



CIS Self-Study Lesson Plan

Lesson No. CIS 255 (Instrument Continuing Education - ICE)

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Ear, Nose and Throat Instrumentation

LEARNING OBJECTIVES

1. Describe the basic ear, nose and throat instruments and their use
2. Identify the cleaning process for ear, nose and throat instrumentation
3. Describe the process for ear, nose and throat instrument inspection and assembly
4. Address the sterilization process for ear, nose and throat instruments

Instrument Continuing Education (ICE) lessons provide members with ongoing education in the complex and ever-changing area of surgical instrument care and handling. These lessons are designed for CIS technicians, but can be of value to any CRCST technician who works with surgical instrumentation.

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OTORHINOLARYNGOLOGY OR EAR, NOSE AND THROAT (ENT) instruments are specialized devices used in the treatment of ear, nose, throat, head and neck disorders. ENT surgery is the oldest surgical specialty in the U.S. It is also one of the most elaborate fields of surgical specialty services, using advanced technology and a broad range of procedures for major reconstructive surgery to correct deformity or injury, as well as for cosmetic purposes. ENT instruments are specialized and can be very complex. The microsurgery instruments have delicate working ends that can barely be seen by the naked eye.

OBJECTIVE 1: DESCRIBE THE BASIC EAR, NOSE AND THROAT INSTRUMENTS AND THEIR USE

ENT surgical instruments differ from general instruments in a number of ways. They must be capable of delicately manipulating structures barely visible to the naked eye. At the same time, they must have handles large enough for the surgeon to hold comfortably and securely. They must also take into account the natural tremor of the surgeon's hand. Some of the various instruments used in microsurgery include:

FORCEPS

Many ENT forceps are handheld, hinged instruments used for grasping and holding objects. There are two basic types of inner ear forceps: cup and alligator. Cup forceps have two opposing small cups at the end of the shaft, which can grasp tissue and ossicles (tiny bones) from the middle ear. Alligator forceps have two straight-flat metal projections on the distal ends, which oppose each other and can grasp tissue. If the handle is angled, the name also contains a

direction of the angle (up, down, right or left). Alligator forceps are used for manipulating and removing tissue from the ear and nasal passages, inserting aeration tubes and placing Gelfoam packing when grafting. ENT forceps used on the outer ear and nose are larger and heavier, and may feature a hand and thumb control.

PICKS

Picks are used for manipulating tissue. They feature two types of shafts: straight and angled. Picks can be sharp or dull, and of various lengths and angles. If the shaft is angled, the pick name includes a direction of the angle (up, down, right or left). If the pick is bent to the right, for example, then the pick is a right pick. Common angles are 45° and 90°.

SCISSORS

Scissors can be large for cutting the ear canal skin, nasal cartridge or oral pharynx for a tonsillectomy, or they may be small to cut middle ear structures. There are two different types of handle actions; the most common has the



Figure 1: Hartman Hertzfeld Forceps



Figure 1a: Jansen Forceps



Figure 1b: Wilde Forceps



Figure 2: Middle Ear Pick



Figure 3: Dean Oral Surgery Scissors



Figure 4: Woodson Elevator

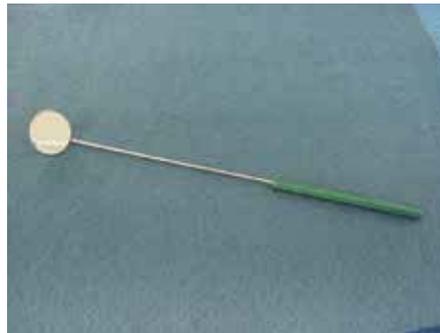


Figure 5: Laryngeal Mirror



Figure 6: Tessier Osteotome Chisel



Figure 7:
Tyding Tonsil
Snare with
Snare Wire



upper finger ring of the handle held in a stationary position to steady the working head of the scissors. The second type is a reverse action, where the lower finger ring is held steady. This is a very delicate instrument that allows the surgeon to stabilize his or her hand while holding the instrument.

ELEVATORS

Elevators specifically designed for the ear are used to elevate the annular ligament (ear canal bone by a small ligament). These instruments can be single ended or double ended. There are two types of ear elevators: straight and bayonet (annulus or gimmick). The bayonet style keeps the instrument from impeding the surgeon's line of sight during use.

LARYNGEAL MIRROR

A laryngeal mirror is used to visualize the base of the tongue and pharyngeal and laryngeal areas from the back of the throat. The handle is rounded and mirrors are available in different diameters. To prevent the mirror from fogging, mirrors are dipped into an anti-fog solution or warm water.

CHISELS AND OSTEOTOMES

Both chisels and osteotomes are used to cut or shave bone, and their handles may be round or flat. These non-hinged, solid stainless instruments have flat cutting edges.

TONSIL SNARE

Tonsil snares are used to remove the tonsil at the end of the procedure to minimize bleeding. The snare wire is placed around the base of each tonsil, the handle is squeezed and the wire is withdrawn into the cannula, severing the tonsil tissue through a guillotine action. This instrument has a handle grip that attaches to a metal cannula and an inner sliding rod. The inner rod has two

small holes at the tip in which the snare wires are placed. *Note: Snare wires should not be placed on the instrument before sterilization.*

OBJECTIVE 2: IDENTIFY THE CLEANING PROCESS FOR EAR, NOSE AND THROAT INSTRUMENTATION

As with all instrumentation, it is important to follow the manufacturer's instructions for use (IFU) for each instrument. This section will outline the basic cleaning process.

Multi-part ENT instruments require disassembly. Hinged instruments must be open, thus minimizing obscured surface areas. Narrow-lumened instruments, such as flexible tubes and cannulas, and instruments with cavities, are difficult to clean. It is important to ensure that the internal surfaces are thoroughly and completely in contact with the solution.

All instruments must be inspected for damage and corrosion. The instruments should undergo a prerinse under cold water for a minimum of 30 seconds, exposing all surfaces and cavities. The instruments should then be completely immersed in a fresh cleaning solution with a neutral pH. As always, the cleaning solution should be prepared exactly as defined in the detergent's IFU. A soft cleaning brush, such as one made of nylon should be used to gently scrub the instrument under the water level, and cleaning should continue until all visible debris is removed from the instrument.

Instrument technicians must pay attention to the soak time to prevent the instrumentation from soaking too long. If instrumentation is soaked too long, which could cause corrosion. Corrosion can also occur because of incorrect chemical concentration levels. Cleaning/disinfecting solutions should be carefully mixed and IFU should be diligently followed to ensure proper concentrations.

After soaking and cleaning, the instrument may be placed in the ultrasonic bath, unless contraindicated by the manufacturer's IFU.

At this point, instruments can now be processed in a washer-disinfector, if recommended by the manufacturer in the IFU. Instrument technicians should use caution when using a washer-disinfector as many micro ENT instruments cannot withstand the equipment's mechanical cleaning action. *Note: Delicate instruments should not be processed through a washer-disinfector unless recommended by the manufacturer. If a washer-disinfector is used, always follow the IFU regarding proper cycles.*

The final rinse should be performed with treated water that prevents residues from remaining on the instrument and does not contribute to staining or contamination. Residues could affect sterilization efficacy and/or cause adverse reactions in the patient whom the instrument is subsequently used on.

The next step is to lubricate the instruments according to the manufacturer's IFU.

Finally, drying should be performed with clean, low-linting cloths or instrument-grade air.

OBJECTIVE 3: DESCRIBE THE PROCESS FOR EAR, NOSE AND THROAT INSTRUMENT INSPECTION AND ASSEMBLY

Instruments must be visually checked to verify they are free from visible residues and debris. Critical areas, such as handle structures, joints or jaw serration, require especially careful inspection.

It is advisable to use working lights, such as lighted magnifying glasses with lenses of 3 to 6 diopters, when inspecting working ends. If cleanliness is in doubt, particularly in the case of instruments with hollow areas, chemical tests for protein and blood should be performed.



All instruments with lumens, such as cannulas, must be checked for free passage. Clogged/obstructed instruments must be reprocessed. If they cannot be cleared of the obstruction, they must be replaced. Instruments with hairline cracks in the joint areas, as well those that are damaged, distorted or otherwise worn, must also be replaced.

Proper instrument functioning must be assured by testing; such tests should be performed on each fully assembled instrument. The instrument may need to be taken apart for sterilization after testing. The instrument may be sterilized either assembled or disassembled, but always in accordance with the IFU. All instruments should be completely dry for sterilization, unless otherwise stated by the instrument manufacturer.

Following inspection, microsurgical instruments should be stored in special, dedicated racks, so that they can undergo sterilization and avoid damage during transport.

OBJECTIVE 4: ADDRESS THE STERILIZATION PROCESS FOR EAR, NOSE AND THROAT INSTRUMENTS

ENT instruments should be sterilized using the methods and conditions recommended in the specific instrument manufacturer's IFU. The instrument manufacturer may also specify packaging requirements and sterilization methods, including the type of cycle, sterilization temperature, exposure time and drying time required for a particular instrument's configuration. If the instruments are sterilized in a containment device, such as protective organizing baskets, trays or cases, the IFU must be consulted to ensure the containment device is compatible with the sterilization method of the instrument.

Instrumentation should be prepared so the sterilant contacts all surfaces and provides protection for the instrument.

Once these steps are effectively completed, instrument preparation/assembly can be performed.

CONCLUSION

Processing ENT surgical instrumentation is a challenge due to the devices' complexity and delicate composition. To ensure safe, effective processing and handling, the IFU should be carefully and consistently followed. The cleaning process should result in the instrument being free of all debris and cleaning residues; sterilization should then be performed precisely as stated in the manufacturer's IFU. Careful handling and inspection must also occur to prevent breakage and ensure the instruments are patient ready. 

RESOURCES

Nemitz R. 2010. Surgical Instrumentation and Interactive Approach.

The Instrument Reprocessing Working Group. 2012. Reprocessing of Instruments to Retain Value, 10th Edition.

Association for the Advancement of Medical Instrumentation. ANSI/AAMI ST79. *Comprehensive guide to steam sterilization and sterility assurance in health care facilities*, 2010 & A1:2010 & A2:2011 & A3:2012 & A4:2013.

Centers for Disease Control and Prevention. 2008. Guideline for Disinfection and Sterilization in Healthcare Facilities.

IAHCSMM acknowledges the assistance of the following two CS professionals who reviewed this lesson plan:

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CIS Self-Study Lesson Plan Quiz - Ear, Nose and Throat Instrumentation

Lesson No. CIS 255 (Instrument Continuing Education - ICE) • Lesson expires May 2019

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1. Ear, nose and throat alligator forceps have:
 - a. Sharp blades
 - b. Two opposing small cups
 - c. Long, flat distal ends
 - d. All the above
2. Picks are used to pick between bones in the middle ear.
 - a. True
 - b. False
3. Ear, nose and throat scissors are large and angled with serrated blades.
 - a. True
 - b. False
4. Elevators are single-ended instruments used to dissect and elevate tissue in the larynx.
 - a. True
 - b. False
5. Instruments used to view the back of the throat are called:
 - a. Oral elevators
 - b. Alligator forceps
 - c. Micro view forceps
 - d. Laryngeal mirror
6. Instruments used to cut or shave bone are called:
 - a. Elevators
 - b. Snares
 - c. Osteotomes
 - d. Osteo scissors
7. Because they are so delicate, ear, nose and throat instruments do not need to be disassembled for cleaning.
 - a. True
 - b. False
8. When processing tonsil snares, it is important to carefully place the snare wires on the instrument prior to sterilization.
 - a. True
 - b. False
9. When prerinsing ear, nose and throat instruments, it is necessary to use:
 - a. Cold water
 - b. Hot water
 - c. A neutral disinfectant
 - d. Enzymes
10. Using the wrong concentration of cleaning chemicals can corrode ear, nose and throat instruments.
 - a. True
 - b. False
11. All ear, nose and throat instruments must be processed in a washer-disinfector using the instrument cycle.
 - a. True
 - b. False
12. Instruments with hairline cracks:
 - a. Can be used in soft tissue procedures
 - b. Should be carefully cleaned to ensure the affected area is clean
 - c. Should be sent out for repair or replacement
 - d. All the above
13. Ear, nose and throat instruments must be assembled for testing, but disassembled for sterilization.
 - a. True
 - b. False
14. Because of the delicate nature of ear, nose and throat instruments, they should be sterilized using a low-temperature method.
 - a. True
 - b. False
15. All ear, nose and throat instruments should be sterilized:
 - a. In a protective tray
 - b. With the small lumens moist
 - c. Per the manufacturer's instructions for use
 - d. All the above

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