



## **TECHNIQUE TIPS & TROUBLESHOOTING**

### **I. TECHNIQUE TIPS**

Inserting the cartridge into the dispensing gun

Various applications

Keeping the paste in contact with the tooth and filling the sulcus

Achieving adequate retraction

Hemostatic properties

Patient is experiencing pain

Using Expa-syl with the double cord technique

### **II. TROUBLESHOOTING**

#### **A. CARTRIDGE AND PASTE**

Some paste seems to remain in the cartridge

The paste appears to harden or dry out

The cartridge has split

Hydrocolloids / Polyether

#### **B. DISPENSING GUN**

Inserting the cartridge into the dispensing gun

Gun is rusted or jammed

Can I use Expa-syl Paste without the dispenser or tips?

#### **C. DISPENSING TIPS**

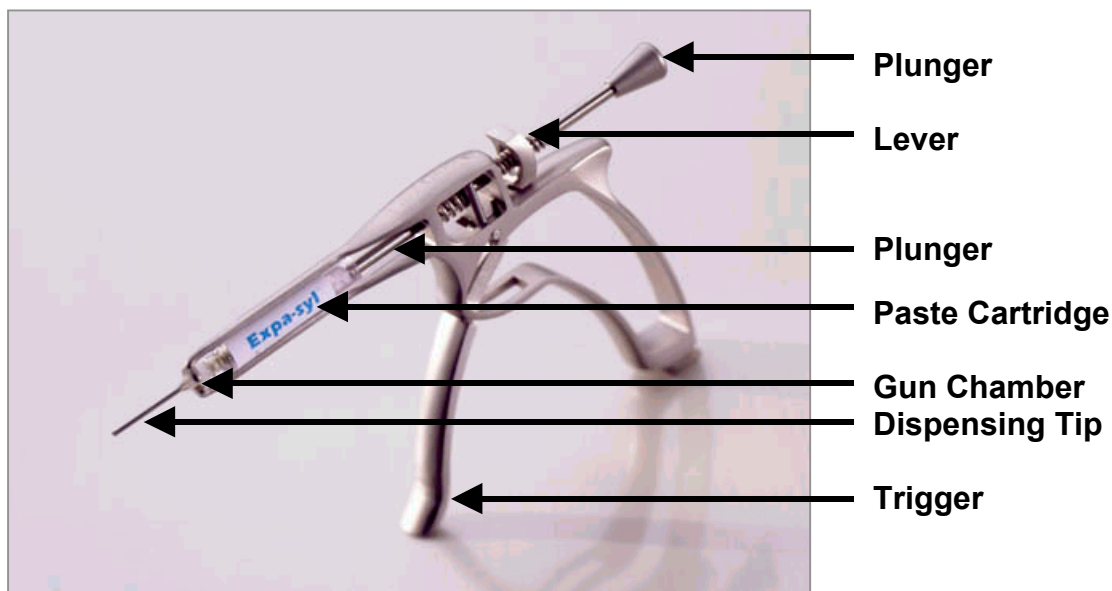
Bending the tip

Using the dispensing tip interproximally

Can I use Expa-syl Paste without the dispenser or tips?

## Inserting the tip/cartridge into the gun and bending the tip

1. Remove the cap from the cartridge and insert the dispensing tip.
2. To back the plunger out of the dispenser; first press the lever forward and hold while then turning the plunger slightly counterclockwise and pulling it back.
3. Insert the cartridge and tip with the tip first, into the chamber of the dispenser.
4. The dispensing tip may be bent if necessary. Take care not to crimp the dispensing tip at the bend. A crimp would hinder the flow of the paste.
5. Squeeze the trigger of the gun to push the plunger forward until it makes contact with the cartridge.
6. To extrude the material, squeeze the trigger of the dispenser, applying pressure evenly to assure continuous flow.



## Various applications

Expa-syl may be used in all the indications of gingival retraction. Such as: Dental impression with or without prior gingival removal, seating of temporary and permanent prosthetics, restoration of Class II, III and V cavities, the placement of a rubber-dam, and when retraction is needed prior to cementing of the final restoration.

## Keeping the paste in contact with the tooth & filling the sulcus

The maximum speed to dispense the paste into the sulcus is 2mm/second. You should see the blanching of the gingiva, which indicates compression of the paste and satisfactory application of the product. If the cord of paste does not emerge in a uniform fashion, then slower application is needed.

**Several cartridges may be required to learn and perfect the application technique for Expa-syl.** To apply Expa-syl, incline the tip almost horizontally to create a closed space between the tooth and the marginal edge of the tissue. It is very important to straighten the axis of the tip progressively while introducing the paste into the sulcus.

Expa-syl must be left in place for 1 or 2 minutes on average. This time depends on the characteristic of the marginal gingiva (1 minute for a thinner tissue, 2 minutes for thick and fibrous tissue).

The viscosity of the paste will decrease with moisture, try to avoid contact of Expa-syl with saliva during the procedure. Expa-syl works by exhibiting a yield stress higher than the force exerted on the tooth by the gum; therefore, it is able to keep the gingival sulcus open. When the material absorbs an excessive amount of water, the yield stress (packability) drops significantly and therefore dry conditions are recommended.

## Achieving Adequate Retraction

It will take five or more applications to learn the technique of applying the paste into the sulcus. It is very important to place the tip almost horizontally then move it vertically when injecting the paste (especially if the tooth has not been prepared).

Slowly inject the paste into the sulcus without excess pressure and gradually straighten the axis of the tip. The cord of paste must have a dry and compact appearance; if not, perform a second injection.

In 1978, Van der Velden and De Vries studied the forces applied to the sulcus during various dental procedures. They observed a tearing of the epithelial attachment as soon as pressure of  $1\text{N/mm}^2$  was applied to the marginal gingiva. This attachment was destroyed when the pressure exceeded  $2.5\text{N/mm}^2$ . The pressure applied by a retraction cord in this region is between 5 and  $10\text{N/mm}^2$  (depending on the number of cords inserted into the sulcus). A simple periodontal probe exerts a pressure between 1 and  $2\text{N/mm}^2$ . To separate the marginal gingiva from the human tooth at a distance of 1.5 mm, it is necessary to apply a pressure of  $0.1\text{N/mm}^2$ . The conclusion of these studies was that gingival retraction should be accomplished under a pressure of between 0.1 and  $1\text{N/mm}^2$  to avoid tearing of the epithelial attachment.

With the Expa-syl technique, it is possible to achieve adequate opening of the sulcus without damaging the epithelial attachment. With Expa-syl the application is faster, a dry open sulcus is obtained, and the procedure is gentler to the tissue preventing bleeding.

## Hemostasis Properties

Expa-syl must be left in place for an average of one to two minutes. The time depends on the tonicity of the marginal gingiva. (1 minute for thinner tissue, 2 minutes for thick and fibrous tissue) This time is reduced to 30 seconds in the case of epithelial detachment (after rotary curettage or removal with electrosurgery for example); the action of the paste is much quicker and more efficient.

The aluminum chloride in Expa-syl achieves comprehensive hemostasis. Expa-syl must be applied to healthy tissue, without any inflammation. The use of Expa-syl is contra-indicated with periodontal pockets or furcation involvement.

Remove Expa-syl using a vigorous air and water spray with simultaneous aspiration. The placement procedure may be repeated if extra hemostasis is needed.

## Patient is experiencing pain

Expa-syl is a painless technique for opening the sulcus when used on a healthy tissue. Expa-syl is biocompatible. However, the use of Expa-syl is contraindicated when there are periodontal pockets or furcation involvement (it is very difficult to thoroughly eliminate the product when there is a pocket). The paste must be applied slowly (2mm/sec), without introducing the tip into the sulcus.

Expa-syl must be applied with the dispenser and with the single-use tips. This dispenser is specially prepared to extrude the paste at a pressure of 0.1N/mm<sup>2</sup>. It is the maximum amount of pressure to prevent damage to the epithelial attachment.

## Using Expasyl in the double cord technique

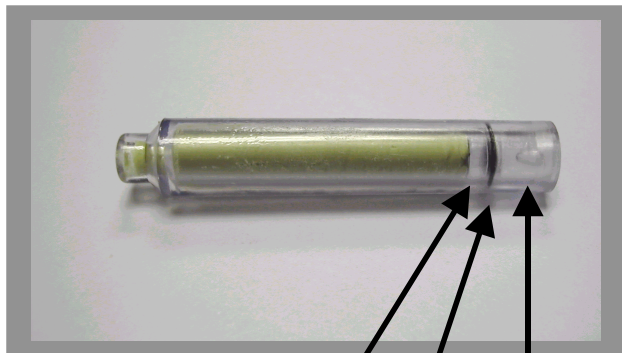
Since Expa-syl is rinsed after two minutes there is not sufficient time to shape the tooth with Expa-syl in place. When using the double cord technique it is acceptable to replace the second cord with the Expa-syl paste to achieve retraction. The resulting retraction will be the same quality as with the traditional double cord technique. The benefits include a quicker and less painful procedure and an open sulcus without bleeding.

## Some paste seems to remain in the cartridge

When the paste stops extruding from the cartridge opening, do not continue to apply pressure. **Excess force on the empty cartridge will bend and damage the plunger, which could render your dispenser unusable.**

There can be the illusion of paste remaining inside of the cartridge when the cartridge is actually empty. There is a clear plastic 'stopper' inside of each cartridge surrounded by an o-ring. The plunger of the gun engages the back of this stopper to push the paste forward. The bulk or head of the stopper is inside the cartridge in front of the o-ring. Once the paste has been dispensed the stopper head may be surrounded by a very thin layer of the paste giving the illusion of usable paste wasted in the cartridge. Instead it is the head of the plastic stopper occupying that space.

**Full Expa-syl Cartridge**

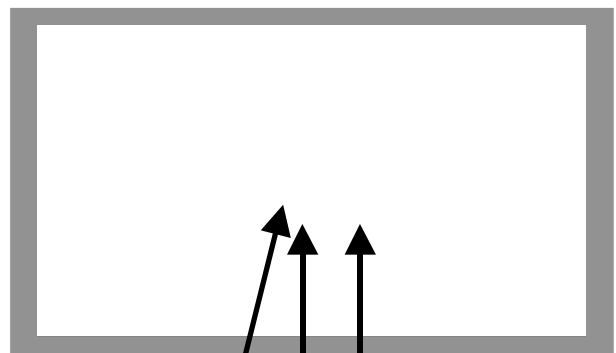


Head of Stopper

Back of Stopper

O-Ring

**Empty Expa-syl Cartridge**



Head of Stopper

Back of Stopper

O-Ring

## The paste seems to hardening or dry out

When you have completed a procedure with Expa-syl, always remember to remove the dispensing tip from the cartridge and replace the cap onto the cartridge. Discard the dispensing tip after each patient. It is critical to avoid prolonged exposure of the paste with the air. Excess exposure to air will result in dry paste. If pressure is applied to the dry paste in the cartridge, the cartridge may split. Expa-syl should be stored at an ambient temperature (59F to 87F, 40 to 60% humidity) to avoid dry paste. Also, do not refrigerate or freeze the Expa-syl paste.

Cartridges containing dry Expa-syl paste can be placed in a zip-lock plastic bag with a moistened 2"X2" gauze sponge. This may improve the condition of the paste.

**It is important to remove any residual paste from the dispenser before sterilization to prevent corrosion caused by the ingredient aluminum chloride, found in Expa-syl. Do not store the dispenser with the cartridge still attached.**

## The cartridge has split

Replace cap onto the cartridge after each use to prevent the material from drying out. Once the paste has dried out from air exposure, and pressure is applied to the paste inside the cartridge from the gun, there is increased potential for cartridge splitting. It is important that Expa-syl is stored between the temperatures of 59F and 87F (40% to 60% humidity) to prevent dry material and splitting cartridges. Do not refrigerate or freeze the paste.

At the end of the cartridge when the paste stops extruding from the opening, do not continue to apply pressure. Excess force would damage/bend the plunger. A bent plunger could apply extra pressure to the inside of the cartridge and increase the chance of cracking cartridges.

There is a clear plastic 'stopper' inside of each cartridge surrounded by an o-ring. The plunger of the gun engages the back of this stopper to push the paste forward. However, the bulk of the stopper is ahead of the o-ring. This gives the illusion of excess paste wasted in the cartridge when instead it is the plastic stopper occupying that space.

## **Hydrocolloid and Polyether**

When using hydrocolloid, it is necessary to check that Expa-syl has been completely removed from the mouth to prevent interaction with the impression material. Remove Expa-syl using a vigorous air and water spray with simultaneous aspiration. The color of Expa-syl makes it easy to see that the paste is totally removed.

The Expa-syl paste (kaolin and aluminum chloride) has astringent and hemostatic properties. It also absorbs liquids so if the paste is not rinsed properly, the hydrocolloid material could tear. The use of hydrocolloid is not contra-indicated but Expa-syl needs to be thoroughly rinsed.

Any product containing aluminum chloride can inhibit the set of a Polyether. When using Polyether it is necessary to completely remove the Expa-syl since it contains aluminum chloride. A longer rinsing time is recommended to avoid interaction and non-set Polyether materials.

## **Gun is rusted or plunger is jammed**

It is critical that any residual paste be removed (with water) from the dispenser prior to sterilization. This will prevent corrosion of the gun from the aluminum chloride in Expa-syl. It is possible to cause corrosion of the gun if the Expa-syl paste remains on the dispensing gun for an extended period of time. Therefore, do not store the dispenser with the cartridge after the procedure is completed. Lubricating the moving parts of the gun will provide a smooth and unhindered movement of the hinges.

## Can I use the Expasyl paste without the gun or tips?

Expa-syl is a viscous, thick paste (with kaolin) and cannot be adequately extruded with a dispenser other than the one provided. No other syringe has been adapted to perform effectively with this paste.

The concept behind the Expa-syl system is to preserve the epithelial attachment and prevent gingival recession or bone resorption. This specific dispensing gun is the only method that assures a pressure of 0.1N/mm<sup>2</sup>. Moreover, the dispensing tips have been specifically designed for the Expa-syl paste. The diameter has been chosen to protect the periodontal tissue as well as allow for an even flow of paste.

Tips are bendable to allow access to all teeth. After the introductory kit purchase, refill boxes of 40 tips and of 20 cartridges of paste are available.

## Using the tip interproximally

Introduce the paste slowly into the sulcus (2mm/sec). Do not tilt the tip away from the long axis of the tooth. Place a sufficient quantity of paste to totally fill the sulcus in order to obtain adequate retraction.

Expa-syl is a firm and viscous paste. The dispensing tip diameter is of optimal size to allow for dispensing of an even flow of material into the sulcus and yet prevent damage to the periodontal sulcus.