Helpful hints with rubber dam

Peter Carrotte

Abstract

This paper details the many reasons for using rubber dam in restorative dentistry, from cross-infection control to medico-legal safe practice, from easier working conditions to increased prognosis. The individual elements involved in the procedure are considered, and methods of application discussed. Although hands-on practice may be required, these helpful hints may make all the difference to the adoption of this easy procedure into everyday practice.

Keywords

Rubber Dam, Restorative Dentistry, Endodontics.

Introduction

More and more practitioners are realising the many benefits of working under rubber dam. Keith Marshall presented the cross-infection control benefits in the last issue of CPD Dentistry. Endodontic treatment is easier and has a far higher prognosis if saliva is kept out of the root canals. Patients generally report that they have received the most relaxed treatment they have ever experienced, with no pools of water and saliva at the back of their throats, no need to keep rinsing, and frequently a sense of detachment from the dental procedure, almost as if the tooth being treated is outside the mouth. Dentists who have been converted rapidly discover that they are able to work more easily, more quickly and more efficiently, and that the quality of their work is dramatically improved. When working with adhesive materials such as composites and fissure sealants, total moisture control is achieved. The presence of any saliva at all will compromise the adhesion of these materials. Rubber dam makes dental treatment easier, quicker, better and of course safer, as the radiograph in Figure 1 clearly shows. This paper presents some helpful hints to encourage this excellent technique to be widely adopted.

Before looking at the methods of application, it is necessary to consider the individual items of equipment involved. The rubber dam itself comes in 6x6 squares, usually green or black although one company produces multicoloured sheets which will appeal to children. The dam can be scented with peppermint oil or other perfumed agents to disguise the smell of rubber. Most manufacturers produce three thicknesses, designated either light, medium and heavy, or medium, heavy and extra-heavy. Whichever terminology is used, the middle grade is usually preferred as the finest is more prone to tearing, and the thickest more difficult to apply.

Latex free dam is necessary for the increasing number of patients with latex allergies. One recent addition is FlexiDam (Roeko, ), a latex free dam of a standard thickness which also, of course, has no rubber smell. These latex-free dams seem to become easier to manipulate if they are stretched out a few times before starting application.

It is always more pleasant for the patient if a napkin or gauze square is placed beneath the dam to protect the facial skin from any moisture.

Figure 1. Endodontic instruments may be inhaled if rubber dam is not used.
Rubber dam clamps

Rubber dam clamps, to hold the rubber dam sheet onto the tooth, are presented in a bewildering array of shapes and sizes, as shown in Figure 2. In fact it is much better to get to know just a few than to be confused with a large choice. Clamps can be active, which slide down the tooth to give a firmer grip, or passive which stay where placed but tend to dislodge more easily. They can also be winged or wingless depending upon the method of placement, which is covered later. To make life easier an almost universal molar clamp is size 8A (W8A if the wingless technique is used), and size 00 (W00) is the universal clamp for premolars. If an active clamp is preferred for a premolar size 1 (W1) is useful. (Some manufacturers use a different numbering system, but a chart is available to guide you to the matching sizes to those quoted.) If a local anaesthetic has not been used then the passive clamp may be kinder, although once the initial pressure has been accepted the discomfort rapidly disappears. A little topical anaesthetic may be helpful during application. A good length of dental floss should always be passed through the holes in the clamp as security in case it is dropped in the mouth or the bow fractures, as shown in Figure 3.

At the front of the mouth pieces of rubber may be placed into contact points to secure the dam rather than using anterior clamps, which can sometimes be quite uncomfortable. Wedgets, (Hygienic Corporation, Ohio, USA) are a useful commercial product for this purpose.

Rubber dam forceps

Rubber dam forceps are used to carry the clamp to the tooth, and it is essential that these do not have deep grooves at their tips or they become very difficult to remove once the clamp is in place. Taking a stone in a handpiece and grinding down the grooves of new forceps makes application much easier. At least four different designs are available, with various styles of grip and angulation. The most important feature is the ratchet system, and if new forceps are to be purchased it may be sensible to try different types to find the most comfortable.

The design of the forceps also incorporates a second, wider groove, placed about 1 centimetre from the tip. (Figures 4 and 5) This groove make removal of the rubber

Figure 2. A bewildering selection of rubber dam clamps can only really cause confusion!

Figure 3. A rubber dam clamp which fractured during use.

Figure 4. Typical rubber dam forceps showing the two grooves in the tip. The first, fine groove may be stoned down to ease the placement of the clamp. The second is for removing the rubber dam as shown in Figure 5.

Figure 5. The rubber dam forceps are inverted for removing the clamp.
Helpful hints with rubber dam

Dam much easier. Instead of trying to relocate the tips of the forceps in the holes of the clamp, the forceps are inverted and slipped through the bow of the clamp. As the handles are squeezed the second groove engages and lifts the clamp, rubber and frame off the tooth in one simple movement.

Rubber dam frame

The frames which hold the dam stretched out over the mouth have improved dramatically since the old style with the huge "butterflies". Modern frames have sharp pins which easily grip the dam. They are available in either metal or plastic. It should be noted that they are mainly designed with pins that slope backwards. These should be placed behind the rubber dam, with the rubber sheet stretched over the frame, rather than in front of the rubber (Figure 6).

Rubber dam punch

Finally the rubber dam punch makes the hole in the rubber to fit over the tooth or teeth. The punch must produce a clean cut hole every time. If it does not cut cleanly, but leaves behind a tag of rubber, the dam will often split as it is stretched out. If just one tooth is to be isolated a hole may be punched about 2cm diagonally off centre, and the sheet is rotated to align the hole with the quadrant being treated. If several teeth are to be isolated then either the rubber dam is marked with a stamp showing the correct spacing to punch the holes, or preferably the rubber may be held against the teeth to be isolated and marked in place.

Application techniques

So how do you do it? We will look at posterior teeth first and then anteriors, although in both cases dental floss must always be passed through all the tooth contacts before starting, since if floss will not go through then neither will the rubber! Everything should be at hand before the application is begun, ideally even before the patient arrives, and the assistance of a good dental nurse is invaluable.

Posterior teeth

Winged method

The most commonly taught method of application is the 'Winged' system. The appropriate clamp, and as described earlier this will almost always be the universal molar or premolar clamp, is picked up in the forceps and the ratchet engaged to hold it firmly in place. The bow of the clamp should be aligned towards the back of the arch, which means the front of the clamp would be nearer the edge of the rubber dam sheet. The hole cleanly punched in the rubber sheet is now stretched over the wings of the clamp, making sure that the rubber is clear of the jaws of the clamp. Looking at the tooth to be treated through the hole in the sheet, the clamp and dam are applied to the tooth together. After application the rubber is pushed off the wings to seal the tooth.

Wingless method

With the wingless system the clamp alone is carried in the forceps and placed on to the tooth with the bow towards the back of the mouth. Remember that this must be protected with a good length of dental floss. The rubber dam is then gripped between fingers and thumb, the hole stretched out with the index fingers, and these fingers place the hole over the bow of the clamp and then pull it forward on to the tooth.

Assisted method

A third method, used by practitioners with a well-trained and efficient dental nurse, is for the dentist to stretch the hole in the rubber dam over the tooth to be isolated, holding it in place with one finger on the gingival margin on each side of the tooth. The dental nurse is ready with the suitable clamp engaged in the forceps, and simply slips the clamp over the tooth, retaining the dam in place.

If a single tooth is being isolated a piece of 6x6 gauze with a hole cut in the middle is now placed behind the dam for the patient’s comfort, and the edges of the rubber sheet secured on to the frame.

If more than one tooth is to be isolated several holes will have been punched. It is useful to hold the sheet over the teeth to be isolated, and mark the position of the centre of each with a pen. This gives the correct spacing for the individual arch, preferable to using a pre-formed template. Without such an aid, it is commonly found that the holes are too close together, and the rubber dam too taught.

The most distal tooth is clamped, then the rubber is stretched over the clamped tooth and successively over the other teeth. To get the dam through a tight contact it should be stretched out and pulled through vertically in a single strand, rather than in a tight bunch. This is often referred to as “knifing” the dam through the contact. Finally a piece of rubber cut from the edge of the dam, or

Figure 6. The rubber dam frame is fitted behind the rubber sheet, not in front.
a proprietary product such as Wedgits (Hygenic Corporation, Akron, Ohio), is pulled through a tight contact at the front to retain the dam.

**Anterior teeth**

It is easier to isolate several teeth at the front of the mouth, and having identified a suitably tight contact point, to use pieces of rubber or Wedgits to secure the dam in place. (Figure 7) Anterior clamps may be used if the contacts are not suitable, or the premolar clamp mentioned earlier is also suitable for anterior teeth.

**Sealing for moisture control**

The final step necessary for complete isolation is to ensure that no saliva can bubble up around the margins. Two methods are available for this. Firstly a caulking material, such as Oraseal, (Ultradent Products, USA) may be syringed around the margins to form an effective seal. Alternatively, it is quite easy to tuck or evert the margins of the dam into the gingival crevice. This is particularly important when carrying out restorative procedures. The rubber is stretched away from the tooth with the thumb to reveal the underlying mucosa. A steady stream of cold air from the 3 in 1 syringe is directed onto the gingiva for about five seconds by the dental nurse. As the rubber is released back onto the dry tissue it will tend to roll into the gingival crevice, occasionally with a little assistance from a flat plastic. (Figure 8)

Sometimes it may be necessary to tie floss ligatures around the tooth. With the rubber dam in place, a length of floss is fitted around the tooth and a loose knot tied labially. A flat plastic instrument is then used to push the floss towards the palate over the cingulum. With this held in place the knot is tightened, and the ligature slips easily into the cervical contour, retaining the dam in the gingival crevice. (Figure 9).

**Radiographs**

Practitioners often ask how radiographs can be taken with a rubber dam in place. It is, in fact, quite easy to remove the frame, pull the dam to one side, and place a film holder over the clamp. Problems sometimes arise in correctly orientating the dam when it is re-attached to the frame. If a mark is made, or an additional hole punched, in the top right-hand corner of the rubber dam, this can easily be grasped and placed on the frame. A simple tip, but one which can avoid considerable frustration!

**Hands-on courses**

There are many hands-on courses in rubber dam organised around the country, and local CPD Tutors will usually be happy to arrange these on request. Although phantom heads can be used, it is in fact much better to practice in a clinical situation on one another, using a little topical anaesthetic if necessary. It is always easier to learn when problems can be shared and everyone can laugh at everyone else's mistakes before trying it “for real”. Do make sure that the teacher is an experienced user, for then as well as learning the technique you will be infected by the enthusiasm for the promotion of this very easy and essential technique.