



What to Teach a New Technician: Part III

BY RICK SCHULTZ



For the past few issues, this column has addressed the importance of instrument inspection and care for new technicians. This knowledge plays a crucial role in the training and retention of quality Sterile Processing (SP) professionals.

This article focuses on the following:

- Tissue and dressing forceps, and
- Laparoscopic instrumentation.

Tissue and dressing forceps

Forceps are typically used for grasping and manipulating tissue during surgery. They can be used for holding or removing tissue, or for holding gauze or sponges. The two main types of forceps are tissue forceps and dressing forceps (Figure A).



Figure A

Tissue forceps have teeth; for example, 1x2, 2x3, 3x4, with each number indicating the number of teeth per side. Tissue forceps are designed to grasp and manipulate tissue. If the forcep has teeth, it is a tissue forcep. Remember, the letter “T” for “teeth” and “tissue.”

A common type of tissue forcep is the Adson 1x2, or 1x2 tissue forcep. Some forceps, such as Bishop-Harmon forcep, are designed with holes in the handles; this makes them lighter and easier to work with. Some forceps are considered atraumatic. These are designed to minimize the damage (no trauma) to tissue during surgery. The most common of these atraumatic forceps are the Cooley and Debakey. These two forceps are very similar, except for the fine distal serrations. The Cooley forcep has two

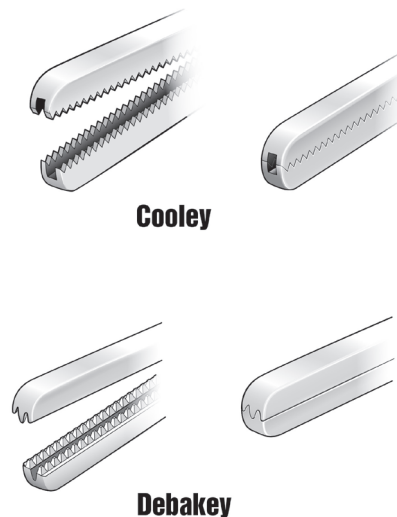


Figure B

fine rows of serrations, whereas, the Debakey forcep has fine serrations in a 1x2 row pattern (Figure B).

Dressing forceps have serrations instead of teeth and are designed to grasp and hold gauze and dressings during a surgical procedure.

Forceps with gold handles indicate the instrument has tungsten carbide jaws at the distal tip. In addition to grasping tissue, forceps with tungsten carbide jaws are used to grasp suture needles. Blue-colored forceps are constructed of titanium, which makes them lightweight, non-magnetic and stronger than stainless steel forceps; however, titanium forceps are also more expensive.

Inspection and repair

Forceps are used in nearly every surgical procedure and they should be carefully inspected before and after each use.

When inspecting forceps, pay close attention to the teeth and the serrations. These are places where blood and tissue are likely to remain after use. Teeth should meet evenly, with no overlap.

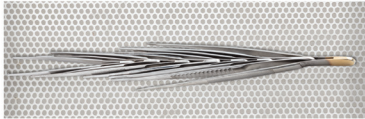
Overlapping teeth is a very common injury to tissue forceps. When this problem is discovered, remove the instrument and send it out for repair. Many micro-forceps have microscopic teeth that, if damaged, can be re-cut at a fraction of the cost of replacing the instrument. These micro-forceps must be inspected using a magnifier. If, upon inspection, a crack is noticed at the proximal end, this damage is



not repairable. Cracks are most likely to occur at the base of the instrument, where the two arms meet. A cracked instrument should be immediately removed from service and replaced.

Care and handling

Because of their design, forceps are sometimes “nested” when assembling the tray. When nesting forceps together, it is very important to ensure they are not tightly wedged together (they should never be forced or jammed together). If they stick together when lifted, they are wedged too tightly. If there are several forceps in the tray, make two rows instead of one. This will prevent the first instrument from being stretched open too far (Figure C).



Incorrect - Forceps wedged together causes damage.



Correct - Forceps loosely nested in two rows to prevent damage.



If the forceps stick together when lifted, they have been wedged too tightly.

Figure C

Placing forceps on the side of a tray is a practice occasionally used in the

Operating Room to organize and quickly pass the instrument during a procedure. It is important to use caution to prevent the tips from going through the holes in the bottom of the tray. This may result in damage, bending and breaking off the teeth. Damage to the forceps can be prevented by placing a towel inside the tray on the sterile field, so forceps cannot pass through the holes in the bottom of the tray (Figure D).



Figure D

Laparoscopic instrumentation

Laparoscopic instruments are used to perform minimally invasive surgical procedures. These instruments offer the advantages of making tiny holes verses large incisions. The end result for the patient is a quicker recovery time, less scarring and less pain.

There are three generations of laparoscopic instruments:

- First generation laparoscopic instruments do not come apart;
- Second generation laparoscopic instruments have a cleaning port that can be flushed with a syringe or an ultrasonic irrigation machine; and

- Third generation laparoscopic instruments can be completely disassembled for cleaning.

There are also four common types of handles: ratcheted, non-ratcheted, slide lock, and axial.

Laparoscopic instruments also come with both single-action and double-action jaws. A single-action jaw has a stationary (non-moving) bottom jaw, while the double-action design has two moving jaws (Figure E).



Single action



Double action

Figure E

Inspection and repair

When inspecting laparoscopic instruments, it is important to pay close attention to the insulation. To reduce the risk of causing thermal burns to the patient, insulation should be visually inspected and checked with an insulation tester every time the instrument comes through the SP assembly area. First, visually inspect the entire shaft for any nicks or cuts. Next, lightly pull back on the insulation. If the insulation slides back (Figure F), it is not secure and the instrument should be re-insulated. This method is called the “pull test.”

Insulation should be tested using a laparoscopic insulation tester, which



will detect pinholes and tears in the insulation and exposed metal. Pin holes are not usually found with visual inspection.

If there is any damaged or loose insulation, or if there is a gap between the insulation and the tip of the instrument, immediately remove the instrument from service and send out for repair (Figure F).



When inspecting the handles, ensure rotating knobs rotate left and right, and check for cracks on both sides of the hinge mechanism. If ratchets are present, make sure they lock in each position.

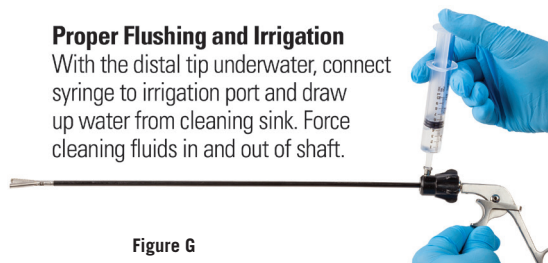
To test the sharpness of a standard laparoscopic scissor, blades should cut cleanly through one thickness of gift wrap tissue paper or yellow scissor test material. Blades should open and close smoothly and be free of nicks and burrs. If the cutting action is not smooth and snags or tears the test material, the instrument should be removed from service and sent for repair.

Cleaning

The port near the handle is present to aid in the cleaning of the instrument. For proper flushing, submerge the distal tip underwater, connect a syringe to the irrigation port and draw up water from the cleaning sink. Force cleaning fluids in and out of the shaft (Figure G).

Proper Flushing and Irrigation

With the distal tip underwater, connect syringe to irrigation port and draw up water from cleaning sink. Force cleaning fluids in and out of shaft.



The most challenging areas to clean are the jaws and distal working portion (linkage). This is where blood, tissue and fluids can hide. Manual cleaning and the use of an ultrasonic irrigator will assist in cleaning these areas. It is also recommended that the instrument be disassembled for cleaning.

Watch for Part IV in the November/December Instrument Whisperer column, where technician training for orthopedic instruments will be addressed.

Q Our laparoscopic instrument sales rep told us we can put our laparoscopic instrument tips into the ultrasonic cleaner. Is this okay?

A I agree, if the manufacturer agrees. Ultrasonic cleaning of the distal tips is extremely beneficial for removing bioburden from the distal tip.



RICK SCHULTZ, the Instrument Whisperer™, is an author, inventor and lecturer, and the retired Chief Executive Officer of Spectrum Surgical Instruments Corp. He served as contributing editor of IAHCSMM's Central Service Technical Manual (Fifth, Sixth, Seventh, Eighth Editions). Rick authored the textbooks *Inspecting Surgical Instruments: An Illustrated Guide* and *The World of Surgical Instruments: The Definitive Inspection Textbook*, which was released in June 2018. Schultz was named IAHCSMM's Educator of the Year in 2002, and in 2006, was named American Hospital Association Educator of the Year. In 2007, he was named by Healthcare Purchasing News as one of the 30 Most Influential People in Healthcare Sterile Processing. Schultz currently provides educational lectures to Central Service professionals at IAHCSMM's annual conferences and conducts operating room personnel lectures across the country.