

Surgical Instruments

Diagnostics, Infection Control and Sterilization



Lesson Objectives

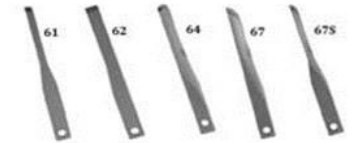
1. Review information on instrument manufacturing
2. Identify the different types of finishes on surgical instruments
3. Differentiate types of instruments by their design
4. Differentiate types of instruments by their function
5. Classify instruments by tissue type
6. Demonstrate how to pass basic instruments to the surgeon
7. Describe how to inspect instruments for defects

Surgical Instruments

- Expertise in surgical instrumentation is crucial for surgical technologists.
- Learning instrument names can be challenging due to regional variations.
- Instruments are classified by function and tissue association to foster critical thinking.
- Evaluation of instrument soundness is essential for patient safety and smooth procedures.
- Responsibility for instrument safety lies with all involved in their use and processing.
- Safety always takes precedence in instrument handling and usage.

Classifications of Instruments

- Accessory Instruments
 - Like loves, rodent guillotines, bone wax, surgical instrument lubricants, surgical instrument cases, absorbent paper points
- Cutting/Dissecting Instruments
 - Sharp
 - Used for Incisions and dissections
 - Like scalpels, blades etc.

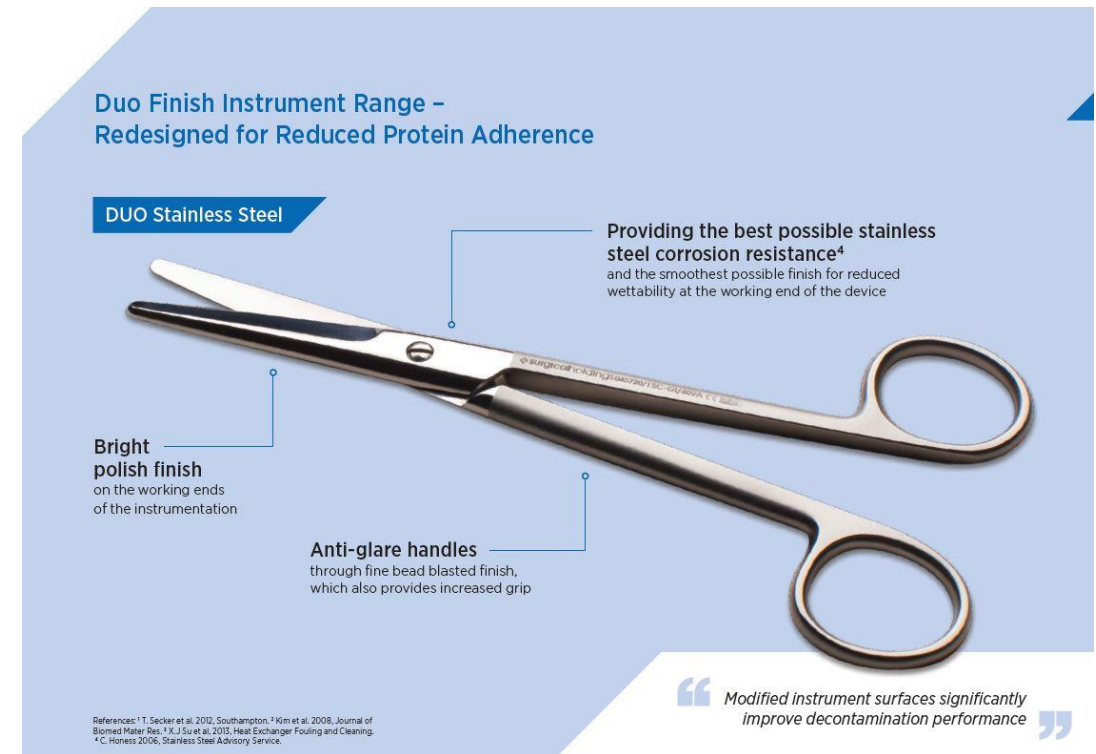


Instrument Manufacturing

- Quality and safety of surgical instruments depend on manufacturing process, materials, and quality control.
- High-quality surgical instruments use specific metals, with stainless steel being preferred.
- Stainless steel contains chromium, which resists corrosion and increases strength.
- **Instrument Grades:**
 - Stainless steel grades determine quality, with variations across manufacturers.
 - Five grades exist, but three are commonly used in surgical instrument manufacturing.
 - Surgical grade has highest chromium content, divided into premium and intermediate grades.
 - Floor grade contains lower chromium, prone to bending and breaking, suitable for labs.
 - Disposable grade is for one-time use, prone to breakdown with repeated exposure to high temperatures.

Instrument Finishes

- Highly polished or mirror finish
- Satin finish
- Black chromium finish
- Titanium anodizing
- Anodizing
- Gold dip
 - Tungsten carbide inserts
- Black finish



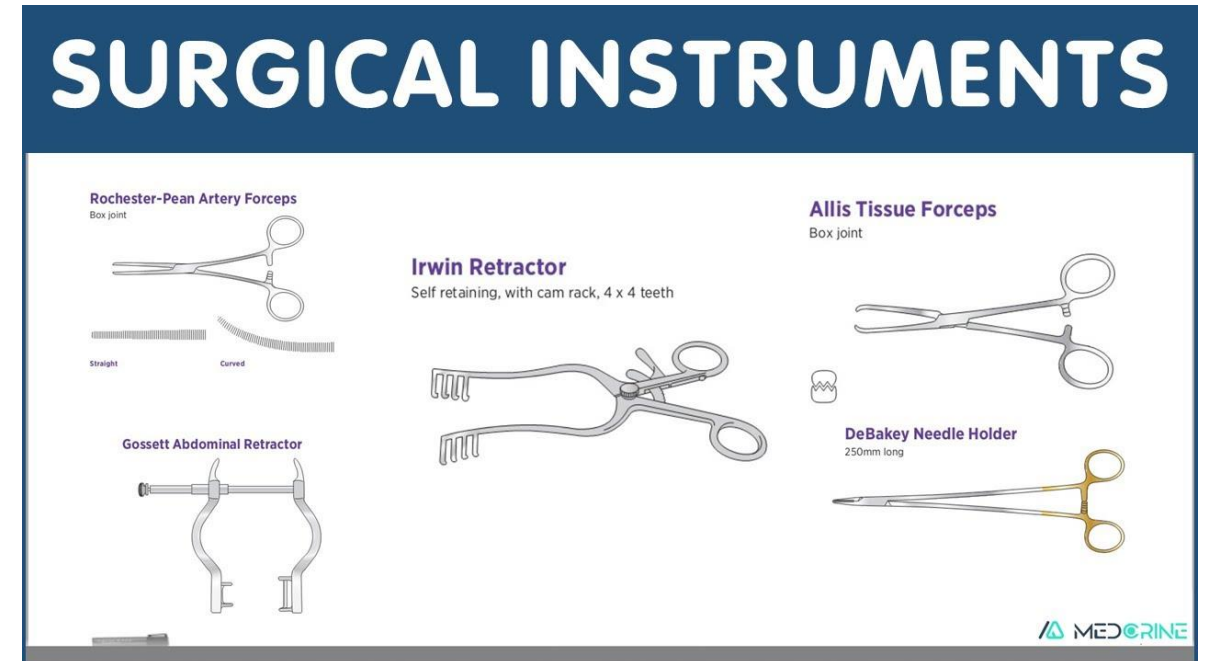
Instrument Names

- Surgical instruments are named for surgeons who invented them, such as:
 - Debakey
 - Satinsky and Cooley
 - Cloward
 - Castroviejo
 - ..and many, many more



Common Types of Instruments by Function

- Cutting/dissecting (Scissors)
- Clamping/occluding (Clamps, Vascular Clamps, Bulldogs)
- Grasping/holding (Forceps, Clamps)
- Retracting/exposing (Retractors)
- Aspirating/suctioning (Suction)
- Suturing (Needle Holders)
- Stapling (Staplers)
- Dilating (Dilators, other clamps used to dilate)
- Probing (Probes)
- Accessory
- Microinstruments (Small/Micro Versions of Others)
- Viewing (Scopes)



Instruments by Tissue Type

- Instruments Designed for use on specific types of tissue:
 - Skin
 - Visceral serosa
 - Lung, spleen, liver, thyroid
 - Peritoneum
 - Adipose tissue
 - Muscle
 - Bone
 - Cartilage, tendon, and fascia



Watch the "General Minor Instrument Tray" Video for an overview of some of the most common surgical instruments

- **This video includes some of the most common and used instruments and their general uses. This is a good place to start learning surgical instruments**

General Minor Instrument Tray Video



General Minor Instrument Tray Video

- Instruments in Video:
 - Towel Clips
 - Mosquito
 - Kelly
 - Allis
 - Babcock
 - Kocher
 - Tonsil (Schnidt)
 - Right Angle (Mixer)
 - Sponge Stick
 - Needle Holders
 - Mayo and Metzenbaum Scissors
- Knife Handles (#3 Handle)
- Retractors
 - Richardson
 - Army/Navy
 - Weitlanders
 - Senn
 - Rakes
- Forceps
 - Adson
 - "Rat Tooth"
 - Debakey
 - Russians

Instrument List/Count Sheet

Lists the type and number of instruments in a set

- Given to circulator and used to count the instruments before, during, and after the case
- Count may be waived for the procedure due to an emergency

Instrument List/Count Sheet -- Minor Set					
Instrument Name	Quantity	Set Assembly	Initial Count	First Count	Final Count
Hairsted mosquito straight 5"	4				
Hairsted mosquito curved 5"	8				
Orile curved 5 1/2"	4				
Orile straight 5 1/2"	2				
Rochester-Pean 6 1/2"	2				
Allis 6"	2				
Babcock 6 1/2"	2				
Mayo-Hegar needle holder 7"	2				
Crile-Wood needle holder 6"	1				
Mayo scissors straight 5 1/2"	1				
Mayo scissors curved 5 1/2"	1				
Metzenbaum scissors curved 7"	1				
Metzenbaum scissors curved 5 1/2"	1				
Foerster sponge forceps straight 9 1/2"	2				
Backhaus perforating towel clamp 5 1/2"	4				
Loma nonperforating towel clamp 5 1/2"	2				
Senn sharp	2				
Volkmann 3 prong sharp	2				
U.S. Army Retractor	2				
Richardson-Eastman medium/large	2				
Yankauer suction tip	1				
Frazier suction tip 9 French with stylet	1				
Probe with eye 5 1/2"	1				
Grooved director 5 1/2"	1				
Tissue forceps without teeth 5 1/2"	1				
Tissue forceps with teeth 5 1/2"	1				
Adson tissue forceps with teeth 4 1/2"	2				
Knife handle #3	2				
Signature of individual preparing set					

Instrument count sheet always included in instrument tray

Passing Surgical Instruments During Surgery

- Pass instruments to surgeon and scrubbed technologist safely to prevent injury.
- Orient instruments for immediate use while passing.
- Pass instruments purposefully and securely.
- Grasp instruments in the midsection when passing.
- Place power-driven or stapling instruments in safety mode before passing to avoid injury.
- Use a magnetic mat on surgical field during procedures without flat surfaces to prevent instrument sliding.

Specific Instrument Techniques

- Knives and scalpels: Passed on sterile field ideally in a basin; if by hand, grasp in the middle with blade down.
- Tissue forceps: Passed with tips down.
- Scissors: Handles contact surgeon's palm, points pointing toward the back of the hand.
- Clamp: Hemostatic clamp passed with tips upward, finger rings touching palm.
- Retractor: Passed with right angle blade(s) pointing down towards the wound.
- Needle holder: Passed with needle point oriented upward, ready for use.

**Watch the video on "Passing Surgical Instruments" in the
next slide**

Passing Surgical Instruments Video

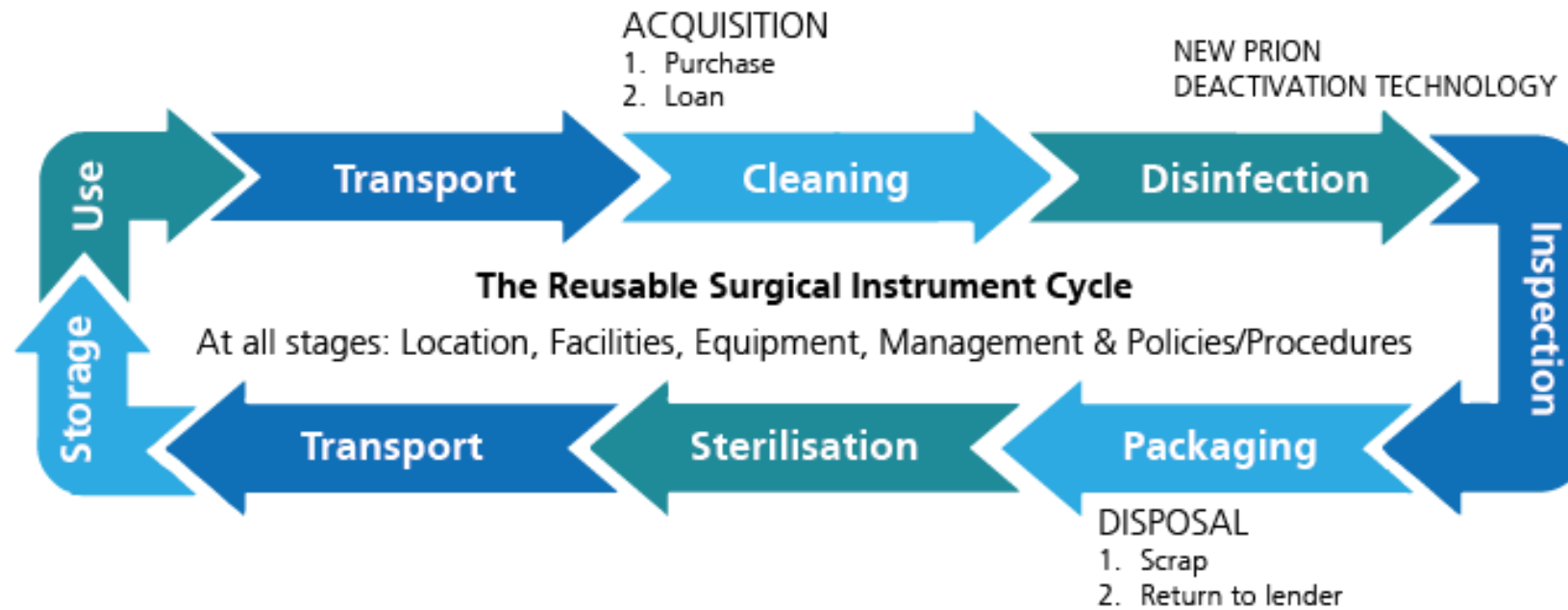


Passing Instruments Video

Summary of Video:

- Pass Instruments how they will be used by the Surgeon
- Safety is the number one priority of passing
- Pass firmly – surgeon will be focused on the surgical field

Instrument care and handling



Watch video of Chapter 11 from the E-Book

- Watch the video on "Surgical Attire ", "Scrubbing, Gowning and Gloving" from **Surgical Technology - Elsevier eBook on VitalSource, 8th Edition** by logging into your Evolve account

Read Chapter 11 from the E-Book

Read **Chapter 11** from your E-Book to pass the upcoming quiz from **Surgical Technology - Elsevier eBook on VitalSource, 8th Edition**.

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- Watch the videos on "**Basic Instrumentation**" from **Surgical Technology - Elsevier eBook on VitalSource, 8th Edition** by logging into your Evolve account
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Thank you!

Get ready for your quiz and rest of the activities now. Best of luck!



Congratulations!

Lesson 11 is complete.