INSTRUMENT REPAIR

LEARNING OBJECTIVES
1. Explain the need for a surgical instrument repair and refurbishment program
2. Outline differences between surgical instrument repair and refurbishing, and the advantages of a surgical instrument preventive maintenance program
3. Identify the types of services available from an instrument repair company
4. Review how to determine if instruments are in need of repair
5. Describe how to select a surgical instrument repair vendor

SURGICAL INSTRUMENTS ARE A MAJOR INVESTMENT FOR ALL facilities that perform surgical procedures. As with any major investment, it makes sense to maintain surgical instruments, so they will last as long as possible. Proactive preventive maintenance is needed to ensure that surgical instruments perform as required and do not harm patients or surgical staff as they are used.

OBJECTIVE 1: EXPLAIN THE NEED FOR A SURGICAL INSTRUMENT REPAIR AND REFURBISHMENT PROGRAM

Surgeons require instruments that perform correctly every time they are used. Normal wear and tear affects surgical instruments and, over time, they will no longer perform as required. For example, scissors will become dull and not cut tissue easily, thereby tearing or damaging tissue, and instrument jaws can become misaligned and create grasping or other performance problems. Pitting or numerous other changes will occur as instruments are used, cleaned and sterilized. It is not enough to repair an instrument when it breaks; instead, safety procedures require that surgical instruments be maintained with a repair and refurbishment program.

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 CRCT technician who works with surgical instrumentation.

Earn Continuing Education Credits:
Online: Visit www.iahcsomm.org for online grading at a nominal fee.
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More information: IAHCSMM provides online grading service for any of the Lesson Plan varieties. Purdue University provides grading services solely for CRCT and CIS lessons. Direct any questions about online grading to IAHCSSMM at 312.440.0078. Questions about written grading are answered by Purdue University at 800.830.0269.

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and preventive maintenance programs. Some people may perceive these programs to have the same basic purpose; however, instrument repair programs do not necessarily provide the same level of overall instrument quality as do refurbishment and preventive maintenance programs. The difference involves an interest in being reactive or proactive. Instrument repair programs are reactive because instruments are not maintained until they break and/or won’t perform as required. Typically, these instruments are identified as needing repair when the surgeon or another surgical team member complains about them.

In contrast, instrument refurbishment programs involve a proactive inspection performed by a qualified instrument repair company technician who determines if attention is needed and maintenance is necessary. This allows the instrument to be refurbished and maintained or repaired, if needed, before a patient or surgical team member’s safety is endangered. A proactive instrument maintenance program results in fewer needed repairs, more satisfied surgical staff, and reduced instrument replacement costs.

Instrument preventive maintenance programs can be established for specified time frames, such as number of months or number of uses. This helps ensure that the instruments do not become unusable and helps minimize breakage that can lead to premature replacement.

**OBJECTIVE 3: IDENTIFY THE TYPES OF SERVICES AVAILABLE FROM AN INSTRUMENT REPAIR COMPANY**

Instrument repair companies offer a wide variety of services. Most companies offer onsite assistance using a repair van driven to the healthcare facility. Surgical instruments are then taken to the van where a variety of services can be performed. Immediately following repair, the instruments are returned to the facility, so they can be processed and returned to service. This, in turn, ensures minimal downtime for the instrumentation.

Examples of services provided include:
- Repair, sharpening, realignment and refurbishment of hand-held surgical instruments
- Reinsulation of electrosurgical instruments
- Insert replacement for needle holders and scissors
- Diamond dusting (the process of coating instruments to protect their surfaces, make them stronger and extend their lives)
- Sterilization container repair
- Sterilizer cleaning
- Case cart repairs

In addition to onsite repair services, more extensive repairs can be performed at national service centers. These repairs include those rendered for:

**Endoscopy equipment**
- Rigid endoscopes
- Flexible endoscopes
- Video equipment
- Flexible biopsy forceps
- Medical fiber optic cable repair
- Surgical headlight repair
- Endoscopic retractor repairs
- Light carrier repair

**Power equipment**
- Pneumatic and electric battery
- Phacoemulsification ultrasonic hand pieces (these instruments help dissolve and break up cataract lenses, and suction them out of eyes)

In addition to repairing these complex instruments, many repair companies offer the use of loaner equipment while the healthcare facility’s equipment is out for repair. Frequently, loaner equipment is available at no additional charge.

**OBJECTIVE 4: REVIEW HOW TO DETERMINE IF INSTRUMENTS NEED REPAIR**

Some instrument problems are common among surgical instruments, and others are unique to specific types of instruments. Corrosion, pitting, cracks and stains are common problems with most instruments, and much can be done to limit the extent of these problems such as:
- Ensuring blood does not dry on instruments, damaging the instrument’s finish
- Using the correct instrument size, so the box lock does not crack
- Ensuring instrument finishes are periodically refurbished to prevent surface damage

Once identified, these common problems must be addressed. Visual inspection of instruments helps identify these types of problems because many of these concerns can be seen with the naked eye. Generally, however, it is recommended that instruments be inspected under magnification; hairline cracks, for example, are difficult to see without magnification. Some instruments require the use of special inspection tools to determine if problems are present. Instruments with lumens, especially those that are long and narrow, cannot be easily inspected for debris, discoloration, corrosion or cracks within their lumens. Special inspection scopes are available for inspecting these instruments.

Instruments should also be inspected to ensure they function properly. Any instrument that has movable parts should be manipulated to ensure the parts move freely without hesitation or obstruction. Jaws should align and not overlap. All screws and springs should be present, and they should not be loose or misaligned. Instruments should not be dented, nicked or have a burr or broken tip. Ratchets of ring-handled instruments should catch and hold.

In addition to these general problems, others are specific to particular types of instruments. Scissors, kerrison rongeurs, bone cutters and osteotomes should be checked for sharpness. Blades should not be nicked, dented or corroded. Needle

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holder surfaces will wear and no longer tightly hold a needle. These can be inspected under a microscope to ensure a needle can be held tightly.

If problems are found during instrument inspection, the affected instrument should be removed from the tray and replaced. The damaged instrument should then be placed in a bin for repair or refurbishing, and they should not be reused until they have been repaired.

**OBJECTIVE 5: DESCRIBE HOW TO SELECT A SURGICAL INSTRUMENT REPAIR VENDOR**

The key to maintaining surgical instruments throughout their useful life relates to the quality of their refurbishing and repairs, as needed. This, in turn, requires the selection of a high quality refurbishing and repair company. Surgical instrument repair is as much an art as it is a science; therefore, repair technicians must know not only how to repair an instrument, but also understand how the instrument is used.

The best repair technicians understand that a surgical instrument is an extension of the surgeon’s hands, and that the device must function as quickly and intuitively as the surgeon’s hand. This requires an artistic sense, as well as the ability to perform the technical functions required for instrument repair. Similar to CIS technicians, instrument repair technicians must be carefully and comprehensively trained.

Consider the repair company itself. The best companies have a large inventory of available parts of medical-grade quality equivalent to those used by the original equipment manufacturer (OEM). Generally, parts should be new and not used or remanufactured. If less than new parts are used, they should be identified before the repair is made. Then, after repairs are made, the repairs should be warranted to protect the facility if a repair fails within a specified time after it was returned to service. The facility should not be charged if the instrument needs subsequent repair, or it should not pay for the original repair if no further repair is possible.

In addition to these basic services, instrument repair companies might also provide some value-added services, including in-service training. Many instrument repairs are needed because of misuse, and training in their proper care, handling and processing could reduce the need for these repairs.

Availability of loaner equipment is also important. A large inventory of various types of loaner equipment should be available by the repair vendor to ensure that the facility will not be without necessary equipment, when needed. Cost of obtaining loaner equipment is also important; some companies provide loaners free of charge, while others charge a fee.

It is also helpful if an instrument repair company provides repairs for obsolete equipment. New equipment models are constantly being developed and facilities cannot purchase new equipment each time a new model is introduced. If the repair company can still maintain and repair the older-model equipment, its useful life is extended.

**IN CONCLUSION**

Instrument repair/refurbishment is an important requirement for properly maintaining a facility’s surgical instrumentation. Instruments are valuable assets that require maintenance to ensure that the facility will obtain the maximum useful life from its instrumentation investments. This is better ensured when the instruments are included in a comprehensive instrument refurbishment and preventive maintenance program. The best results are realized when a high quality instrument repair company is used. CIS technicians must be trained to inspect instruments so those with problems are not passed on to the surgical team. Each of these and related tactics help to minimize instrument failure that can impact facility staff and patients.

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