



Tissue Management with Expasyl; A Key to Restorative Success

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Educational objectives

Upon completion of this course, participants should be able to achieve the following:

- Understand the dento-gingival complex
- Discuss the advantages of preserving the epithelial attachment
- Know the protocol of Expasyl placement
- Evaluate what conditions warrant placement of this material

Abstract

Using a material called Expasyl, this presentation will provide dentists techniques and tips for predictable soft-tissue management of restorative dentistry ranging from porcelain veneers to full mouth rehabilitation. Clinical case examples will be shown throughout the presentation that will show the versatility of this material.

Introduction

Now is a great time to practice restorative and cosmetic dentistry. Today, unlike ever before, clinicians and assistants have a variety of restorative materials from which to choose in order to quickly, easily and predictably restore a patient's dentition to proper form and function. A product that has provided quick, predictable soft-tissue management for crown and bridge procedures as well as restorative procedures is a material introduced by Kerr (Orange, California) called Expasyl.



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History

Sulcus opening and hemostasis are two essential prerequisites for good access. Classical gingival excision techniques by laser and primary rotary curettage, can sometimes be painful and lead to damage of the periodontium. Gingival retraction techniques using cords are often laborious, painful in the absence of anesthesia, and represent a risk of damage to the epithelial attachment.^{1,2} Some other drawbacks might include risk of epithelial detachment, risk of irreversible gingival retraction and excessive bleeding or seeping. Also, the level of the gingival margin is difficult to predict following periodontal healing and therefore may present aesthetic problems. Some existing products used for hemostasis have shown to be unstable, inhibit bonding, and often leave debris in the sulcus area.^{3,4}

Expasyl has been developed to deal with these difficulties, saving considerable amount of time for the practitioner and enhancing comfort for the patient. Expasyl utilizes a mechanical and chemical component for sulcus opening and hemostasis. It is comprised of three materials: kaolin, water, and aluminum chloride.⁵ Expasyl contains white clay (kaolin) to ensure the consistency of the paste and its mechanical action while aluminum chloride enhances the hemostatic action. Application of an air water spray will remove the material from the sulcus.

Indications for using Expasyl are essentially whenever hemostasis or sulcus opening (gingival deflection) is required. Procedures may include sulcus opening and hemostasis before taking an impression, restoration of cavities, or prior to bonding or cementing restorations. The Expasyl paste is injected into the sulcus, exerting a stable, non-damaging pressure of 0.1N/nm.^{3,6} It is important to note that the approximate measurement of biologic width is 3mm. When Expasyl is left in place for one minute, this pressure is sufficient to obtain a sulcus opening of 0.5mm for two minutes.⁴

The product is supplied in reusable capsules. Depending on the clinical situation and number of teeth, four to 10 preparations can be performed with a single capsule. The reusable capsule can be decontaminated after each use. The disposable injection canula allows for bending and shaping for greater access.

Equipment

- Capsules
- Injection canulas
- Applicator

Care after use:

- Separate the applicator, capsule and canula.
- Discard the injection canula.
- Close and decontaminate the capsule.
- Clean applicator before disinfection and sterilization.
- Store the product separately from the canulas and applicator.

Storage

The paste is very viscous and dependant upon humidity and temperature. Capsules must be kept around room temperature (20 degrees Celsius). If the contents of the capsule are left open to air, its viscosity will increase to where it becomes impossible to inject. To prevent the material from drying up, it is essential to close the capsule immediately after use. Store the capsules separately from the canulas and applicator since the paste has aluminum chloride, which could corrode the metal found in canulas and applicator.

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Figure 1: Preoperative smile.



Figure 2: Prepared dentition with gingival retraction.



Figure 3: Porcelain veneer restorations.



Figure 4: Cementation of porcelain veneers.

Insertion Protocol

At the start of injecting the Expasyl material, the canula tip must be braced on the surface of the tooth with immediate proximity to the gingival edge angling into the sulcus. This creates an enclosed space which walls are compromised of the tooth surface, the cross section of the canula tip and the intrasulcular wall. In other words, the canula is pushed towards the tooth surface when expressing the material. It is important to see blanching (from pink to white) of the marginal gingival to verify that the product has entered the sulcus. As the sulcus expands, the angle of the injection canula tip is increased to maintain contact with the sulcus lining of the gingival edge.

Clinical Case

Case Presentation;

A woman in her late 30s presented to the practice dissatisfaction with the appearance of her smile (Figure 1). She commented that she felt that her existing restorations were unattractive because of size, shape, and color and that these restorations were making her look much older than her actual age. She wanted a very white “Hollywood” smile!

Initial diagnostic evaluation consisted of a series of digital images with study casts, a centric relation bite record and a face bow transfer. The patient had porcelain veneer restorations present on her maxillary anterior teeth #5-12. Overall vitality and translucency appeared to be compromised with these restorations. A smile guide book was used to complete the smile analysis necessary for predesigning the case. The size and shape of her existing restorations on teeth #8 and 9 were too wide, so our goal was to distribute this amongst her other maxillary teeth. Because the patient wanted a very white smile, she decided to restore eight maxillary teeth (#5-12) and six mandibular teeth (#22-27).

Preparation

When informed consent was obtained from the patient, treatment was initiated. After anesthetic was administered, a crown-removing bur was used to take out the maxillary anterior restorations from #5-12. Utilizing a crown spreader hand instrument, the existing restorations were removed with a rotation to dislodge the porcelain from the underlying tooth. Utilizing Expasyl (Kerr), we not only controlled hemorrhaging, but also achieved gingival retraction (Figure 2). After approximately two minutes in the sulcus, the Expasyl was rinsed off with copious amounts of water. Since the patient had a sensitive gag reflex, a very quick-set impression material was selected (Take One Super-Fast, Kerr) to take the impression. Since her previous restorations had a shade of A-2, the patient desired a whiter smile and selected 010 Bleach shade on the Chromascope (Ivoclar Vivadent).

Laboratory Considerations

Color photographs and diagnostic data were also obtained and forwarded to the laboratory for the fabrication of the final restorations. During the laboratory phase, the full arch polyvinyl siloxane impressions were used to create a master model on which the restorations would be based. The master model was segmented into individual dies that were trimmed and pinned to determine the manner by which the final restorations would integrate with the existing soft tissue. A silicone incisal matrix of the provisionals was created to guide the placement of incisal effects and edge position in the subsequent ceramic build-up. Additionally, comprehensive color mapping ensured that the definitive aesthetic result of the restorations would meet the patient’s expectations (Figure 3).

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Figure 5: Postoperative smile.

Author's Bio

Ara Nazarian, DDS, is a graduate of the University of Detroit-Mercy School of Dentistry in Detroit, Michigan. Upon graduation, he completed an AEGD residency in San Diego, California with the United States Navy. He is a recipient of the Excellence in Dentistry Scholarship and Award. Currently, he maintains a private practice in Troy, Michigan, with an emphasis on comprehensive and restorative care. His articles have been published in many of today's popular dental publications. Dr. Nazarian also serves as a clinical consultant for the Dental Advisor, testing and reviewing new products on the market. He has conducted lectures and hands-on workshops on aesthetic materials, mini-implants, and restorative techniques throughout the United States. Dr. Nazarian is also the creator of the DemoDent patient education model system. He can be reached at 248-457-0500 or at www.demo-dent.com.



Disclosure: Dr. Nazarian declares being a consultant for Kerr Corporation.



This CE activity is supported by an unrestricted grant from Kerr Corporation.

Cementation

Before try-in of the definitive restorations to verify fit and shade, the provisional restorations were removed sequentially, starting from the maxillary anterior region. Any remaining cement was cleaned off the prepared teeth and bleeding from the gingival tissues controlled with Expasyl (Kerr) paste. After the patient was shown the retracted view for acceptance, the cementation process was initiated. The restorations were treated with phosphoric acid (37 percent) for 20 seconds, rinsed, and silanated with a porcelain primer (Kerr). The prepared dentition was cleaned with chlorohexidine 2 percent (Consepsis, Ultradent Products, Inc.) for 15 seconds and rinsed to remove any contamination during the temporary phase. The preparations were treated with Optibond Solo Plus (Kerr) dental adhesive according to the manufacturers' protocol. The adhesive was cured for 10 seconds per tooth with L E Demetron II (Kerr) curing light.

Insure white opaque resin cement (Cosmedent) was applied to the inner surface of the restorations. The restorations were then placed on the preparations and, while firmly holding the restorations in place, a rubber tip applicator removed all excess luting cement from the margins (Figure 4 on p. 50). A thin layer of glycerin was then applied to the margins to prevent an oxygen-inhibiting layer from forming. The restorations were tacked at the gingival margin.

While the restorations were still firmly held in place, the restored dentition was flossed and any excess luting cement was carefully removed. When most of the excess cement was removed, the restored dentition was completely light-cured from both facial and lingual sides. Any residual cement was removed with a No. 15 scalpel or finished with a fine diamond and polishing points. After complete polymerization of the restorations, the occlusion was verified and adjusted. The overall health and structure of the soft tissue and restorations was very good. The patient was extremely satisfied with her new "Hollywood" smile (Figure 5).

Conclusion

Expasyl has proven to be a valuable adjunct for taking accurate impressions. One significant advantage of Expasyl versus conventional retraction methods is its time savings. Also, the control of soft-tissue deflection combined with hemostasis means the quality of final impressions and the fit of laboratory restorations are significantly improved. Expasyl also creates the ideal environment for bonding of final restorations. As clinicians, we are always looking for ways of delivering our services in an efficient, safe, and productive manner. Expasyl is a great addition to your armamentarium that allows you to deliver restorations in such a manner.

A special thanks to Burbank Dental Lab for the fabrication of these porcelain veneer restorations. ■

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1. What is the hemostatic agent used in Expasyl?
 - a. Ferric sulfate
 - b. Aluminum chloride
 - c. Sodium chloride
 - d. Benzyl chloride
2. Expasyl obtains a sulcus opening of 0.5mm for _____.
 - a. one minute
 - b. two minutes
 - c. five minutes
 - d. eight minutes
3. What are some drawbacks of existing techniques in tissue retraction?
 - a. Risk of damage to the epithelial attachment
 - b. Risk of irreversible gingival retraction
 - c. Bleeding and seeping
 - d. All the above
4. Expasyl can be used for the following dental indications:
 - a. Prior to impression taking
 - b. Prior to prosthetic seating
 - c. Preparation of Class II and V restorations
 - d. All the above
5. The _____ of the gingival tissues shows that the paste is well applied.
 - a. whitening
 - b. darkening
 - c. yellowing
 - d. red color
6. When using the Expasyl applicator, the tip or canula should be pushed _____ the tooth surface when expressing the material.
 - a. away from
 - b. towards
 - c. opposite
 - d. all the above
7. Other existing techniques in gingival retraction include _____.
 - a. cord deflection
 - b. electro or laser surgery
 - c. rotary curettage
 - d. all the above
8. Which one of the following is not a component of Expasyl?
 - a. Kaolin
 - b. Aluminum chloride
 - c. Ferric sulfate
 - d. Water
9. What is the approximate measurement of biologic width?
 - a. 2mm
 - b. 3mm
 - c. 1cm
 - d. .33mm
10. When using Expasyl, the paste must be injected in an enclosed space which walls are the following:
 - a. Tooth surface
 - b. Intra-sulcular wall of the marginal gingival
 - c. Cross section of the canula tip
 - d. All the above

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