

Chapter

1

Exam and Basic Hand Instruments

INTRODUCTION TO DENTAL HAND INSTRUMENTS

Dental hand instruments are made of metal alloy or plastic resin. They are named according to their use or shape or named for the designer of the instrument.

Hand instruments may be single- or double-ended. Advantages of double-ended: two sizes of the same design in one instrument, two different working ends in one instrument, or two directions of use in one instrument (right/left).

There are three parts of a hand instrument:

- 1.** Working end. The design determines the function and may be a beveled cutting edge (chisel), a point (explorer), a nib (amalgam condenser), a blade (composite instrument) or beaks (pliers).
- 2.** Shank. Portion of the instrument that connects the handle and the working end. The shank may be straight or angled to provide better access to different areas of the mouth.
- 3.** Handle or shaft. Rounded or hexagonal in different diameters and materials for better fit and grip.



MIRROR, MOUTH

FUNCTION: To view tissues of the oral cavity and reflect light for better visibility

FEATURES: Front surface or plane reflective surface. Front surface mirrors reflect from the front of the glass providing a distortion-free reflection.

Mirror sizes #2–#5 (3/4"–15/16")

Magnifying and double-sided also available

Reusable handles in cone socket or simple stem design

TRAY SET-UP: Exam and Basic Set-up, component of most procedural tray set-ups

CLINICAL APPLICATION: Also used to retract and protect tongue and cheek



Image/photo courtesy of Miltex, www.miltex.com

EXPLORER

FUNCTION: To examine tooth surfaces for caries, calculus, or defects using sense of touch (tactile)

FEATURES: Thin, sharp working end comes in different designs
Common styles are the #1, 2 (pigtail), 11/12, 17, and 23 (Shepard's hook)
May be single- or double-ended (different design on each side)

TRAY SET-UP: Exam and Basic Set-up, component of most procedural tray set-ups

CLINICAL APPLICATION: Also used to:
Check fit of margins of restorations
Evaluate root surfaces and furcation area in periodontal exam (11/12)
Remove excess material from restoration or preparation
Remove excess cement

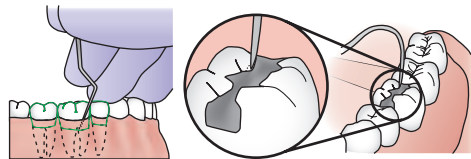


Image modified from University of Kentucky
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COTTON PLIERS

FUNCTION: To place and remove small objects from the oral cavity (i.e., cotton pellets, root canal instruments, wedges)

FEATURES: Serrated or nonserrated beaks, locking or nonlocking handles
Also known as College pliers or dressing pliers

TRAY SET-UP: Exam and Basic Set-up, component of most procedural tray set-ups

CLINICAL APPLICATION: Also used to retrieve materials from drawers and containers to avoid cross-contamination



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

PERIODONTAL PROBE

FUNCTION: To measure depth of gingival sulcus

FEATURES: Blunt or rounded tip
Flat or cylindrical working end
Line or colored millimeter markings in variety of increments
Metal or plastic in white or yellow with colored markings

TRAY SET-UP: Periodontal exam

May be part of Basic Set-up in some offices

CLINICAL APPLICATION: Also used to measure gingival recession

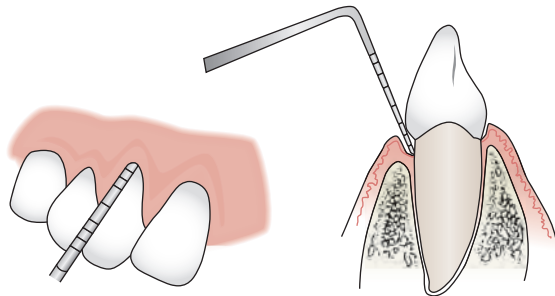


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SALIVA EJECTOR TIP

FUNCTION: To remove saliva and maintain dry field using low-volume evacuation

FEATURES: Disposable plastic
Some designed with attached tongue deflector

TRAY SET-UP: Exam and Basic Set-up, component of most procedural tray set-ups. Used primarily when operator is working alone (sealants, coronal polishing, fluoride treatments, taking impressions, cementing crowns)



ORAL EVACUATOR TIP

FUNCTION: To maintain a dry working field by removing saliva, blood, and debris with high-volume evacuation

FEATURES: Disposable plastic, sterilizable metal or plastic
Straight or angled with beveled ends
Surgical Aspirator (see Chapter 11 ORAL AND MAXILLOFACIAL SURGERY INSTRUMENTS)
Also known as Aspirator, High Volume Evacuator, Suction, or Vacuum tip

TRAY SET-UP: Exam and Basic Set-up, component of most procedural tray set-ups

CLINICAL APPLICATION: Effective use of oral evacuator reduces microbial aerosols. Also assists in retracting and protecting tongue and cheek. On/off control is located on the suction tubing.



Image courtesy of Miltex, www.miltex.com

ISOLITE, i2 PER MANUFACTURER DRYFIELD

FUNCTION: To provide internal illumination, aspiration, throat protection, and tongue and cheek retraction all in one device

FEATURES: Available in five sizes: pediatric, adult small, adult medium, adult medium deep vestibule, and adult large

Disposable mouthpiece; autoclavable control



Image courtesy of Isolite Systems, www.isolitesystems.com

ANESTHETIC SYRINGE

FUNCTION: To deliver local anesthesia to intraoral site

FEATURES: Aspirating and Non-aspirating

TRAY SET-UP: Restorative, Fixed Prosthodontic, Endodontic, Periodontic, Oral and Maxillofacial Surgery Treatment Procedures

CLINICAL APPLICATION: An aspirating syringe has a harpoon on the end of the piston, the nonaspirating syringe does not. With pressure, the harpoon imbeds in the rubber stopper of the anesthetic cartridge. As the dentist begins the injection, he/she draws back on the thumb ring, pulling the harpoon and the rubber stopper back and creating a vacuum. This will draw in (aspirate) fluid from the farthest end of the needle. If blood comes back into the cartridge, the dentist will reposition the needle to prevent injecting anesthetic agent into a blood vessel.



Image courtesy of Miltex, www.miltex.com

INTRALIGAMENT SYRINGE

FUNCTION: Alternative method of delivering local anesthesia; generally to supplement a nerve block. Injection is made in the periodontal ligament space.

FEATURES: Delivers calibrated amount of anesthetic with each click of the lever

CLINICAL APPLICATION: Uses 30-gauge short needles and standard 1.8-ml anesthetic cartridges

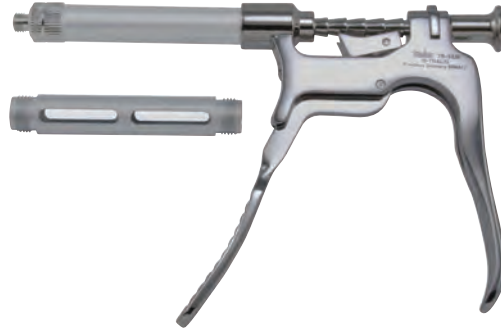


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LOCAL ANESTHESIA ACCESSORIES

1. Anesthetic needles:

Two lengths—1" (short) and 1 5/8" (long)

Three gauges (diameter)—25 gauge, 27 gauge, and 30 gauge

Some manufacturers identify gauge by color-coding caps

Available with plastic or metal hubs

2. Anesthetic cartridges:

Glass vial containing anesthetic solution such as lidocaine (Xylocaine), mepivacaine (Carbocaine), prilocaine (Citanest), and bupivacaine (Marcaine).

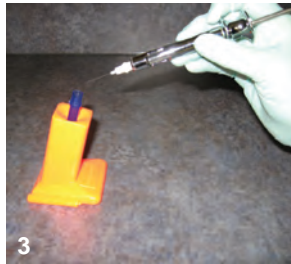
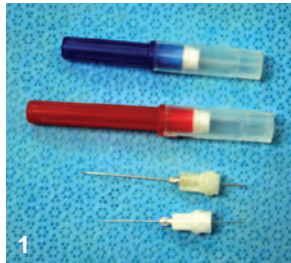
Aluminum cap with rubber diaphragm that needle penetrates at one end of cartridge.

Rubber stopper at the other end.

Cartridges are sterile and sealed in "blister packs."

Color coded and labeled with type of anesthetic solution and amount of vasoconstrictor.

3. Recapper: Needles may be used more than one time during a procedure and must be recapped to avoid accidental exposure. For safety, this must be done by using a recapper or the one-handed scoop technique.
4. Sharps container: Needles and other disposable sharps must be disposed of in a labeled, puncture-proof container.



(4) Image courtesy of Crosstex, www.crosstex.com



One-handed scoop technique

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TRAY SET-UPS

- Assembling all instruments and materials needed for a procedure
- Instruments for a given procedure are sterilized together in a bag or a wrap. Instruments remain in the sterile wrap until the time of use.
- Instruments are arranged on the tray from left to right in their order of use



1. Place Mirror in mouth.
2. Push off protrusion with firm, uniform force.
3. Hold long, steady, long, steady (protrusion should protrude about 10mm from the upper incisors).

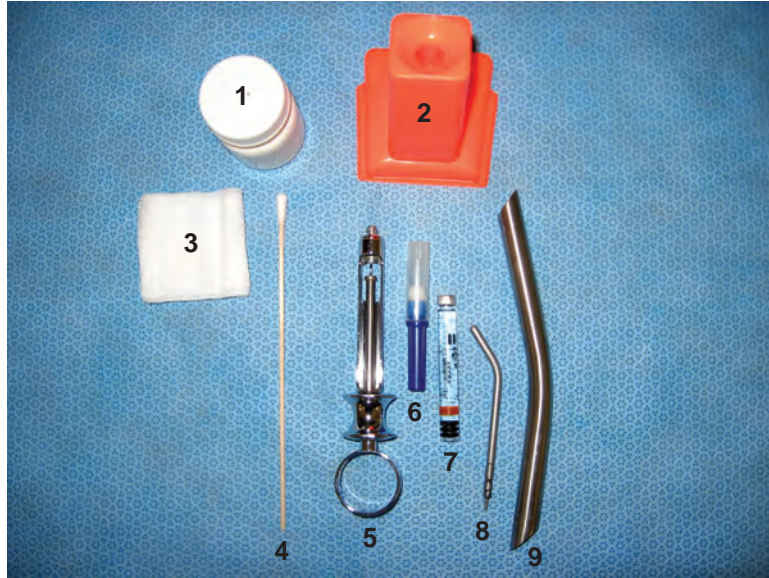
ORAL EXAM AND BASIC SET-UP

1. Mouth mirror
2. Explorer
3. Periodontal probe
4. Cotton pliers
5. Air/water syringe tip
6. Oral evacuator tip
7. Saliva ejector tip
8. 2×2 gauze



LOCAL ANESTHESIA SET-UP

1. Topical anesthetic
2. Needle recapper
3. 2×2 gauze
4. Cotton applicator
5. Anesthetic syringe
6. Anesthetic needle
7. Anesthetic cartridge
8. Air/water syringe tip
9. Oral evacuator tip



End Chapter 1