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Review Article

ADVANCES IN SOFT TISSUE MANAGEMENT: A REVIEW.

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ABSTRACT
Technologies have created new opportunities to attain the goals of aesthetics & periodontal health in dental practice. For a precision fit and long-term success with fixed prosthetic dental restorations, the quality of impressions taken is an important key element. Making an accurate impression requires appropriate tooth preparation and soft-tissue management followed by proper selection of impression material, system, tray and the impression technique. The purpose of this review is to discuss superior qualities of new, preventive and improved soft tissue management materials and techniques.

Keywords: *Soft Tissue Management*

INTRODUCTION
The relationship between a fixed partial denture (FPD) and the surrounding hard and soft tissue should be considered crucial for long-term success of the prosthesis. Several studies have suggested that supragingival margins were preferable (Nevins and Skurow, 1984; Parma-Benfenati *et al.*, 1986). Nevertheless, there are clinical situations that require restorations with subgingival margins (Reiman, 1976).
An FPD requires an accurate impression that records location of the finish line of the prepared tooth and a portion of apical untouched tooth structure (Bjorn *et al.*, 1970; Trivedi and Talim, 1973).

Need for the Gingival Retraction

1. To widen the gingival sulcus in order to provide access for impression material to reach the subgingival margins and to record the finish line accurately.

2. Helps in obtaining a perfect die with accurate margins, which helps in margin placement and contouring of the restoration.

3. Helps in blending of the restoration with the unprepared tooth surface.

4. Helps in placement and finishing of the margins on the prepared tooth.

5. After cementation it helps in easy removal of cement without tissue damage.

6. It helps the dentist in visually assessing the marginal fit and any cervical caries if present.

7. In situations where it is necessary to extend the restoration below the gingival margin to enhance retention.

8. To enhance access and to prevent damage to the soft tissue during cavity preparation procedure, it may be desirable to carry out some degree of gingival retraction prior to commencement of preparation.

For the retraction of soft tissue, three principle methods are available for use today: 1) mechanical; 2) chemo-mechanical; and 3) electrosurgical. The chemo-mechanical technique is probably the most widely used but its limitations are time consumption, pain during the procedure, need for local anesthesia and injury to epithelial tissue and gingival recession (Rupali *et al.*, 2011).

To overcome these limitations, various newer retraction system are introduced e.g.- Expasyl, Magicfoam cord, Merocel strips, Lasers, stay put retraction cord and matrix impression system.

Expasyl Retraction Paste
It gives excellent retraction. It physically displaces tissue for marginal access. It is absolutely safe. It requires minimal pressure and causes no damage to epithelial tissue. It significantly saves time. It can be placed quickly. It also has hemostatic action hence controls bleeding and crevicular seepage.

MATERIALS AND METHODS

Method

Expasyl is injected into the sulcus, physically displacing the tissue. It is left for 1-2 minutes and then rinsed. Expasyl's 15% aluminum chloride controls bleeding and crevicular seepage. After rinsing, Expasyl leaves the sulcus open and dry. Expasyl new improved elastomeric materials can be used to obtain an impression which gives accurate recording of the margin.

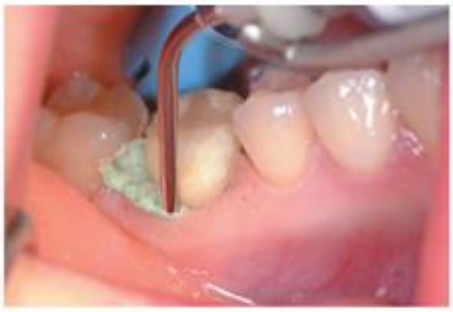

Figure 1: Expasyl is injected into the sulcus

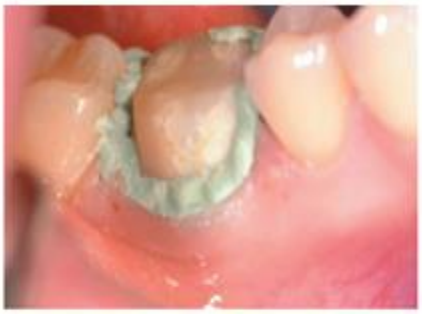

Figure 2: Left for 1-2 minutes and then rinsed

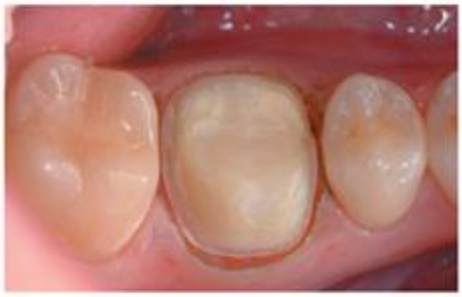

Figure 3: After rinsing

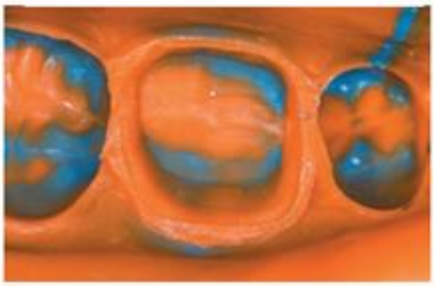

Figure 4: Impression

Contraindications

• Presence of periodontal pocket and furcation involvement.
• Known allergy to aluminium.

Magic Foam

Designed for easy and fast retraction of the sulcus without the potentially traumatic and time consuming packing of retraction cord. It is **a** non-traumatic method of temporary gingival retraction.

It has easy and fast application directly to the sulcus without pressure or packing. No special training or technique is required. It is comfortable to the patient. It contains no hemostatic chemicals that may contaminate the impression site. There is no need for extensive rinsing of residue or hemostatic chemicals.

Method

Crown preparation is completed prior to retraction. Pre-fit Comprecap per each crown preparation is selected. Apply Magic Foam Cord around the crown preparation. Place Comprecap and have the patient bite and maintain pressure on the Comprecap. Remove Comprecap after 5 minutes. The result is a wide open sulcus with clear access for the wash material.

Limitation

Hemostasis cannot be achieved. Less effective on subgingival margins.

Merocel Strips

Merocel retraction strips are a synthetic material that is specifically chemically extracted from a biocompatible polymer (hydroxylate polyvinyl acetate) that creates a netlike strip without debris or free fragments.

It can be easily shaped and adapted around the tooth. It is highly effective in absorption of oral fluids. It is not abrasive and hence provides a gentle displacement.

Method

Tooth is initially prepared at the gingival level without retraction of the gingival sulcus. A provisional crown is lined with acrylic resin and then inserted. A gingival finish line is prepared within the intracrevicular space during the second appointment, and caution is exercised to avoid injury to the gingival tissue. A 2 mm thick Merocel retraction strip is inserted around the tooth and the provisional crown is reinserted.

Figure 5: Merocel retraction strip

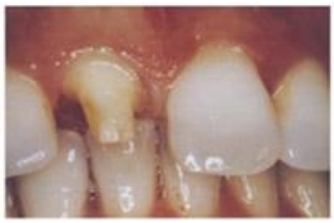

Figure 6: Tooth Initially prepeared

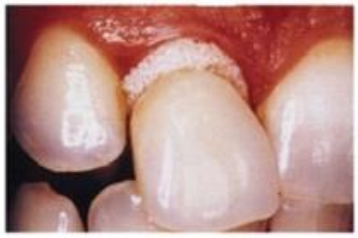

Figure 7: Merocel used as a retraction device

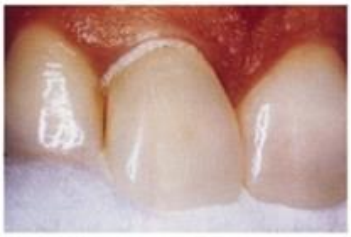

Figure 8: Maintain pressure for 10 min

The patient is asked to maintain pressure on the artificial crown and concomitantly on position is sustained for 10 to 15 minutes. The Merocel retraction strips tend to expand with absorption of selected oral fluids, exerting pressure on surrounding tissues to provide gingival retraction.

The material in the intracrevicular space is removed and an impression is made. The gingival tissue returned to the original position 1 day after the surgery. The metal-ceramic crowns were cemented 1 week later (Ferrari *et al.*, 1996).

Stay Put Retraction Cord

Time and again dentists are faced with a problem when placing a retraction cord: it is difficult to place in the sulcus and to keep it there. Stay-put is the answer to this problem. When you place Stay-put it stays put.

Figure 9: Stay-put combines the advantages of an impregnated retraction cord with the adaptability of a fine metal filament

The pliable core is so effective that the cord is not only easy to place in the sulcus but it stays there. Overlapping is not necessary. Impregnation with aluminium chloride promotes quick haemostasis without

causing any cardiovascular problems. Saves chair time: Stay-put impregnated cord stops bleeding quickly and effectively and does not need to be replaced. It is quick, efficient and gives improved results.

Matrix Impression System

A new fixed Prosthodontic impression procedure that incorporates the attributes of traditional methods and overcomes the drawbacks in: (1) registration of subgingival margins, (2) gingival retraction and relapse, (3) Hemostasis and sulcular cleansing, (4) delivery of impression material subgingivally, (5) strengthening the sulcular flange of the impression, and (6) simplification for making complex impressions.

Method

In this system a matrix of polyether occlusal registration elastomeric material is made over the tooth preparation.

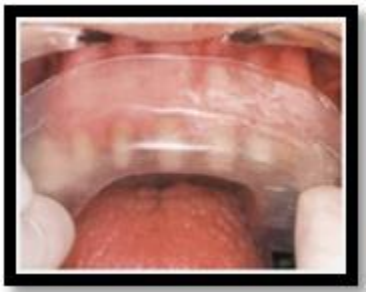

Figure 10: Clear plastic carrier is selected from assortment of premade forms. Carrier may also be made of wax

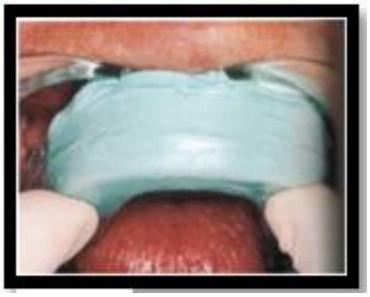

Figure 11: Matrix is made in carrier with polyvinyl siloxane material before soft tissue is retracted

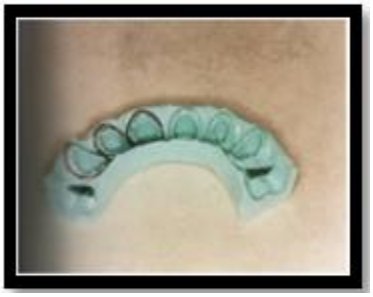

Figure 12: Registration of gingival crest is primary objective. Tissue under planned pontics and precision attachments should be included

Facial and palatal sides of matrix are trimmed with scalpel. Matrix should extend one half to two thirds of tooth beyond prepared teeth and close to gingival crest. Black lines indicate sulcular extension.

Part of matrix has been colored to indicate important structures. Thin black line around each preparation identifies sulcular extension but not necessarily finish line of preparation. Thick red line indicates crest of gingiva. Two black marks point out proximal contacts that must be relieved. Slender bur or knife edged rubber wheel is used to enlarge interproximal embrasures. This permits lateral displacement of gingiva when impression material is guided into sulcus.

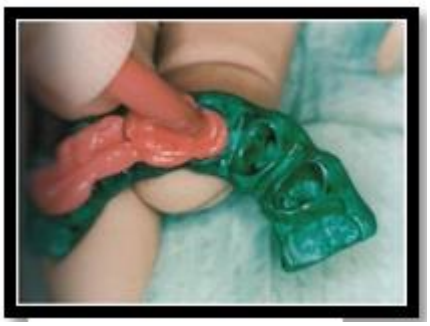

Figure 13: Matrix is painted with polyether adhesive to generate more secure bond with nonbonding materials. Impression syringe is used to fill matrix with high viscosity impression material

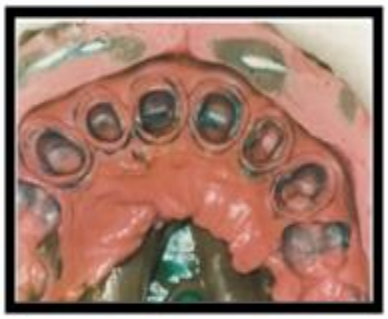

Figure 14: Matrix impression is seated with light pressure. Axial walls and positive vertical stops make proper seating easily discernible. Mark may be lacked on facial surface for proper orientation, because many references are covered with impression material

Stock tray filled with medium viscosity impression material is seated over the matrix impression before matrix material polymerizes. Completed impression shows registration of preparation margins. Quality and thickness of sulcular flange is possible due to effective gingival displacement.
Matrix visible through impression material in place is acceptable because it becomes an integrated part of impression (Gus and Livaditis, 1998).

Lasers

Laser is preferred for resection of the oral soft tissues and can be used successfully without local anesthesia for gingival retraction prior to impression making, particularly in the presence of hypertrophied tissue.

Method

The tip of the fiber is kept in touch with the soft tissue and is moved in the same way as a conventional scalpel. The laser technique is a little slower than using a scalpel but produces a very controlled tissue removal free of hemorrhage and pain. Healing is rapid and uneventful with lasers.
Overuse of laser energy causes shrinkage of the tissue and unwanted exposure of the crown margins (Steven *et al.*, 2004).

CONCLUSION

Atraumatic gingival tissue management for impression making provides greater patient comfort during and after impression making.
Soft tissue mismanagement will produce inaccurate impressions and hamper the long term success of the restorations.

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