Types and classification of Surgical Instruments

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Types and classification of surgical instruments
Objectives learning

1- History of surgical Instruments
2- Definition of the Instruments
3- Manufacture of Surgical Instruments
4- Grade of Surgical Instruments
5- Structure of the Instrument and its function
6- Types and Classification of surgical instruments
History of surgical instruments

- The history of surgical instruments began 10,000BC by using the stone knife to perform surgery.

- Then, the modern surgical instrumentation began with the introduction of stainless steel.

- Surgical instruments represent a large portion of healthcare facilities budget.

- Additionally, they are the tools that surgeons rely on to help ensure a positive outcome of a surgical procedure.

- Each instrument is designed for a specific purpose and should never be used for any other purpose.
Surgical procedures cannot be effectively performed without properly cleaned, packaged, and sterile surgical instruments.

The manufacturer of surgical instruments must provide processing instruction with each instrument manufactured.

Reprocessing of surgical instruments is the direct responsibility of CSSD Technician.
Definition of Surgical instruments

Are tools or devices that perform such functions as:

- ✓ Clamping
- ✓ Grasping & Holding
- ✓ Cutting & Dissecting
- ✓ Retracting
- ✓ Dilating & Probing
- ✓ Suctioning
- ✓ Suturing & Stapling
Manufacture of Surgical instruments

Most of surgical instruments are made from Stainless Steel.

But there are other metals involved in the manufacture of surgical instruments such as Titanium, chromium, vanadium, molybdenum.
Grade of surgical instruments

- SURGICAL GRADE
- FLOOR GRADE
- DISPOSABLE
SURGICAL GRADE

Is characterized by:
❖ Highest quality
❖ The steel from USA and German
❖ Their instruments are reusable

FLOOR GRADE

Is characterized by:
❖ A lower grade of stainless steel
❖ Low quality and advise not use in OR set
❖ Also their instruments are Reusable
Is characterized by:
- Single use
- should never reprocessing
Structure of instrument

Tips

Jaws

Box lock

Shank

Ratchet

Finger ring
Tips

The most important qualities:

- Usually be pointed or rounded
- Both of them must be equal
- While the other kinds without it.
- Some of them have teeth

E.g. for teeth: Kocher, Allis
The second part of instruments is (jaws).

This part which contacts with the patient directly.

What should you inspect in this part?

Blood, tissue

This can be straight or curved.

- Smooth
- Serrated
- Cross-hatched

For grasping tissue or suture.
The third part of instruments is (box lock)

Connect with the jaws of the instrument

Known by another name which is (hinge joints)

Why this part is more difficult to clean??

It's the weakest part of the structure which permits blood and body fluid to enter

So, what should we do to clean this part??

Inspect both sides for cracked or blood
The fourth part of instruments is (shank)

Which provide the closing force.

connect the box lock to the finger rings
The fifth part of instruments is called (Ratchet)

One of the most important specifications

Allow the instrument to be locked in place

It can be tested by checked closing on the first ratchet

It's difficult to clean

Ratchet
The sixth part of instruments is (Ring Finger) known by another name which is (Ring Handle).

Used to grip instruments securely.

It controls the action of the jaw which can open or close.
What are the similarities and differences between both artery forceps and scissors as structure?

Both of them have?

Tips

shank

Finger ring

The differences

jaws

blades

box lock

screw

ratchet

without
In the scissors, there are some parts should be inspected such as below:

1- Inspected tips
   Both side should be present and sharp

2- Inspected blades for burs

3- Inspected both sides for cracks

4- Open and close rings
   Cutting action should be smooth
In the tissue forceps you should inspect three parts of it as below:

1. Inspect teeth to make sure all are present and no tissue is present.
2. Inspect joint for cracks.
3. Inspect handle serration for blood and tissue.

Parts of the tissue forceps:
- Tip
- Shank
- Handle grip
- Jaws
- Joint
Types of Surgical Instruments

300 Series Stainless steel

400 Series Stainless steel

AUSTENITIC

MARTENSTIC
300 SERIES STAINLESS STEEL EXAMPLES

- BASIN
- BOWELS
- DEAVER RETRACTOR
- HOHMAAN RET
- MALLABLE RETRACTOR
- BOWEL KIDNEY
- AND THE LIKE
400 SERIES STAINLESS STEEL EXAMPLES

- Forceps
- Scissors
- Needle holder
- Allis forceps
- Chisels
- Osteotomes

And the like
Classification of surgical instruments

There are five basic categories of surgical instruments:

1-Hand-held
2-Microsurgical
3-Powered
4-Laparoscopic
5-Endoscopic

Microsurgical usually classified as hand-held instruments.
There are seven basic categories of hand-held instruments:

- Hemostats
- Sharps/Dissectors/Cutting
- Forceps
- Needle Holder
- Reactors
- Laparoscopic Instruments
- Miscellaneous Instruments

And there are special considerations for specific types of hand-held instruments.
Inspections of hand-held instruments

When should be inspected instruments?

- Each and every time an instruments is handheld
- When receive a new instruments in the department
- Whenever they enter the decontamination area
- When they are being assembled and packaged for sterilization
- Before use, they should be inspected by the OR staff.
Examples of types of hemostats

- Kelly
- Fogarty
- Vascular, glover
- Clamp, tubing
- Mosquito
- Mixter
Examples of types of sharp / cutting

- PERIOSTEAL ELEVATOR
- Curette which knows dissectors
- CHISEL / BONE
- BONE CUTTER
- OSTEOTOMES0
- SCISSORS
Examples of types of Needle Holder

- Crile Wood needle holder
- Barraquer Needle Holder
- Microsurgical Castroviejo
Examples of types of forceps

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<thead>
<tr>
<th>Forceps / Adson</th>
<th>Brown Adson forceps</th>
<th>Forceps / Babcock</th>
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Retractors Classified into two types

Hand held

Self retaining
Examples of types of retractor which include handheld

- Bone Hook
- Deaver
- Volkman
- Richardson
- Harrington
- Malleable (Ribbon)
Examples of types of retractor which include self retaining

- Gelpi Retractor
- Balfour Retractor
- Bookwalter Retractor
- Cerebellar Retractor
- Weitlaner Retractor
Examples of types of laparoscopic instruments

- Grasping forceps
- Dissecting forceps
- Spatula forceps
- Babcock forceps
MISCELLANEOUS INSTRUMENTS

Knife handle

Towel clamp

Sponge stick
REFERENCES

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