DENTAL CHAIR

CONTENTS

- ✓ Definition
- ✓ History of the dental chair
- ✓ Parts of dental chair
- ✓ Functions of each part of the dental chair
- ✓ Conclusion

DEFINITION

- A dental chair is a chair in which a patient sits and a clinician can operate or treat the patient by looking into his/her mouth easily.
- A dental chair comprises of an electrically operated, retractable patient seating chair to which compressed air, water line, micromotor, spittoon bowl and an overhead light is attached.

- A dental chair is also accompanied by a dental operator stool on which the clinician sits while handling the patient procedures.

HISTORY

- World's first simplest dental chair!

- Around 1790, the world's 1st adjustable dental chair was invented.

- It featured an adjustable headrest and an attached arm extension for convenient access to dental equipments.

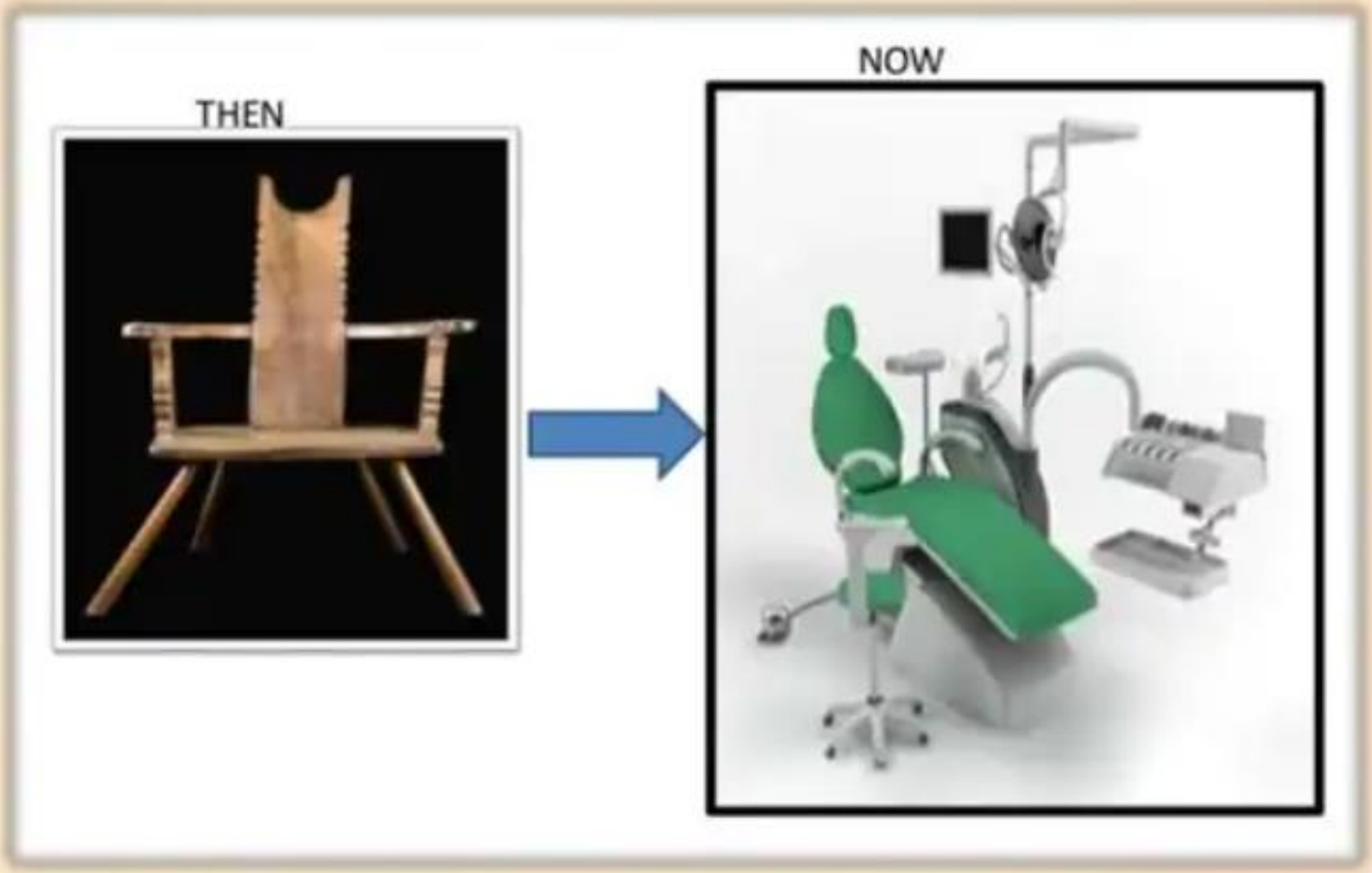
- In the early 1800's came the first fully reclining dental chair.
- It was the first pump-style chair that raised and lowered the patient.

- In 1867, a British dentist constructed a chair that could not only raise the patient up to 3 feet and allow the patient to fully recline, but was also capable of tilting side to side.

THE FIRST DENTAL CHAIR IN THE UNITED STATES.

Dr. Josiah Flagg constructed the first dental chair.

Transformation or Advancement!



The Modern Dental Chair

Types of modern dental chair

PORTABLE

It can be carried anywhere.
Usually used in community dentistry.

NON-PORTABLE

It is non-movable as a wide base is attached to the floor.
It is very heavy.
Used in dental clinics.

Types of Non-portable dental chair

- General Dental Chair

=it is used for any purposes in a dental clinic.

=it is the most common type of dental chair used by dentists.

- Kids' Dental Chair

=it is used by pediatric dentists especially for the kids patients to keep them happy and interested, since they are not easy to handle.

- Exodontics Dental chair

=also called surgical dental chair.

=it is used by dental surgeons for surgery or tooth extractions.

General dental chair

Pediatric Dental Chair

Surgical/Exodontic Dental Chairs

PARTS & FUNCTION OF A DENTAL CHAIR

1)SEAT
2)ARMREST
3)BACKREST
4)HEADREST
5)SEAT COVER
6)MOUNTING BRACKET
7)MAIN LINK COVER
8)PUMP COVER
9)POWER SUPPLY PANEL
10)BASE
11)SUB LINK COVER WITH SAFETY SWITCH
12)FLANGE COVER
13)FOOT SWITCH
14)MAIN SWITCH
15)SETTING SWITCH
16)POWER SUPPLY CABLE
17)FUSE HOLDER

I. Dental Light / Operator Light/ Bulb

- The operator light is used to illuminate the oral cavity or mouth of the patient sitting on the dental chair.

- The light is positioned 30 – 50 inches from the mouth of the patient.

=this is practiced so that the light does not shine in the patient's eyes and he/she might feel uncomfortable.

- Lights contain dimmer switches to adjust the intensity of light.
- Prior to procedures, protective barriers are placed on the handles and switches of the light, such as:

a. Plastic wrap, aluminum foil, or any other commercial covers are used.

b. Barriers must be removed and replaced with clean covers after each patient.

- Frequent cleaning of the light is important.
- All movable parts of the light should be lubricated with general all-purpose lubricant agents at least once a week.

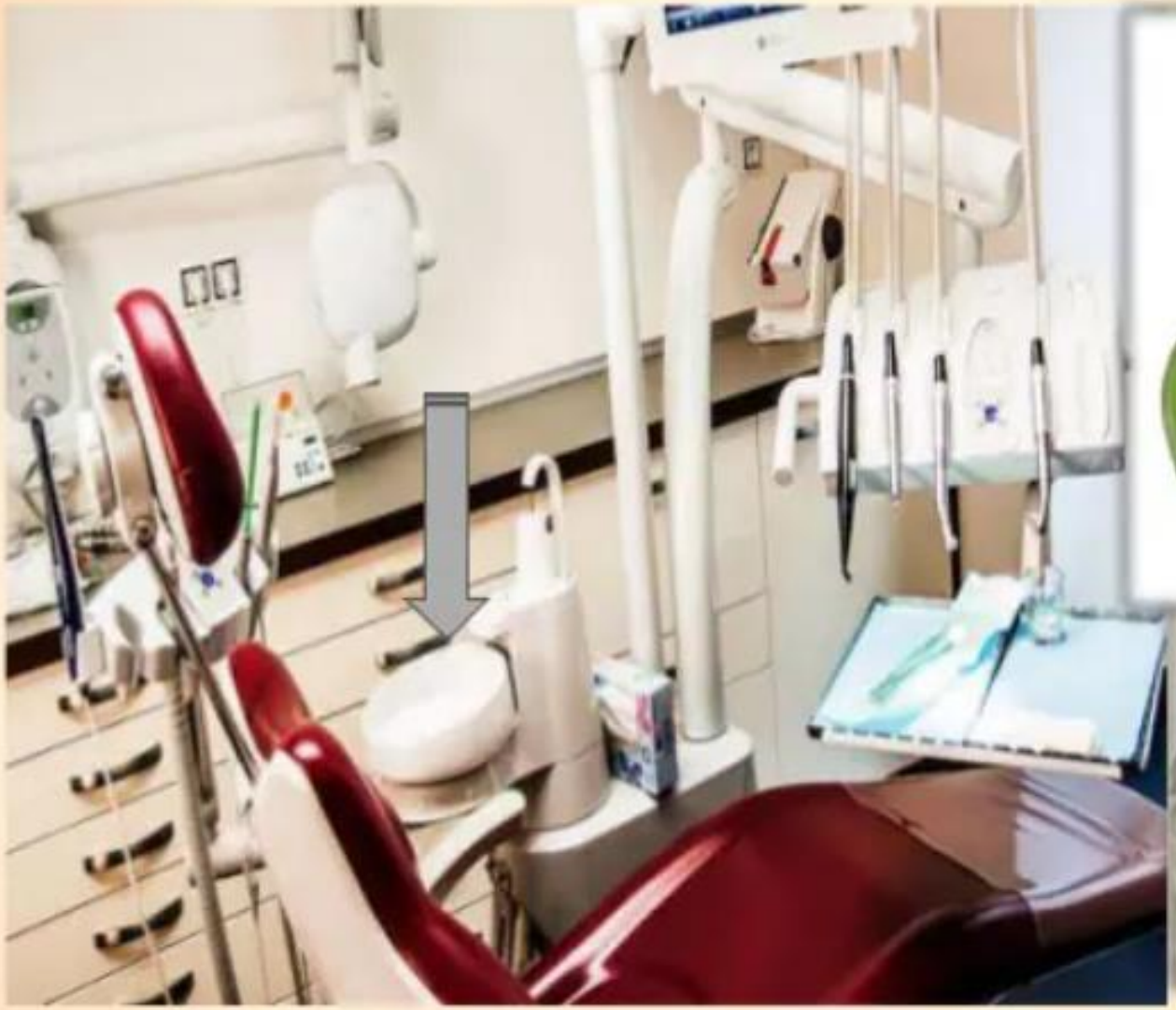
II. Dental Chair Controls

- The control buttons showed in the above picture are used for movement of the dental chair upside or downwards, according to the convenience of the clinician.

III. Cup (or Disposable glass) Holder

- Disposable glasses/cups (preferably) kept on the holders, are used for the patients to take in water during the dental procedures (as he/she might feel uncomfortable with the blood or debris in the mouth), and then gargle and spit out in the spittoon bowl.

IV. Spittoon Bowl



- A bowl or basin-like receptable for the patient to spit saliva from the mouth during dental procedures.

- It is provided with water pipe supply to clean the bowl and push them toward the drain.

V. Air-Water Syringe

- It is a dental device that supplies a focused stream of compressed air, water, or combination of both.

- It is frequently used to clean a tooth surface during dental treatment.

Evacuation devices

Saliva ejector on the left.
High volume evacuator in the middle.
Air-Water syringe on the right.

VI. Bracket Table

- It holds the hand instruments and other materials such as:

-cotton

-cotton holders

-cement mixes

-diagnostic instruments, etc.

VII. X-Ray Viewer

- It helps in examination and interpretation of the radiographs of the patient's oral cavity or a tooth.

VIII. Foot Control Motor

- Foot control is used by the dentist when both of his/her hands are engaged.
- It contains the same operating buttons as of the manual one.
- Its use can be considered safe, as in, it can be operated by foot press while maintaining the instruments sterilized to not be touched by hands frequently during the dental procedures.

Conclusion

- How the dental chair is different from any other general chairs?

The reasons may be the following:

= For the convenience of the patient as well as the dentist.

= So that the instruments and equipments required are at hands' reach.

= The special objects (like the operating light, foot and chair controls, spittoon bowl, etc.) are all present at a single complete dental chair, without which the dental procedures can be difficult to proceed.

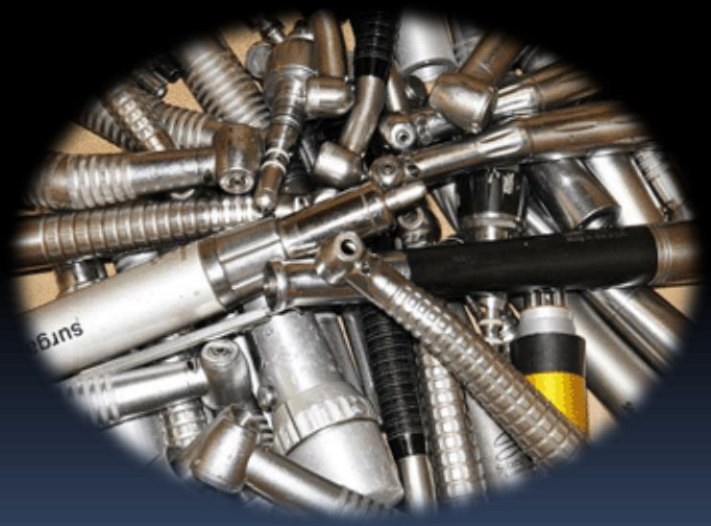
ROTARY INSTRUMENTS IN CONSERVATIVE DENTISTRY

INTRODUCTION

- The term SPEED in dentistry has greater importance in all the treatment procedures . SPEED refers to revolution per minute. certain speedy devices like handpiece ultrasonic , sonic instruments plays greater role in dentistry .

What is an handpiece ?

- A hand piece is a - device for holding rotating instruments, transmitting power to them and for positioning them intra orally.



- Uses
  - to cut tooth structure for various types of preparations.
  - to remove old metal restorations
  - to polish teeth and finish various types of restorative materials.
- The hand piece may also be used in oral surgery and for implant procedure.

- Most development of methods for preparing teeth has occurred within the last 100 years .effective equipment for removal and preparation of enamel has been available since 1947. speeds of 10,000 rpm were first used along with newly marketed carbide burs and diamond instruments.

- Since 1953 continued improvements have results in equipment that is efficient as well as sterlizable.

HISTORY / EVOULTION

- 1868 – Dr.Jonathan Taft in his text book of operative dentistry. Cutting procedures on tooth enamel and dentin were carried out using thick, bulky chisels and excavators.
- The first rotary instruments used for cutting tooth tissue were actually drill or bur head that could be twisted in the fingers, for a cutting action. He described them as “bur drills”.

- One of the refinements of these bur drills was scrantons drill. This could be rotated in either direction to achieve its cutting action.
- The next modification was drill ring.

- 1871 – Morrison modified and adapted the dental foot engine from the singer sewing machine. For the first time, cutting procedures were carried out with a power source.
- 1883 – electric dental engine linked to the hand piece by a flexible cable arm was introduced.
- 1910 – belt driven hand piece was introduced
- 1950 – ball bearing hand piece was introduced

- 1953 – nelson introduced, first fluid turbine type hand piece with speed of 50,000 rpm.
- 1954 – air driven hand piece were developed with possible speed of 150,000 rpm.
- 1957 – rotational speed was increased to 300,000 rpm
- 1960's – introduction of air bearing hand piece with speed of 500,000 rpm.
- 1963 – ultrasonic method of tooth tissue removal with vibrating frequency ranging from 15,000 - 30,000 cycles / second.

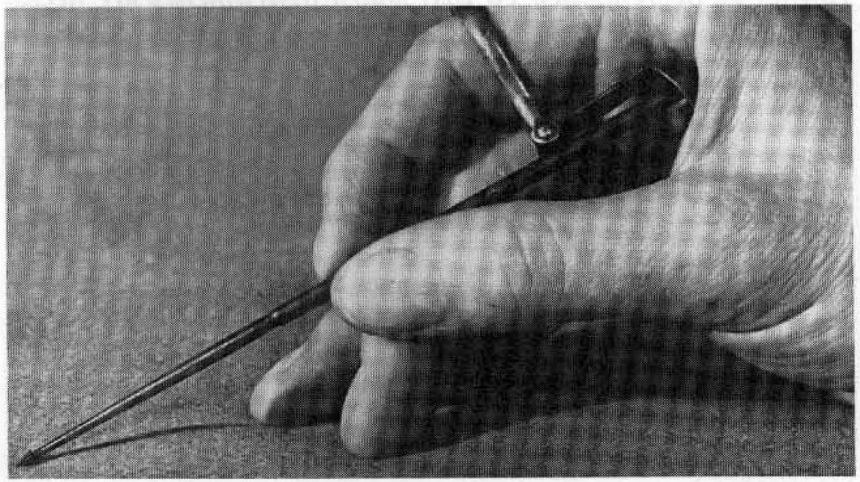


FIG. **7-20** Early straight hand drill for direct access preparations (circa 1800). Back end of bur shank fits into a finger ring while the front end is rotated with thumb and forefinger.

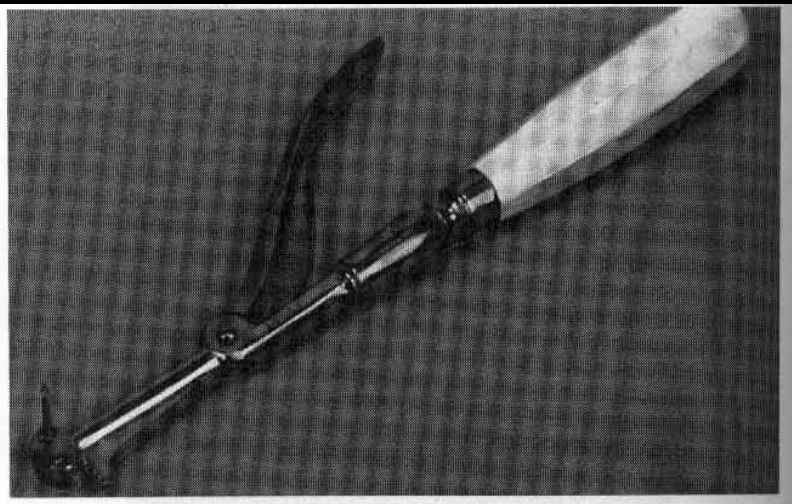


FIG. **7-21** Early angle hand drill for indirect access preparations (circa 1850). The bur is activated by squeezing the spring-loaded handle.

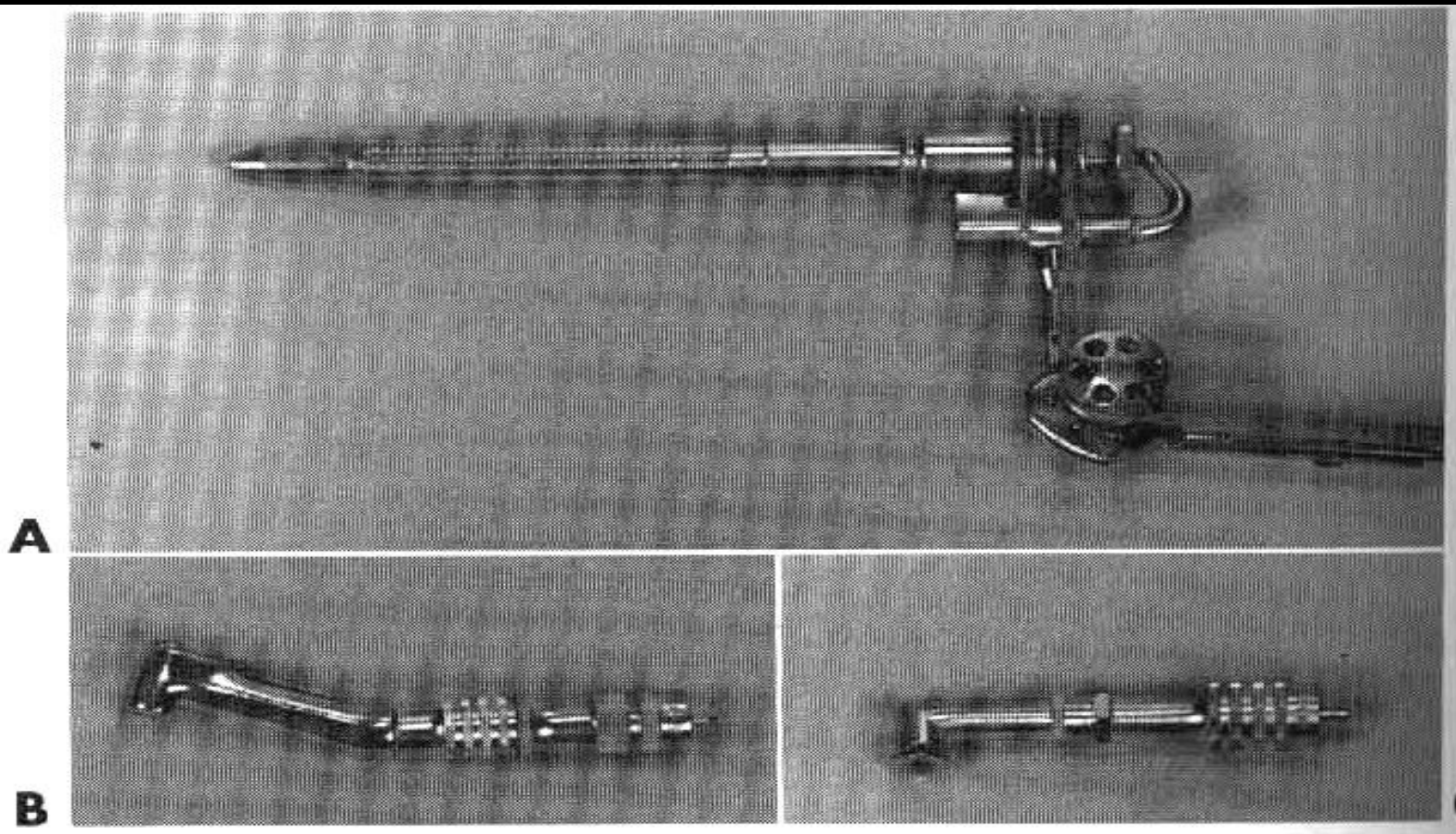


FIG 7-22 Conventional designs of handpieces. **A,** Belt-driven straight handpiece. **B,** Gear-driven angle handpiece that attaches to front end of the straight handpiece. **C,** Gear-driven angle handpiece designed for cleaning and polishing procedures.

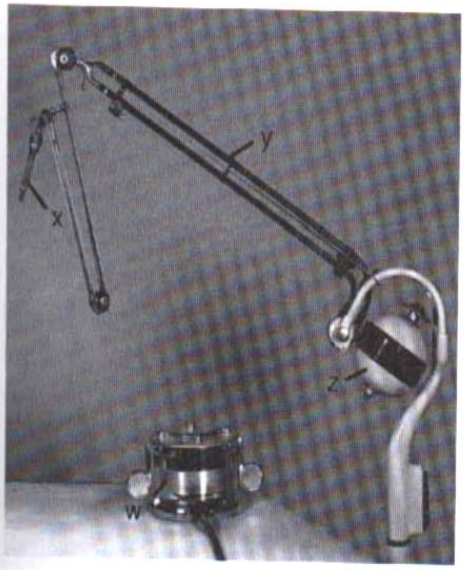


FIG. 7-23 Typical equipment when an electric motor is used as source of power: foot control with rheostat *(w)*, belt-driven straight handpiece *(x)*, three-piece adjustable extension arm (y), and electric motor *(z)*.

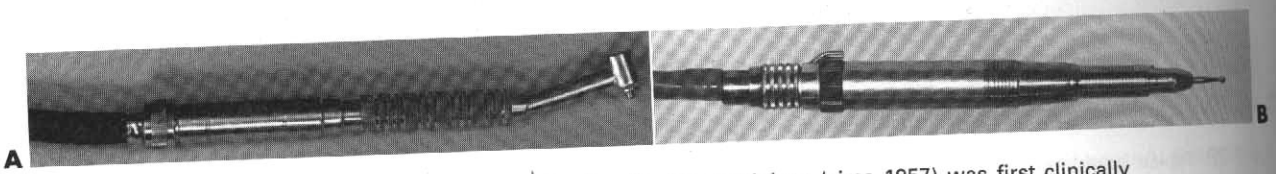


FIG. 7-26 Air-turbine handpiece. **A,** Borden Airotor handpiece (circa 1957) was first clinically successful air-turbine handpiece. Current air-driven handpieces are very similar in basic design. **B,** Air-turbine straight handpiece (circa 1980).

How do we classify handpiece?

- Dental hand pieces classified according to driving mechanism
  - Gear driven hand piece
  - Water driven hand piece
  - Belt driven hand piece
  - Air driven hand piece

- Depending upon angulations

  - Straight
  - Contra angled
  - Right angled

Each is designed for a specific range of functions

- Straight hand piece → the straight hand piece may also be used with a straight shank. Rotary instrument on anterior teeth or where a direct approach to teeth is possible.

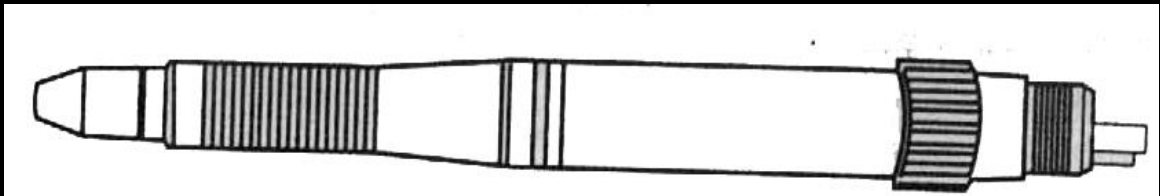


Fig. 33–3. Air-driven straight handpiece

- **Contra angled hand piece** → is designed to provide the operator with greater accessibility to the oral cavity during operative dentistry.

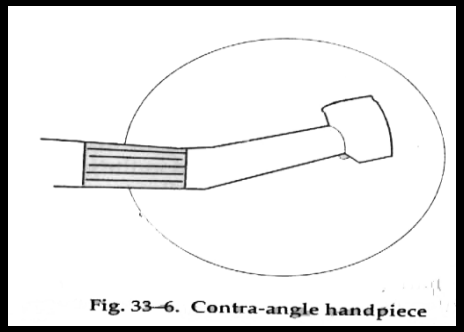


Fig. 33–6. Contra-angle handpiece

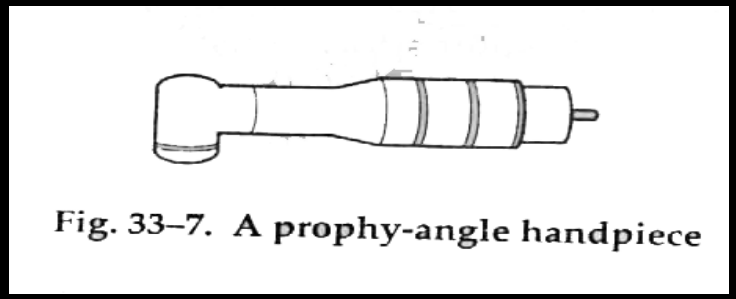


Fig. 33–7. A prophy-angle handpiece

- **Right angle hand piece** → in which the head of the hand piece forms a 90° angle to the shank. The most popular right angle hand piece is the prophy angle.

DEPENDING ON SPEED

- Speed is defined as the number of revolution per minute (RPM) or the number of times a rotating instrument, such as a bur, will make a full turn during a minute. The higher the rpm, the faster the speed of hand piece.
- **Low or slow speed - below 12,000 rpm**
- **Medium or intermediate speed - 12,000 to 200,000 rpm**
- **High or ultra speeds - above 200,00 rpm**

- AIROTOR (or air turbine) speed → 250,000 – 500,000 rpm gives the highest speeds but with rather less torque than low speed hand piece.

- The high speeds are achieved by a small air driven rotor or turbine mounted in bearings in the head of a airotor hand piece. The hand piece always contains a system which directs water spray at the cutting head of the bur and often also contains a fiber – optic light.

LOW SPEED HAND PIECE

- Speed ranges from 10,000 to 30,000 rotations per minute (rpm)
- Low speed hand piece
  - Straight
  - Contra angle
- The speed of these hand piece is less but the torque is greater.
- Low speed hand pieces can be rotated clockwise or anticlockwise, where as airotor only rotates clockwise.

SELECTION OF LOW SPEED HAND PIECE

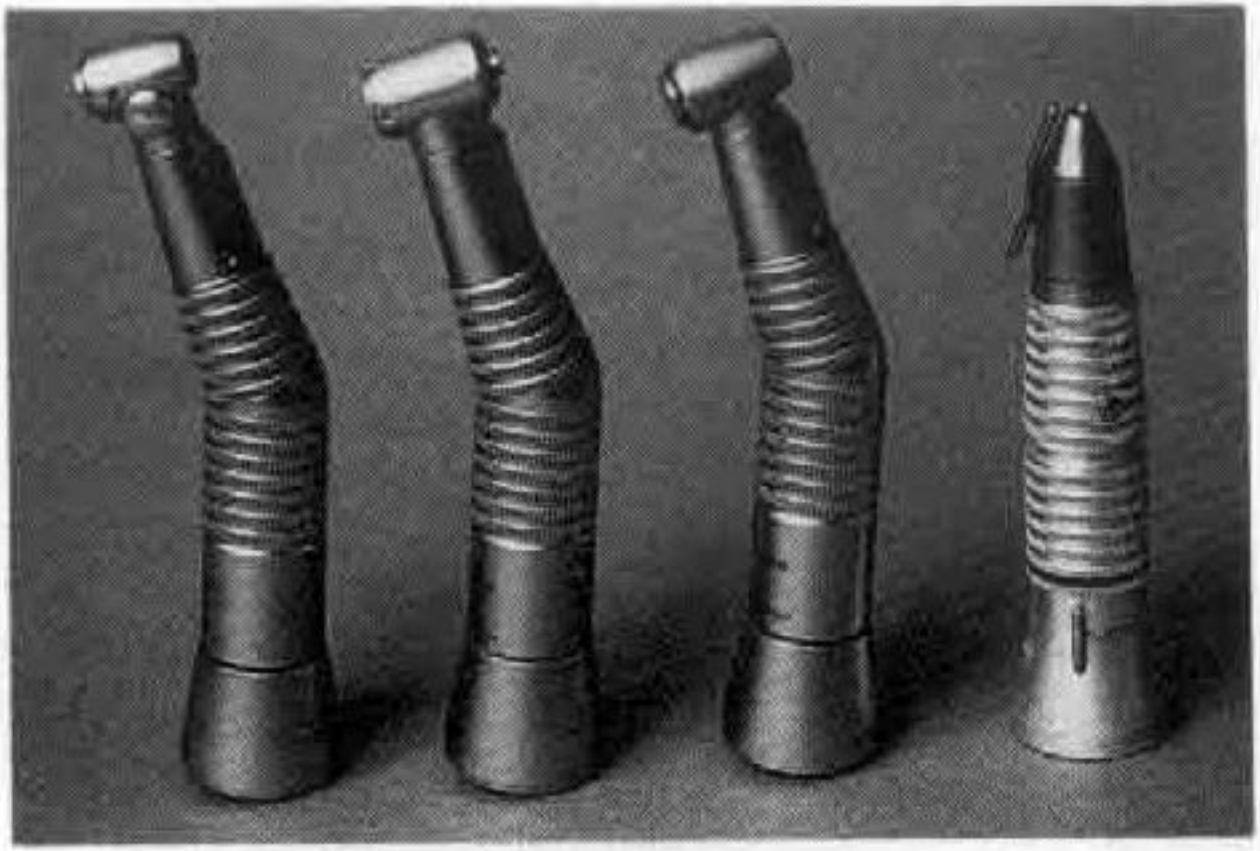


Fig. 5.12 A selection of low-speed handpieces. From the left.

- 1:1 Ratio contra angle handpiece used for most procedures.
  - Latch grip burs are used.
  - Commonly identified with the ***blue color*** on the shank of the handpiece and a ***blue dot*** on the head.
  - Speed range 4000-40000 rpm
- 1:4 Speed increasing handpiece.
  - Commonly identified with the ***red band***.
  - Speed 16000-160000 rpm

- 7:1 Ratio speed reducing handpiece used for drilling pin holes and other procedures where slow speed is indicated.Commonly identified with the ***green band.***Speed range 550-5500 rpm

LATEST DEVELOPMENT

- The latest development with regard to torque control is the incorporation of gear systems within the handpiece that regulates torque depending on the size of the rotary instrument. (Endoflash- Kavo, Anthogy Ni-Ti control- Dentsply). This obviates the need for torque control motors.


Variable Angle Position
Easy Touch Position
for On/Off Switch
360°
Endo a class
Endo a class
Quiet Motor
Comfortable feeling for patients
while endodontic operations
with an extremely quiet motor.
Variable Setting
Much easier Setting Mode
Easy Disconnect System
Much easier to exchange
Contra angle Handpieces that
have variable speed ratio.
Comfortable Grip
Much easier control and no burden on arms with its
comfortable grip while endodontics operations.
Rechargeable
Outstanding rechargeable battery type with its
long duration. It makes one and a half hour
long operation possible.

USES

- Low or slow speed → cleaning teeth, occasionally caries excavation finishing and polishing procedures.

ADVANTAGES –

- At low speeds, tactile sensation is better and there is generally less chances for over heating cut surfaces.

DISADVANTAGES

- Cutting is ineffective, more time consuming and produces vibrations of low frequency and high amplitude.
- Heat and vibrations are the main sources of patient discomfort.

HIGH SPEED HANDPIECE

Operates at speeds up to 450,000 rpM

- Tooth preparation
- Removing old restoration.
- with high speed cutting instruments removal of tooth structure is faster with less pressure, vibration and heat production.
- Patients are generally less apprehensive because annoying vibrations and operating time are decreased

Variable control to regulate the speed makes the hand piece more versatile. This allows the operator to easily obtain the optimal speed for the size and type of rotating instrument at any stage of a specific operation.

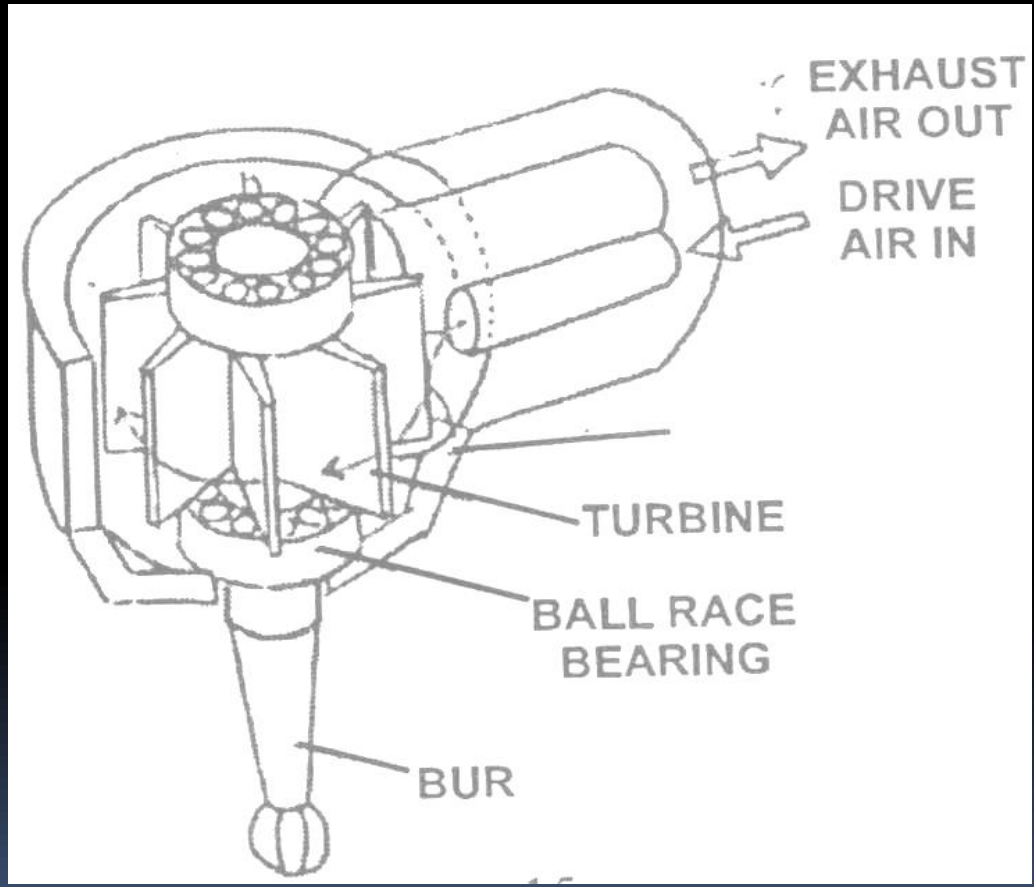
PARTS OF THE DENTAL HAND PIECE

The basic parts of a dental hand piece include the following

- ***Head*** – the head is the end of the hand piece that holds the rotary instruments,such as burs mandrels, polishing stones and alike.
- ***Shank*** – the shank is the handle portion of the hand piece
- ***Connecting end*** – The connecting end is where the hand piece attaches to the power source of the motor or unit.

MECHANISMS

- Air turbine



BASIC CRITERIA SHOULD BE USED IN EVUALTING HAND PIECES

- *Friction*
- *Torque*
- *Vibration*

FRICTION

- Will occur in the moving parts of a hand piece especially the turbine.
- If the heat from friction is not prevented or counteracted, the hand piece will be unsuitable for dental use.
- For this reason bearings are used: ball bearings, needle bearings, glass and resin bearings etc.

TORQUE

- Is the ability of hand piece to withstand lateral pressure on the revolving tool without decreasing the speed or its cutting efficiency
- Torque Depends on
  - Type of bearing used
  - Amount of energy applied to the hand piece.

VIBRATION

- As vibration is a very deleterious aspect of rotary instruments so the care to be taken not to introduce it unnecessarily.

- Excessive wear of the turbine bearings will cause eccentric running which creates substantial vibration.

FOR BETTER CUTTING EFFICIENCY THE IDEAL REQUIREMENTS ARE

- Greater rpm
- Smaller cutting tool
- Less force
- effective lubrication

PRESSURE

- Pressure is related to force and surface area
- For low speed instrument it requires 2- 5 pounds
- For high speed instrument less force 1 pound
- For ultra speed still less force 1-4 ounces is needed

HEAT PRODUCTION

Is directly proportional to

- Pressure
- RPM
- Area of the tooth

permanent damage of pulp may result when the temperature of 130 degree F

Structural changes to high speed instrumentation for cavity

- Mechanical distortion of dentin
- Exudation of fluid from the prepared surface due to the heat generated during preparation
- Marked differences in osmotic gradients
- chemotaxixs form toxic agents of dentinal surface
- build up intrapulpal pressure due to inflammation

Physiologic reactions to high speed instrumentation in cavity and crown preparation

- Increase in blood flow in cavity preparation
- Blood flow is decreased with high speed bur without water spray.
- Blood flow depends on the thickness of the dentin .
- If 1mm of dentin remained there would be 90 % reduction in the blood flow after one hour.

Micro motors

- In case of micro motors, in addition to the turbine, it is necessary to have a slower speed motor to accomplish tasks such as
  - Soft caries removal
  - Finishing and polishing etc
- Speed range – 500 – 100,000 rpm

Air-Abrasion Handpiece

- **Design**
  - Small version of a sandblaster.
  - Produces a high-pressure delivery of aluminum oxide particles by

Air-Abrasion Handpiece

- **Uses**
  - Prepares teeth for sealants.
  - Removes external stains.
  - Class I through class VI preparations.
  - Endodontic access.
  - Crown margins.
  - Prepares a tooth surface for the cementation of a cast restoration, such as a crown or veneer.

Methods for holding Rotary Instrument in hand piece

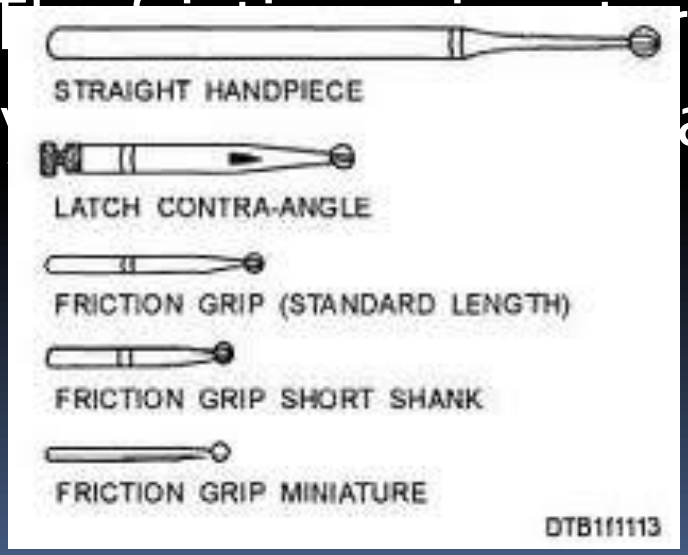
- The Rotary Instruments (Bur) may be held in place by tightening a bur-rod knob at the end of the hand piece or by using a special bur tool provided by the manufacturer. Newer hand pieces may have either a button or release lever that is used to secure and release the Rotary Instrument

- Inside the head of the hand piece is a small metal cylinder called a chuck. The chuck is designed to hold the shank portion of the Rotary Instrument in the hand piece.

- Rotary Instruments such as burs, stone and mandrels are inserted into the chuck and are held in position by either a
  - Latch type system
  - Friction-grip type

- Latch type hand piece uses a special notched shank rotary instrument. The rotary instrument is inserted into the chuck and is held in the hand piece by a movable latch

- Friction grip: T[illegible]y instruments s[illegible]air turbine hand piece.



COOLANT SPRAY SYSTEMS

- A considerable heat is generated when an air turbine is cutting teeth. This heat has to be removed rapidly from the cutting site.

- All current hand piece have provision for an air-water spray from closely positioned air and water jets to be directed onto the rotary cutting for cooling and clearance of debris.

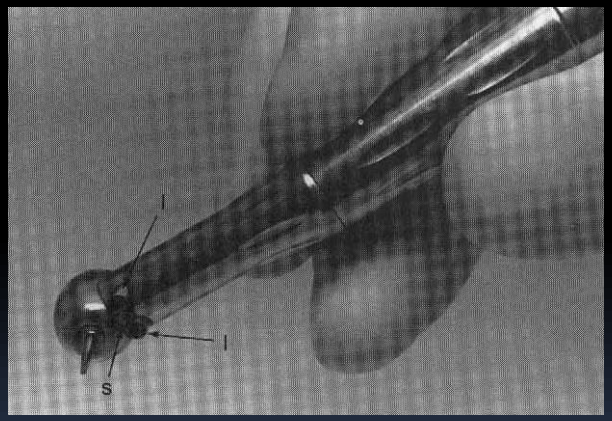
- Some hand piece have tubes carrying water and air separately or even a single water / air nozzle combination.

- Some hand piece have a single nozzle and some hand piece have multiple water – air nozzles which equally spaced around the head.

IMPROVEMENTS IN DESIGN

FIBEROPTIC SYSTEM OF HAND PIECE

- Fiber optic refers to a light system that uses special glass fibers called optical bundles to carry a source of light to the dental piece. The light source is – tungsten halogen bulb
- Fiber optic systems can be used with
  - Slow – speed hand piece
  - High – speed hand piece



- This provides an additional source of light in addition to the dental light from the unit.
- Two fiber optic system are available
  - One system carries the light (via) optical bundle to the hand piece from a remote source, such as a control box.
  - Second system, a bulb is attached to rear of the hand piece, and the light is carried through the optical bundles within the tubing of the hand piece and from the dental unit.

- **ADVANTAGE**
  - Improved visibility for operator during tooth preparation
- **DISADVANTAGES**
  - Increased hand piece mass
  - in case of hand piece loaded with the bulb → with hand piece running light source is cooled by the air flow, but if lamp is operated for long period after the air flow is stopped, then it may over heat.
  - Reduced flexibility of the hose

SAFETY PRECAUTIONS

Maximum effectiveness with minimum damage to the hand piece can be accomplished by using the following precautions

- Improper handling of hand piece, use of incorrect bur, improper maintaining of a bur and extended use of noisy cartridge must be avoided.
- Do not use a bent, damaged or non concentric burs.

- Mount the bur into chuck correctly as instructed by the manufacture
- Do not run the hand piece without a bur or bur loosely mounted
- Always securely mount a bur in the chuck, even while it is not in use.
- In screw cartridge
  - Do not tighten the chuck without a bur in it.
  - ¼ to ½ counter wise turn to a chuck is sufficient to remove a bur. Excessive turning may cause the chuck to bind into head cap.

- Ultra push type cartridge (Prevention of button heating).
  - Do not press the push button during rotation.
  - Contact with cheek tissue may cause the push button to depress and burn to patients may occur.
- Sterilize the hand piece either a stem autoclave or chemical vapour sterilizer.
- Do not dry heat.

CLEANING OF HAND PIECE

- Do not use wire brush to clean the hand piece sheath. Wipe it clean with alcohol immersed cloth or cotton swab
- Do not clean in an ultrasonic bath, boiling water nor chemicals.
- To clean the turbine cartridge - spray a lubricant into the drive air tube of the hand piece

LUBRICATION

- Adequate lubrication to the bearings is a must for extended bearing life.

- Spray a lubricant into the drive air tube of the hand piece until a good amount of it comes out of the head.
- Run for a while to drive out excess oil.
- Repeat until dirty oil does not come out of the head or Supply 2 – 3 drops of oil into the drive air tube of hand piece and run for a while.

ROTARY CUTTING INSTRUMENTS

DENTAL BURS

- The term *bur is applied to all rotary cutting instruments that have bladed cutting heads. This includes instruments* intended for such purposes as finishing Metal restorations and surgical removal of bone, as well as those primarily intended for tooth preparation

. In spite of the great variation among rotary cutting instruments, they have certain design features in common.

(1) shank,(2) neck, and (3) head

Shank

- The *shank is the part that fits into the* handpiece, accepts the rotary motion from the handpiece, provides a bearing surface to control the alignment and concentricity of the instrument.

The American Dental Association Specification No. 23 for dental excavating burs' includes five classes of instrument shanks.
Three of these, the *straight handpiece shank, the latch-type angle handpiece shank, and the friction-grip angle handpiece shank, are commonly encountered*.

Neck Design

- the *neck is the* intermediate portion of an instrument that connects the head to the shank. It corresponds to the part of a hand instrument called the shank.
- The main function of the neck is to transmit rotational and translational forces to the head.

Head

- The *head is the working part of the instrument*, the cutting edges or points that perform the desired shaping of tooth structure.

Many characteristics of the heads of rotary instruments could be used for classification. Most important among these is the division into bladed instruments and abrasive instruments.

Material of construction, head size, and head shape are additional characteristics that are useful for further subdivision

- Early burs were made of steel. *Steel burs perform well, cutting* human dentin at low speeds, but dull rapidly at higher speeds or when cutting enamel. Once dulled, the reduced cutting effectiveness creates increased heat and vibration.

Carbide burs

- *Carbide burs, which were introduced in 1947, have* largely replaced steel burs for tooth preparation. Steel burs now are used mainly for finishing procedures. Carbide burs perform better than steel burs at all speeds, and their superiority is greatest at high speeds.

Carbide is stiffer and stronger than steel, but it is also more brittle

Carbide burs

In most burs, the carbide head is attached to a steel shank and neck by welding or brazing.

Although most carbide burs have the joint located in the posterior part of the head, others are sold that have the joint located within the shank and therefore have carbide necks as well as heads.

Bur Classification Systems

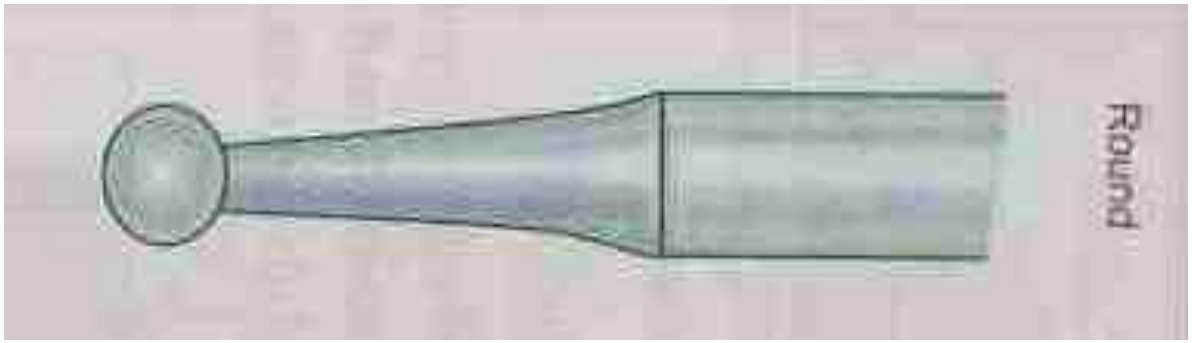
In the United States, dental burs traditionally have been described in terms of an arbitrary *numerical code for head size and shape (e.g.,* 2 = 1-mm diameter round bur; 57 = 1-mm diameter straight fissure bur; 34 = 0.8-mm diameter inverted cone bur) .2 Despite the complexity of the system, it is still in common use.

Newer classification systems such as those developed by the International Dental Federation (Federation Dentaire Internationale [FDI]) and International Standards Organization (ISO)
tend to use separate designations for shape (usually a shape name) and size (usually a number giving the head diameter in tenths of a millimeter [e.g., round 010; straight fissure plain 010; inverted cone 008]).

- Shapes. The term *bur shape refers to the contour or* silhouette of the head. The basic head shapes are round, inverted cone, pear, straight fissure, and tapered fissure

Round Bur

- These burs are numbered from ¼,1/2,1,2, to 10.
- Used for initial tooth preparation and for placement of retention grooves.

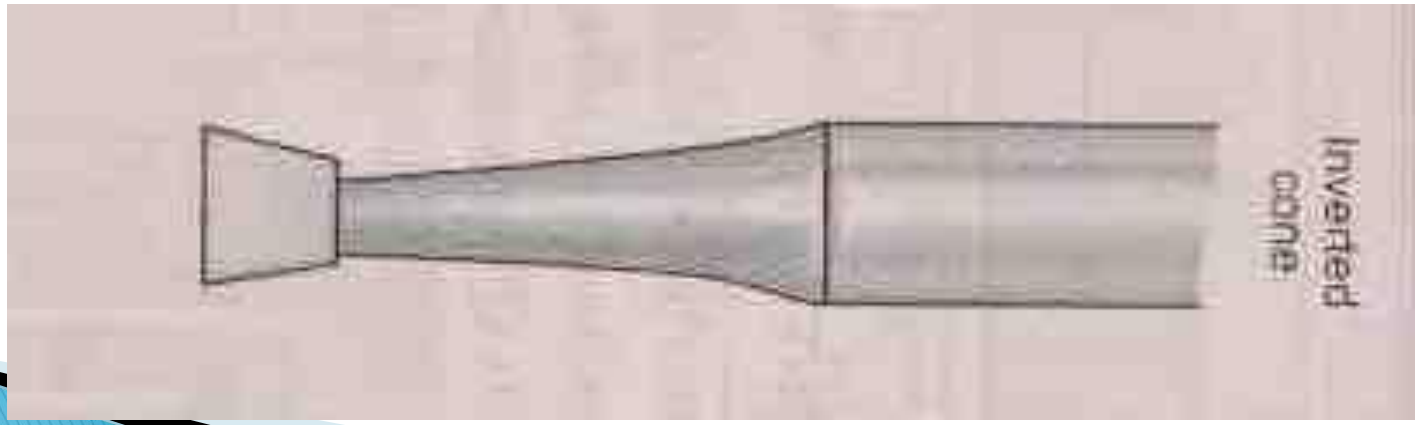


Wheel Bur

- They are numbered as 14,15.
- Used to placed grooves and for gross removal of tooth structure.

Inverted cone Bur

- 33 ¼ ,33 ½ , 34, 35 to 39.
- Used for cavity extension and occasionally for establishing wall angulations and retention forms.



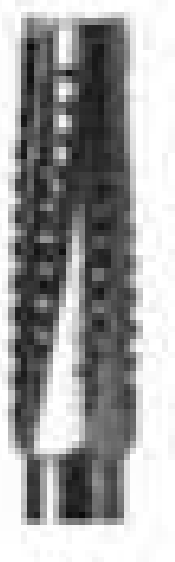
Plain Cylindrical fissure bur

- 55 to 59.

The bur teeth can be cut parallel to the long axis of the bur, which are designated straight or cut obliquely to the long axis of the bur are called cylindrical fissure bur.

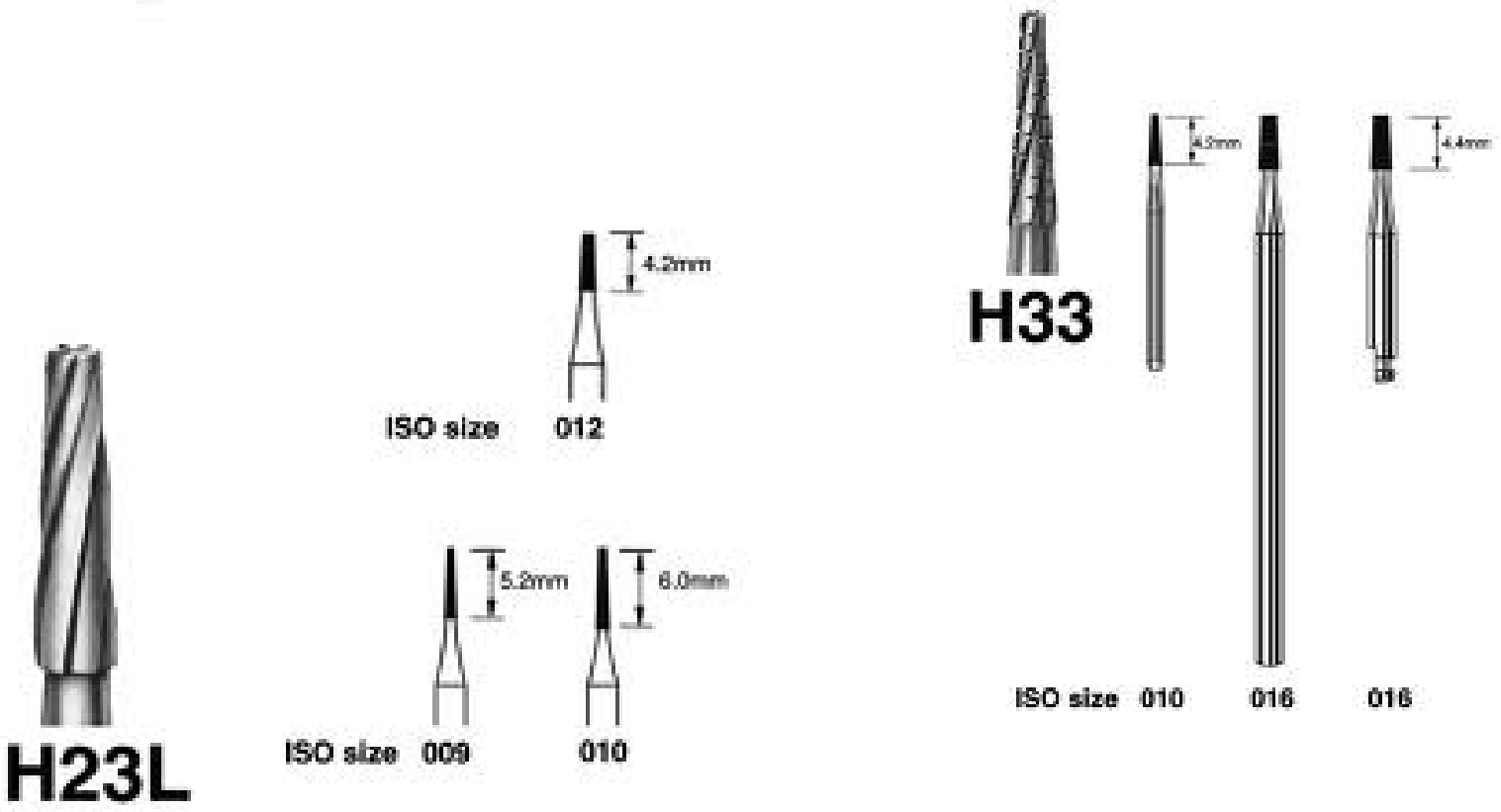
Cross cut cylindrical fissure bur

- Used for gross cutting, cavity extentions, and creation of walls.



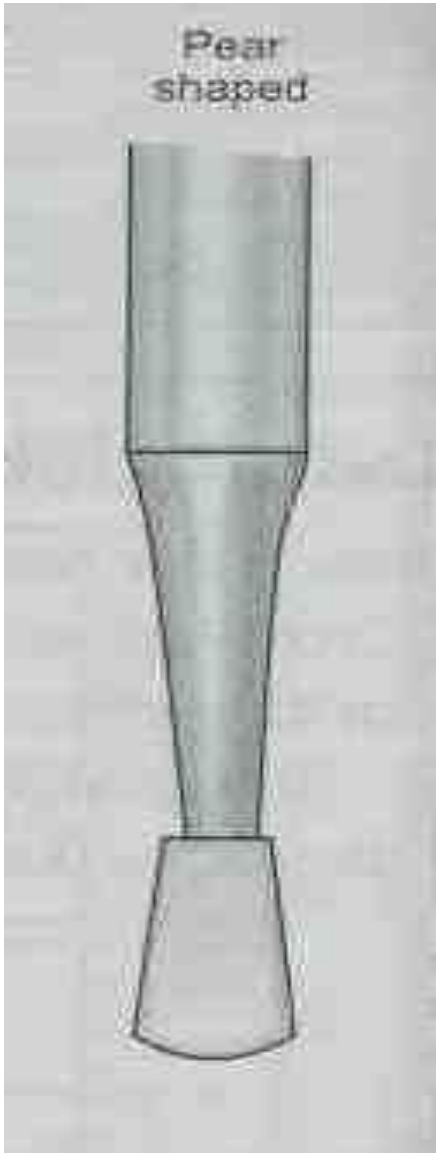
Plain tapered fissure bur

- Cross cut tapered fissure bur



Pear shaped bur

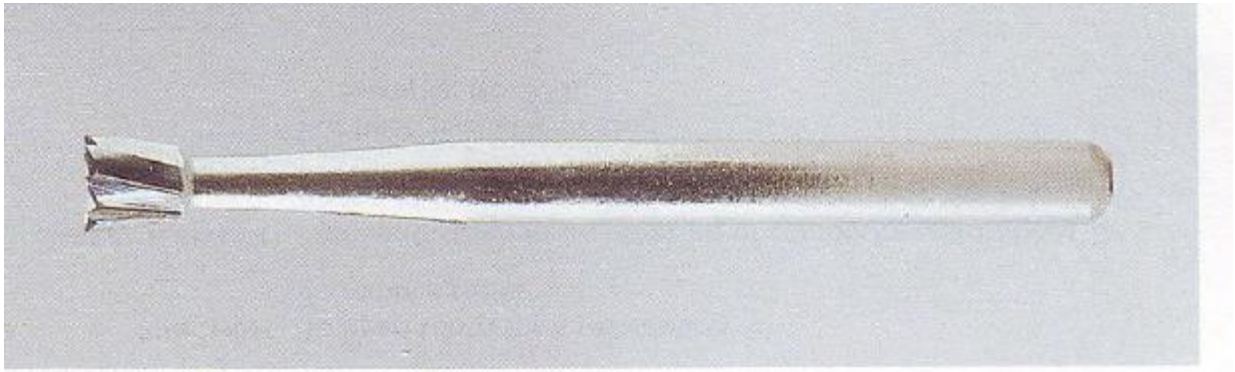
- They are used mainly in periodontics.



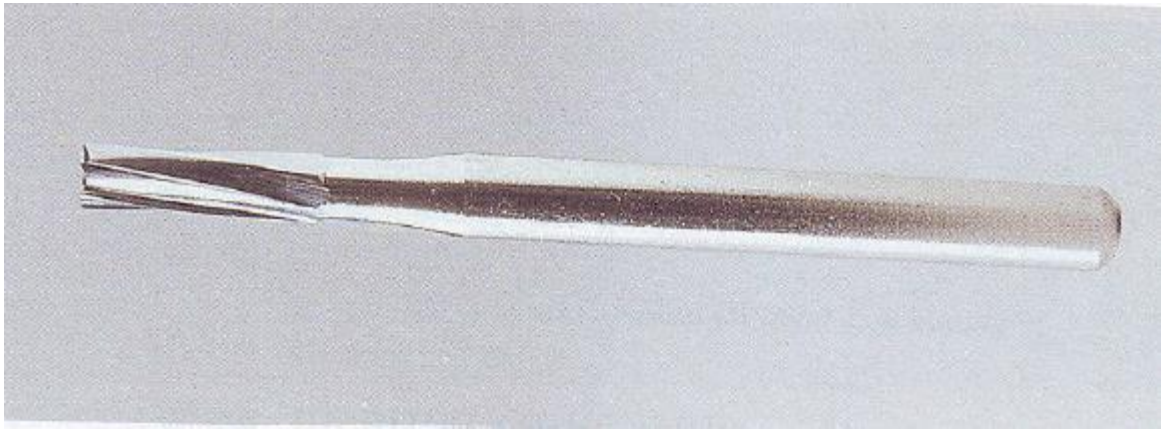
End cutting bur

- They are cylindrical in shape, with just the end carrying blades .

- <u>invert cone bur:</u>
- Function : removal of caries
- make retention in cavity preparation



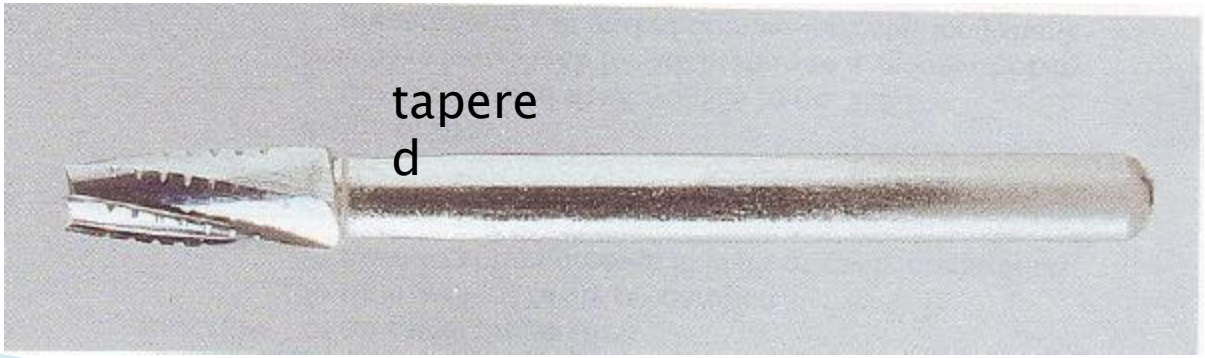
- straight fissure bur- plain cut
- Function:cut cavity preparation,retention grooves



- tapered fissure bur- plain cut
- Function:
- Cut for cavity preparation, place retention grooves in walls
- Commonly 169, 271 it may have short or long shank

- <u>tapered fissure bur cross cut</u>
- Function: cut cavity preparation, place retention grooves or locks

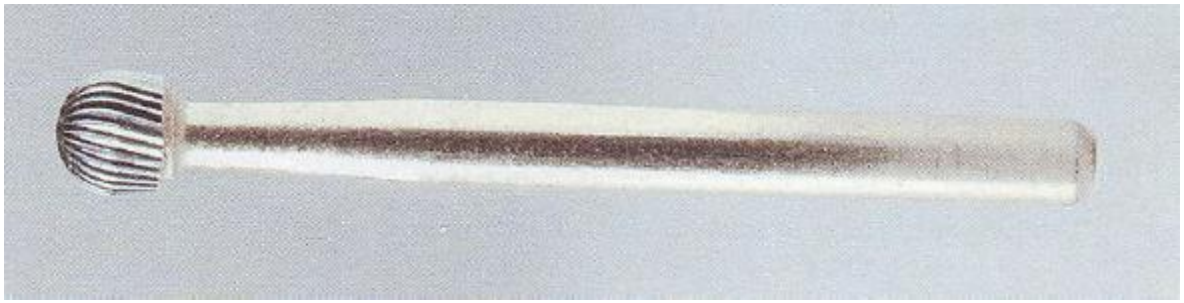
straight



tapere
d

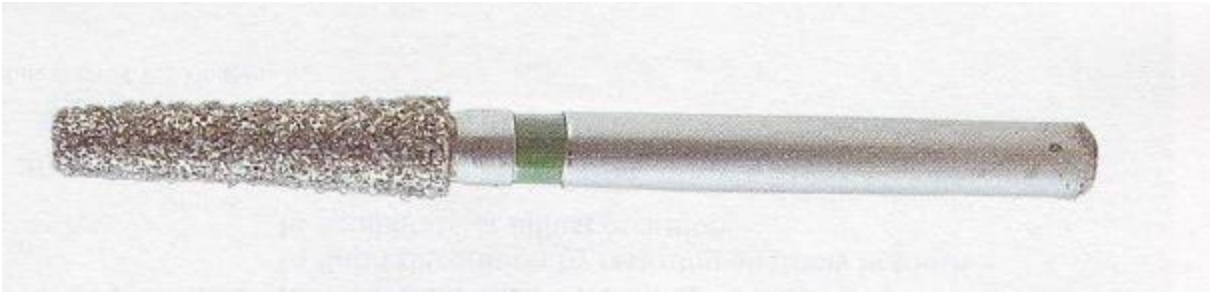
Finishing bur

- Function:
- To finish composite restorationit may be carbide
- 12 fluted carbide
- Diamond fine one with yellow strip



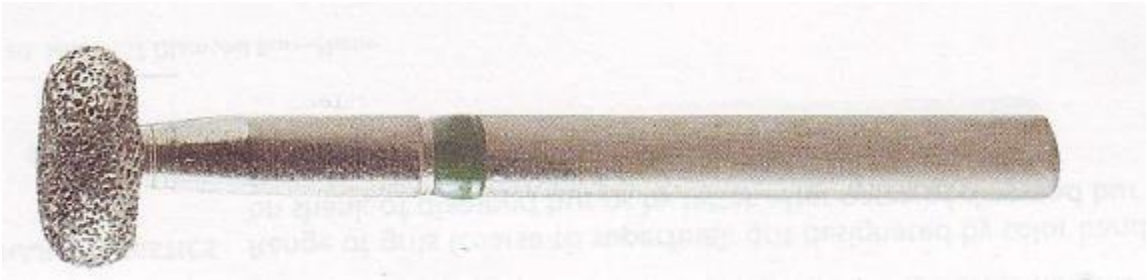
- flat end taper diamond
- Reduction of tooth for crown to make shoulder finish line
- From superfine to course grit designed by color band on the shank

- round end tapered (TR) diamond
- Function : preparation of tooth for crown to make chamfer finish line

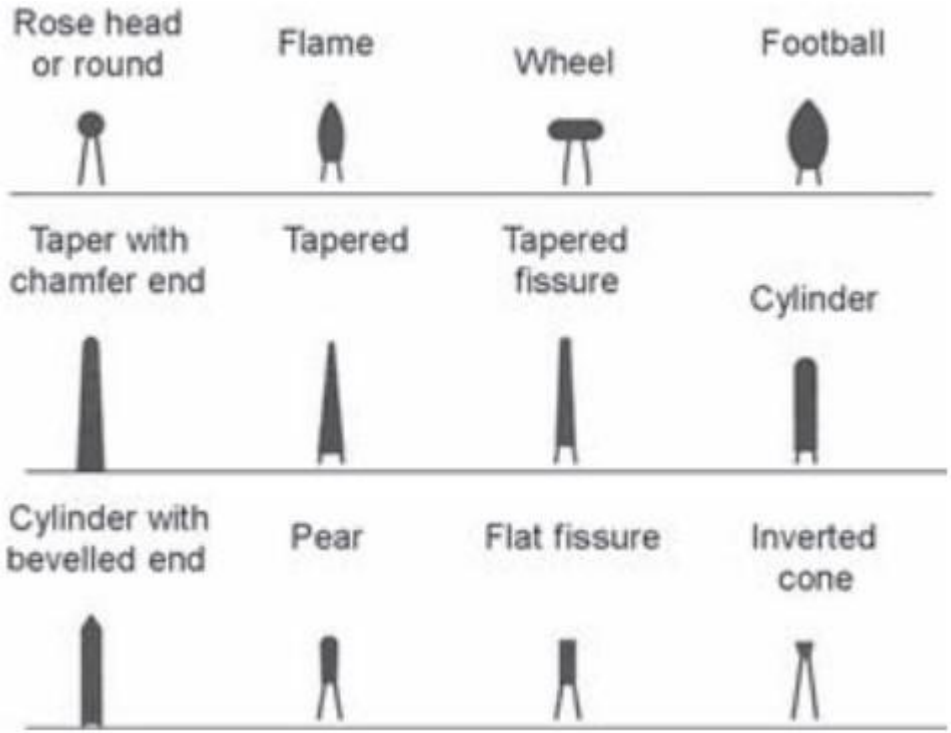


- flame diamond
- Function reduction of tooth for crown for subgingival margins
- Superfine for finishing restoration

- wheel diamond
- Function:
- Reduction of tooth for crown on lingual surface and incisal edge

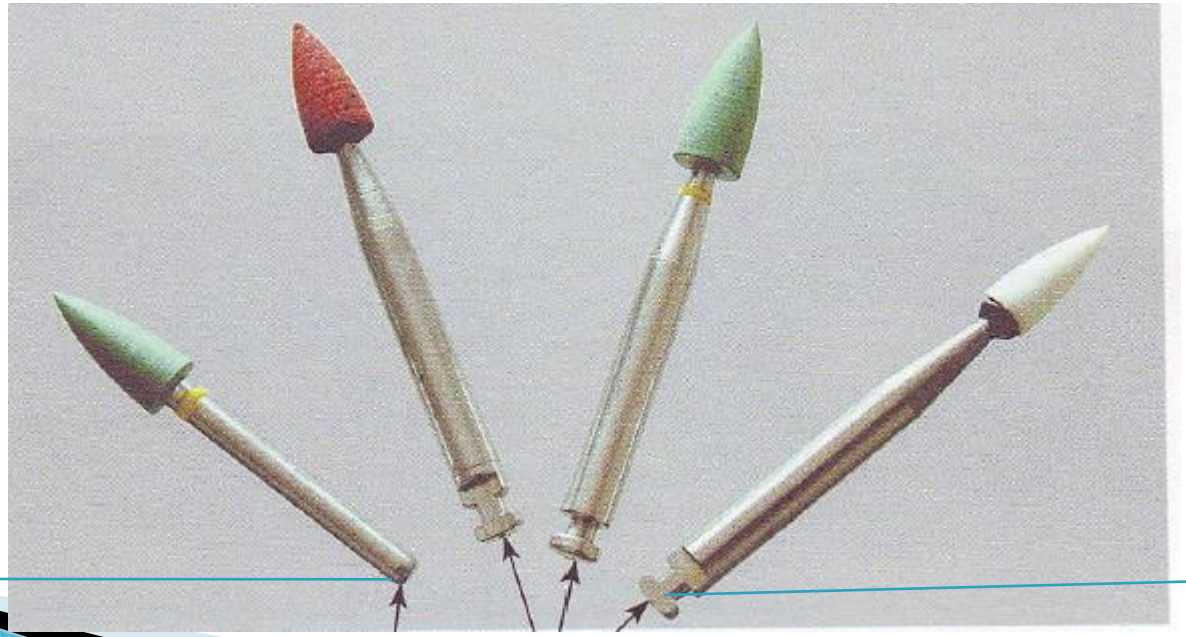


The names of most common shaped of bur either carbide or diamond



- **rubber point**

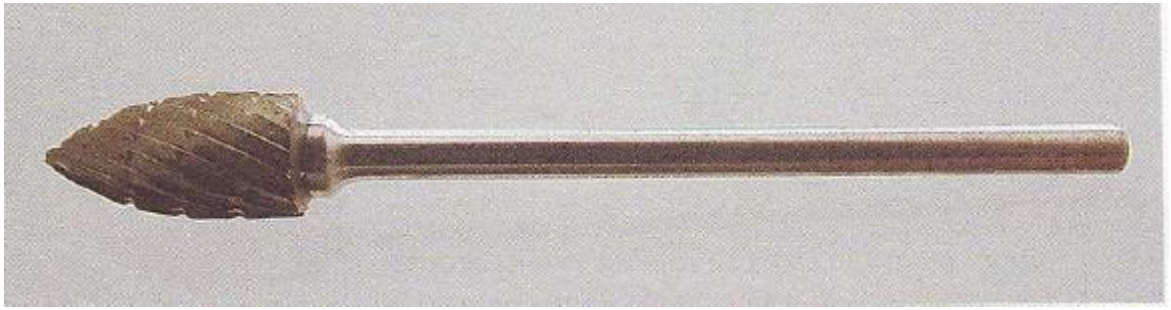
- Function:polish of restoration composite , amalgam
- Types:
- Brown points: abrasive
- Green point les abrasive
- White (point) polishing point
- It may be friction grip
- Or latch type



Friction grip

Latch type

- lab acrylic bur
- Function:
- Cut models or trim acrylic in lab
- Attached for straight hand piece



Hand instruments

- Reference book
- Dental instruments pocket guide by linda R bartolomucci
- Art and science 5th edition

1- diagnostic instrument

- A- mirror
- Function
- : provide indirect vision
- Retraction for lips , cheeks, and tongue
- Reflection og light into mouth

- B- explorer (probe)
- Function :
- Examine tooth for caries , calculus,and furcation involvement

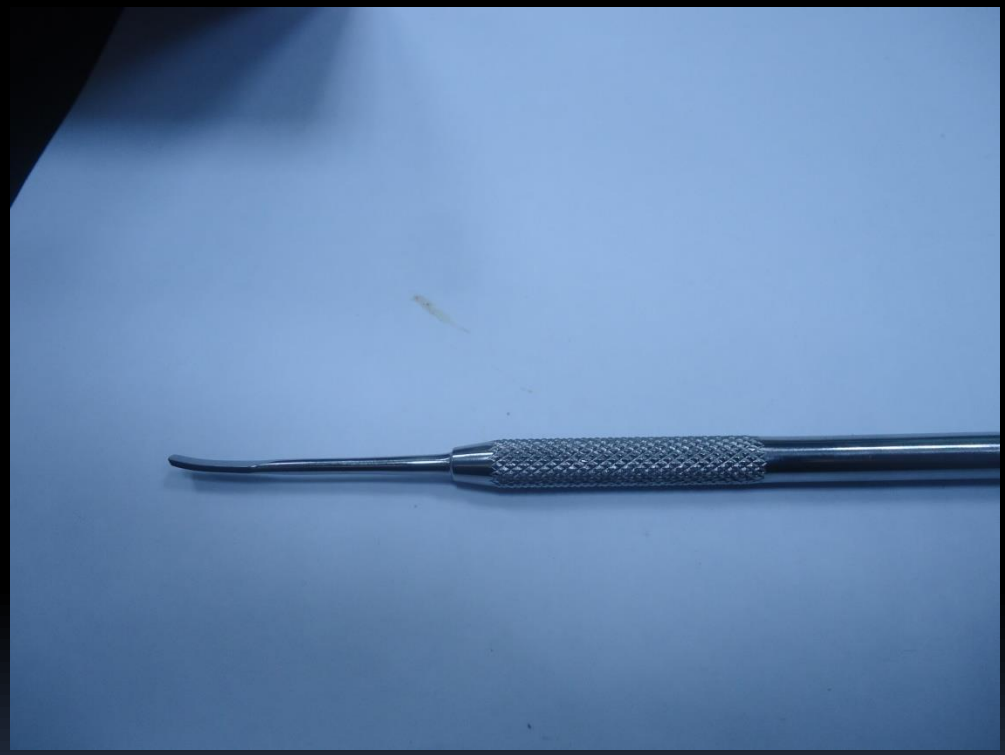
- C-forceps (plier(or tweezer)
- Function:
- Hold and transfer materials from and into oral cavity

2- enamel cutting instrument

A- enamel hatchet:
Function
Removal of undermined enamel
Shaping to external walls

- B-enamel hoe:
- Function:
- Remove undermined enamel from walls in ca preparatyion

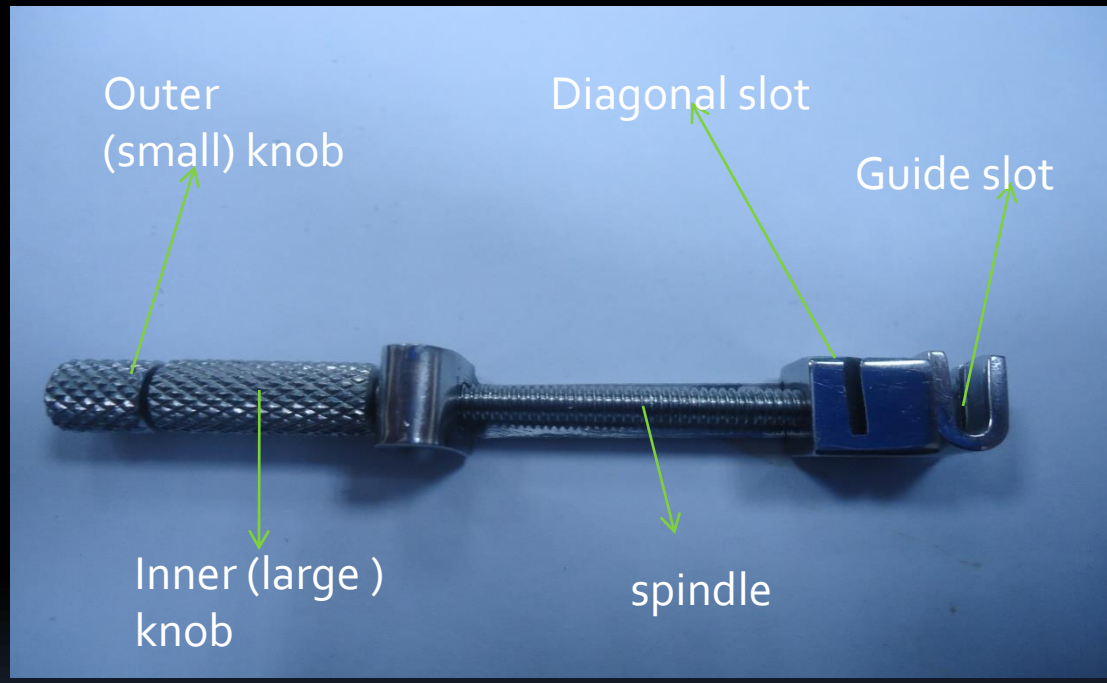
- C- wedelstaedat chisel
- Function :
- Removal of undemined enamel



- D- gingival marginal trimmer-mesial and distal
- Function:
- Bevel for cervical margins mesial and distal
- Bevel to axiopulpal line angle

- E- spoon excavator:
- Function:
- Removal of soft caries, temporary crown,temporary cement, permenant crown
- Claw like called (spoon)

- 8- tofflemire matrix
- Function:
- Maintain stability of matrix during restoration of class 2



Parts:
Guide slot for right and left
Diagonal slot:towords gingiva sliding up and downon the spindle
Spindle : hold matrix in place
Inner knob adjust size of the band to fit around tooth
Outer knob:at the end of the spindle to tighten or loose the matrix

- 9- matrix band:
- Function replace missing proximal wall to restore clas
  2

CEMENT SPATULA

- FUNCTION :
  CEMENTATION OF BASE
  ON GLASS SLAB

Composite restorative material

- 1- plastic filling instrument
- Function:
- Carry composite material into cavity
- Place , condense and carve composite

- 2- applicator
- Function:apply conditioner , primer or bonding system


thank
you