Rubber Dam Isolation

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Introduction

The use of the rubber dam is vital to the successful completion of restorative dentistry in the pediatric patient. Developed by Sanford C. Barnum in 1864, the rubber dam is considered the optimal method to isolate a dental operative field and to prevent moisture contamination during the placement of direct restorations and endodontic procedures. Other advantages include improved operator access and visibility, minimization of airborne debris and aerosols, and patient safety.

Background

The rubber dam provides several benefits when it is used properly as an adjunct to many treatment procedures.

These benefits include:

- Improved visualization of the treatment field through the retraction of soft tissues
- Improved moisture control when compared to other forms of isolation
- Improved contrast of the adjacent teeth
- Improved safety and airway protection
- Behaviour management
- Decreased stimulation of the gag reflex in those children that are prone to gagging
- Reduced operator time

Almost all pediatric restorative procedures should be completed with the use of a rubber dam except in those instances where placement is extremely difficult or impractical.

These instances include:

- Situations where one is operating on a newly erupted tooth that is unable to retain a clamp
- Where the presence of fixed orthodontic appliances impede rubber dam placement

Procedure

In order to correctly utilize the rubber dam it is important to understand the instrumentation involved.

The armamentarium required for rubber dam placement includes:

- Rubber dam cut into 6 inch lengths for the use on the Standard and/or Modified Young's frame
- The Standard and/or Modified Young's frame with containment extension
- An assortment of rubber dam clamps
- Rubber dam punch
- Rubber dam clamp forceps
- And floss

** It should be noted that in those patients that are latex sensitive or that have a known latex allergy a vinyl dam should be used instead

Clamp selection:

Proper clamp selection is one of the most critical aspects of good rubber dam application and an assortment of clamps will allow the selection of the most appropriate clamp for the tooth in question. The Ivory number 14 clamp is the clamp of choice for fully erupted primary molars as the gingival retraction prongs will allow firm yet atraumatic placement at the cervical constriction. For permanent or partially erupted molars, the Ivory 14 A or 8 A should be considered. "A" clamps have retraction teeth that are angled gingivally so as to seat below subgingival heights of contour. For interproximal preparations on the distal aspect of the "clamped" tooth, the Ivory 8AD or 14AD with a distal extension could be considered. This distal extension will allow for the width of the hand-piece head. Lastly, single anterior primary teeth can be clamped using the Ivory 00.

While the above represents a basic guide for clamp selection the most important detail to remember is that the clamp that fits is the best clamp and that different clamps may be used in different situations.

Rubber Dam Preparation:

The first step is to select the rubber dam and place it onto the standard or modified Young's frame equally centered and approximately ¼ to ½ inch from the upper border. Next the holes should be punched. Generally an entire quadrant should be isolated. The hole that is to be

placed over the clamp should be double punched to allow easy placement. The location of the holes may be facilitated by a template or worked out logically. If the area within the frame is considered to be the mouth, it can be divided into the four quadrants by the mounting spurs. The teeth should be positioned halfway between the midline and the edge of the frame. The second permanent molar would be located at the level of the middle spur. The first permanent molar and the primary teeth would be located more anteriorly. Using this method holes can be punched in any of the 4 quadrants and the dam will sit properly on the patients face.

Clamp Placement:

Prior to clamp placement the clamp must be ligated with floss either on the loop or through the hole in one of the wings. When approaching the patient the clamp should be held firmly in the forceps with one hand, and the floss held in the other hand. When seating the clamp onto the tooth adequate visualization is essential. The gingival retraction teeth should be gently placed into the lingual gingival sulcus to engage the cervical constriction. The buccal wing of the clamp is then rotated across the tooth so that the buccal teeth gently enter the buccal gingival sulcus and engage the cervical constriction. Gentle tugging on the floss ligature will not dislodge a properly seated clamp.

Placement of the clamp in this manner has several benefits, including:

- Allows better visualization of the tooth to be clamped
- Allows precise gentle placement of the gingival retraction teeth of the clamp into the gingival sulcus rather than into the gingiva
- Reduces gingival trauma and therefore decreases:
- Intra operative hemorrhage and contamination of the treatment field
- And post operative pain

Rubber Dam Placement:

Once the clamp is securely placed the dam is placed over the clamp and onto the teeth. This is accomplished by placing the middle finger of each hand on either side of the double punched hole and gently slipping the dam behind the bow of the clamp. Then engage the lingual wing and the buccal wing of the clamp. Next isolate the most anterior tooth in the quadrant and then isolate the remaining teeth. Water soluable lubricant can be used on the underside of the dam to aid in placement. However, usually the patients' saliva provides all the lubrication necessary. Finally the edges of the dam are inverted around the necks of the teeth to discourage seepage.

Removing the Rubber Dam:

Prior to the removal of the rubber dam one must first rinse away all debris and remove any ligatures used for rubber dam stabilization. The rubber dam should then be stretched so that the dams interproximal septa can be removed from any interproximal contacts. On occaision these septa need to be cut with a pair of scissors. Lastly, the clamp, frame, and dam are removed as a unit with the rubber dam forceps. The mouth should then be inspected for any debris or excess rubber dam material that may have been left behind.

Conclusion

The use of the rubber dam is indespensible to the proper performance of pediatric restorative dentistry. It must be emphasized however, that the use of the rubber dam in itself does not guarantee good treatment results. Nor does it necessarily mean that high standards of treatment cannot be maintained without its use. However, following these logical and straight forward principles of rubber dam placement, we can isolate single or multiple teeth, or single or multiple quadrants. The method outlined above will allow the dam to be placed without interfering with the patient's eyes and nose while providing good visualization of the treatment field and access for both the operator and assistant.

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