Moisture management:
Refers to excluding sulcular fluid, saliva and gingival bleeding from the operating field.

Reasons for moisture control:
- Fluids need to be removed from the mouth for the patient’s comfort and to improve the dentist’s vision.
- Salivary flow is stimulated by dental treatment. Saliva is teeming with microorganisms so it’s preferable to exclude this extraneous infection from all cavities.
- Contamination by moisture has a detrimental effect on all restorative materials and it’s essential that cavities are kept dry to produce a good restoration.

Techniques for moisture management:
1- Rubber dam
2- Aspiration
3- Cotton rolls & cellulose pads
4- Local anesthetics

1- Rubber dam: this method gives the most complete control over moisture in the mouth.

Advantages of rubber dam:
1- Complete isolation of the teeth from saliva, blood, gingival fluid is possible. This is important with all restorations especially in adhesive restorations.
2- Improved visibility and access to the operating site resulting from retraction of the cheek, lip, tongue and gingiva.
3- Rubber dam aids isolation from bacteria in saliva so is indicated when infection from the rest of the mouth must be excluded for example: direct and indirect pulp capping.
4- Protects the patient from swallowing or inhaling instruments or materials like amalgam fragment, wedges, and pins.
5- Saving of time and promotes more efficient treatment.
6- Cross-infection control.

Rubber dam equipment:
Rubber dam: is supplied in ready cut square sheets (5x5 inch, 6x6 inch) or roll. The rubber is resistant to tearing and it grips the teeth well and retracts gingival tissue. Is available in a variety in color, a dark color (green, blue) is preferred because it contrasts well with the teeth. They are available in various thicknesses (thin-weight, medium, and
Rubber dam holder: this holds the free edges of the sheet of the rubber and prevents them from falling into the mouth or back against the patient face (retract and stabilize). Are available in several designs (Young’s frame-U-shaped, Nygaard)

Rubber dam punch: the punch used to give a sharp clean hole without any tearing. Some punches have holes of varying diameters, hole depend on the tooth to be treated.

Clamp forceps: for positioning and removing the clamp.

Clamps: metal clips, which fit the neck of the tooth and hold rubber dam in position, and may enhance gingival retraction.

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<th>Wingless clamps</th>
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<th>Tooth Fit</th>
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<td>W8A,W8ASA 8A</td>
<td>Molar</td>
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<tr>
<td>Or B1 27</td>
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<td>W2A 2A</td>
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<td>212SA</td>
<td>Premolar, canine, and incisor</td>
<td>For class 5 isolation</td>
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<td>W1A 1A</td>
<td>Premolar</td>
<td>Gingivally</td>
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<td>W14A 14A</td>
<td>molar</td>
<td>For partially erupted</td>
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Lubricant: a water-soluble lubricant applied in the area of the punched holes for reducing the friction between the rubber dam and the teeth.

Dental tape: this can be used to carry the rubber past tight contact point.
**Rubber dam application for occlusal restoration (single isolation):**

1- A winged clamp of suitable size is selected and tried on the tooth, only the tooth to be treated needs to be isolated.

2- After punching the hole, the dam is fitted loosely on the frame (a), the clamp is engaged in the lubricated hole in the rubber dam after stretched on the frame (b). Then the clamp, rubber and frame placed directly on the tooth in one motion(c,d).

3- The edges of the hole are then freed from the wings of the clamp with a flat plastic instrument (e).

Variation of this method includes placing the clamp and rubber dam first, followed by the frame.

This method fasts and does not require the aid of an assistant but it doesn’t permit direct visualization of the tooth during the placement of the clamp.

If the dentist prefers to position the clamp before applying the rubber (dam over clamp), a wingless clamp is selected then:

1- We place the clamp on the tooth to be treated; the clamp must fit securely to prevent subsequent dislodgment (a).

2- Then we stretch the rubber dam on the frame, and carefully drawn rubber dam over the clamp (b).

This method allows unobstructed visualization of tooth and soft tissues during clamp placement. But the incidence of tearing of dam and dislodgment of the clamp during drawing will increase.
Another alternative method: the rubber dam stretched over the anchor tooth before the retainer is placed. There is a little tendency to dislodgment of the clamp, but it needs a help of assistant especially in posterior teeth.

**Rubber dam application for proximal cavities (multiple isolation):**

The more teeth that are passed through the rubber, the better will be the access. The major part of the quadrant is usually isolated. A clamp retains the rubber dam on the most distal tooth and a contact point holds the rubber anteriorly.

**Steps:**
1. Test the tooth contact with floss in order to identify any difficulties.
2. Decide upon the anchor teeth and select the clamp to be placed on the tooth; and punch the rubber dam.
3. Open the clamp widely with clamp forceps and place it on the tooth (distal one).
4. Hold the sheet of the rubber so as to stretch widely the most posterior hole; then pass over the clamp and allow it to hug the tooth.
5. Work the fingers forwards tooth by tooth, trying quickly to pass the interseptal rubber between the tooth contacts (a).
6. Engage the edge of anterior hole in the anterior anchor contact point, place rubber dam holder (b).
7. Finally insert wedges to the mesial and distal of the treated tooth. When a matrix band has to be placed on a clamped tooth, the clamp may prevent the band from seating and therefore must be removed before the band is positioned. The band then performs the function of the clamp.

**Rubber dam application for anterior teeth:**

Clamps are used less often in this situation. A sufficient number of teeth should protrude through the rubber dam for its stability and for good access. The clamp can be stabilized on the most posterior teeth to be isolated (canine or premolar) in one of three ways: 1-the tight contact between the canine and premolar 2-retention of the rubber dam in contact area by passing extra strip of rubber on the contact 3- floss ligature to hold the rubber in position or plastic cord.
2-Aspiration: fluid can be evacuated from the mouth either with high-volume evacuators or saliva ejectors. When a high-speed hand-piece is used, air-water spray is supplied through the head of the hand-piece to wash the operating site and to act as a coolant for the bur and the tooth.

H.V.E. are preferred for suctioning water and debris from the mouth because saliva ejectors remove water slowly and have a little capacity for picking up solid.

The combined use of water spray and H.V.E. during cutting has the following advantages:
1-Remove cutting materials as well as other debris from the operating site.
2-A washed operating field improves access and visibility.
3-There is no dehydration of the oral tissues.
4-Quadrant dentistry is facilitated.
5-Without an anesthetic, the patient experiences less pain.
6-Pauses that are sometimes annoying and time consuming are eliminated.

The tip of the evacuator is placed just distal to the tooth to be prepared. The saliva ejector removes saliva that collect on the floor of the mouth, conjunction with sponges, cotton rolls and rubber dam. The tip of the ejector must be smooth, made from a non-irritating material. Disposable, inexpensive plastic ejectors that may be shaped by bending with fingers are available. It’s held by the patient and should be placed to prevent occluding its tip with tissue from the floor of the mouth.

3-Cotton rolls and cellulose pads: are used to absorb saliva and other fluids. They are helpful in these situations:
Short period of isolation (e.g. examination, sealant placement, polishing …etc).
As alternatives when rubber dam application is impossible.
When we need acceptable dryness for procedures such as impression taking and cementation.
Mostly we use absorbents with saliva ejector. They are placed in the upper sulcus close to the orifice of the parotid duct, in the lingual sulcus close to the orifices of the submandibular and sublingual ducts, and in the lower buccal sulcus.
**4-Local anesthetics:** use of these agents reduces salivation because the patient is more comfortable, less anxious and less sensitive to oral stimuli. Local anesthetics incorporating a vasoconstrictor also reduce blood flow, thus helping to control hemorrhage at the operating site.

**Drug:** the use of drugs to control salivation is rarely indicated in restorative dentistry and is generally limited to atropine. As with any drug, the operator should be familiar with its indication and contraindications, and side effect.

Thank you