Rubber Dam and its Application

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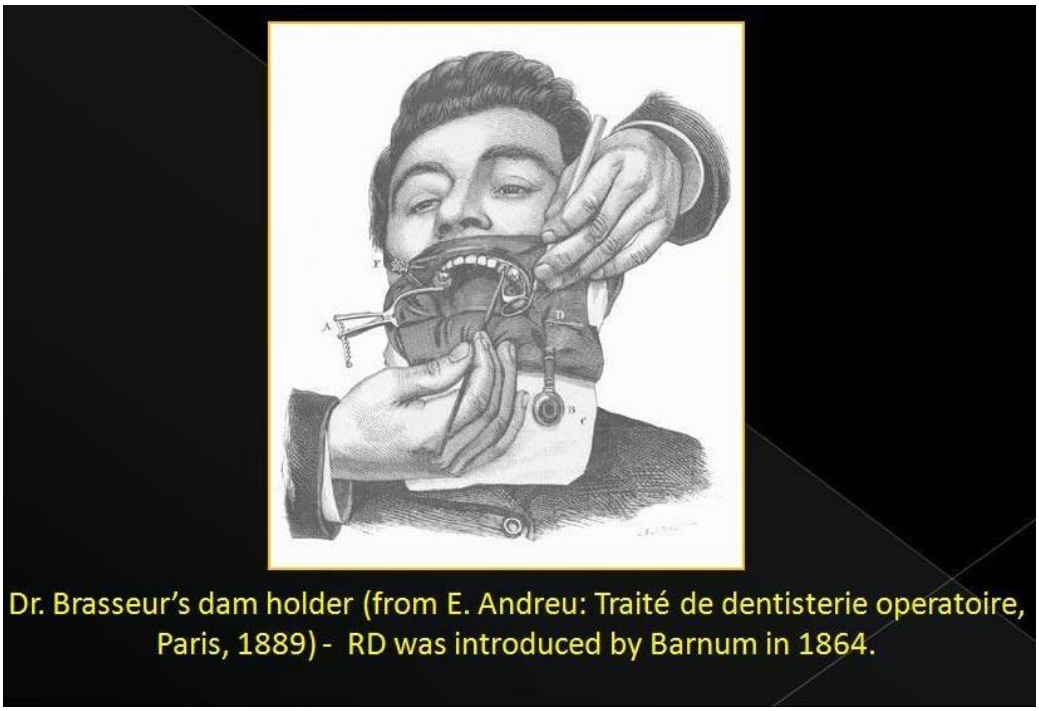
The need to work under dry conditions, free of saliva, has been recognized for centuries, and the idea of using a sheet of rubber to isolate the tooth dates more than 150 years (Castellucci, 2004).



Rubber dam

The rubber dam is a disposable aid in endodontic treatment used for the following reasons:

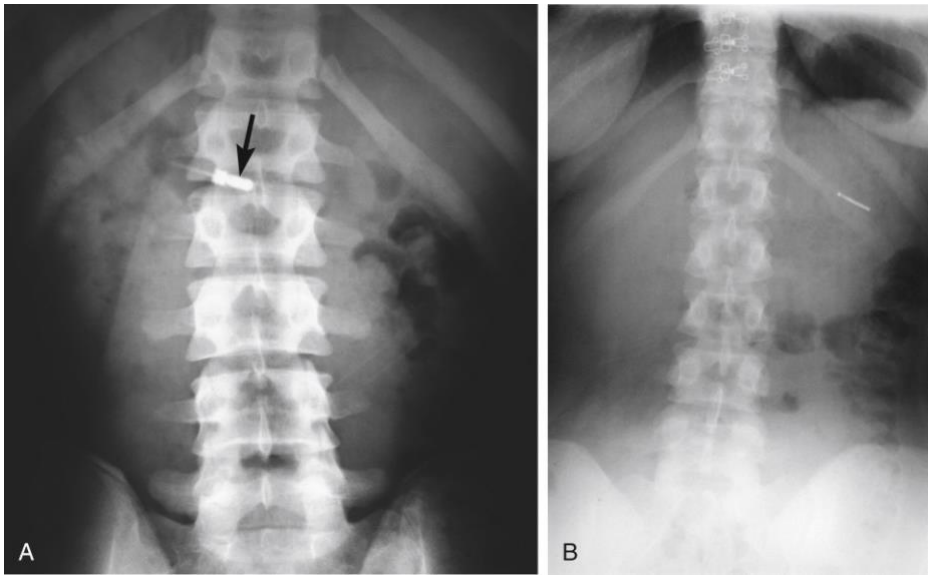
1) It helps to maintain a dry field of operation by eliminating salivary contamination.

2) It eliminates soft tissue interference by retracting the check & tongue.

3) It enhances better concentration of the dentist by showing only the tooth to be treated.

4) It prevents intra canal irrigants from entering to the mouth because most of them are of unpleasant taste.

5) It prevent accidental swallowing or aspiration of the small, easily dropped endodontic instruments.

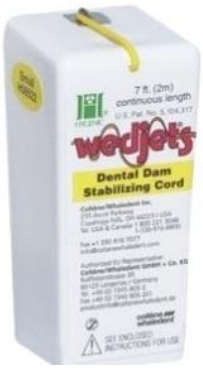


Disadvantages:

1- Time consuming.
2- Limited communication between patient and operator.
3- Cost.

How to solve that:

- More training on using rubber dam.
- Enhancing communication using hand control.
- Anterior teeth can be used using wedjets which is less cost than using clamps.



Components of rubber dam:

- Rubber dam **sheets**.
- Rubber dam **frame**.
- Rubber dam **clamps**.
- Rubber dame **puncture**.
- Rubber dam **forceps**.
- Dental floss.
- Scissor.
- Widgets.

& Other optional components

Rubber dam sheet

It comes in a variety of thickness, colors & sizes.

Thickness

- Thin (0.15mm) this thickness is indicated in teeth with tight contact areas. It can be used in lower anterior teeth & partially erupted posterior teeth..
- Medium (0.2mm) It is indicated in general for all teeth.
- Heavy (0.25mm) It has the advantage of providing great adaptation around the teeth & does not tear easily but it exerts much force on the lips & cheek.

Color

- Light. It provides better illumination of the field.
- Dark. It provides a sharp contrast between the tooth & the dark background which is better for photograpy.

Size

- 5 x 5 inch (12.5 x 12.5 cm)
- 6 x 6 inch (15 x 15 cm)

Type of surface

- Shiny side (facing tissue) can slide over tissue without irritation.
- Matte side (facing tooth) does not reflect light.

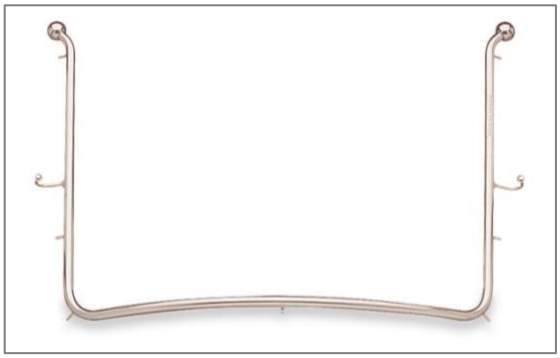
Rubber dam frame

The purpose of rubber dam frame is to hold the rubber dam in a manner to:

1) Provide lip & cheek retraction.
2) Provide unobstructed access to the tooth to be treated.

Types

1- Type A. This is called **Young's frame**. It is U–shaped, and made of metal. It might interfere with the X– ray causing obscuring of important structure in the radiograph. Therefore, it should be removed before taking x-ray.



*2- **Type B:*** This is called **Starvisi frame**. It is a U–shaped frame, and made from radiolucent plastic & nylon materials. It is regarded as a suitable substitute for Young's frame.

*3- **Type C.*** This is called **Nygard – Ostby frame**. It is made from radiolucent plastic & nylon materials & can be left inside the patient's mouth while taking a radiograph without obstruction in the radiograph.

Rubber dam clamps

The R.D. clamp is used to grasp the tooth needed to be endodontically treated and secure the rubber dam material and frame in place. There are many types of R.D. clamps, and each one of them is placed in a different tooth or region.

Type of Clamp	**Use**	
Ivory No. 9	Incisors and bicuspids	
Ivory No. 1	Bicuspids	
Ivory No. 26	Molars	
Ivory No. 0	Incisors and cuspids multiple isolation	

Ivory No. 14A — Molars (partially erupted, badly broken-down, when other clamps fail)

Types clamps according to the wing:

- Winged:
  Offers additional retraction of the dame sheet
  Allows attachment of the sheet to the clamp before and during placement on the tooth

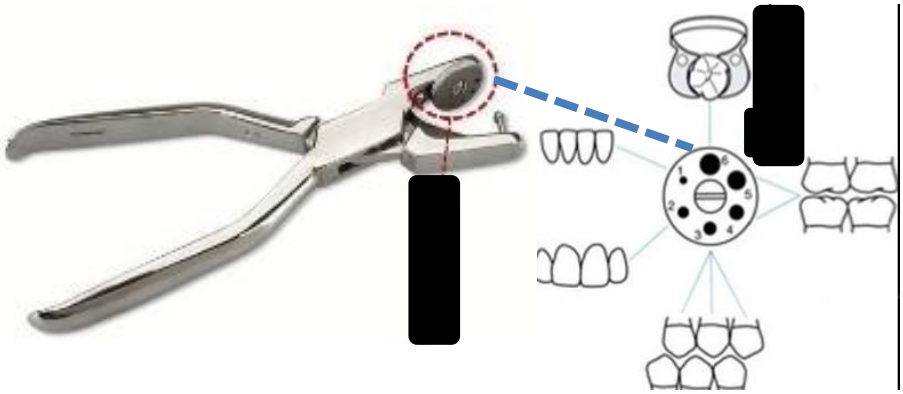
- Wingless:
  Are less bulky, and may be used easily in the posterior teeth in patients with particularly thick cheeks

Types of clamps according to the type of jaw:

- Non-serrated:
  Can be used in most of clinical cases.
  Can be used in porcelain crowns.
  Some clamps have different angles of the jaw. This angle is directed more gingivally for more anchorage. I is called gingivally approaching or deep reaching clamps which can be used in fracture teeth or teeth wit deep gingival caries which required deeper attachment.
- Serrated
  Are used for badly decayed teeth to gain more anchorage.
  But it is contra-indicated with porcelain crowns.

Rubber dam puncher

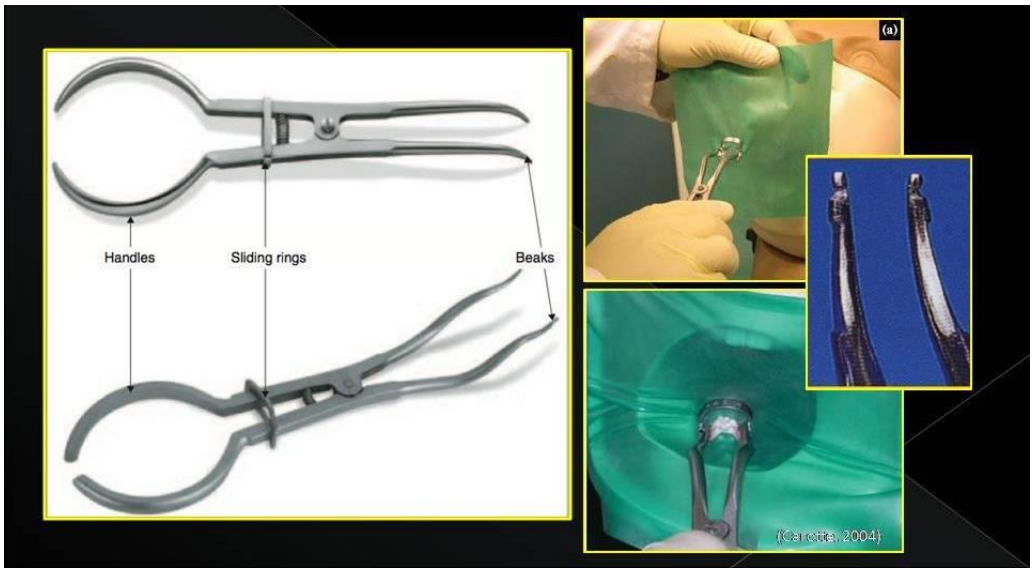
It is an instrument used to create a hole in rubber dam. The hole should be clear without any tags or tears. The size of the hole punched or created depends on the tooth to be isolated. The puncture provides this hole to give maximum adaptation of the rubber dam around the tooth.



Puncture has a rotating head with 6 holes of varying sizes and sharp pointed plunger

Rubber dam holder (clamp forceps)

This holder or forceps is used to place the clamp on the tooth by grasping the rubber dam clamp from 2 lateral holes and widening the clamp to fit on the tooth.



Methods of Applying the Rubber Dam

Method 1: Application of the rubber dam clamp, sheet and frame together

- Select the suitable clamp to be used.
- Insert the wing in the hole after stretching the rubber dam on the frame with the forceps.
- Apply the clamp on the tooth.
- Release the wing from the dam.
- Restretch the rubber dam on the frame tightly to provide a good retraction to lips & cheek.
- Swab the isolated tooth & the adjacent dam with a suitable disinfectant.

Advantages

1- Easy & fast.

2- It doesn't require the aid of assistance.

3- If the clamp snaps during placement, it's held by the dam.

Disadvantage

It doesn't permit direct visualization of the tooth & soft tissues during placement.

Method 2: Application of the rubber dam clamp then sheet

- Select the suitable clamp to be used.
- Place the clamp on the tooth.
- Stretch the dam on the frame.
- Draw the dam over the clamp.

Placement of rubber dam: (A) Placing clamp on selected tooth; (B) Stretching rubber dam sheet over clamp; (C) After complete stretching, tooth is isolated.

Advantages

1-It allows unobstructed visualization of the tooth & surrounding tissues during clamp placement.

2- Its most efficient method of dam placement if there's difficulty in securing the clamp.

Disadvantage

1- Tearing of the dam.

2- Dislodgment of clamp during rubber dam drawing.

Method 3: Application of the sheet then the clamp

- Select the suitable clamp to be used.
- Stretch the dam on frame.
- Apply the dam on the tooth.
- While retracting the dam to expose the tooth & the adjacent gingiva, place the clamp on the tooth.

Advantages

1- There's little tendency to dislodgement of the clamp during placement.

2- It provides direct visualization of the tooth & adjacent gingiva.

Disadvantage

It needs help of assistance especially in posterior teeth as the mandibular molars.