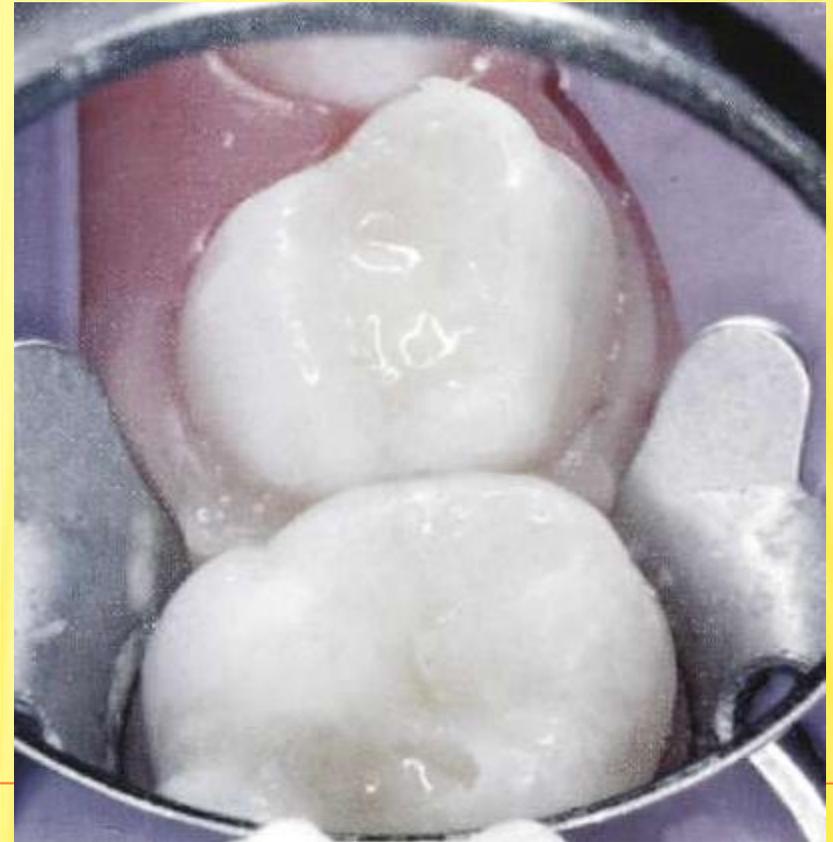
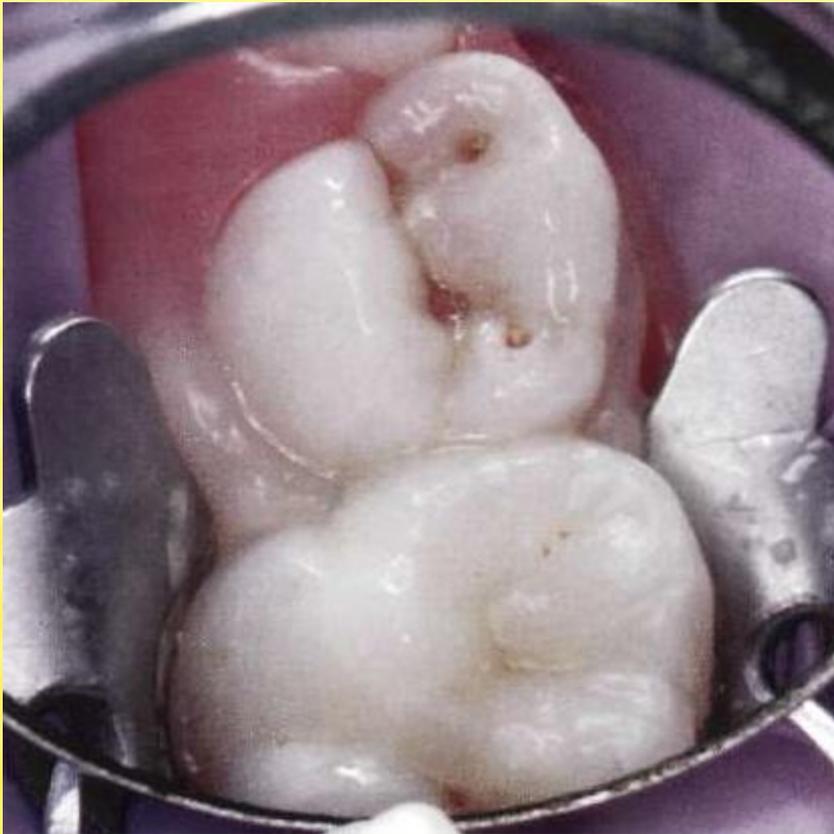


# PEDIATRIC OPERATIVE DENTISTRY



PRESENTED BY  
**DR. RAJEEV KUMAR SINGH**

# **PROCEDURES REQUIRED FOR RESTORATION**

---

- × ISOLATION
- × CAVITY PREPERATION
- × PLACEMENT OF MATRICES
- × PLACEMENT OF RESTORATIVE MATERIAL

# ISOLATION

---

## Isolating the working area:

- I) Isolation from moisture (saliva, blood & gingival crevicular fluid)
- II) Isolation from soft tissues ( lips, cheeks, gingiva & tongue)

# ISOLATION FROM MOISTURE

---

- × Rubber dam
- × Cotton rolls
- × Throat shields
- × Absorbent Pads/ Wafers
- × Evacuation systems
- × Gingival retraction cords
- × Psychological management
- × Drugs

# RUBBER DAM

---

- × One of the most effective way of isolation
- × Usually made of latex rubber
- × Developed by **S. C. Barnum** (1864), a New York City dentist.

# ADVANTAGES OF RUBBER DAM

Moisture-free operating field

Isolation from salivary contamination

Improved access

Protection and retraction of soft tissues

Improved patient comfort

Minimized procedural time

Minimized mouthbreathing (especially useful when inhalation sedation is being administered)

Reduced risk of inhalation or ingestion of small instruments or debris

Cross-infection control is achieved by minimization of aerosol spread of microorganisms

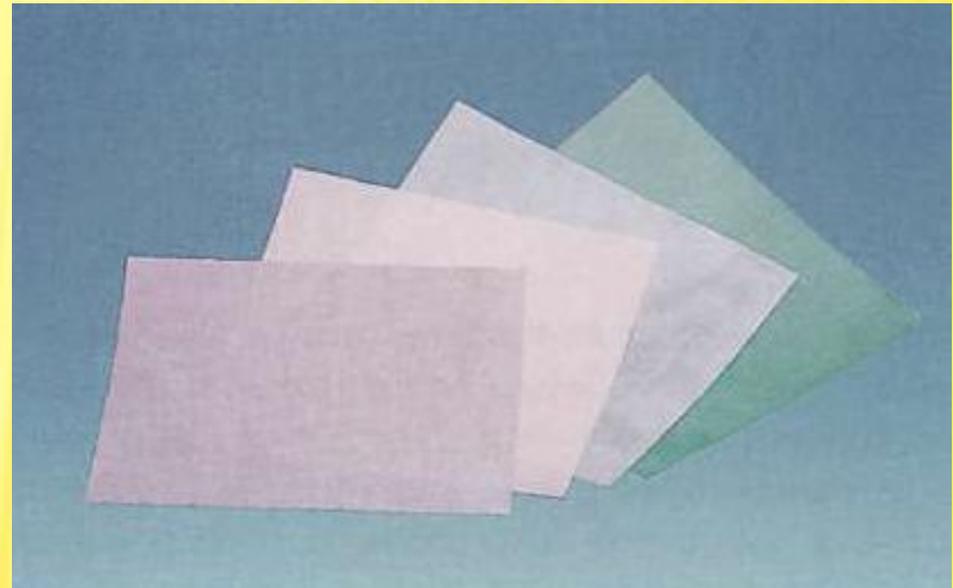
# ARMAMENTARIUM

---

1. Rubber dam sheet
2. Rubber dam frame
3. Rubber dam punch
4. Rubber dam forceps
5. Clamps
6. Waxed dental floss
7. Scissors
8. Rubber dam napkin
9. Lubricants

# RUBBER DAM SHEET

| <i>Grade</i>   | <i>Thickness [mm]</i> |
|--|-----------------------|
| ✘ Thin   | 0.15                  |
| ✘ Medium   | 0.20                  |
| ✘ Heavy  | 0.25                  |
| ✘ Extra Heavy  | 0.30                  |
| ✘ Special extra heavy  | 0.35                  |
| ❖ Available as rolls or prefabricated<br>Size 5"x5" or 6"x6" |                       |
| ❖ Available in various colours                               |                       |

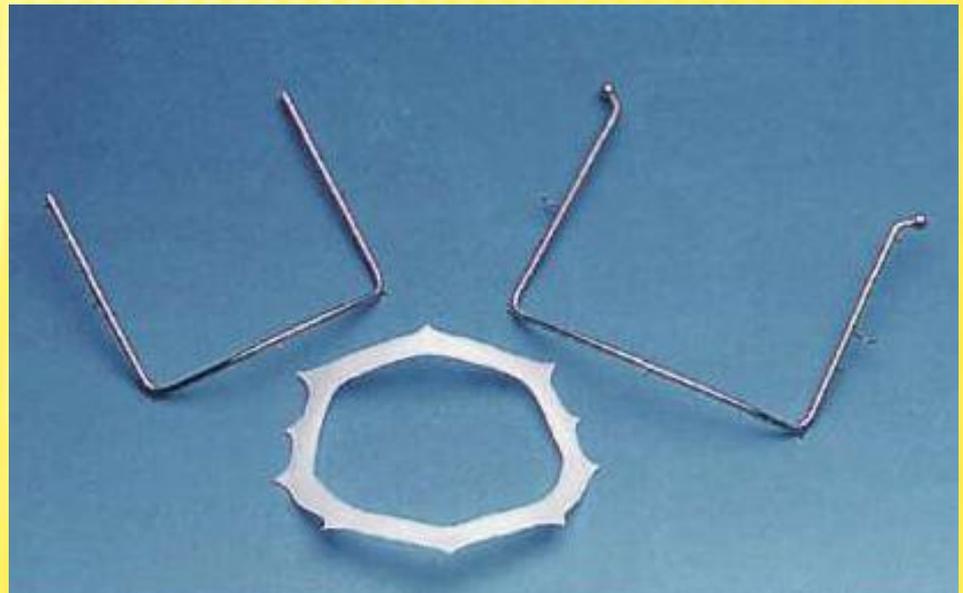


# RUBBER DAM FRAME

- ✘ Frames support the edges of the rubber dam sheets –retract soft tissues & improve access to isolated teeth
- ✘ These are of two types-

Metallic

Plastic



# RUBBER DAM PUNCH

---

- ✘ Is a precision instrument having a rotating metal table (disk) with 5 or 6 holes of varying sizes and a sharp pointed plunger
- ✘ Used to produce the clean-cut holes in the rubber sheet through which teeth can be isolated.



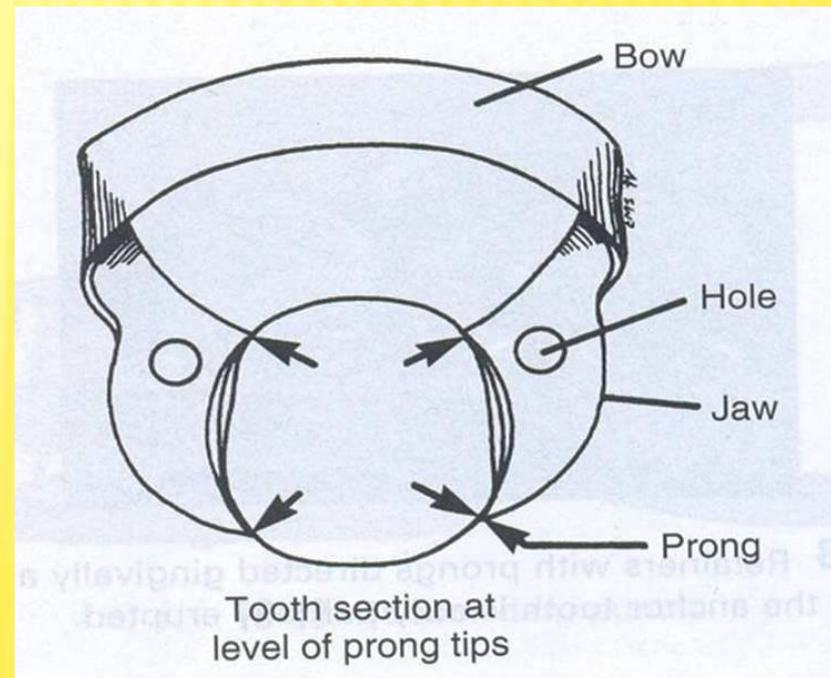
# RUBBER DAM FORCEPS

- ✘ Forceps needed to stretch the jaws of the clamp open in a controlled manner during placement and removal.



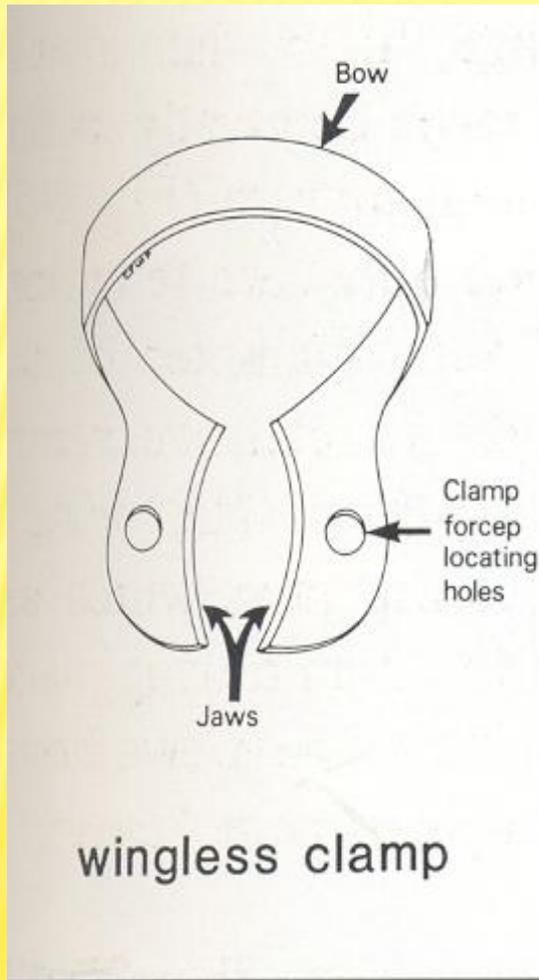
# CLAMPS

- ✗ Clamps retain the rubber dam on teeth; also retract gingival tissue
- ✗ Usually one or two clamps are used.
- ✗ Clamps -consist of four prongs & two jaws connected by a bow.
- ✗ Bow or spring holds the jaws of the clamp together and provides the force required to grip the neck of the tooth

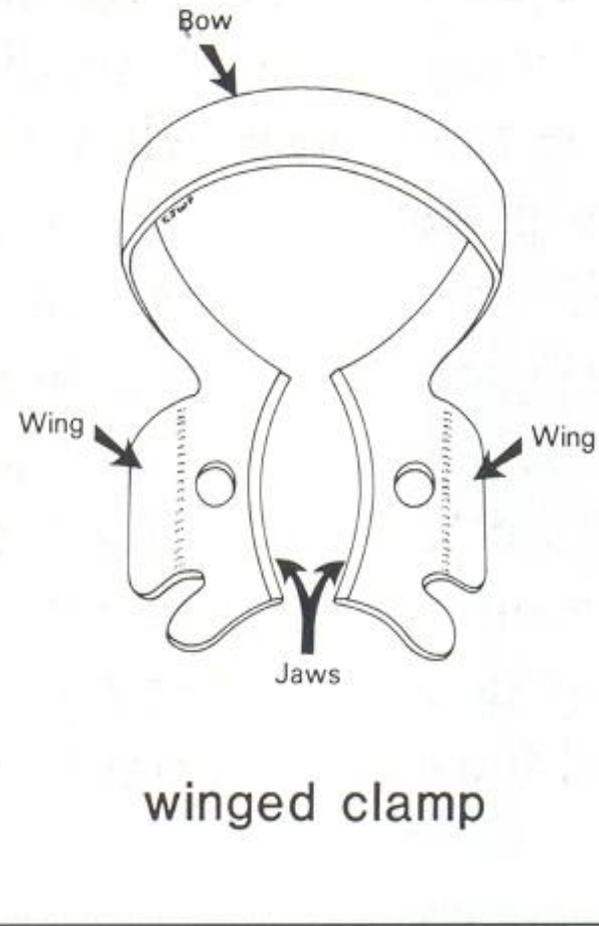


✘ According to the presence of wings; these are-

## Wingless clamps



## Winged clamps





# WAXED DENTAL FLOSS

---

- ✘ Making ligatures when they are needed.
- ✘ For flossing the rubber dam through tight contact areas.
- ✘ Dental floss is tied to the bow of the clamp before application



# RUBBER DAM NAPKIN

- ✘ Absorbent material placed between the rubber sheet and the soft tissues.
- ✘ Used where chemicals are used

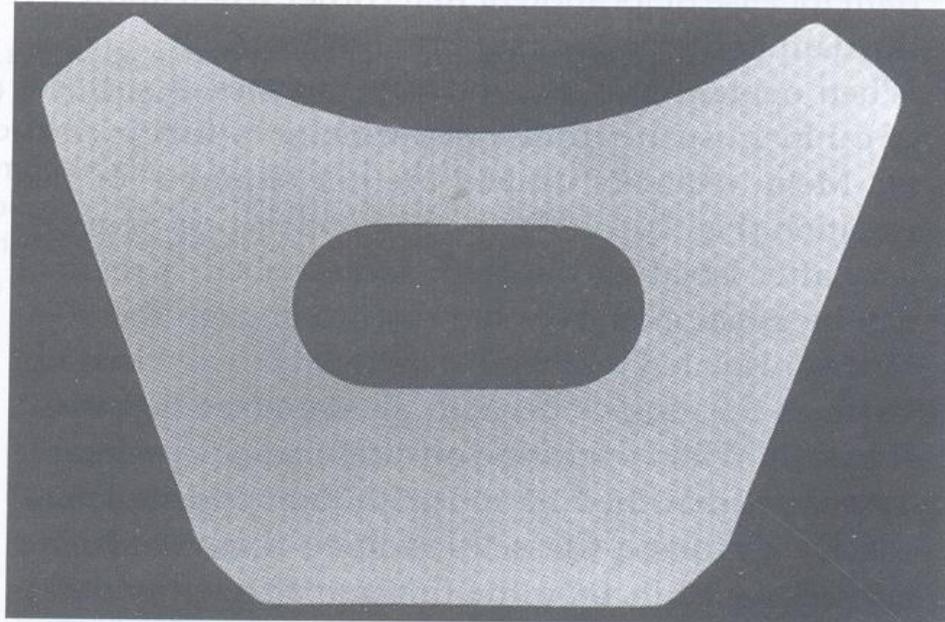


FIG. 10-19 Disposable rubber dam napkin.

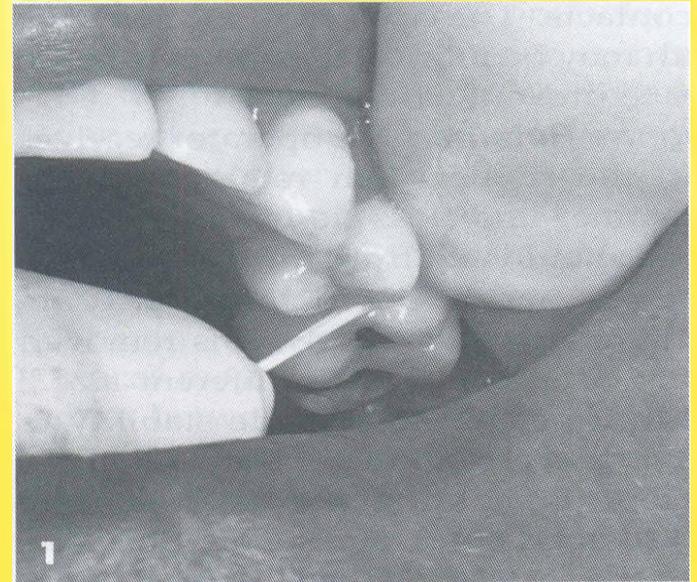
# LUBRICANTS

---

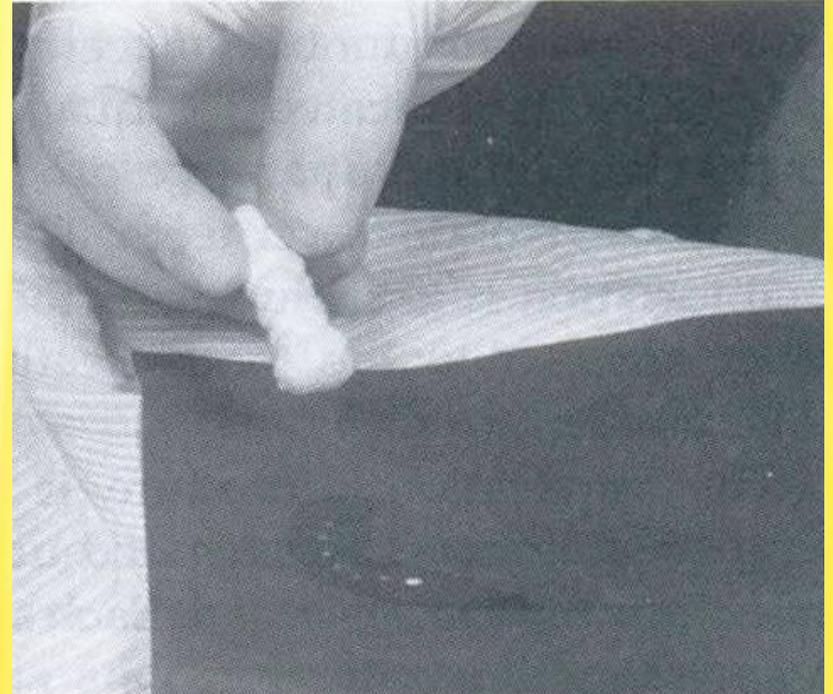
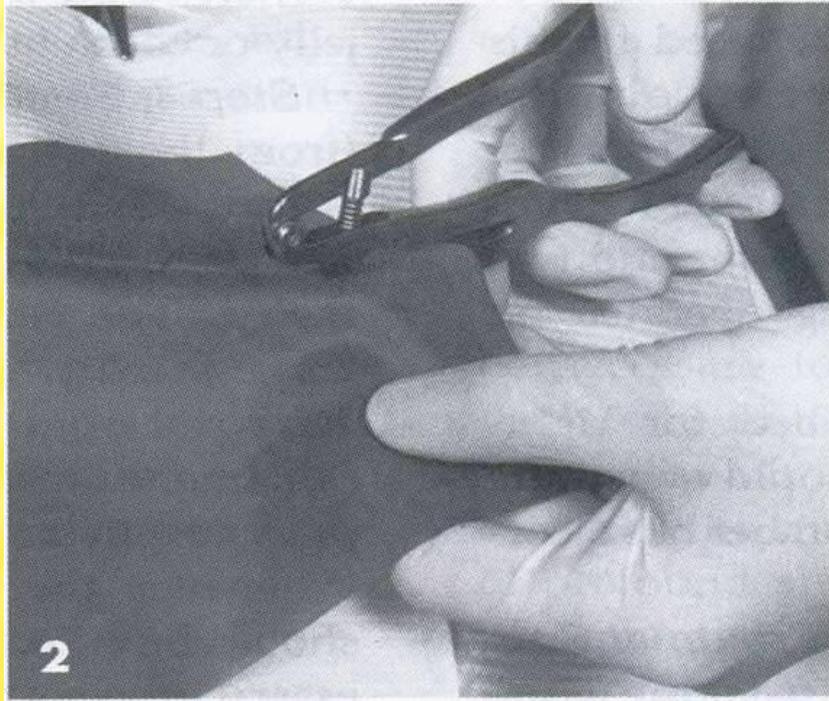
- ✘ Helpful when the rubber sheet is being applied to the teeth.
- ✘ lubricant should be water soluble and have a pleasant taste
- Oil based lubricants** are not preferred as they are not rinsed from the dam after its placement.
- ✘ Cocoa butter or petroleum jelly are applied around the corners of the mouth to prevent irritation.
- ✘ Other lubricants: shaving cream, soap slurry

# PROCEDURE FOR THE PLACEMENT OF RUBBER DAM

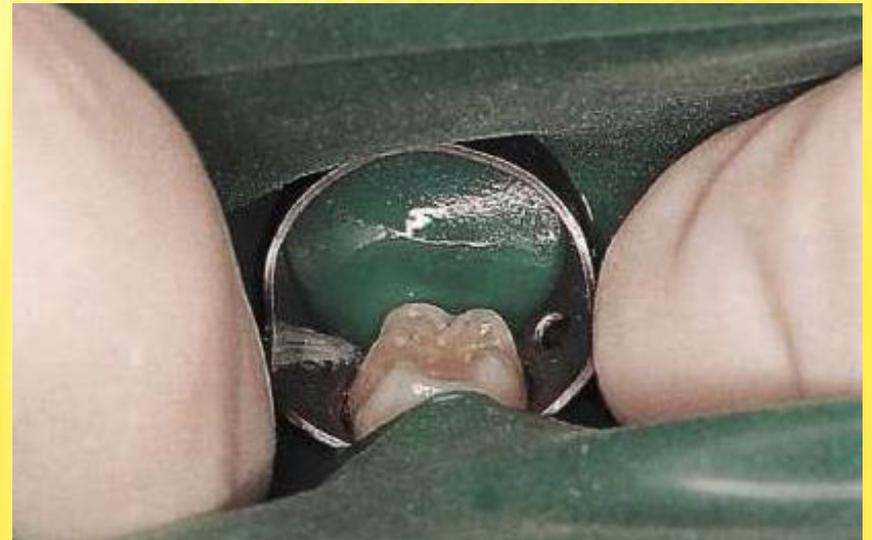
- ✘ Calculus & debris removed from the tooth to be isolated
- ✘ Inter proximal contacts are tested with the help of dental floss
- ✘ Sharp edges of enamel that might cut the rubber dam are removed



- ✘ Application of an emollient (boro wax) to the lips
- ✘ Rubber sheet is punched with the help of template placed beneath the rubber sheet
- ✘ Punched holes in the dam are lubricated



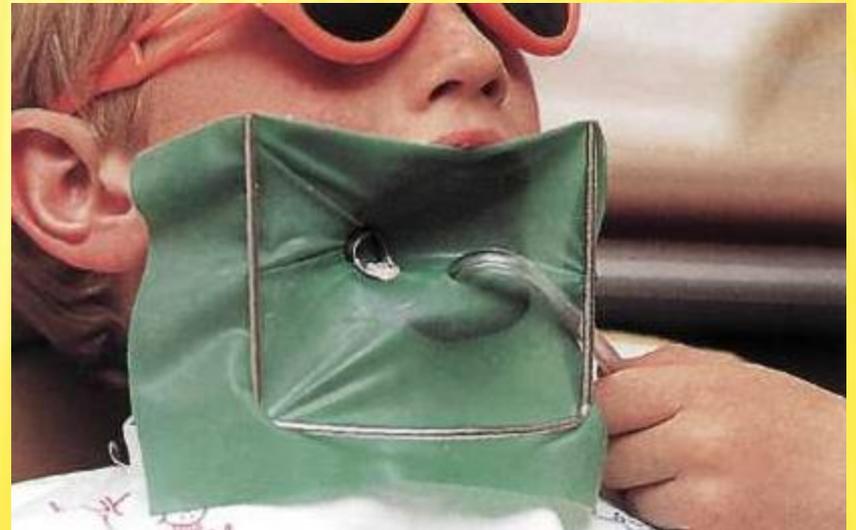
- ✘ Selected retainer is placed on the anchor tooth with the help of retainer forceps after the dental floss is tied to the retainer.
- ✘ Anchor hole is stretched over the retainer (the bow part first & then under the jaws).



- ✘ The napkin is placed beneath the dam by gathering the dam.
- ✘ The frame is placed by stretching the dam & it should be concentric with the patients face.

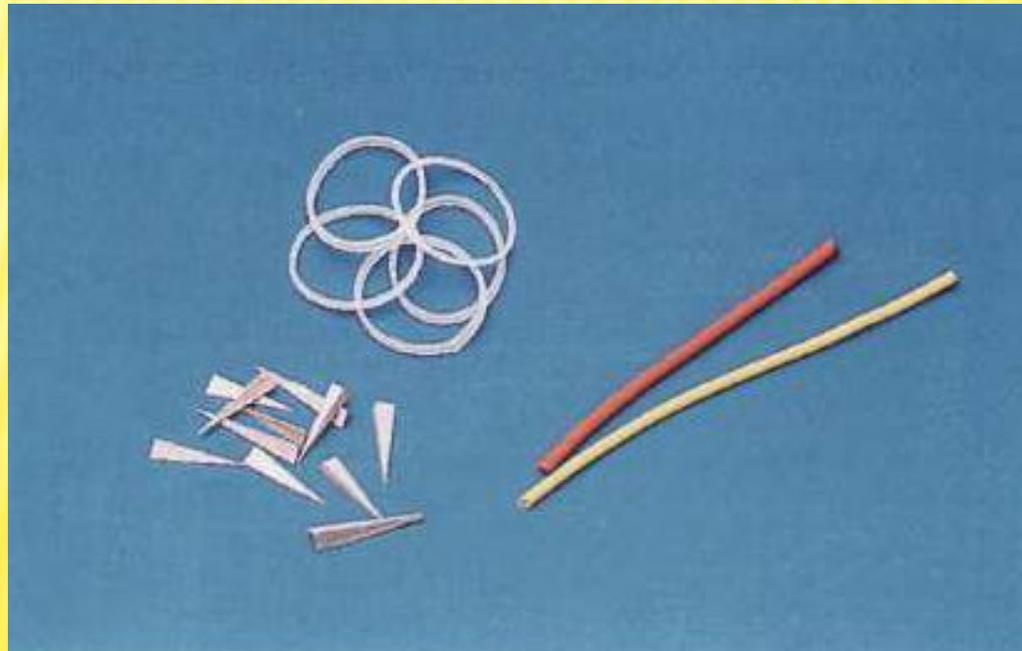


- ✘ Passing the septa through contacts
- ✘ The saliva ejector is placed



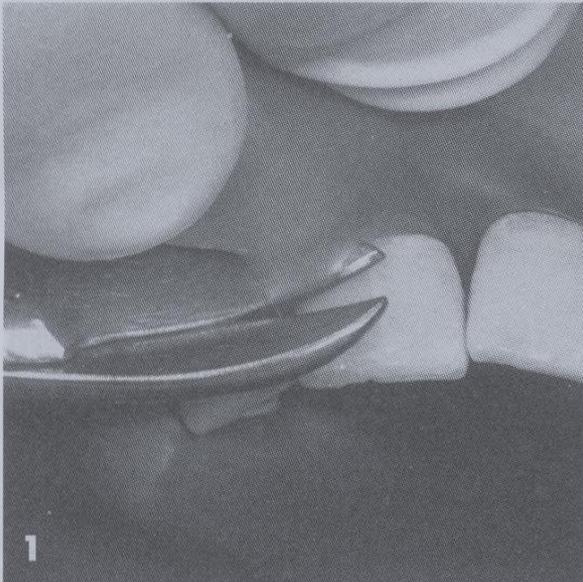
- ✘ After placing the dam the access & visibility is checked for the operating procedure.
- ✘ Inserting the wedges (proximal surface)





# PROCEDURE FOR THE REMOVAL OF THE RUBBER DAM

- ✘ Stretch the dam facially & cut the septa
- ✘ Remove the retainer from the anchor tooth after engaging it with a retainer forceps



- ✘ Remove the dam and frame simultaneously
- ✘ Patient lips are wiped off with the help of napkin
- ✘ Then examine the dam; so that it should not be left around the tooth, as remnants may cause gingival inflammation



# DISADVANTAGES

---

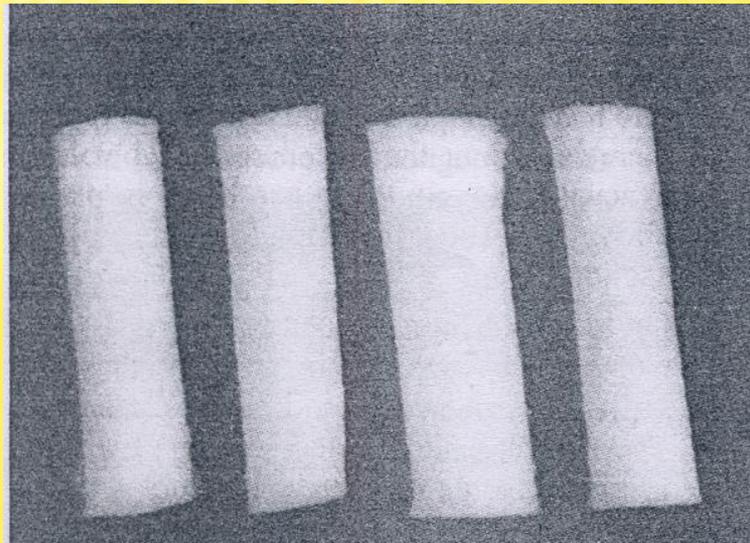
- ✗ Time consumption -Patient objection
- ✗ Contact allergy to rubber dam sheets i.e. Angioneurotic edema; Dermatitis (non-latex sheets may be used)
- ✗ It cannot be used in partially erupted teeth or extremely malpositioned teeth & patients with mouth breathing & asthma
- ✗ Minor damage can occur to the marginal gingiva
- ✗ Accidental ingestion or Aspiration into Alimentary and Respiratory tracts
- ✗ Psychological reasons- not comfortable

# COTTON ROLLS

---

- × Isolation alternatives for rubber dam application
- × profound anesthesia + absorbents provide acceptable moisture control
- × possible to suction the free moisture from a saturated cotton roll placed in the mouth by placing the evacuator tip next to the end of the cotton roll

- ✘ Cotton rolls are available as prefabricated roll or can be rolled manually.
- ✘ The prefabricated ones are more compact & can absorb more moisture
- ✘ They help to control moisture & also retract the cheeks, lips & tongue; thereby improving the accessibility & visibility of the working area.



# CELLULOSE WAFERS

- ✘ Cellulose wafers may be used to retract the cheek & provide additional absorbency.
- ✘ After the cotton rolls or cellulose wafers are in place, the cheek retractor may be positioned

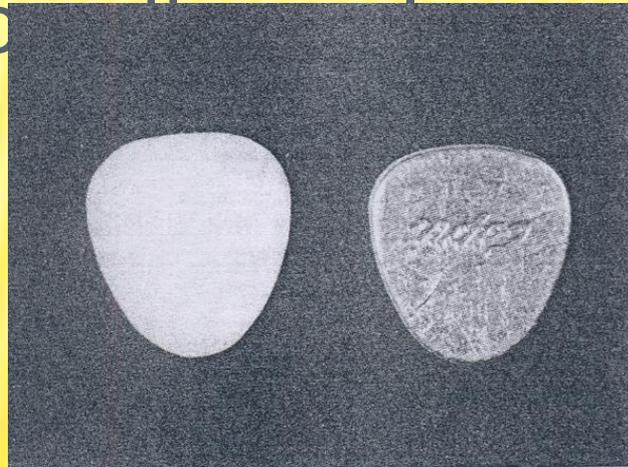
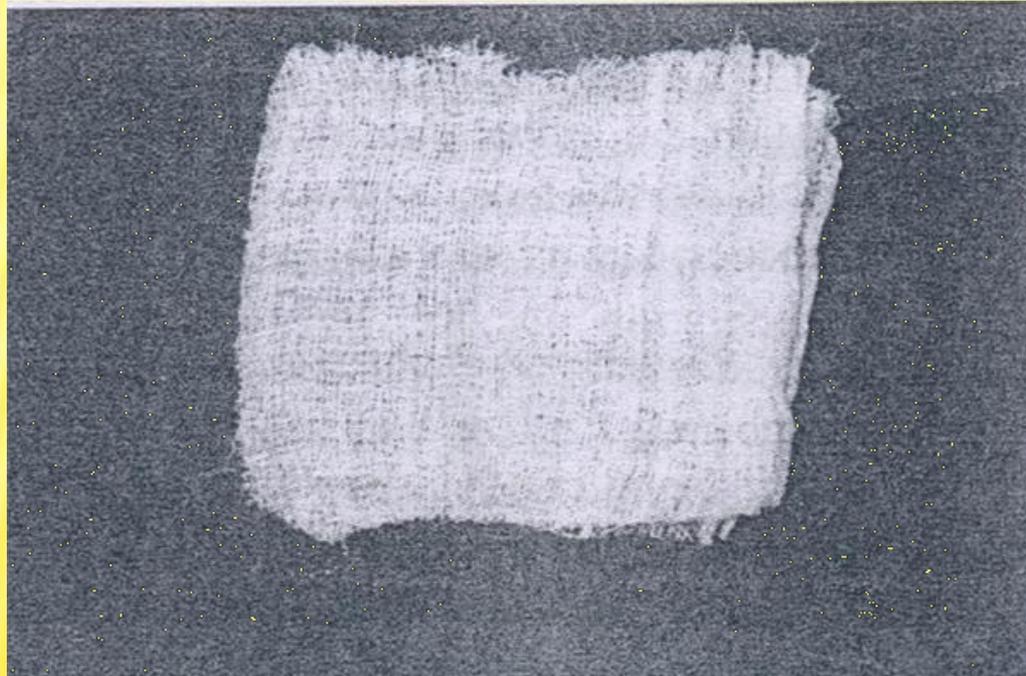


Fig. 6.13. Cellulose wafers/cheek pads.

# GAUZE PIECES

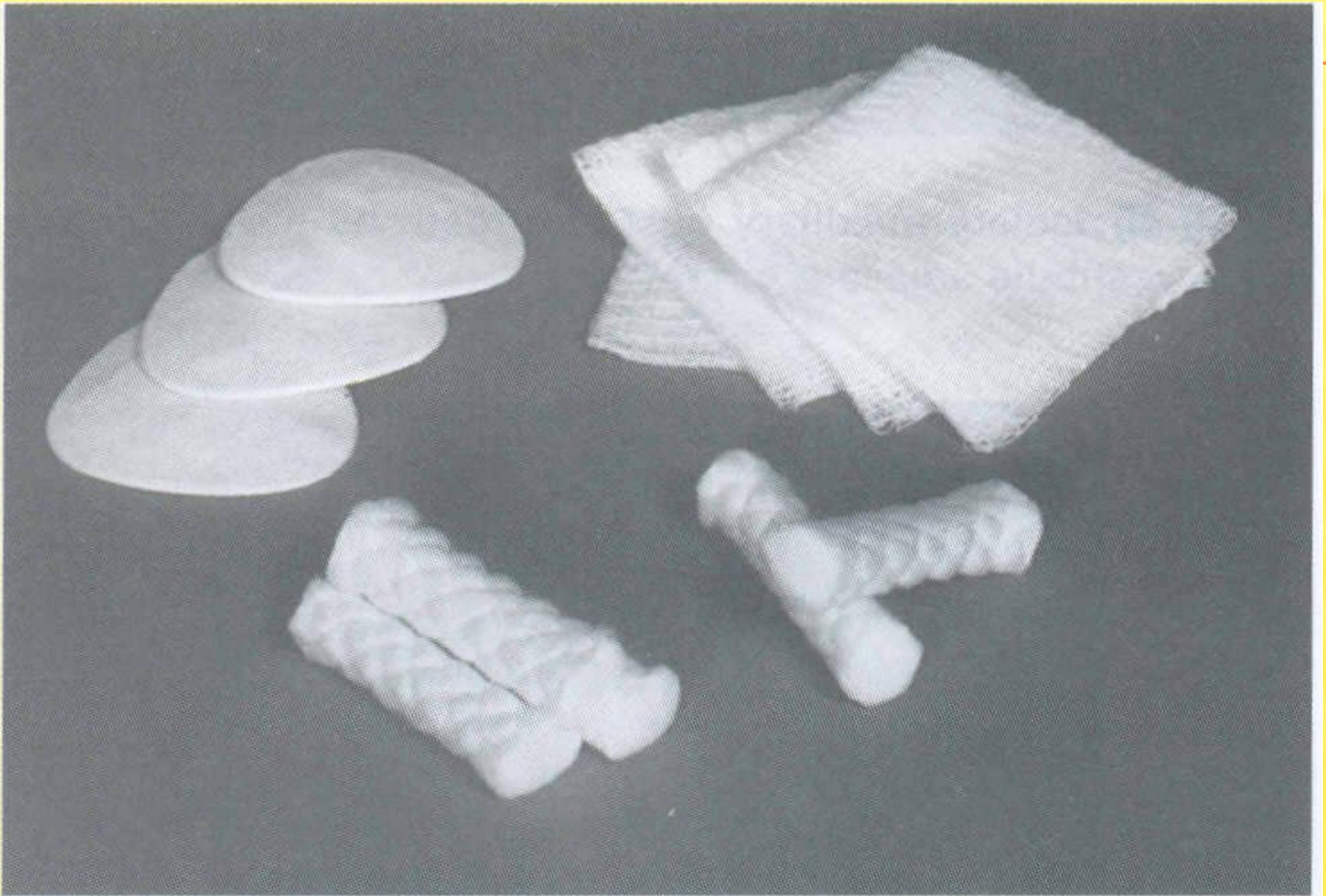
---

- ✘ Used to prevent accidental ingestion or aspiration of small instruments



- ✗ Indicated when there is danger of aspirating or swallowing small objects.
- ✗ Important when treating teeth in the maxillary arch.
- ✗ Gauze sponge (2 X 2 inch [5 X 5 cm]), unfolded & spread over the tongue & the posterior part of the mouth

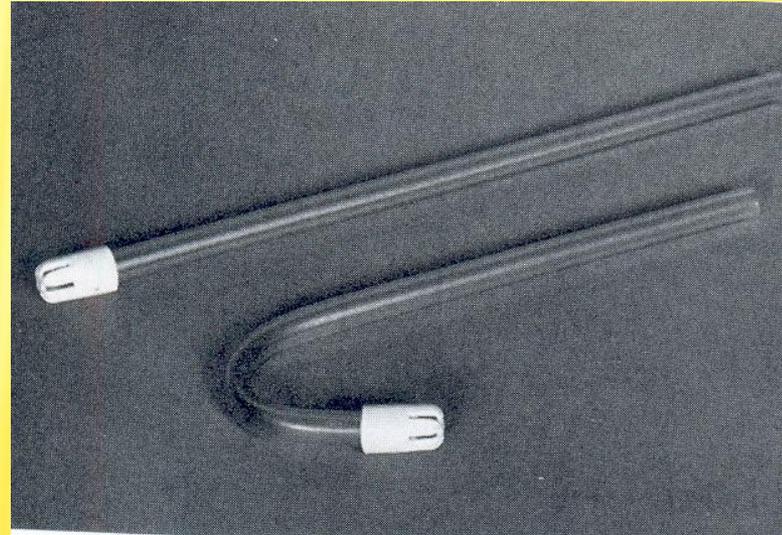
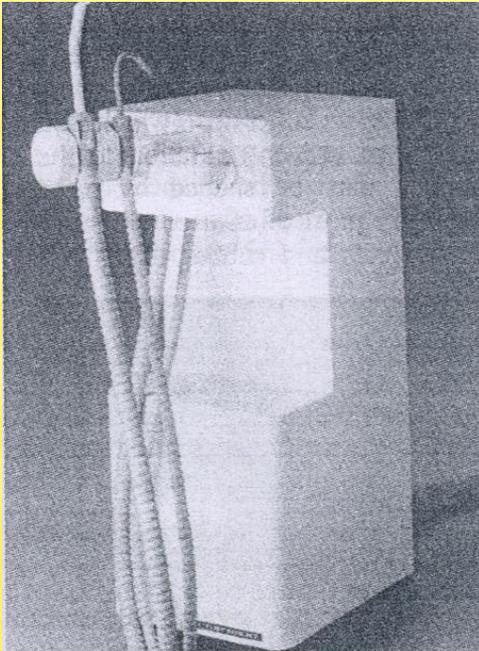




# EVACUATION SYSTEMS

**High-Volume Evacuators**

**Low-Volume Evacuators**



Tips are made of metal or plastic

- ✘ **metallic ones** should possess a rubber tip to avoid irritation to the tissues sterilized after each patient
- ✘ **plastic tips** - disposable & preferred. No chance of cross contamination

- ✘ **High-Volume Evacuators** are preferred for suctioning water & debris from the mouth, & other shavings of tooth & restorative materials
- ✘ Saliva ejectors remove water slowly & have little capacity for picking up solids.

# GINGIVAL RETRACTION CORDS

---

- × Readymade cotton or synthetic fibers woven in form of cords
- × provide improved access & visibility.
- × protects gingiva from abrasions
- × inserted into the sulcus to keep moisture & gingiva away from tooth surface for cavity preparation.
- × Retraction cords having vasoconstrictors or styptics (local haemostatic) are used to control sulcular seepage.

## Retraction cord

---

- ✗ May help restrict excess restorative material from entering the gingival sulcus
- ✗ Retraction cords may be
  - Braided
  - Non- braided
- ✗ They can also be
  - Plain
  - Impregnated
- ✗ These are available in different sizes.

# OTHER METHODS

---

- × *Anxiety levels of the patient*

Increased anxiety levels increase salivation

So, the patient should be **calm & relaxed**

- × Possible by the various pharmacological & non- pharmacological methods.

## *LOCAL ANESTHETICS*

---

Reduce the anxiety levels; thereby reducing the moisture.

The vasoconstrictor also helps in reducing the hemorrhage at the operating site.

# *DRUGS*

---

- ✘ Anti-cholinergics like atropine decrease the salivation. Should be given half an hour before the appointment
- ✘ Atropine is contraindicated for nursing mothers & patients with hypertension
- ✘ Anti-anxiety agents- diazepam(5-10 mg)  
barbiturates

# ISOLATION FROM SOFT TISSUES

---

## *Cheeks, Lips & tongue*

- × Rubber dam
- × Cotton rolls
- × Absorbent Pads/ Wafers
- × Tongue guards / depressors
- × Mouth mirrors
- × Cheek & lip retractors (mainly used for photography)

# GINGIVA

---

- × Rubber dam
- × Gingival retraction cords
- × Wedges
- × Astringents like

## **Biologic fluid coagulants-**

Alum(100%),Tannic Acid(15-20%)

Aluminium potassium sulphate(10%)

Aluminium chloride(15%)

## **Tissue coagulants-**

zinc chloride & silver nitrate

- 
- ✘ Electro-Surgical mean used when access to the working area not available by conservative methods.

### **Principle :**

Alternating electric current passed through an apparatus

to increase its frequency (60-120 to million/sec)

- ✘ No shocks produced by the current
- ✘ Energy concentrated at tiny electrodes producing localized tissue changes limited to superficial 2-3

- 
- ✘ Surgical means -Sharp knife is used to remove interfering & unneeded gingival tissues.
  - ✘ Advantage of electrosurgical method over surgical method: It causes minimal hemorrhage.

THANK YOU



---

MCQs



**Q1: Rubber dam was introduced in dentistry in the year:**

a) 1764

b) 1864

c) 1964

d) 2004

---

Q2: Rubber dam sheets are available in which of the following size:

- a) 2" x 2"
- b) 3" x 3"
- c) 4" x 4"
- d) 5" x 5"

**Q3: Which of the following is a disadvantage of rubber dam:**

- a) isolation from salivary contamination
  - b) protection and retraction of soft tissues
  - c) Contact allergy to rubber dam sheets
  - d) increased risk of inhalation or ingestion of small instruments or debris
-

---

**Q4: Rubber dam punch has how many holes:**

- a) 5 or 6
- b) 7 or 8
- c) 8 or 9
- d) 9 or 10

---

Q5: Rubber dam was developed by:

- a) Wilson
- b) Barnum
- c) Lampshire
- d) Wright

---

**Q6: All of the following are  
armamentarium of rubber dam  
except:**

- a) Frame
- b) Punch
- c) Clasp
- d) Clamp

---

Q7: Rubber dam clamps contains:

- a) four prongs & two jaws
- b) two prongs & four jaws
- c) four prongs & four jaws
- d) two prongs & two jaws

---

Q8: Which of the following is true for gauze pieces:

- a) Used to prevent accidental ingestion or aspiration of small instruments
- b) Important when treating teeth in the maxillary arch
- c) Used in pieces of 2" x 2" or larger
- d) All of the above

---

**Q9: what is the effect of anxiety on salivation:**

- a) it decreases salivation
- b) it increases salivation
- c) has no effect on salivation
- d) first increases then decreases salivation

---

**Q10: Atropine is contraindicated in:**

- a) Nursing mothers
- b) Hypertension patients
- c) Both of the above
- d) None of the above