FOUR-HANDED DENTISTRY

Terminal Learning Objective

Identify the basic principles of four-handed dentistry with 70% accuracy.

Enabling Learning Objectives

a. Identify the principles of four-handed dentistry with 70% accuracy.

b. Identify principles of the operating zone with 70% accuracy.

c. Identify the principles of positioning of the assistant and dental light with 70% accuracy.

d. Identify the principles of instrument exchange with 70% accuracy.

e. Identify the principles of oral evacuation with 70% accuracy.

INTRODUCTION

Have you ever been doing a job and wished for a second pair of hands to help you get the job done more quickly and efficiently? With our hands, as well as the hands of the dentist, we can treat more patients in a short amount of time with less strain to both the dentist and the specialist. The purpose of this lesson is to provide basic information in using four-handed dentistry.
PRINCIPLES OF FOUR-HANDED DENTISTRY

Four-handed dentistry is a chairside technique that involves four hands working together to provide treatment to the oral cavity. There are several benefits of four-handed dentistry. It increases patient comfort, reduces operator and assistant fatigue, and increases productivity.

Work simplification is the process of finding an easier way to do any task. It is learning to work smarter, not harder. The four basic processes that the dental team can follow to make dentistry easier are rearrangement, elimination, combination, and standardization.

- **Rearrangement** is placing equipment, instruments, and materials essential to performing procedures within easy reach and positioning items to minimize movements during procedures.

- **Elimination** is the process of eliminating things that you are not going to use. Instrument setups should be for the usual patient's needs and not for the unusual or occasional needed instruments. Items that are seldom used or not used at all can be eliminated from the DTR.

- **Combination** is using one step to serve multiple functions. Use instruments for more than one purpose or use double-ended instruments.

- **Standardization** is a streamlining process to promote predictable routines in the work pattern. It is standardization the procedure to make the dentist's actions predictable.
OPERATING ZONES

The **operator zone** is where the dentist is seated. Patients enter and leave through this zone.

The **assistant zone** is where the assistant is seated. Instruments and materials need to be easily accessible to this zone. Nothing in this area should interfere with the assistant's access to needed items.

The **transfer zone** is the area where instruments and materials are exchanged. It is an excellent area for the dental unit so that it is within easy reach of the dentist and the specialist.

The **static zone** is reserved for large equipment, such as a mobile dental unit; dental cart; and nitrous oxide machine. Anesthetic syringes can be passed in this zone to keep from scaring the patient with the syringe.

For a left-handed dentist the assistant and operator zones will be reversed. The specialist will pass instruments with the right hand instead of the left.

POSITIONING THE ASSISTANT AND DENTAL LIGHT

The dental assistant is seated in a relaxed position 4 to 5 inches higher than the dentist. The mobile cabinet top can be placed over the assistant's lap, putting the instruments and materials within comfortable reach.

The dental light should be positioned 3 feet from the patient's face. When the dentist and assistant are properly seated, they should not block the path of the light into the oral cavity.

INSTRUMENT EXCHANGE

During instrument transfer, the dentist should not have to look up from the patient's mouth to receive instruments. The
The assistant should use his left hand to pass the instrument to the dentist's right hand, unless the dentist is left-handed.

The most common instrument transfer methods are as follows:

- **Hidden Syringe Transfer**
  - Keep the syringe out of the patient's view during preparation and delivery.
  - The assistant loosens the needle cap but does not remove it (avoid pulling off the cap).
  - The delivery of the syringe will take place over the chest below the patient’s line of vision.
  - The assistant guides the thumb ring over the dentist's thumb, places the syringe in their hand, and removes the cap.
  - The assistant receives the syringe with one hand. The needle is recapped using an acceptable method.

- **One-handed Transfer (Pickup and Delivery)**
  - The assistant's hand is divided into two
parts. The thumb and first two fingers form the delivery part of the hand. The last fingers form the pickup part of the hand.

- - Hold the instrument being delivered between the tips of the thumb and the first two fingers.

- - The instruments must be held close to the opposite end that the dentist will use.

- - The working end of the instruments should be directed downward for mandibular areas and upwards for maxillary areas.

- - When the dentist signals for exchange:

* Position the instrument parallel to the handle of the instrument in use.

* Extend the pickup fingers and grasp the instrument in the dentist's hand, opposite the working end.

* The assistant lifts the unwanted instrument from the dentist's hand and tucks it in the palm.

* Deliver the new instrument by simply lowering it into the dentist's hand.

- Cotton Forceps Transfer

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- - Forceps are delivered so that the dentist can grasp and hold the beaks together before the assistant releases them.

- - Pickup of the forceps is done by taking the working end of the instrument, avoiding dropping the item in the beaks.

- **Mirror and Explorer Transfer**

  - - The dentist will do an exam of the area being worked on.

  - - The assistant can deliver both of these at the same time.

- **Handpiece Transfer**

  - - Handpieces can be exchanged for other instruments using the one-handed method.

  - - Caution should be exercised with the hoses to avoid tangling them during exchange.

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Materials should be delivered in the following manner:

- **With the left hand,** the assistant delivers the instrument used for placing the material.

- **Bulk material** is held in the right hand close to the transfer zone.

- **The assistant may hold** 2 x 2 gauze in the left hand to wipe off excess material.

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Some of the common problems with instrument transfer include the following:

- **Crowding.**
  - Having the instrument too close to the dentist's hand while another instrument is being used.
  - The assistant should hold the instrument at a distance of 8 to 10 inches from the dentist's hand.

- **Shorting.**
  - The delivery of an instrument to the dentist's hand that is too close to the working end.
  - The assistant does not hold the instrument far enough away from the working end.

- **Disorientation.**
  - The dentist shifting an instrument in the hand after it has been delivered.
  - The working end is not pointing upward for maxillary areas or downward for mandibular areas.
ORAL EVACUATION

The primary of goals of oral evacuation are as follows:

- To remove fluids, saliva, and materials from the patient's mouth.
- To allow the dentist to work in a clear operative field.
- To provide comfort to the patient.

The washed field technique for oral evacuation involves preparation of the tooth under a fine air-water spray from the handpiece. High-volume evacuation is used to remove debris and excess water from the patient's mouth.

The advantages of oral evacuation include the following.

- It allows for rapid removal of oral fluids, water, and debris from the patient's mouth.
- The suction tip may be used to retract the patient's tongue or cheek.
- It allows the dentist greater visibility with the proper placement of the tip.
- It reduces chair time because the patient may remain in the supine position (no need to sit the patient up for rinsing).

The disadvantages of the oral evacuation include the following:

- The suction may be noisy when it is on.
- If the tip is placed close to the tissues, it may accidentally grab them and cause damage.
- It may trigger a gag reflex if the tip touches the soft palate.
Improper placement of the tip may interfere with the dentist's access and visibility.

There are two methods for holding the oral evacuation tip.

- The **thumb to nose method** is used for posterior teeth. It is very effective in controlling the tip when retracting the patient's cheek and tongue.

- The **modified pen grasp method** is used for anterior teeth. It is usually retracted by the dentist. It is most effective when a surgical suction tip is used.

When retracting, use a firm grip on the suction tip.

The basic rules for tip placement are as follows:

- Place the tip as close to the tooth as possible.

- Place the edge of the suction tip even with or slightly above the occlusal or incisal edge of the tooth.

- Place the tip near the tooth surface closest to the assistant.

- When the handpiece is used, place the tip slightly distal to the surface being treated.

The saliva ejector makes it possible to keep the teeth dry during treatment. A saliva ejector is used during an oral prophylaxis, when the dentist is working alone, when a patient salivates heavily under the rubber dam, and with attachments can retract the tongue.