Mymensingh Polytechnic Institute, Mymensingh. Institute Code : 57067

# Electro-Medical Department



Dental Equipment Subject code: 28641 Semester: 4th

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#### **CHAPTER ONE**

# Understand the concept of dentistry

## Introduction

• Every Practicing dentist knows what dental instruments are and how they function. This presentation is aimed to review these instruments according to published literature.

# Dentistry

Dentistry, also known as Dental and Oral Medicine, is a branch of medicine that consists of the study, diagnosis, prevention, and treatment of diseases, disorders, and conditions of the oral cavity, commonly in the dentition but also the oral mucosa, and of adjacent and related structures and tissues, particularly in dentistry.

#### Preventive dentistry

*Preventive dentistry* is *dental* care that helps maintain good oral health. It's a combination of regular *dental* check-ups along with developing good habits like brushing and flossing. Taking care of your teeth starts early in childhood and extends throughout the course of your life.

#### Purpose of Preventive dentistry

*Preventive dentistry* is the practice of caring for your teeth to keep them healthy. This helps to avoid cavities, gum disease, enamel wear, and more. There are many forms of *preventive dentistry*, such as daily brushing and *dental* cleanings.

## **Cosmetic Dentistry**

Smiles matter, probably more than we realize. Volumes of research confirm the influential role of smiles on our relationships and our self-esteem. If you're confident, you smile more. If you smile more, you feel more confident. But what if you don't want to flash your smile because you're embarrassed by bad teeth? It becomes a psychological short-circuit, with effects that may ripple through your life. Fortunately, a growing range of options opens doors for anyone to enjoy a stunning new smile. And Dr. Gemmell and Dr. Jaros' passion for enhancing smiles brings you the best in modern dentistry.

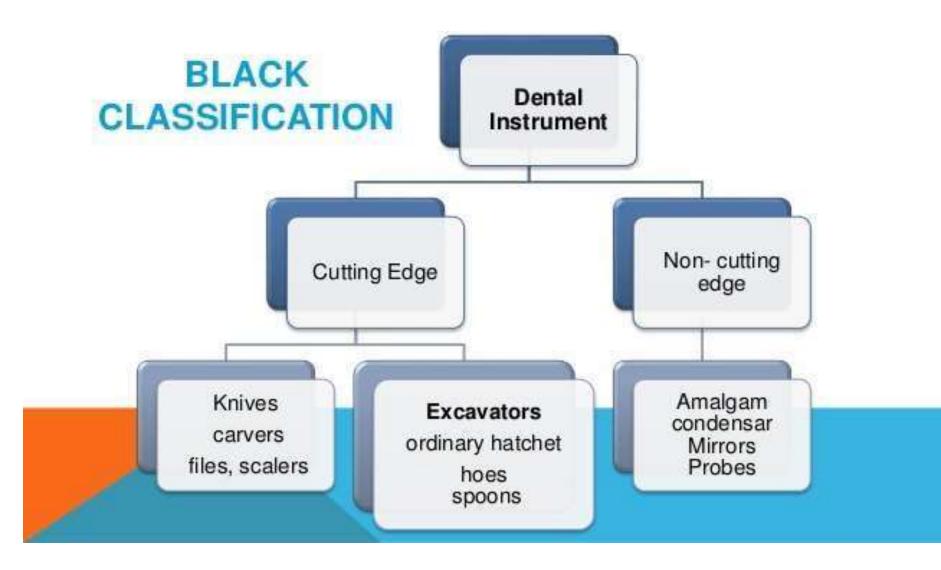
#### **Cosmetic dental treatments can:**

- •Brighten stained or discolored teeth
- •Repair cracks or fractures
- •Fill gaps between teeth
- Correct overcrowding
- Reshape teeth
- •Replace missing teeth
- •Replace old metallic restorations, such as fillings and crowns

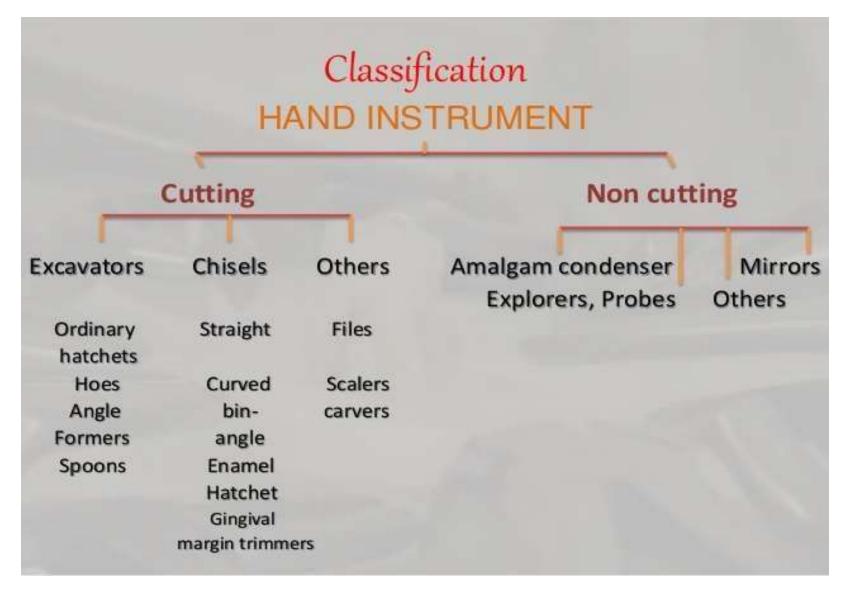
### **Cosmetic Dentistry**



## **Classification of Instruments**



## **Classification of Instruments**



# **Classification of Instruments**

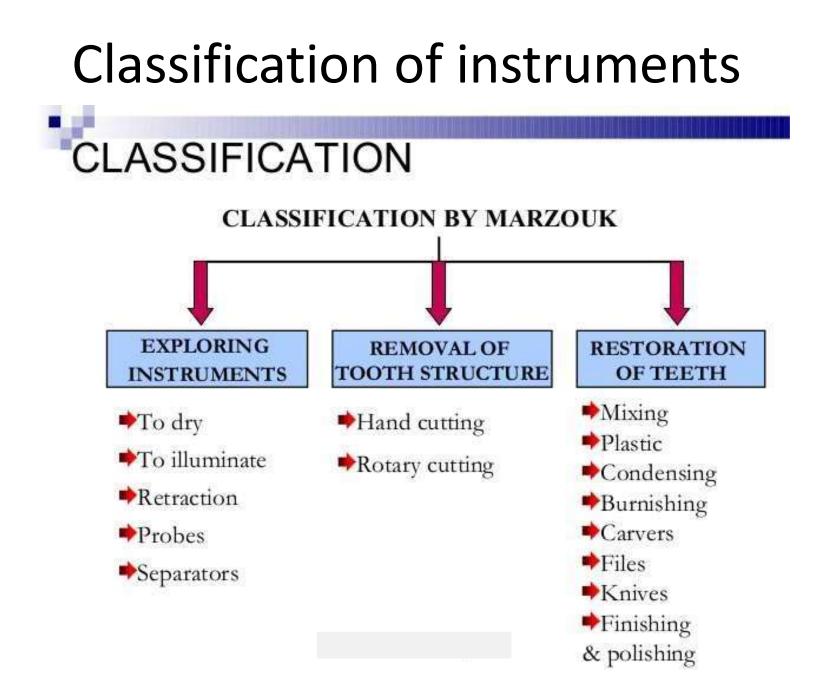
#### classification

Operative dental instruments as classified by CHARBENEAU-

#### 1.Cutting instruments-

a) Hand Hatchets Chisels Hoes Excavators others b) Rotary-Burs -Stones -Disks Others

2. Condensing instruments a) Pluggers -Hand -Mechanical



## Leaning Outcomes...

To provide the students with an opportunity to develop knowledge, skill and attitude in the area of dental equipment with emphasis on:

- Overview of dentistry
- Preventive dentistry
- Different types of dentistry
- Purpose of Preventive dentistry
- Cosmetic dentistry

# QUESTIONS...?

### **Chapter Two**

## The concept of dental office design

## Factor of dental suit design

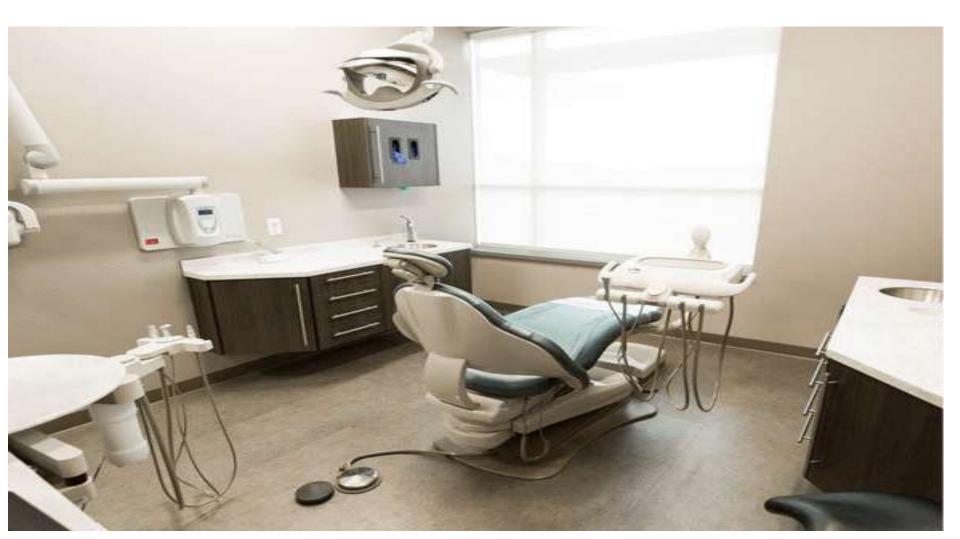
Dental Office Design For professionals in most industries, an office is more than just a place where work is done. Rather, it's a second home: it's a place to burn the midnight oil and chase your dreams. It's where you make friends, build connections, and interact with clients, customers, or patients who matter to you. Dental offices are no different. In fact, more so than professionals in other industries, dentists need to prioritize their office design to accommodate employees and visitors alike. That's one reason why dental office design presents a tricky prospect for many practices. After all, getting the most out of your workspace, while also satisfying patients' needs is a tall order. The good news is, we understand this problem intimately; at Key Interiors we've worked with dentists for decades, and know what it takes to develop a sound office design strategy. So whether your dental office merely needs a few fresh takes — or you're ready to sanction a full-scale overhaul — we're here to provide you with the resources you need.





#### Function of each room in the dental suite

### chair and its main components



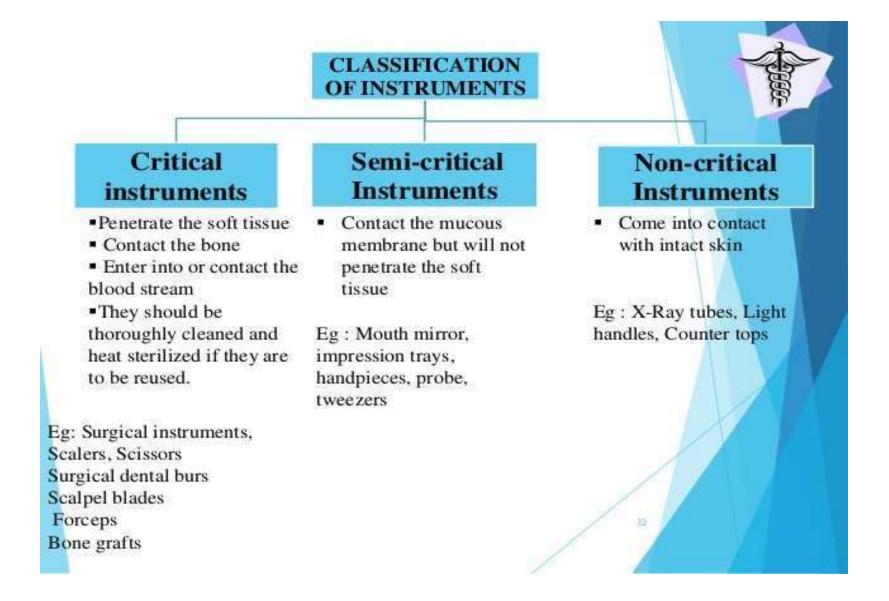
# **Positioning of operating light**

#### Working procedure of treatment room

Studies suggest that working with an instrument bridge placed over the chest of patient is the best way of achieving a good balanced working position while seeing all surfaces of all teeth.

Before and after the treatment, position the instrument bridge on the dental assistant's side of the unit. This reassures nervous patients, as they will see less of unit instruments when entering and leaving the chair. Further, it is easier for the dental assistant to prepare the unit and instruments for the next treatment. When the patient is in the chair, position the unit's instrument bridge above the chest of the patient, with a distance of 30 cm between the tips of the unit instruments and patient's mouth. In this way, you and your assistant are able to reach the instruments in all working positions from 9 to 12 o'clock, without twisting the body and without looking away from the patient.

#### Classification according to method of sterilization



## Leaning Outcomes...

To provide the students with an opportunity to develop knowledge, skill and attitude in the area of dental equipment with emphasis on:

- Overview of dental office design
- □ Function of each room in the dental suite
- Design of dental treatment room
- Dental chair and its main components
- Positioning of operating light
- □ Working procedure of dental treatment room

# QUESTIONS...?

## **Chapter Three**

#### Understand the basic dental equipment

## Non cutting instruments

#### 1. Dental Mirror

A mouth mirror or dentist's mirror is an instrument used in dentistry. The head of the mirror is usually round, and the most common sizes used are the No. 4 Ø (18 mm) and No. 5 (Ø 20 mm). A No. 2 is sometimes used when a smaller mirror is needed, such as when working on back teeth with a dental dam in place.

Function:

- 1. Cheek retraction
- 2. Indirect Visualization
- 3. Transillumination



## Non Cutting instrument

#### 2. Explorers and probes

#### **Probe:-** (Explorer)

- It is sickle shaped.
- Used to detect the tooth decay.
- To check bifurcation & furcation. Furcation mean branches.
- To check the carious region.

If we apply probe on tooth and if it move smoothly on surface so it means there is no carious region, there is only stain so we wil not cavity prep and filling.



## Non Cutting Instruments

#### 3. Condensers and burnishers

#### Condenser:-

- Used to condense the amalgam.
- Used for packing the amalgam into cavity.

## G-50-704/D algam Condenser

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666

#### Burnisher:-

One end of burnisher is egg type shaped & other end is T-shaped.

• Used for burnishing.

#### **classification**

Operative dental instruments as classified by CHARBENEAU-

#### 1.Cutting instruments-

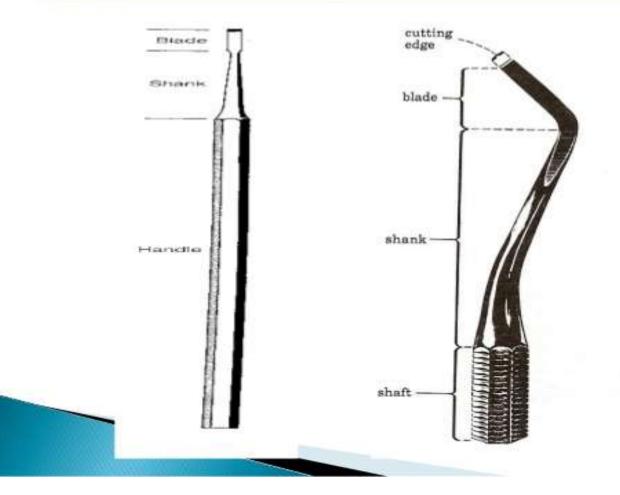
a) Hand Hatchets Chisels Hoes Excavators others b) Rotary-Burs -Stones -Disks Others

#### 2. Condensing instruments

a) Pluggers -Hand -Mechanical



#### PARTS OF HAND CUTTING INSTRUMENTS



#### Anesthetic syringe and needle



#### Leaning Outcomes...

To provide the students with an opportunity to develop knowledge, skill and attitude in the area of dental equipment with emphasis on:

- Overview of basic dental instruments
- □ Function of basic dental instruments
- Hand cutting instruments
- Different types Hand cutting instruments
- □ Anesthetic syringe and needle
- Preset instrument trays
- □ Application of hand cutting instruments

# QUESTIONS...?

#### **Chapter Four**

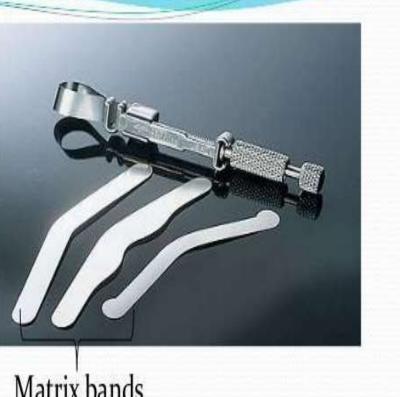
Understand dental hand pieces used in dental units

### **Isolation Instruments**

# Matrix Band:-

It has a concave surface (upward) & one convex (downward). The conxity of matrix band should put up on the occlusal surface.

- Used to support the wall of class II.
- To replace missing proximal walls of
  cavity preparation for condensation
  of restorative material



# **Isolation Instruments**

#### Wooden Wedge:-

Pointed sharp part should be apply b/w the teeth.

- Used to tight the matrix band.
- Used to comress the gingiva.
- used to separate the very tight band.
- To hold matrix band in place
- along gingival margin of class II.

Wooden wedge absorb saliva then they expand and fill the space b/w tooth, and it has low strength as compared to plastic wedge.



## Hand piece

Instrument for holding **dental** burs to remove tooth structure or to smooth and polish restorative materials. **Hand piece** rotations are measured in rotations per second. **Hand pieces** may be powered by electric motor or air turbines and are characterized as high speed or low speed depending on their rotational speed.

#### High speed hand piece



#### Types of Dental Hand pieces

Types of Dental Hand pieces Based on speed, there are two major types of dental hand piece, high speed dental hand piece and low speed hand piece. High Speed Dental Hand piece can rotate at up to 400,000 rpm, and generally use hard metal alloy bits known as burrs.

#### **Types of Dental Handpieces**

Based on design, a dental handpiece can be classified into two, *Air-Driven Handpiece* and *Electric Handpiece*.

Air-Driven High-Speed Handpieces contain air-driven turbine inside. This generates the rotational motion of the dental handpiece.

*Electric Handpiece* contains an electric motor driving the handpiece. An electric handpiece consists of an entire system.

#### **Electric vs Air-Driven**

- Electric Handpiece is more quiet.
- Air-driven handpiece produces a high-pitch sound
- Electric Handpiece has constant speed and no power is lost during procedure.
- An electric handpiece consists of an entire system.
- Air-driven handpiece is run by an air-driven turbine inside.
- Any number of attachments with various gearing combinations will connect onto an electric motor.
- An Electric Handpiece is more expensive yet more efficient than an air-driven handpiece.

#### Sirona Handpiece

- Automatic calibration allows immediate treatment without delay
- <u>Sirona</u> offers one of the most well balanced, sophisticated turbines available, with high tech ceramic bearings for Airdriven handpieces.



#### **Sirona Refurbished Handpieces**



- Fully reconditioned by Sirona factory trained technicians
- With original Sirona factory parts.
- 7 day unconditional money back guarantee.
- Full six month warranty.

#### Leaning Outcomes...

To provide the students with an opportunity to develop knowledge, skill and attitude in the area of dental equipment with emphasis on:

- Overview of basic dental hand piece
- □ Function of basic dental hand piece
- Hand cutting instruments
- Different types Hand piece
- □ Anesthetic syringe needle
- Preset instrument trays
- Application of hand piece

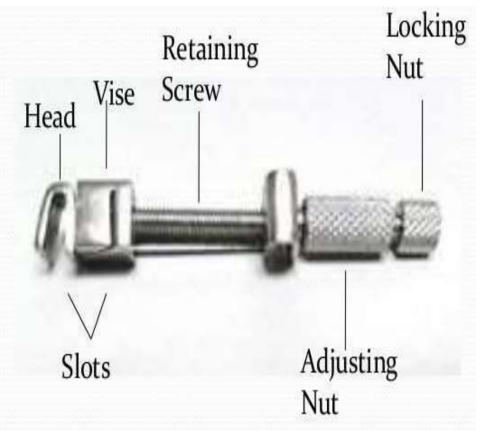
# QUESTIONS...?

#### **Chapter Five**

#### **Understand instrument sharpening**

## **Tofflemire Matrix Band**

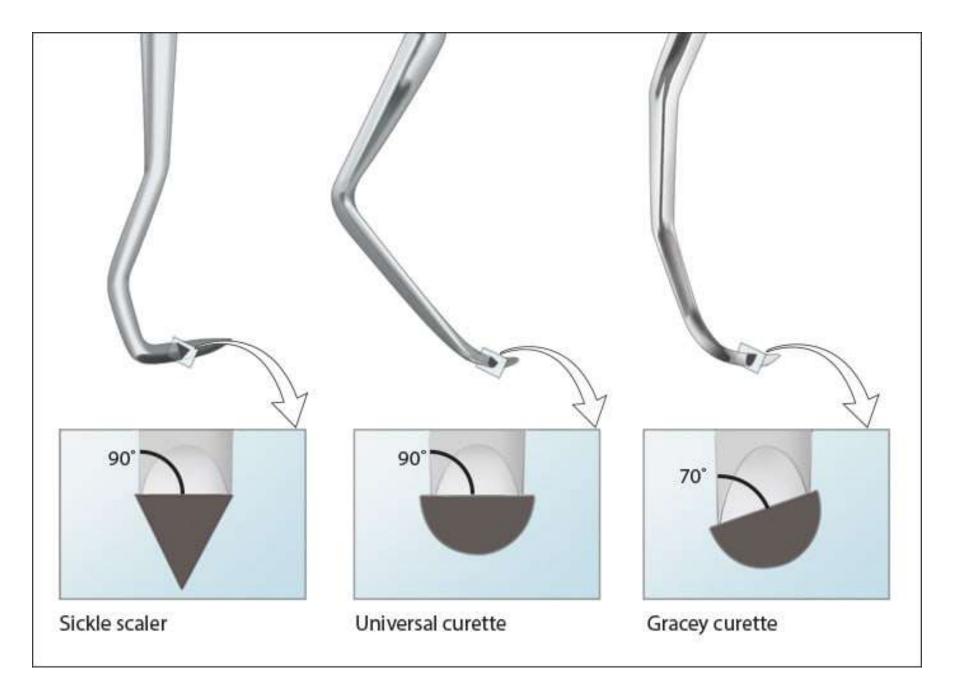
Parts Of Tofflemire Matrix Band Retainer:-✓ Adjusting Nut  $\checkmark$  Locking Nut—used for tight. ✓ Retaining screw ✓ Two slots ✓ Head (u-shaped) ✓ Vise (box shaped)





#### **Sharpening Procedure**

Sickle scalers, and universal and Gracey curettes share common components: handle, shank, working end and blade. The difference is at the very tip of the instrument . For all instruments, the instrument is held in the non-dominant hand using a palm grasp. The index finger and thumb should be near the junction of the functional shank and the top of the handle such that they will counter balance the force produced at the opposite end of the instrument once the stone is activated. For all stones, the lower half is held in the dominant hand with the thumb on the edge closer to the operator and the fingers on the edge farther. The entire arm will work in one fluid motion so the grasp is intended to stabilize the stone and make such a motion comfortable to accomplish. The difference between the instruments is found at the working end. These differences make sharpening technique a little different for each instrument type.



A. Sickle scaler has two straight cutting edges which join to form the sharp back of the instrument. These cutting edges of the face meet to form the pointed end of the tip. This makes a triangular cross-section. Sickle scaler also comes in a variety where the sharp back is rounded or squared off.

B. Universal curette has two cutting edges with the blade at a 90 degree angulation. The blade is curved in only one plane such that it is not specialized to a particular area of the mouth.

C. Gracey curette blade is curved in two planes. The blade is "offset" such that there is only one cutting edge on each blade. In this example it is offset by 70 degrees.

# Procedure

Working with dull dental instruments can lead to inefficient procedures, decreased staff and patient satisfaction, and less productivity for your practice. With total Sharpening Solution, keeping your edge is easy. We offer a range of options including the automated Sidekick Sharpener, a variety of Sharpening Stones, and Professional Sharpening Services to keep your dental instruments sharp and high-functioning. Whatever your style, you can stay sharp and perform at your best with total **Sharpening Solution.** 

#### **Sharpening Evaluation**

Instrument Sharpening Products Take a closer look at the working end during sharpening to evaluate condition of instrument blades while sharpening. Composition stones to be mounted on the handpiece. Used to test the sharpness of an instrument.

#### Leaning Outcomes...

To provide the students with an opportunity to develop knowledge, skill and attitude in the area of dental equipment with emphasis on:

- □ Instrument sharpening
- Objective of instrument sharpening
- □ Sharpening stones
- □ Sharpening techniques
- □ Basic principle of sharpness evaluation

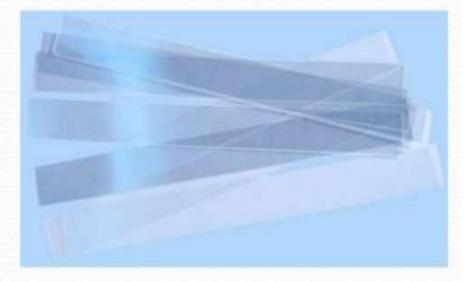
# QUESTIONS...?

#### **Chapter Six**

Understand high velocity evacuation technique

### **Isolation Instrument**

Mylar strips:Straight strips same as matrix band.
Thin clear strip used to isolate cavity prep.
Able to use cure light b/c it is plastic strip.



### **Isolation Instrument**

• Rubber Dam



### high-volume evacuator

A high-volume evacuator is a suction device that draws a large volume of air over a period of time. This differs from a low-volume evacuator (LVE), which pulls a significantly lower volume of air.

# WHAT IS HVE?

A High Volume Evacuator (HVE) is a suction device that draws a large volume of air over a period of time. This differs from a Low Volume Evacuator (LVE) which pulls a significantly lower volume of air. Air volume is measured in cubic feet per minute (CFM) and while both HVE and LVE maintain the same static vacuum pressure; the difference in air volume is due to the borehole size or number of holes in the evacuator tip. HVE devices typically have large, single bore or multiple openings, whereas LVE devices have a much smaller bore size. The standard HVE device commonly used in dentistry has a large opening and is attached to an evacuation system that will remove a volume of air up to 100 cubic feet per minute.



# saliva ejector

Evacuating the oral cavity of excessive moisture is a common part of **dental** treatment, but it's essential that it be done properly so as not to compromise the patient's health. Many clinicians use a device called a **saliva ejector**—a straw-like, perforated suction tube that sucks out moisture from your mouth.

# Saliva ejector



#### Leaning Outcomes...

To provide the students with an opportunity to develop knowledge, skill and attitude in the area of dental equipment with emphasis on:

- □ High velocity evaluation system and saliva ejector
- □ Function of high velocity evaluation system
- □ Basic rules for oral evacuator tip placement
- Routine care of the HVE and saliva ejector system

# QUESTIONS...?

#### **Chapter Seven**

# Understand the tooth extraction technique



#### SURGICAL ASPIRATING TIP-FRAZIER

- FUNCTION:
   To maintain a clear working field by removing saliva, blood, and debris

   FEATURES:
   Removable stylet to clear tip of bone or tooth fragments

   Vacuum relief hole controls suction by covering/uncovering the hole with fingertip

   Available in several diameters

   Other common designs: Byrd, Cogswell
- TRAY SET-UP: All surgical procedures

# Extraction forceps (Maxillary anterior)



Images courtesy of Hu-Friedy, www.hu-friedy.com

- FUNCTION: To remove teeth from bony socket
- FEATURES: Straight handle and beaks

Beaks designed to conform to facial and lingual root contour just apical to cervical line

Universal (both beaks same design-fit equally well on facial and lingual) for right and left quadrants

TRAY SET-UP: Extraction

#### **BASIC EXTRACTION SET-UP**

PURPOSE:

- : To provide instrumentation for surgical removal of tooth/teeth.
  - 1. Local anesthesia syringe, needles, and cartridges
  - 2. Sterile gauze
  - 3. Surgical aspirating tip
  - 4. Cotton pliers
  - 5. Mouth mirror
  - 6. Periosteal elevator
  - 7. Straight elevators
  - 8. Surgical curette
  - 9. Hemostat
  - 10. Extraction forceps (selected for specific tooth/teeth)



# **Cutting Instruments**

#### 1. Excavators

## Excavator:-

Spoon shaped.

- To remove temporary fillings.
- To remove soft caries or dentine.
- Scoope out/excavate soft dentine.



# Extraction forceps (Maxillary posterior)



- FUNCTION: To remove teeth from bony socket
- FEATURES: Bayonet design

Each beak has different design to adapt to the maxillary molar roots that differ anatomically on the facial and lingual

Rounded beak contours to lingual root

Pointed beak contours to bifurcation of mesial-buccal and distal-buccal roots #53L and #18L are essentially the same instrument except that #18L has one curved handle while both handles are straight on #53L

TRAY SET-UP: Extraction

#### 2. Carvers

**Carver:-**1-Fraham's Carver: kite shaped.

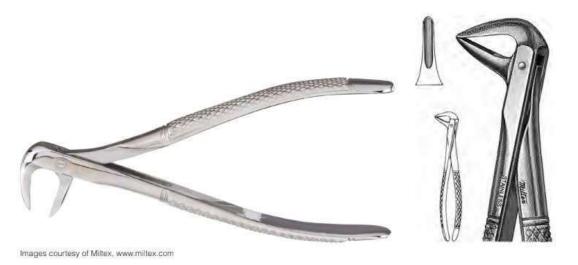


• Both carver is used to remove the excessive material.

• To produce the normal tooth anatomy.



# Extraction forceps (Mandibular root tip)



#### **EXTRACTION FORCEPS**-#74 MANDIBULAR ROOT TIPS

- FUNCTION: To remove tooth fragments and root tips from bony socket
- FEATURES: Bird beak design

Universal (both beaks same design-fit equally well on facial and lingual) for right and left quadrants

TRAY SET-UP: Extraction

# **Cutting instruments**

• Endodontic instruments



# **Cutting Instrument**

• Motorized Handpiece and cutting burs





# Leaning Outcomes...

To provide the students with an opportunity to develop knowledge, skill and attitude in the area of dental equipment with emphasis on:

- Tooth extraction
- □ Instruments for using tooth extraction
- □ Different types of tooth extraction forceps
- □ Surgical extraction technique
- □ Non-surgical extraction technique

# QUESTIONS...?

# Chapter Nine

# Understand dental X-ray machines.

# **Dental X-rays**

*Dental X-rays* (radiographs) are images of your *teeth* that your *dentist* uses to evaluate your oral health. These X-rays are used with low levels of radiation to capture images of the interior of your *teeth* and gums. This can help your *dentist* to identify problems, like cavities, tooth decay, and impacted teeth.

**Dental X-ray** exams are **safe**; however, they do require very low levels of radiation **exposure**, which makes the **risk** of potentially **harmful** effects very small.

# How Dental X-Rays Work.

When the X-rays pass through the mouth, the teeth and bones absorb more of the ray than the gums and soft tissues, so the teeth appear lighter on the final X-ray image (called a radiograph). Areas of tooth decay and infection look darker because they don't absorb as much of the X-ray.

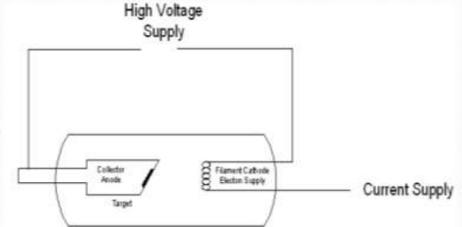
# **Dental X-ray machine**

# Three major elements of an x-ray machine:

1. Vacuum tube:

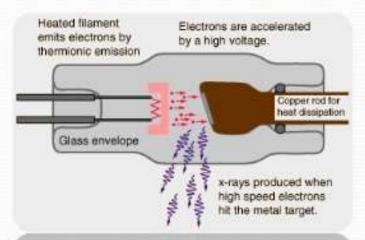
made up of Pyrex glass.

- tungsten anode is enclosed along with cathode.
- cathode or emitter.



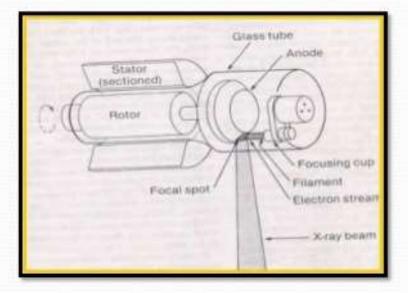
# X-ray tube

- Cathode accelerates electrons and leads them to anode(electron beam).
- Only a small portion of the electron beam is converted to x rays.
- Photons are discharged in all directions.
- By adjusting current and voltage, we can direct the beam on a visible substance.



# **Rotating Anode**

 The anode of rotating anode tube consist of a large disc of tungsten, or an alloy of tungsten, which theoretically rotates at a speed of about 3600 rpm.



 The purpose of rotating anode is to spread the heat produced during an exposure over a large area of anode.



## 2. High Voltage Power Source

#### A transformer is used

- Alternates between the voltage of currents being sent to the emitter or to the anode.
- Emitter requires small voltage supply for small currents
- Anode needs a large voltage supply

# **3. Operating Console**

- Control unit..
- Manages current, voltage and timer.
- Current control allows adjustment of tube current to vary radiation intensity.
- Voltage control allows adjustments in anode to change energy of radiation.
- Timer determines the duration of exposure.



- \* Advantages:
- It is non-invasive.
- It can be made available as a portable x-ray unit.

It is less costly when compared to the other imaging modalities like MRI or CT.

#### Limitations:

X-ray uses radiation, which can cause cancer if you are exposed to it over a prolonged period of time.

Do not provide as much information as MRI and CT.

#### Working of x-ray tube:

- Cathode accelerates electrons and leads them to anode(electron beam)
- Only a small portion of the electron beam is converted to x rays
- Photons are discharged in all directions
- By adjusting current and voltage, we can direct the beam on a visible substance

#### • Advantages:

-

- It is non-invasive.
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- It is less costly when compared to the other imaging modalities like MRI or CT.

#### Limitations:

- X-ray uses radiation, which can cause cancer if you are exposed to it over a prolonged period of time.
  - Do not provide as much information as MRI and CT.

# APPLICATIONS

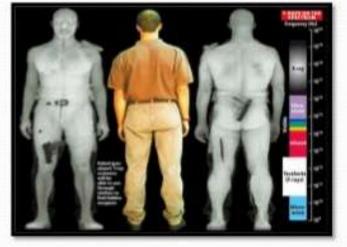
Orthopantomogram: all teeth

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- Mammogram: breast tissues
- Fluoroscopy for real time images

# Uses of x ray machine:





 Full Body scanners at airport

#### Metal detectors

Security purposes



An OPG (short for orthopantomograph) is a special type of X-Ray image that offers a panoramic/wide view x-ray of the lower face, displaying all the teeth of the upper and lower jaw on a single film.

It gives the dental specialist important and vital information regarding the number, positioning and growth of teeth, inclusive of those that may have not yet surfaced or erupted. It is quit different from the small close up x-rays dentists take of individual teeth.

- An OPG is able to also reveal problems with the jawbone and the joint which connects the jawbone to the head, called the
- Temporomandibular Joint or TMJ. An OPG is usually needed for the planning of orthodontic treatment, for assessment of wisdom teeth or for a general overview of the teeth and the bone which supports the teeth.
- Herman Dental Practice is equipped with a state of the art Digital X-Ray System that is OPG capable so you do not need to be refereed to a different X-Ray provider for the procedure, saving you time and money.

# Orthopantomograph



# Leaning Outcomes...

To provide the students with an opportunity to develop knowledge, skill and attitude in the area of dental equipment with emphasis on:

- Dental X-ray
- Dental X-ray machines
- □ Safety procedure of Dental X-ray machines
- Dental Orthopentamogram(OPG)

# QUESTIONS...?

### CHAPTER TEN

# **Surgical Instruments**

# **Surgical Curette**



Image courtesy of Premier Dental Products, www.premusa.com

#### FUNCTION: To remove tissue or debris from bony sockets

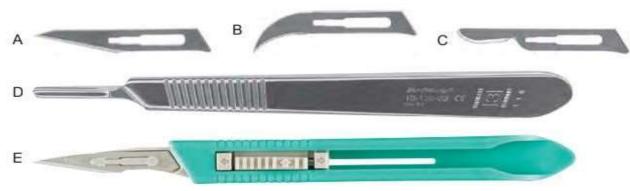
FEATURES: Spoon-shaped scraping instrument Usually double ended and angular in several sizes

TRAY SET-UP: Extraction, impaction, and cyst removal

CLINICAL APPLICATION:

Used following tooth extraction to ensure removal of debris and diseased tissue

# Scalpel



(A-D) Images courtesy of Hu-Friedy, www.hu-friedy.com, and (E) courtesy of Miltex, www.miltex.com

FUNCTION:	To cut soft tissue—a surgical knife
FEATURES:	Often referred to as "Bard-Parker" or "BP"
	Individually sterile wrapped for single use
	Common blade sizes: #11 (a), #12 (b), #15 (c)
	Metal, sterilizable handle for replaceable blades (d)
	Disposable scalpel consisting of a plastic handle with attached blade (e)
TRAY SET-UP:	Most surgical set-ups: impaction, extraction, biopsy, frenectomy, gingivoplasty, alveoplasty, incision and drainage, and apicoectomy
CLINICAL APPLICATION:	For safety, blades are placed and removed from the metal handle with a hemostat or a specially designed scalpel blade remover
	Used blades should be disposed of in a sharps container

# Needle Holder

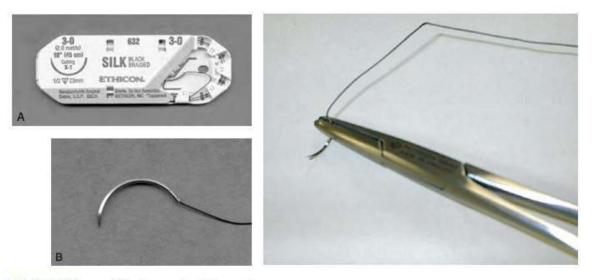


Images courtesy of Miltex, www.miltex.com

#### FUNCTION: To hold suture needle

- FEATURES: Similar to hemostat but with a concave area on inside of each beak to allow for curve of suture needle
- TRAY SET-UP: Any surgical procedure involving an incision will require placement of sutures
- CLINICAL APPLICATION: To avoid needle breakage, place the needle holder on the needle just beyond the suture attachment point and at right angles to the curve of the needle

# Suture



- FUNCTION: To close incision site "Stitches" hold tissues in place during healing
- FEATURES: Suture material attached to sterile stainless steel needle Different sizes and designs of needles
  - Suture may be absorbable-plain or chromic gut, polyglycolic acid (PGA, Vicryl) or nonabsorbable-silk, polyester, nylon, polypropylene

Sized by diameter of suture material: 3–0 (000), 4–0 (0000), 5–0 (00000) most common sizes used in dentistry (smaller number = larger diameter)

CLINICAL APPLICATION: Nonabsorbable sutures usually removed at 7–10 days postsurgical visit Placed with needle holder or hemostat

# Scissors

FUNCTION:	To cut and remove excess or diseased soft tissue
	Also used to cut sutures after knots are tied during suture placement
FEATURES:	Straight or curved, 4" and 41/2"
	Other common varieties of tissue scissors: Dean, Kelly
TRAY SET-UP:	Gingivectomy/gingivoplasty, frenectomy, multiple extractions

50

#### SUTURE SCISSORS

FUNCTION:	To cut sutures for removal
FEATURES:	One curved, hook-like tip to slip under suture
	Holds suture away from tissue while cutting
	31/2", 41/2", 51/2", and 6"
TRAY SET-UP:	Suture removal

**CLINICAL APPLICATION:** Suture removal often performed by the dental assistant. Wipe area clean with moistened  $2 \times 2$ , place curved scissor beak under suture near the knot, then grasp the knot with cotton plier or hemostat, and pull the suture out.

# Hemostat



Images courtesy of Hu-Friedy, www.hu-friedy.com

FUNCTION: To securely hold small items, clamp blood vessels, and remove small pieces of tooth or bone

FEATURES: Angled or straight with locking, scissor-like handles Common names: Mosquito, Kelly Available in 4<sup>3</sup>/4", 5<sup>1</sup>/2", 6<sup>1</sup>/4", and 7<sup>1</sup>/2"

#### TRAY SET-UP: Almost all surgical set-ups

#### CLINICAL APLICATION: Ratchet-type handles require some practice to open and close smoothly Very versatile instrument used in all areas of dentistry

# **Tissue Plier**



Image courtesy of Hu-Friedy, www.hu-friedy.com

#### **TISSUE PLIERS—ADSON**

- FUNCTION: To grasp and stabilize soft tissue flaps during suturing and reconstructive procedures such as gingival grafting
- FEATURES: Similar in overall appearance to cotton pliers Various serrated tips for securely grasping tissue flaps
- TRAY SET-UP: Any surgical procedure requiring an incision and suturing

# Mouth Gag



### MOUTH PROP-MOUTH GAG

FUNCTION:	To keep mouth open with extensive procedures, sedated or disabled patients
FEATURES:	Rachet design with rubber tips
	Other common design: bite-block

TRAY SET-UP: Any procedure when patient may have difficulty keeping mouth open

# **Periosteal Elevator**



Image courtesy of Hu-Friedy, www.hu-friedy.com

## TISSUE RETRACTOR/PERIOSTEAL ELEVATOR-SELDIN

- FUNCTION: To deflect and retract a tissue flap from bone following an incision
- FEATURES: Double ended with round, blunted ends
- TRAY SET-UP: Used for most surgical procedures: extractions, gingivoplasty, alveoplasty, cyst removal

# **Tongue Retractor**



## TONGUE AND CHEEK RETRACTOR-MINNESOTA

- FUNCTION: To hold tongue and cheek away from surgical site Other common designs: Shuman, Weider
- TRAY SET-UP: All surgical procedures

# **Straight Elevator**



Images courtesy of Hu-Friedy, www.hu-friedy.com

- FUNCTION: To loosen tooth or root from bony socket prior to placement of the extraction forceps
- FEATURES: Straight handle and working end Single rounded working end in several sizes Often referred to by number—common sizes: 1, 34, 301
- TRAY SET-UP: Tooth and root extraction

# Angular Elevator (Cryer)



Images courtesy of Hu-Friedy, www.hu-friedy.com

FUNCTION: To loosen tooth or root from bony socket prior to placement of the extraction forceps

FEATURES: Handles may be either large and straight or T-bar/crossbar design Pointed working end in several sizes Paired, right and left Also called a "flag" elevator Other common designs: Potts and Crane

TRAY SET-UP: Tooth and root extraction, impaction

# Angular Elevator (Crane)



Image courtesy of Hu-Friedy, www.hu-friedy.com

- FUNCTION: To loosen tooth or root from bony socket prior to placement of the extraction forceps
- FEATURES: Large straight handle Nonpaired, universal Other common designs: Cryer and Potts
- TRAY SET-UP: Tooth and root extraction, impaction

## Extraction Forcep (Maxillary root forceps)



FUNCTION: To remove teeth, tooth fragments, and root tips from bony socket

FEATURES: Bayonet design

Universal (both beaks same design-fit equally well on facial and lingual) for right and left quadrants

TRAY SET-UP: Extraction

## Extraction forceps (Mandibular Posterior)



Images courtesy of Miltex, www.miltex.com

#### FUNCTION: To remove teeth from bony socket

- FEATURES: Beaks designed to conform to facial and lingual root contour just apical to cervical line
  - Universal (both beaks same design-fit equally well on facial and lingual) for right and left quadrants

Pointed beaks contour to bifurcation area of mesial and distal root

#17 and #15 are essentially the same instrument except that #15 has one curved handle while both handles are straight on #17

TRAY SET-UP: Extraction

# Mandibular Cryer



Images courtesy of Miltex, www.miltex.com

- FUNCTION: To remove teeth from bony socket
- FEATURES: Beaks designed to conform to facial and lingual root contour just apical to cervical line

Universal (both beaks same design-fit equally well on facial and lingual) for right and left quadrants

Mandibular counterpart to #150 Maxillary Cryer

TRAY SET-UP: Extraction

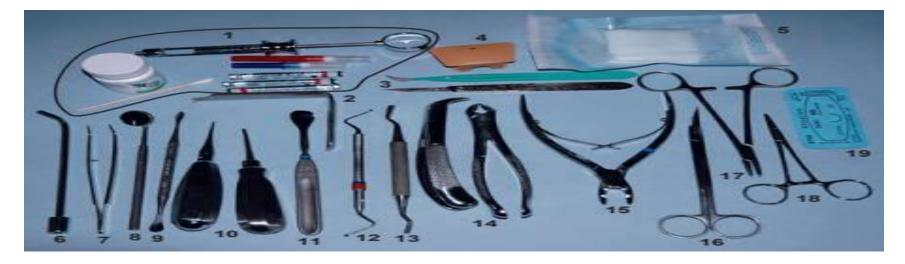
# Various Tray Setups

#### MULTIPLE EXTRACTION/ALVEOPLASTY/GINGIVOPLASTY SET-UP

**PURPOSE:** To provide instrumentation for surgically removing multiple teeth, reshaping bone and gingiva, and placing sutures.

- 1. Local anesthesia set-up
- 2. Tissue retractor
- 3. Scalpel(s)
- Mouth prop
- 5. Sterile gauze
- 6. Surgical aspirating tip
- 7. Cotton pliers
- 8. Mouth mirror
- 9. Periosteal elevator
- **10.** Straight elevators

- **11.** Tissue retractor
- 12. Surgical curette
- 13. Bone file
- Extraction forceps (selected for specific tooth/teeth)
- 15. Rongeur
- **16.** Tissue scissor
- 17. Needle holder
- **18.** Hemostat
- 19. Suture



#### IMPACTION SET-UP

- **PURPOSE:** To provide instrumentation for surgically removing impacted tooth. Often involves incision and bone removal.
  - 1. Anesthetic syringe, needles, and cartridges
  - 2. Mouth prop
  - Tissue retractor
  - 4. Austin tissue retractor
  - 5. Surgical bur
  - 6. Hemostat
  - 7. Surgical aspirating tip
  - 8. Mouth mirror
  - 9. Cotton pliers
  - 10. Periosteal elevator
  - **11.** Straight elevator

- 12. Crane pick
- Angular elevators
- 14. Root tip picks
- **15.** Surgical curette
- 16. Molt curette
- 17. Bone file
- 18. Tissue scissor
- **19.** Extraction forceps
- 20. Needle holder
- 21. Scalpel(s)
- 22. Suture



# Leaning Outcomes...

To provide the students with an opportunity to develop knowledge, skill and attitude in the area of dental equipment with emphasis on:

- Dental surgery
- Different types of dental surgical instruments
- Different types of dental surgery
- Light cure unit
- Dental compressor
- Dental surgery unit
- Laser in dental treatment.

# QUESTIONS...?

# **Thank You!**