosthodontics. Furthermore, the procedure can be relatively painless, quick, and atraumatic. The selection of material has to be carefully done by the operator.

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There are no conflicts of interest.

**References**