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FAKULTAS KEDOKTERAN

RSCM

Basic Laparoscopy

The Science of Tissue Management

Departemen Ilmu Bedah FKUI–RSCM
Program Studi Ilmu Bedah

Advantages of Laparoscopy

- Less blood loss
- Decreased pain
- Shorter hospital stay
- Faster recovery
- Less scarring
- Improved esthetic

Outline

- Operating room set up
- Basic laparoscopic instrument
- Patient positioning
- Peritoneal access

Operating room set up

Patient positioning

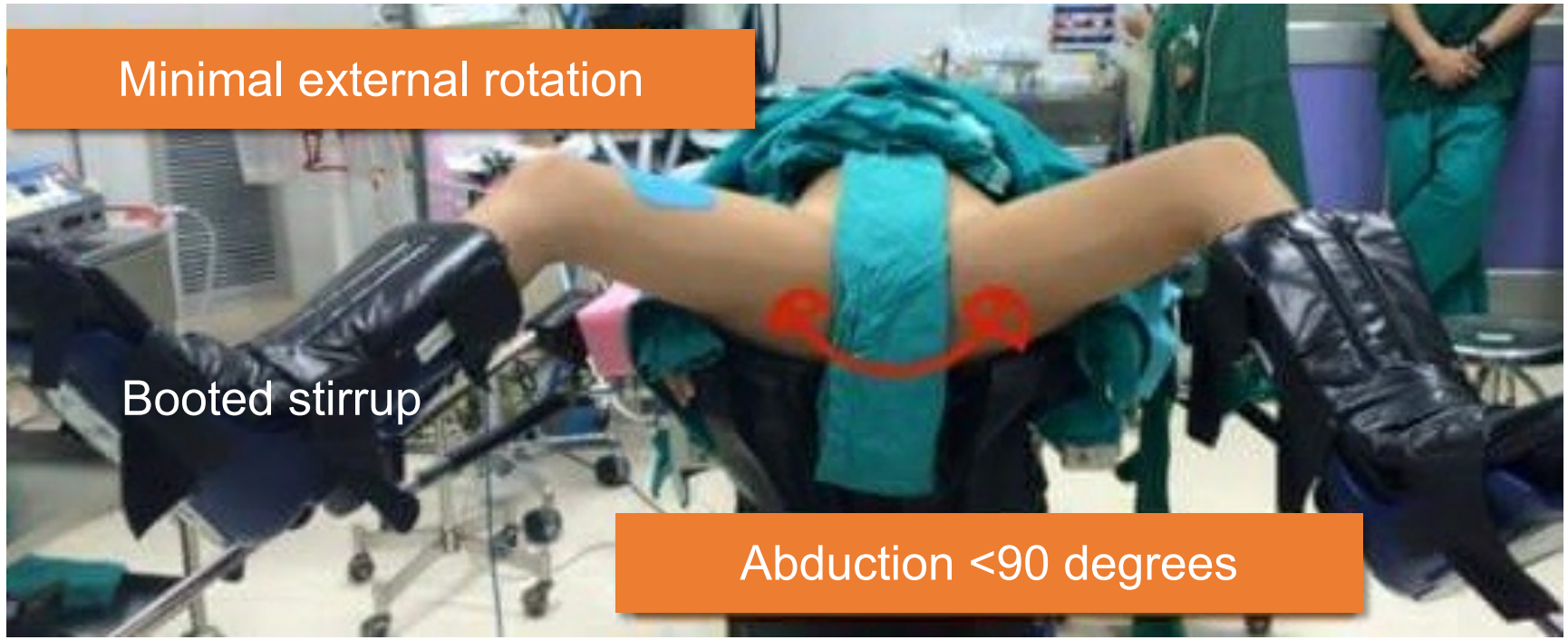
Proper positioning

- Low lithotomy
- Avoid nerve injury
- Tucked arms
- Chest strap or shoulder brace

Low lithotomy position

Knee flexion 90–120 degrees

Low lithotomy position



Tucking the arms

Minimal external rotation

Shoulder brace

Surgeon ergonomics

- Monitor position / height
- Table height
- Foot pedals

Monitor position

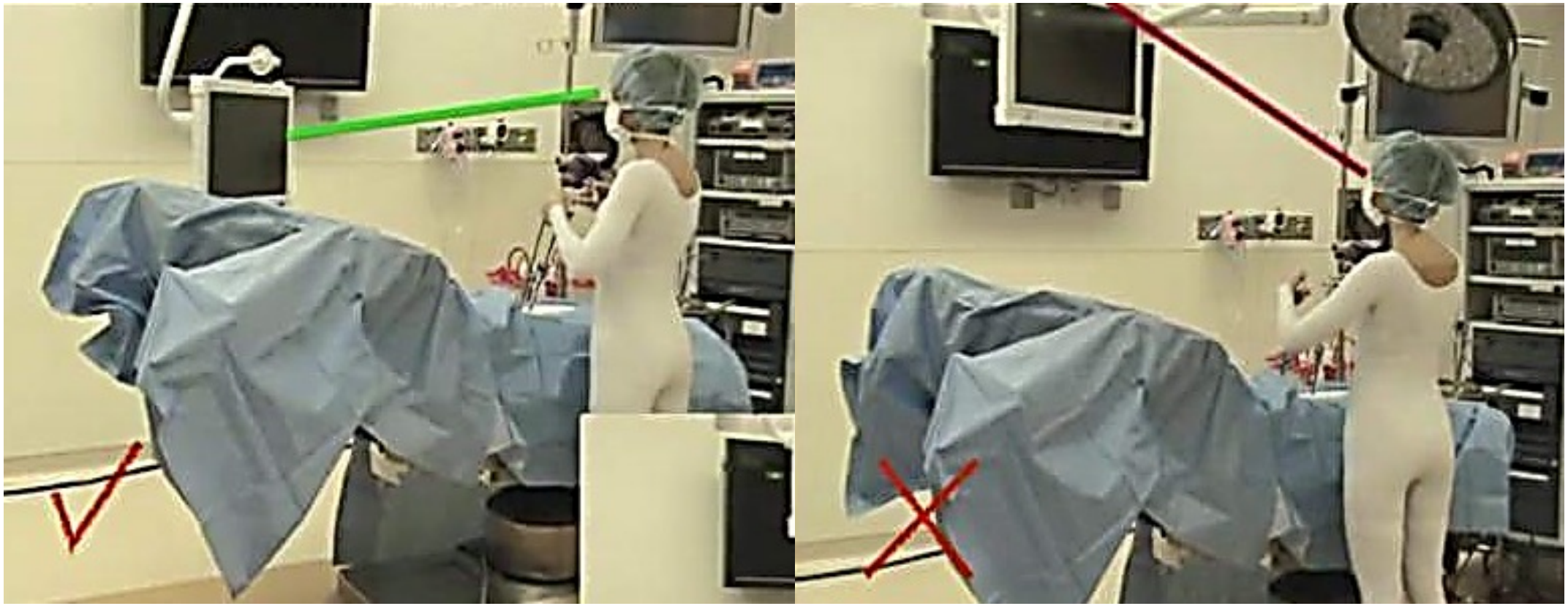


Table height

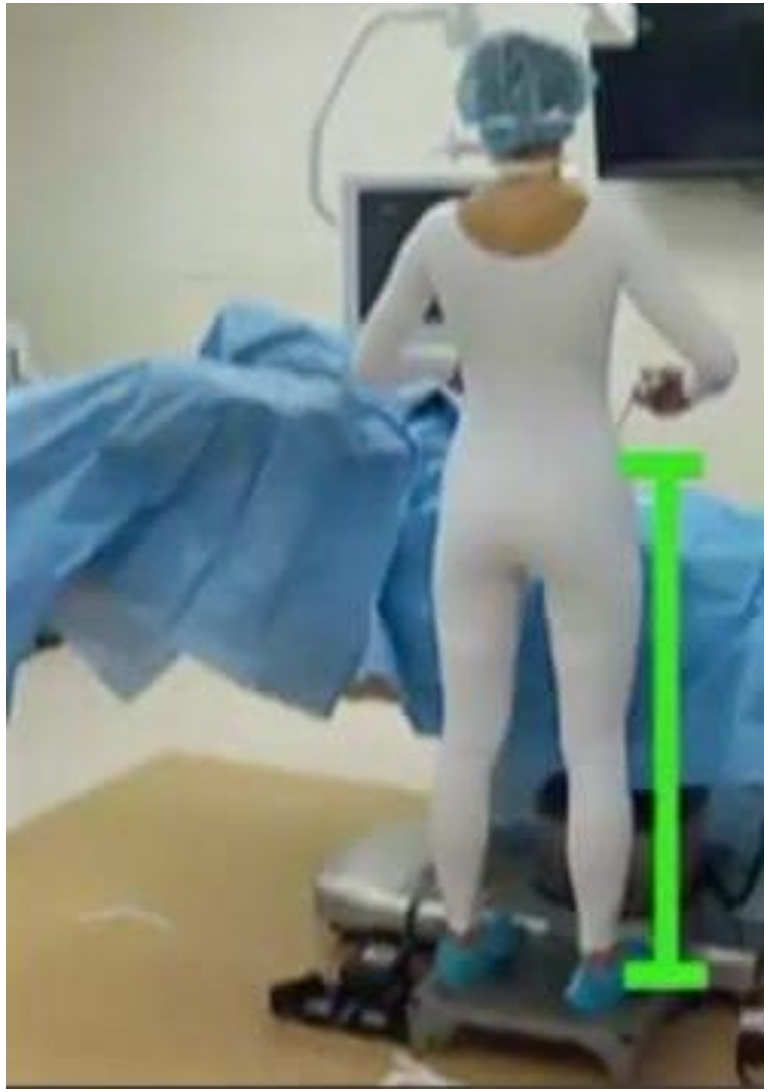


Table height

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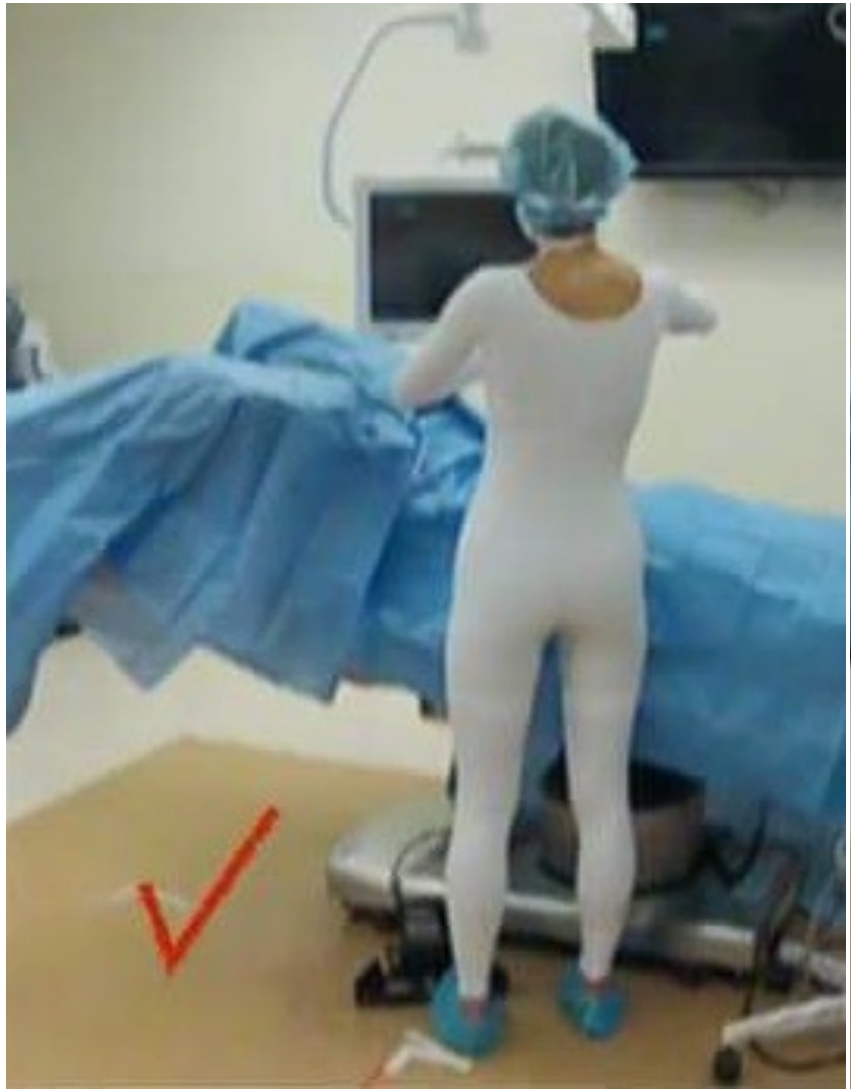


Surgeon ergonomics

Forward head position

Shoulder elevation

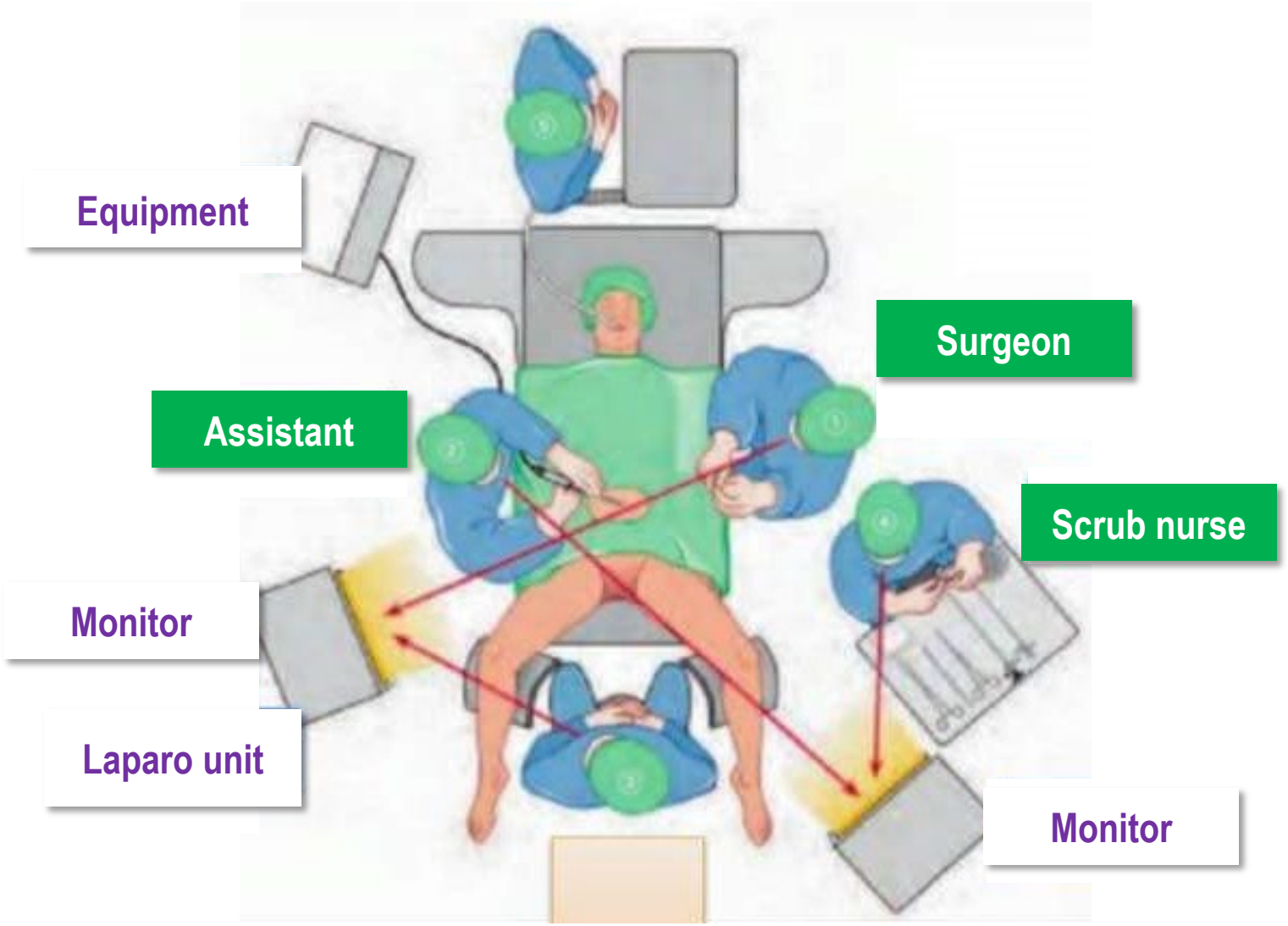
Weight bearing asymmetry

Surgeon ergonomics

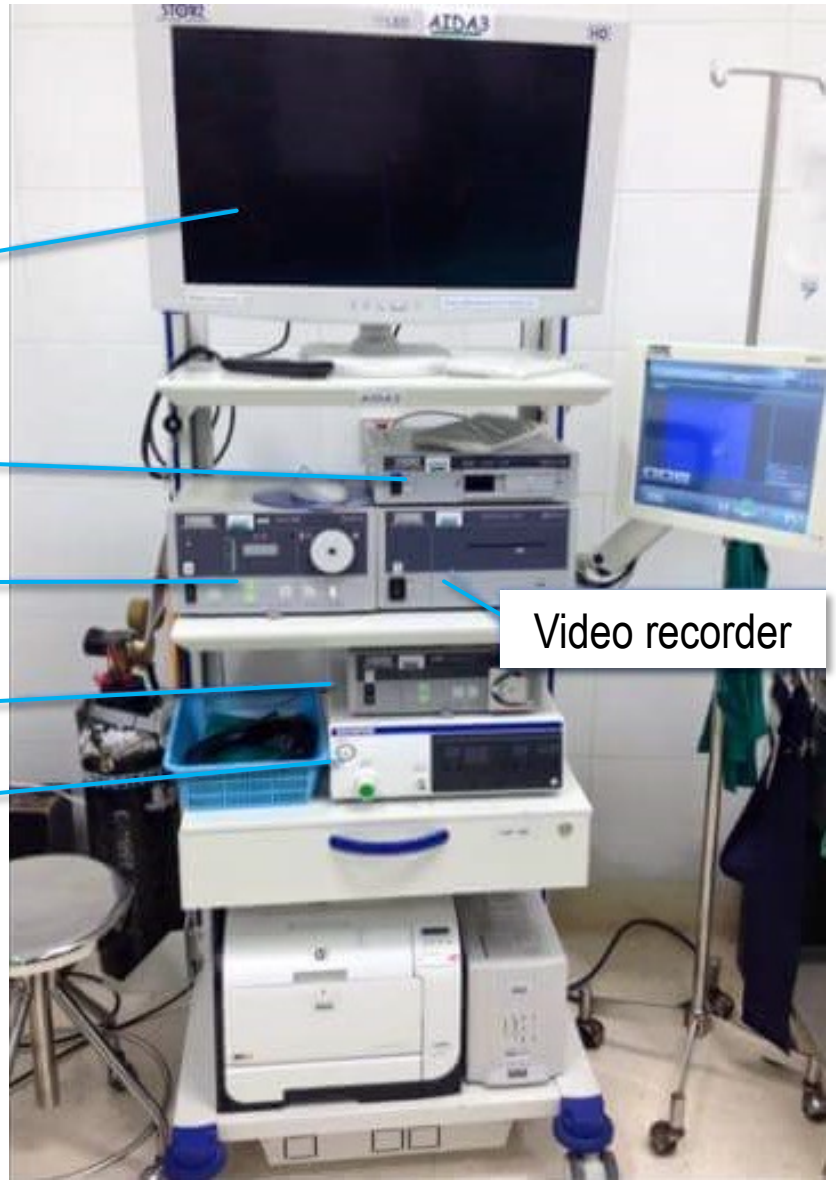
Why is this important?

- Neck pain and spondylosis higher in high volume surgeon
- Poor ergonomic lead to backache, hands and finger joint paint, tendinitis, exhaustion
- Why aching and exhausted?
- Lack of awareness among surgeons

van Det MJ, et al. Surg Endosc. 2009;1279-85.


Equipment
Surgeon
Assistant
Scrub nurse
Monitor
Laparo unit
Monitor

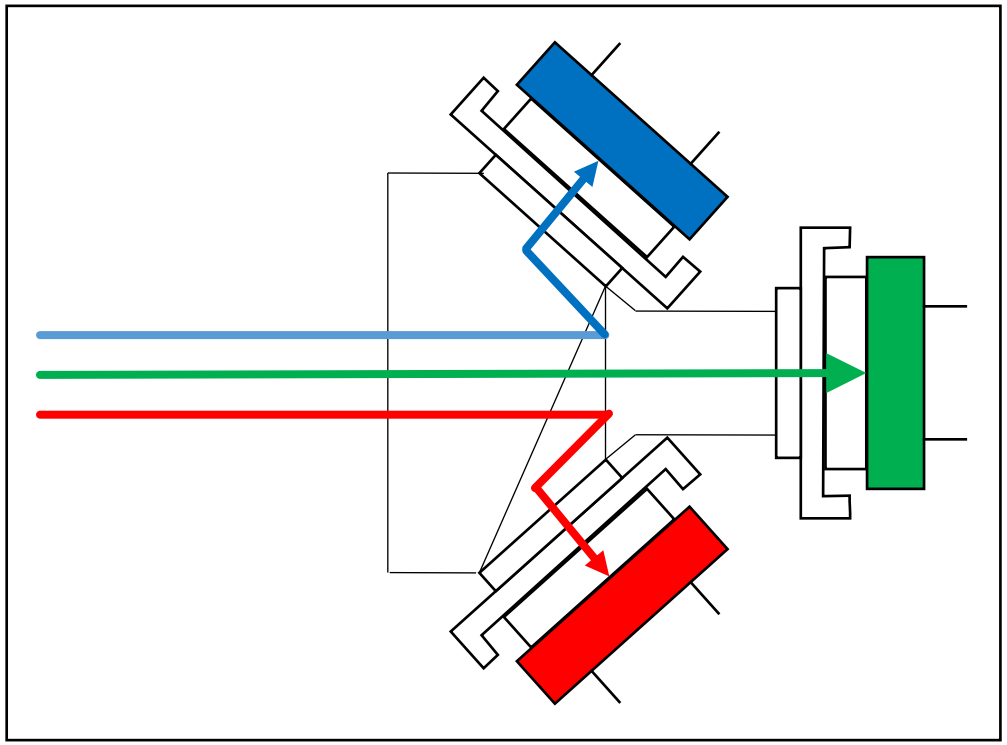
Laparoscope unit

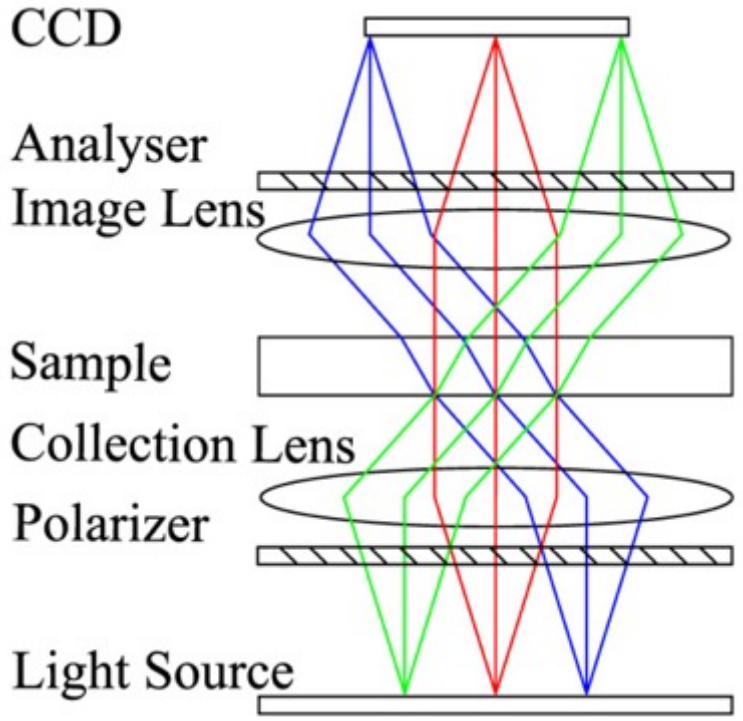


Camera and video monitor

Camera

- Charged coupled devices (CCDs)
- Single chip or 3 chips (red, green, blue)
- White balance

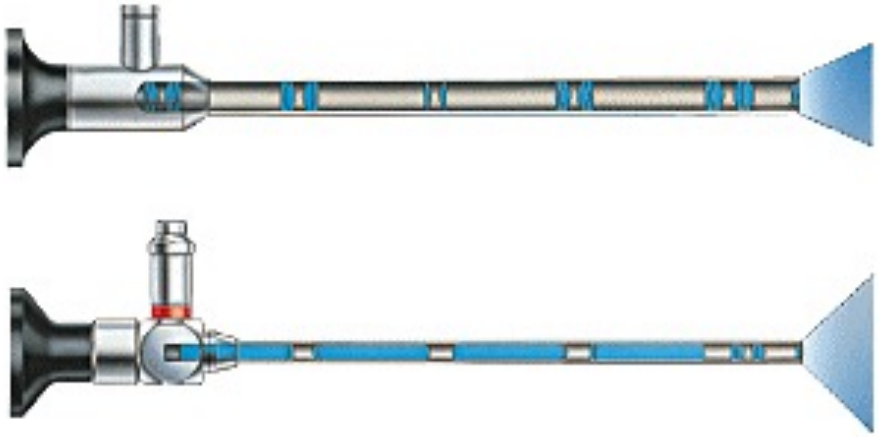


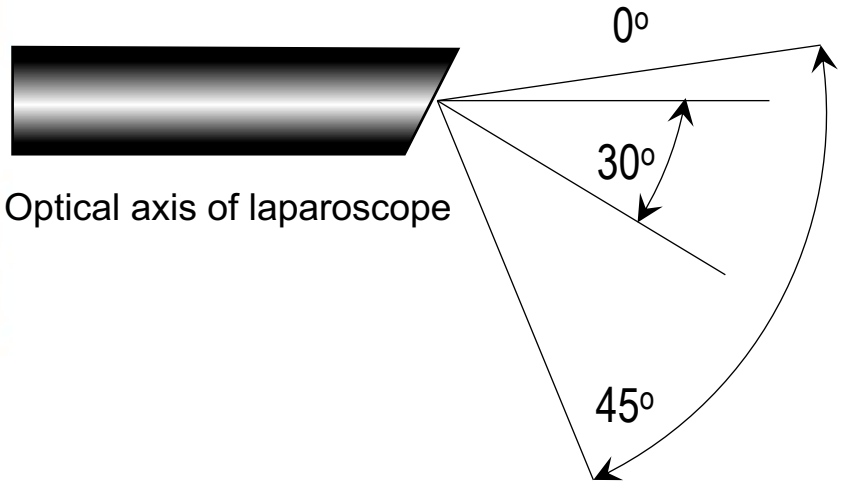


Laparoscope

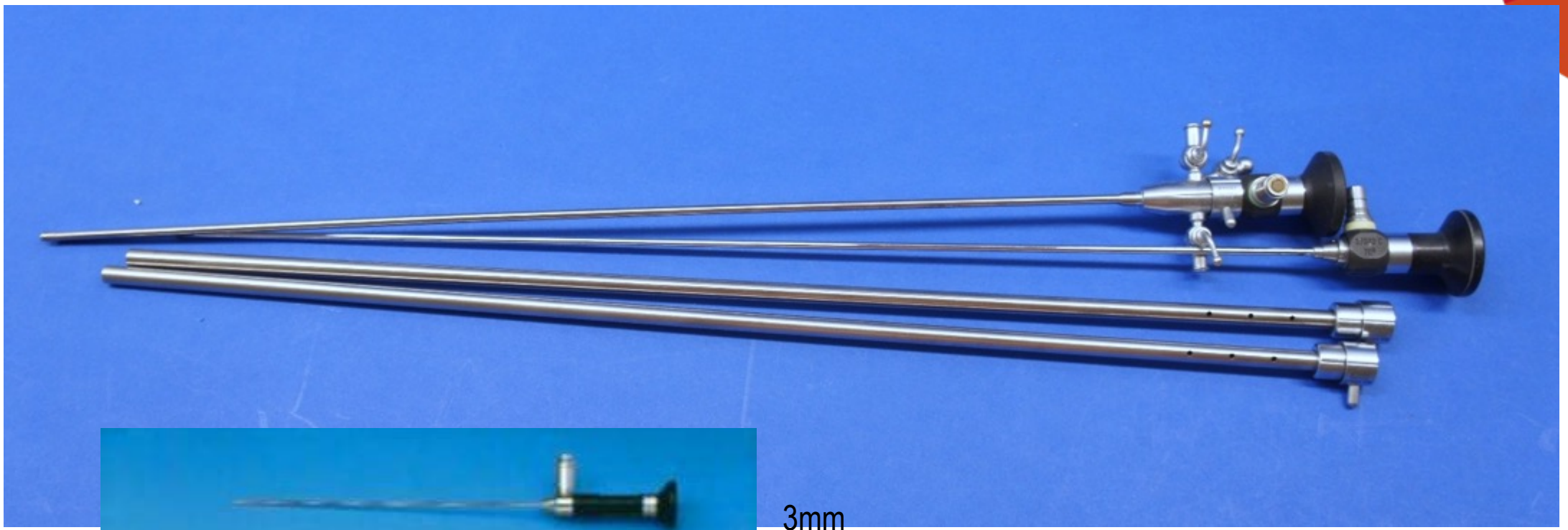
Conventional glass lens endoscope

Rod lens system





Laparoscope



3mm

5mm

10mm

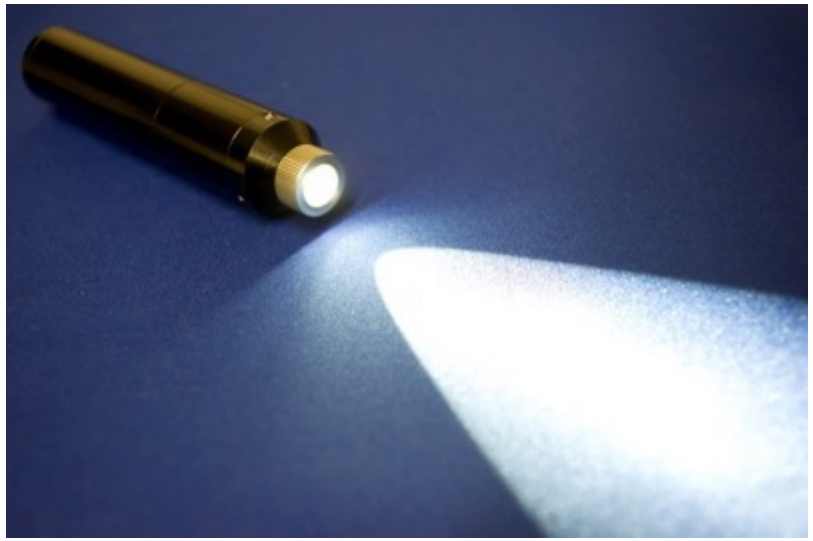
Laparoscope

Flexible laparoscope

Laparoscope

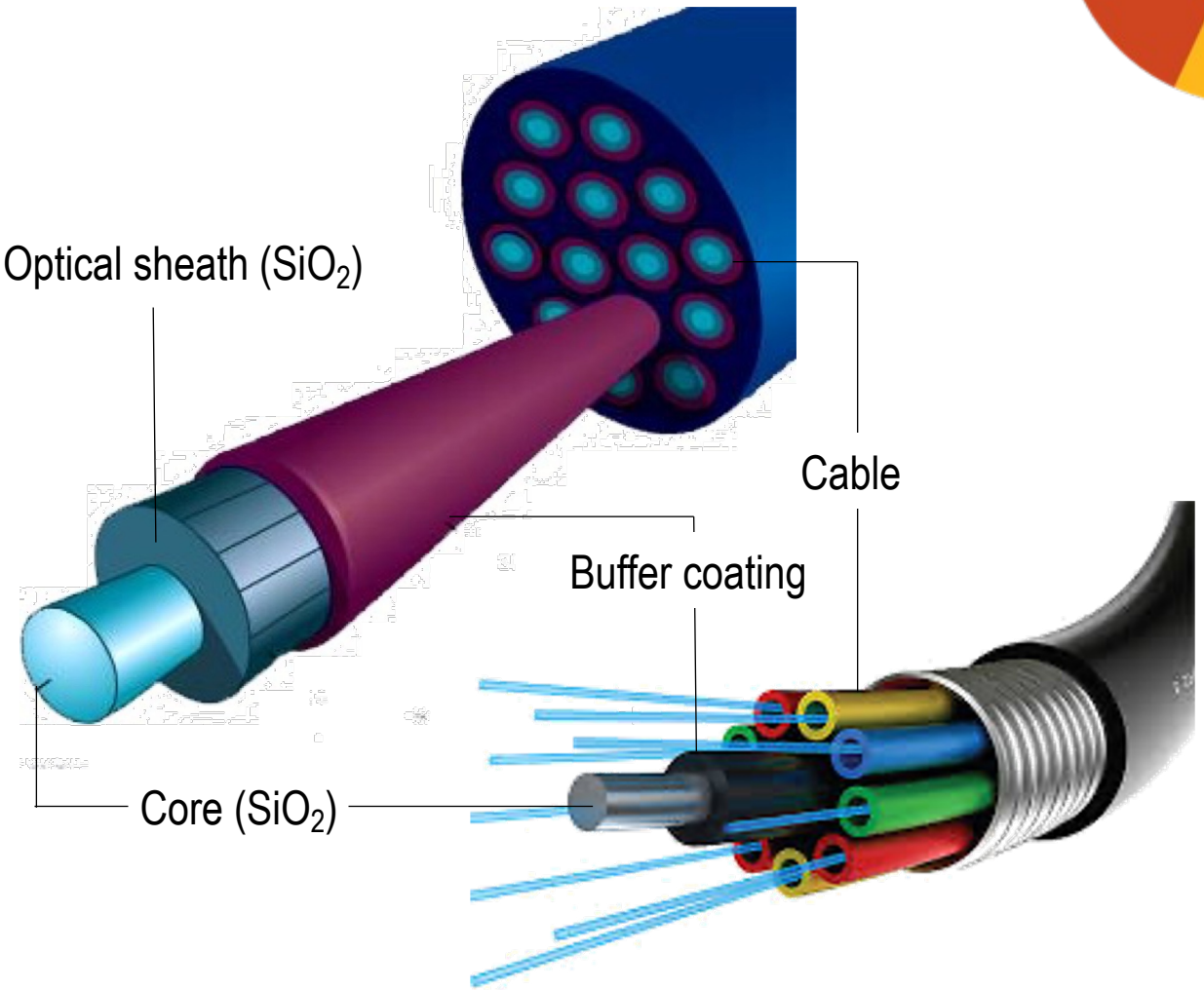
Light source

- Lamp → Xenon, Halogen, LED → Light emitted more natural
  More intense
  Contrast enhancement
  Cold light
  Long life
- Heat filter
- Condensing lens
- Manual or automatic intensity control circuit



Light cable

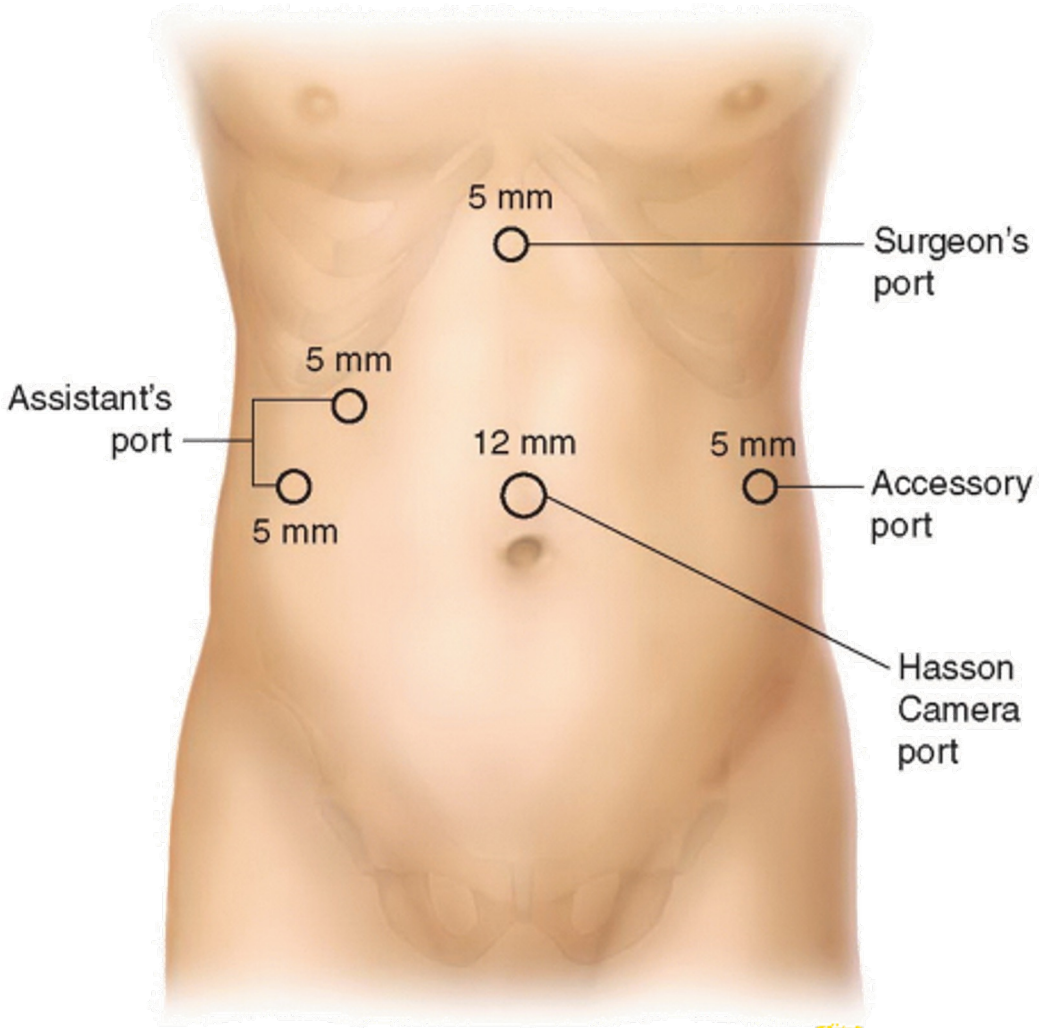
- Fiber optic cable
- Liquid crystal gel cable

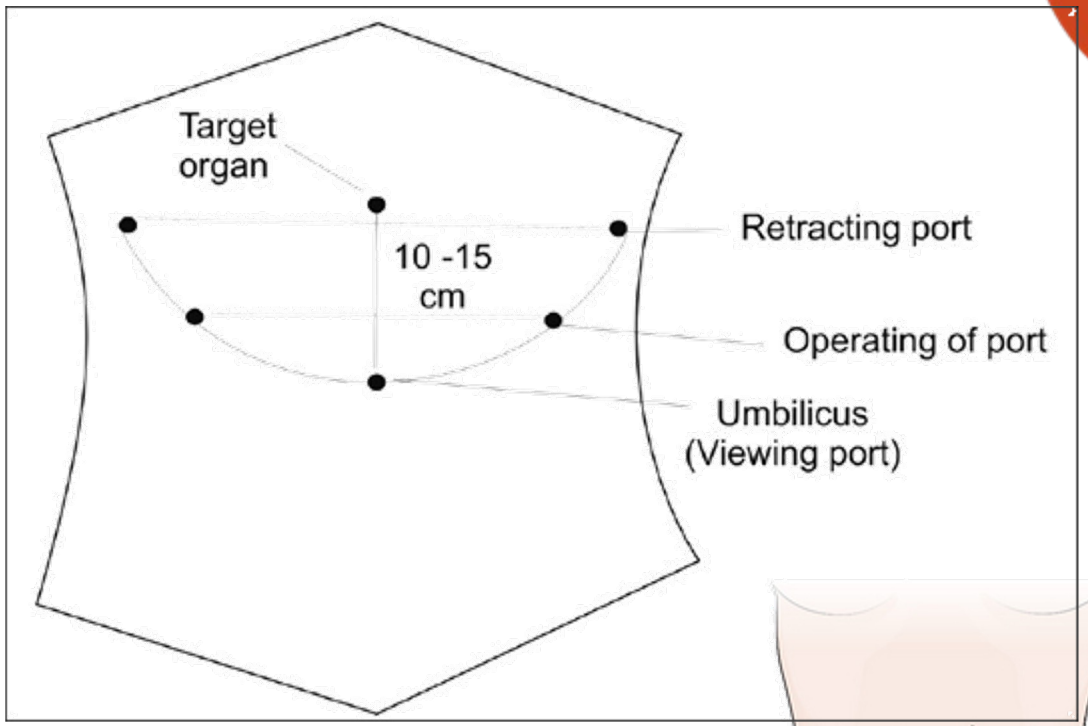


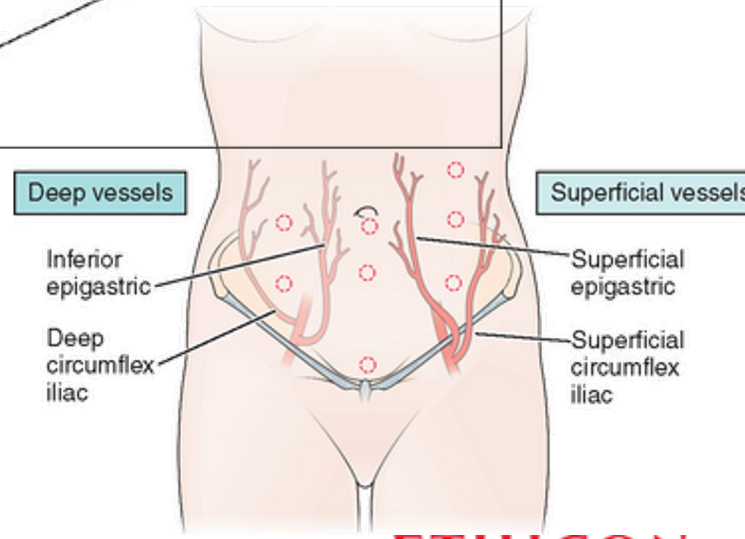
Insufflator

- Deliver CO_2 15 – 20 L/min
- Maintain intraabdominal pressure
- Heated

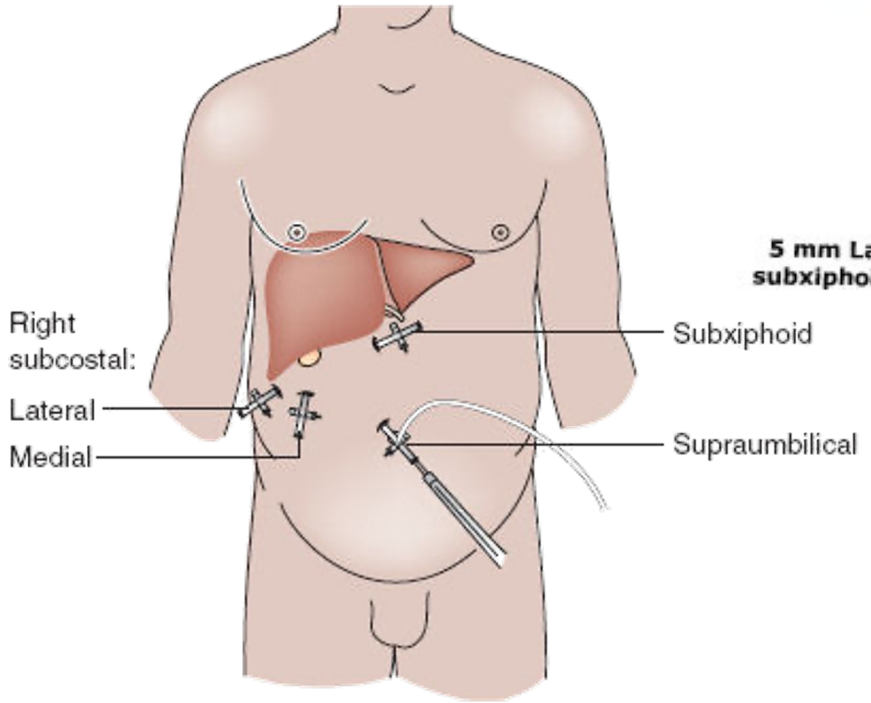
Trocar placement

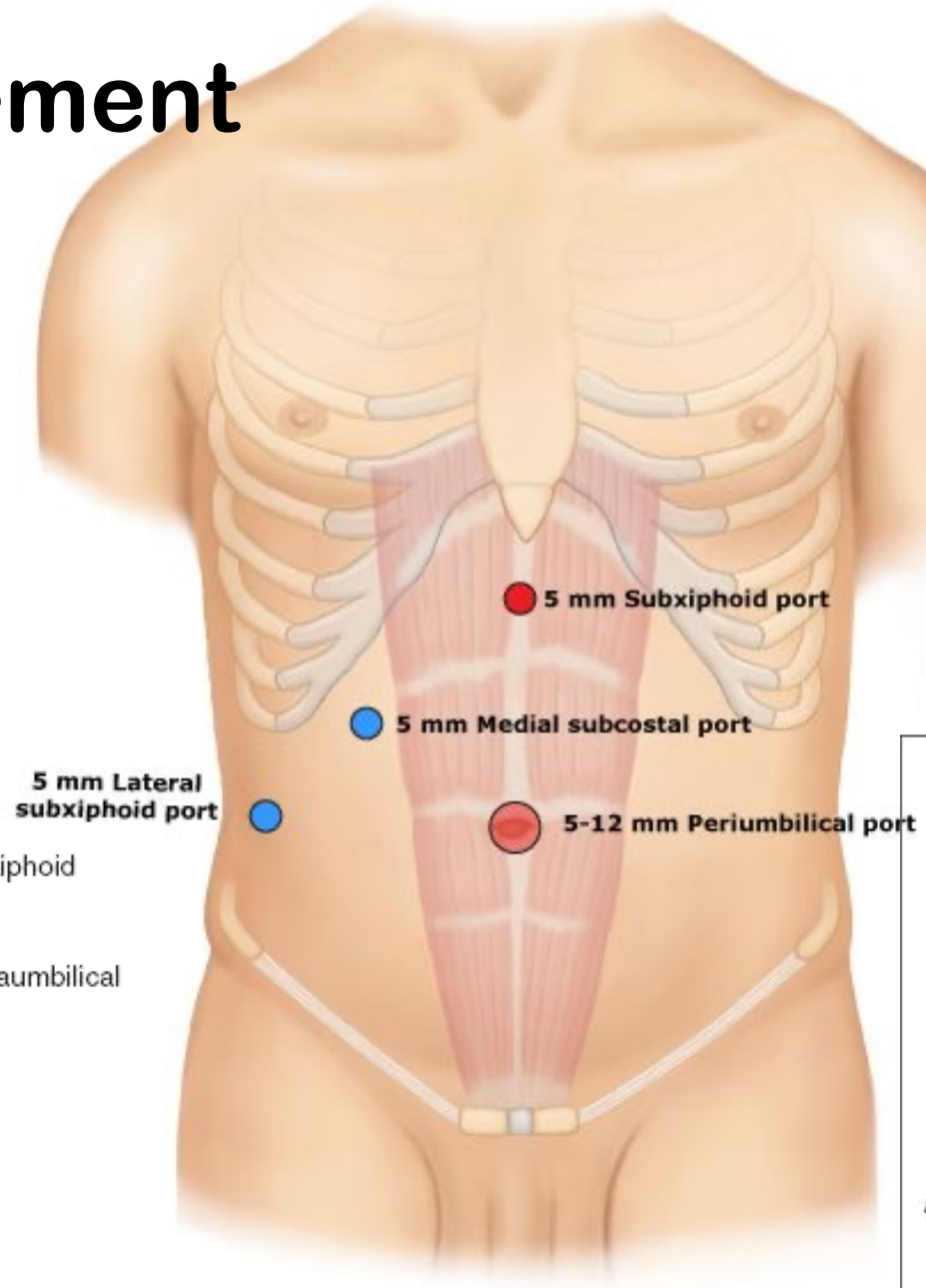


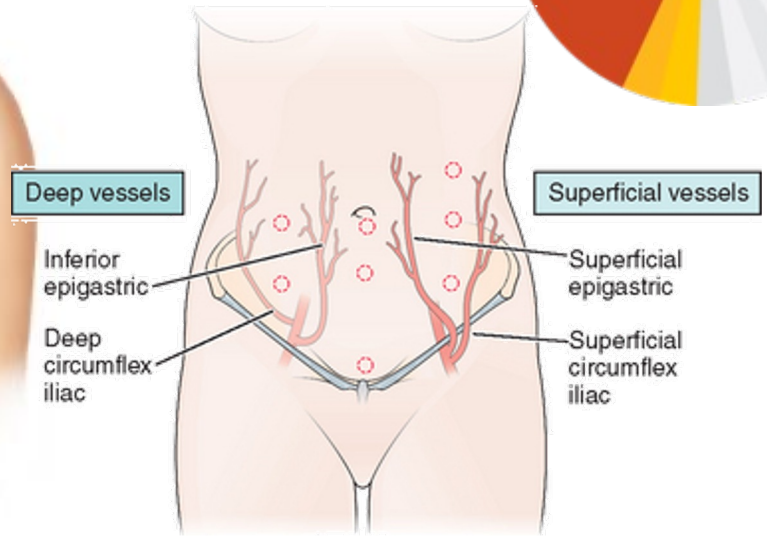


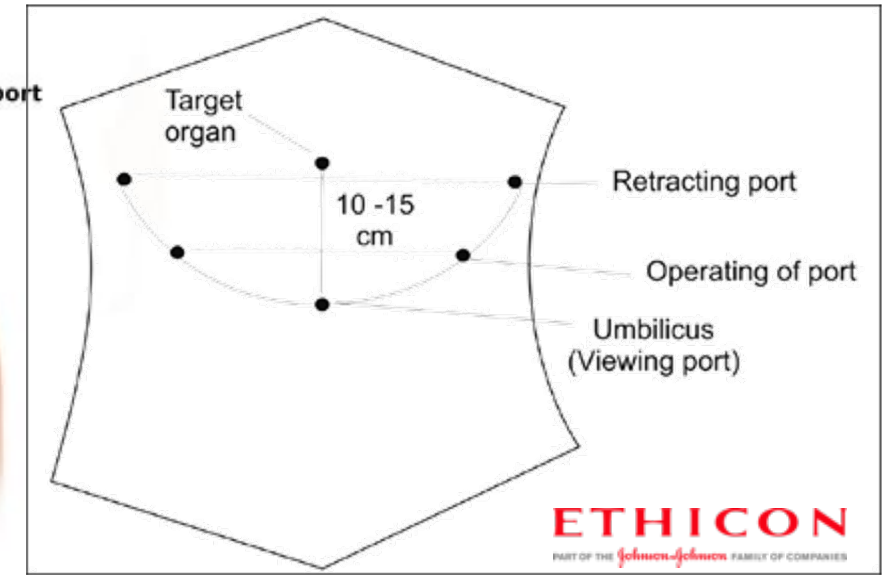


Trocar placement





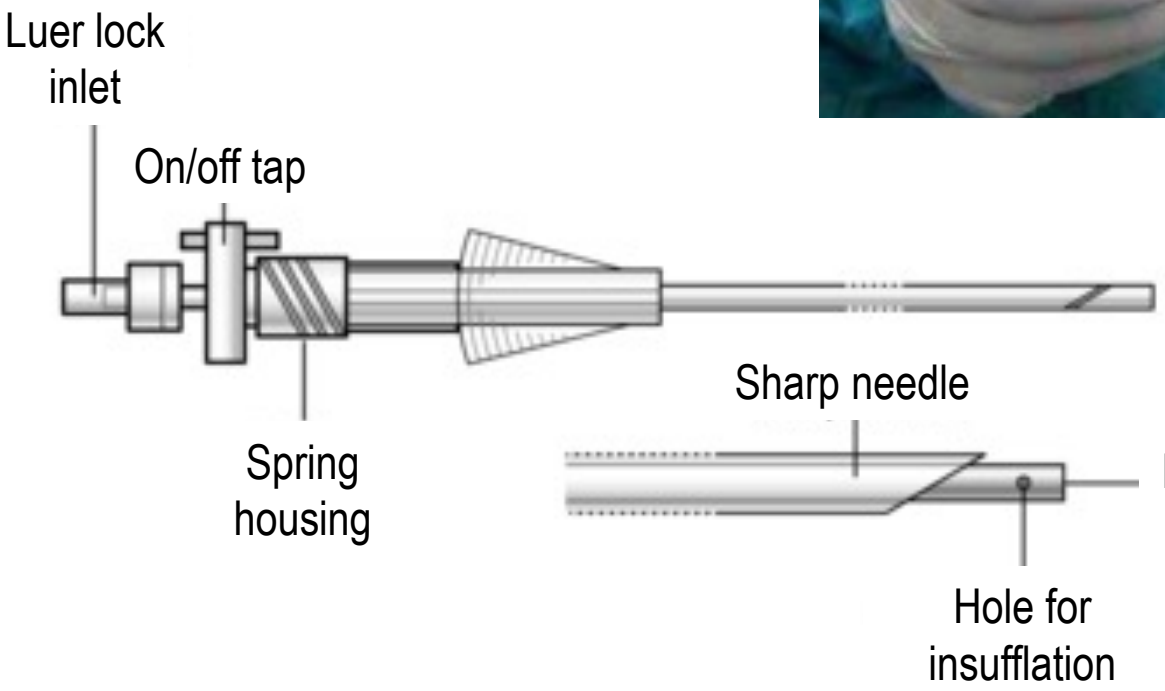




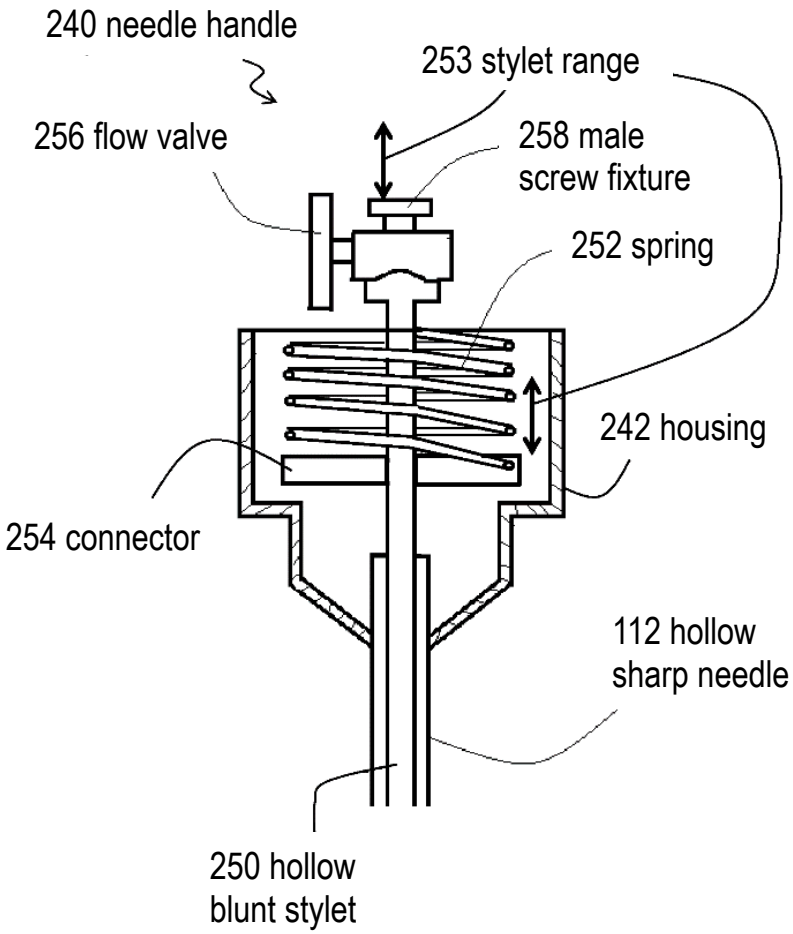
Peritoneal access

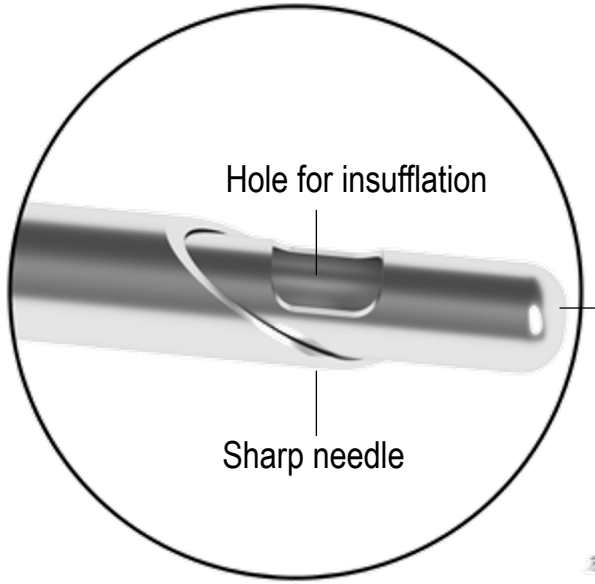
- Closed technique
  → Veress needle, direct access, optical Veress needle
- Open technique (Hasson)

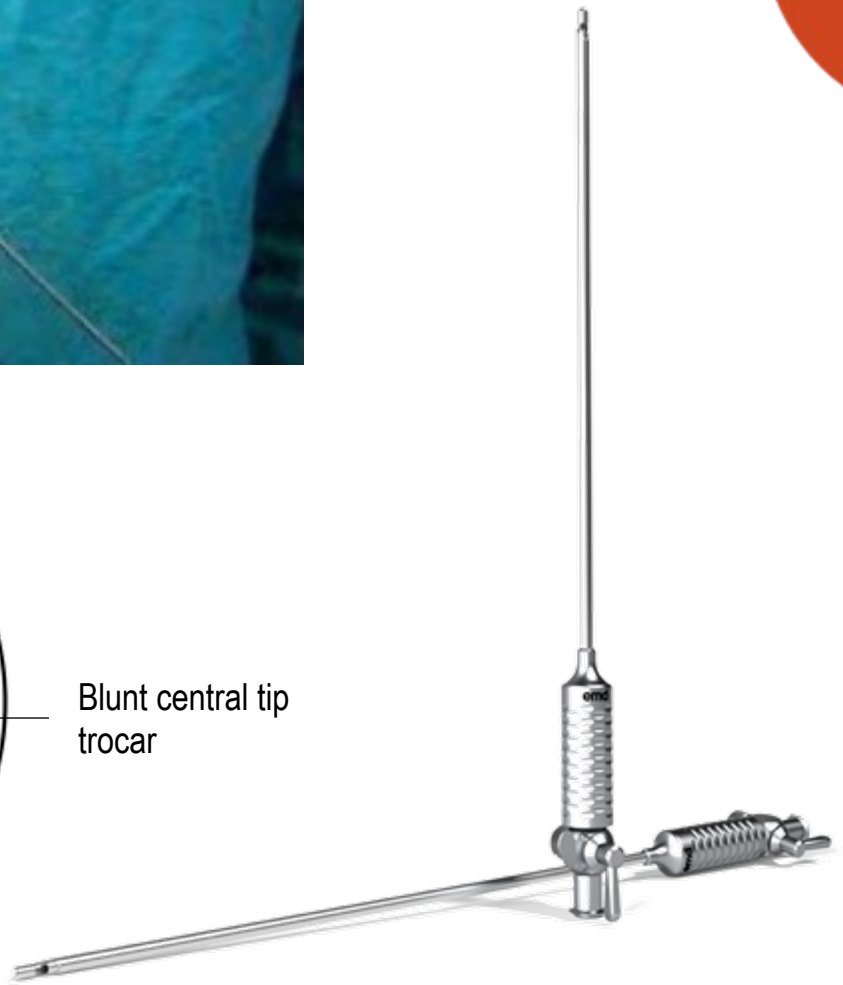
Veress needle: a spring–loaded needle used to create pneumoperitoneum in laparoscopic surgery



Veress needle: a spring–loaded needle used to create pneumoperitoneum in laparoscopic surgery







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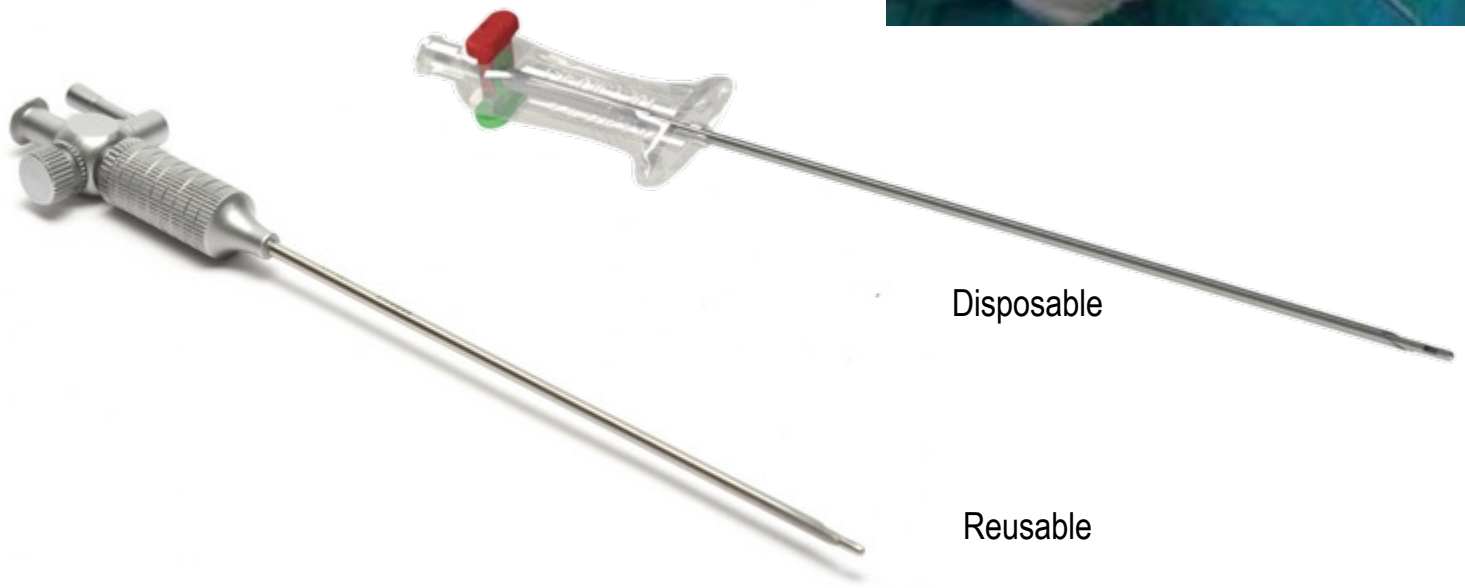


Disposable

Reusable

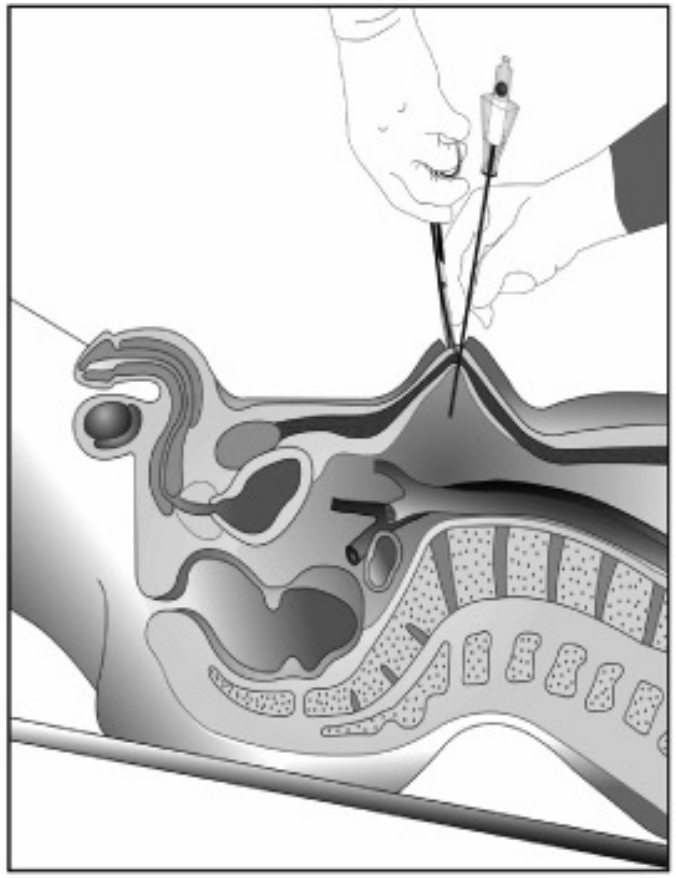
Peritoneal access

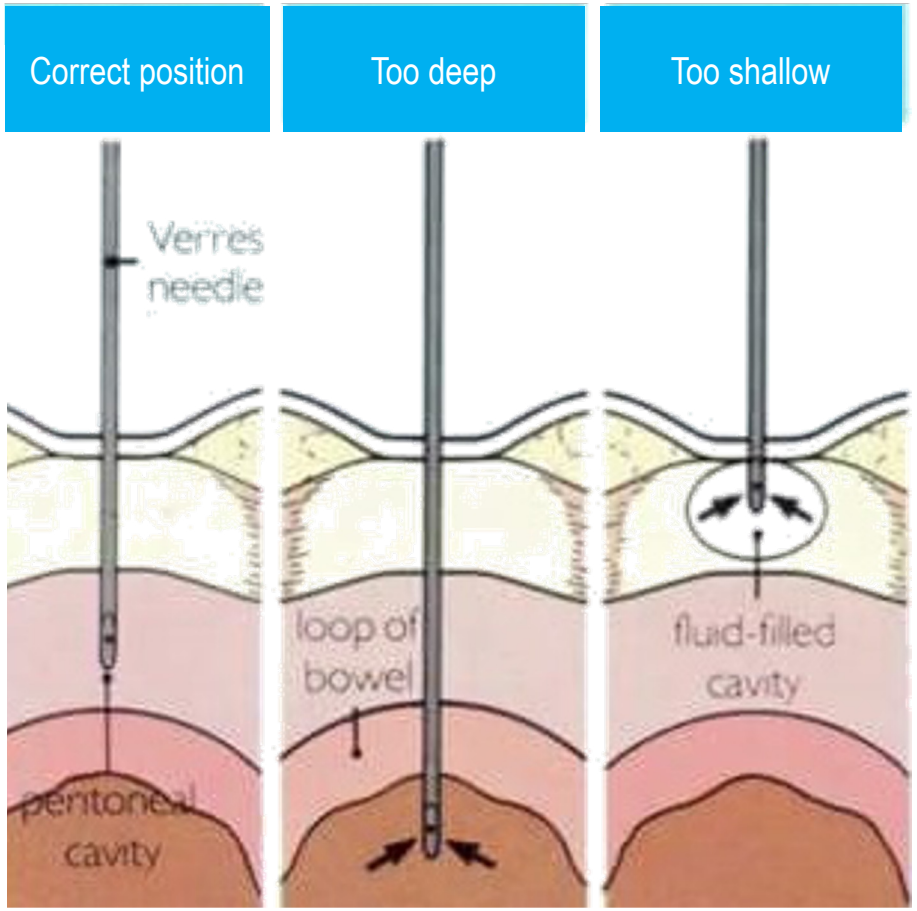
Test for peritoneal entry

- Irrigation and aspiration test
- Hanging drop method
- Measuring intraperitoneal pressure

Peritoneal access

Test for peritoneal entry





Peritoneal access

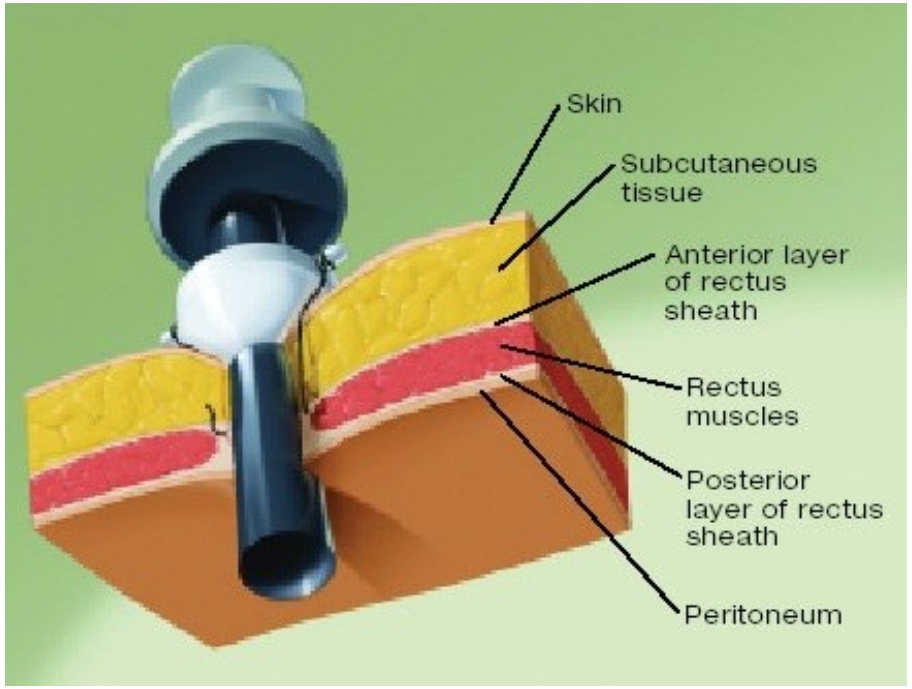
Hasson open technique

Incision correspond in length to the diameter of the intended trocar.

Dissecting the fascia followed by fascial incision and place a suture in each side.

Grasp the peritoneum, elevate to ensure no bowel is present.

Place a trocar into the peritoneal cavity.



Laparoscopic Instruments

Operative Instruments

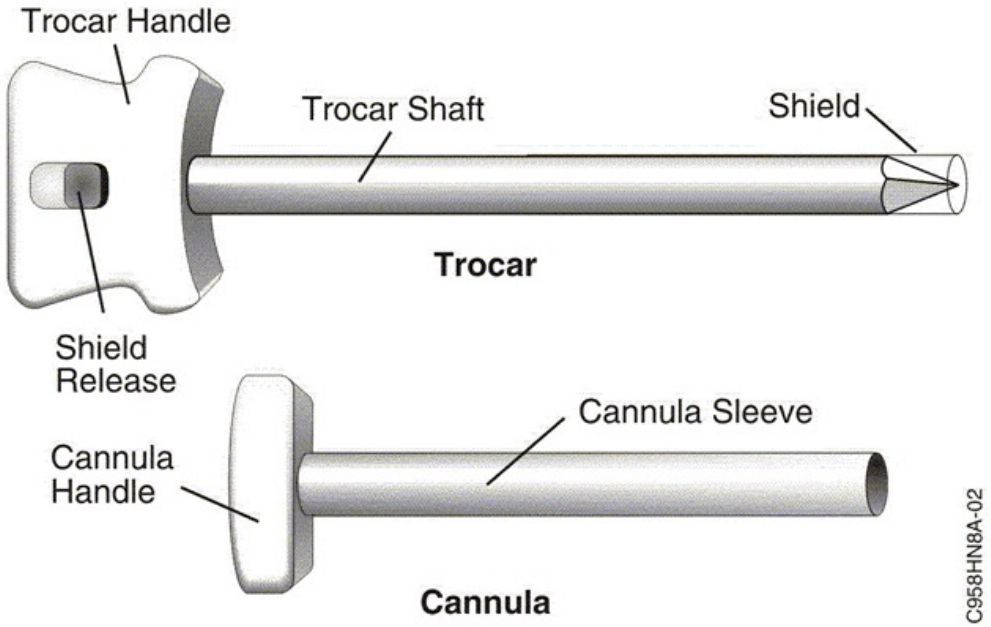
- Hands instruments
- Grasping Instruments
- Cutting Instruments
- Hemostatic Instruments
- Suction and irrigation instruments
- Special instruments:
  - Staple and clips
  - Specimen retrieval bag

Primary trocar

- Permit access to intraperitoneal cavity (usually via umbilicus)

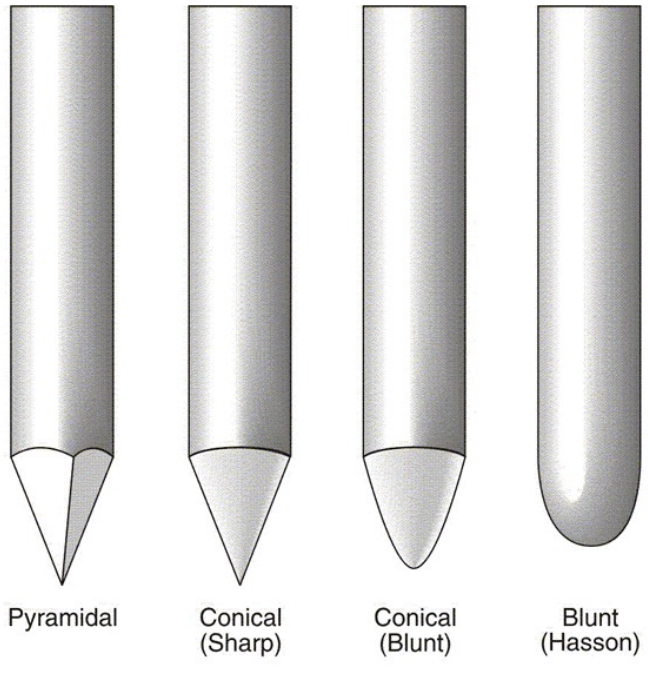
Disposable

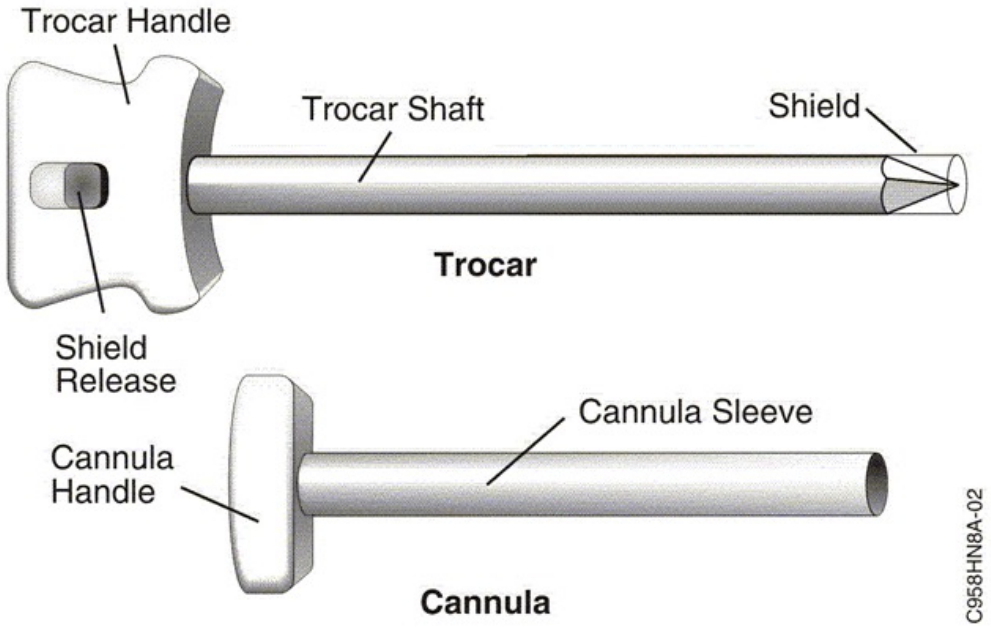
Reusable



Primary trocar

- Permit access to intraperitoneal cavity (usually via umbilicus)





Primary trocar

- Permit access to intraperitoneal cavity (usually via umbilicus)

Blunt trocar

Primary trocar

- Permit access to intraperitoneal cavity (usually via umbilicus)

Bladed trocar

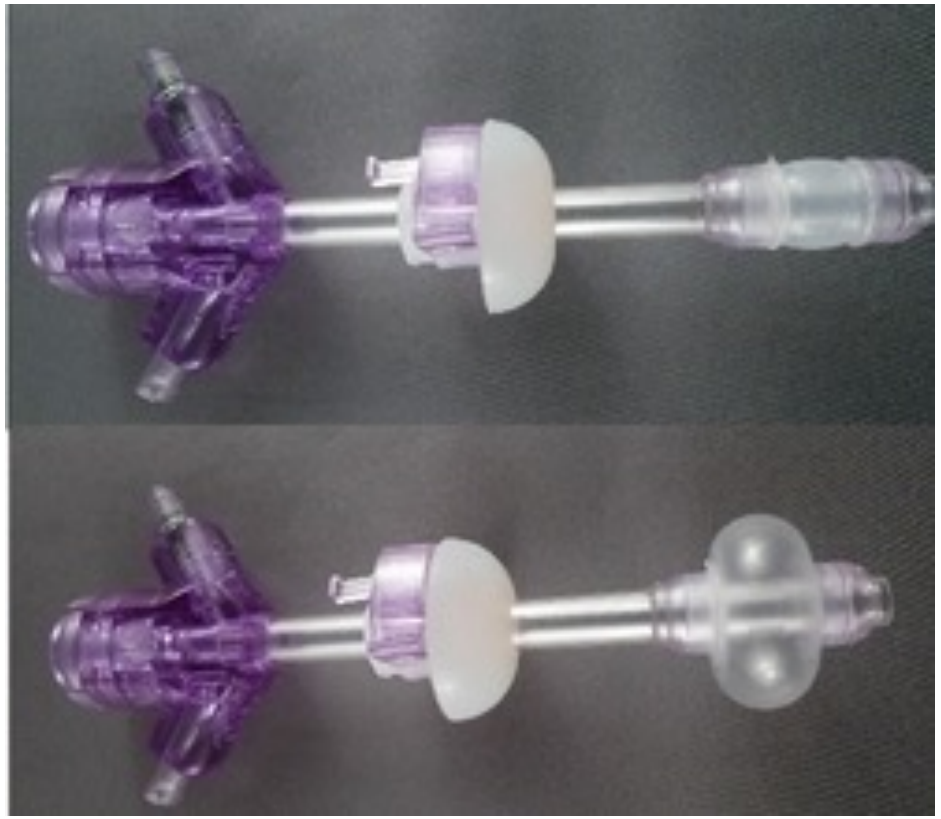
Primary trocar

- Permit access to intraperitoneal cavity (usually via umbilicus)

Endo tip

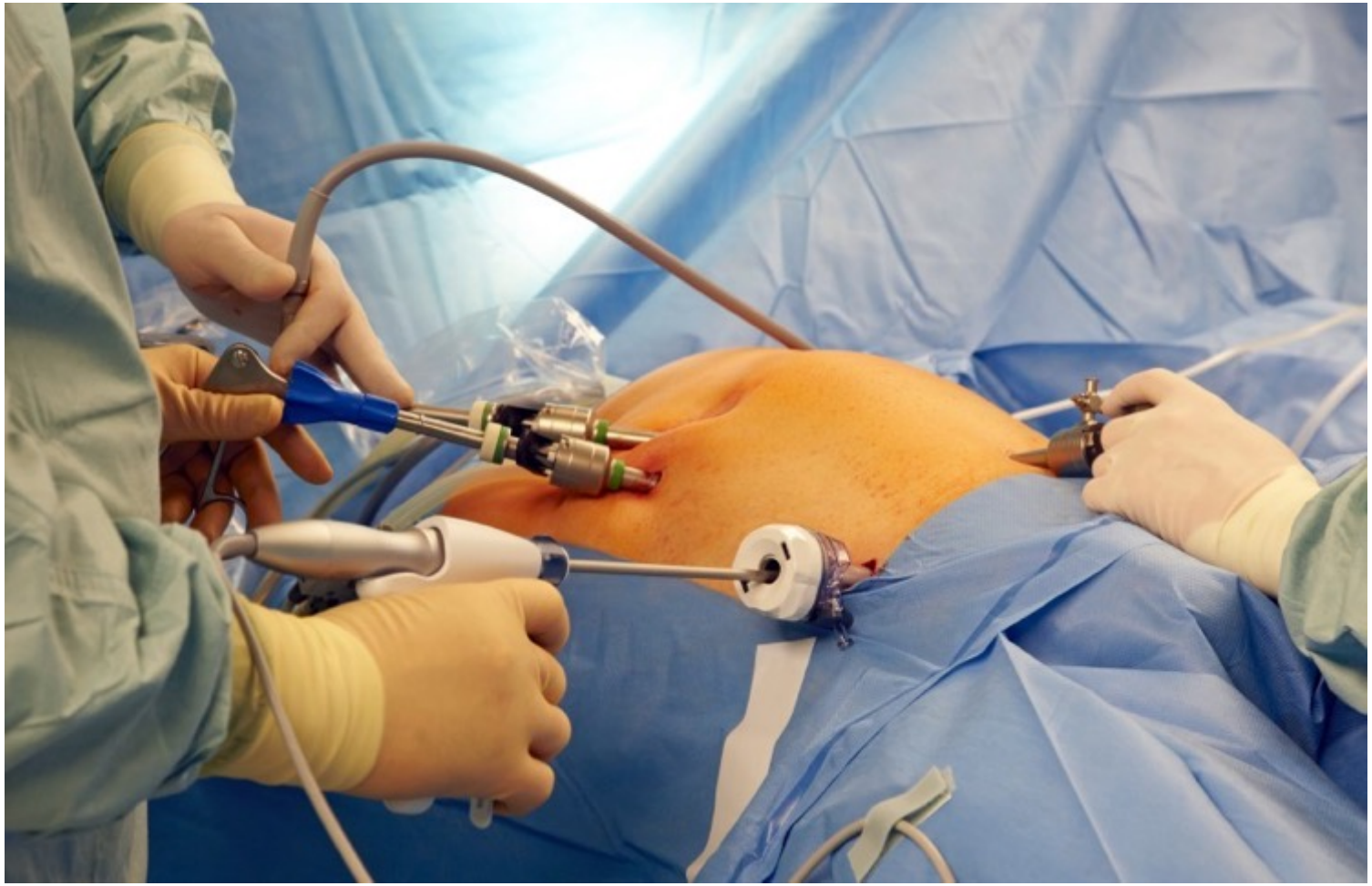
Primary trocar

- Permit access to intraperitoneal cavity (usually via umbilicus)



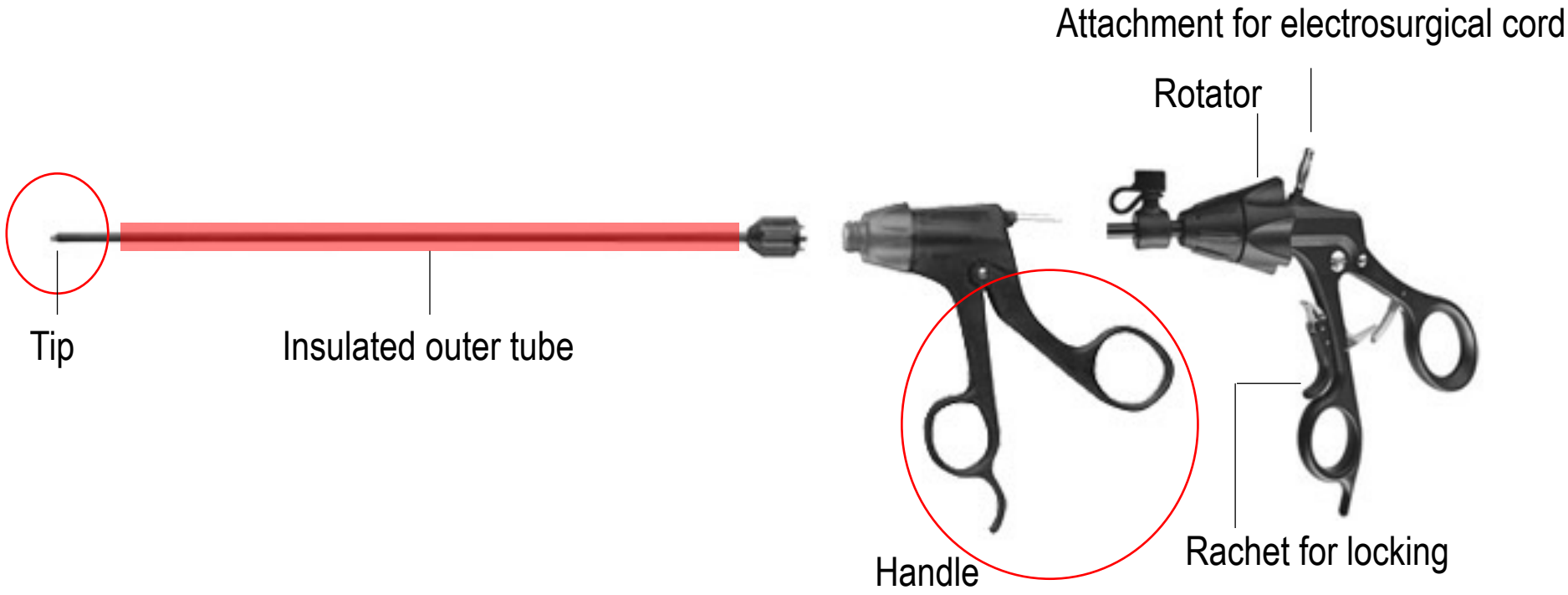
Balloon trocar

Primary trocar

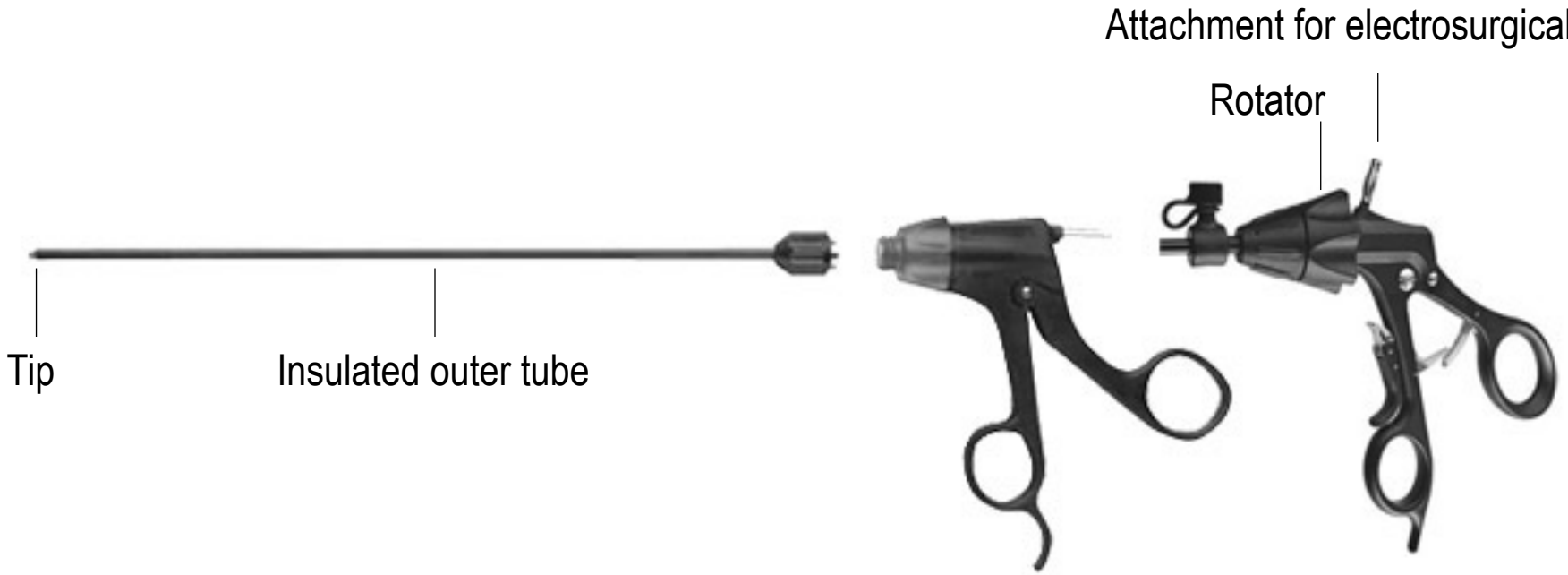


Secondary trocar/Sleeve

Hands instrument



Hands instrument



Reusable instruments

- Easy to disassemble and reassemble
- Parts should be interchangeable between similar instruments
- Easy to be cleaned and sterilized

Grasping instrument

Manches grasping forceps

Kelly grasping forceps

DeBakey grasping forceps

Grasping instrument

- Traumatic forceps
  - Sharp tip
  - Immobilize tissue with that does not either bleed or no concern if it is damaged

Grasping instrument

- Atraumatic forceps
  - Dull tip
  - Hold and move tissue that is to remain in abdomen with minimal trauma: bowel, Fallopian tube, etc

Cutting instrument

- Scissor
  - Cutting / Dissecting
  - Connected to electrosurgical electrode

Curved scissor

Straight scissor

Hook scissor

Hemostatic instrument

- Monopolar / bipolar
- Advanced vascular sealing

Suction and Irrigation instrument

- Suction
  - Fluid and Smoke
  - Numbers of hole at the ends to prevent pullingbowel
- Irrigation

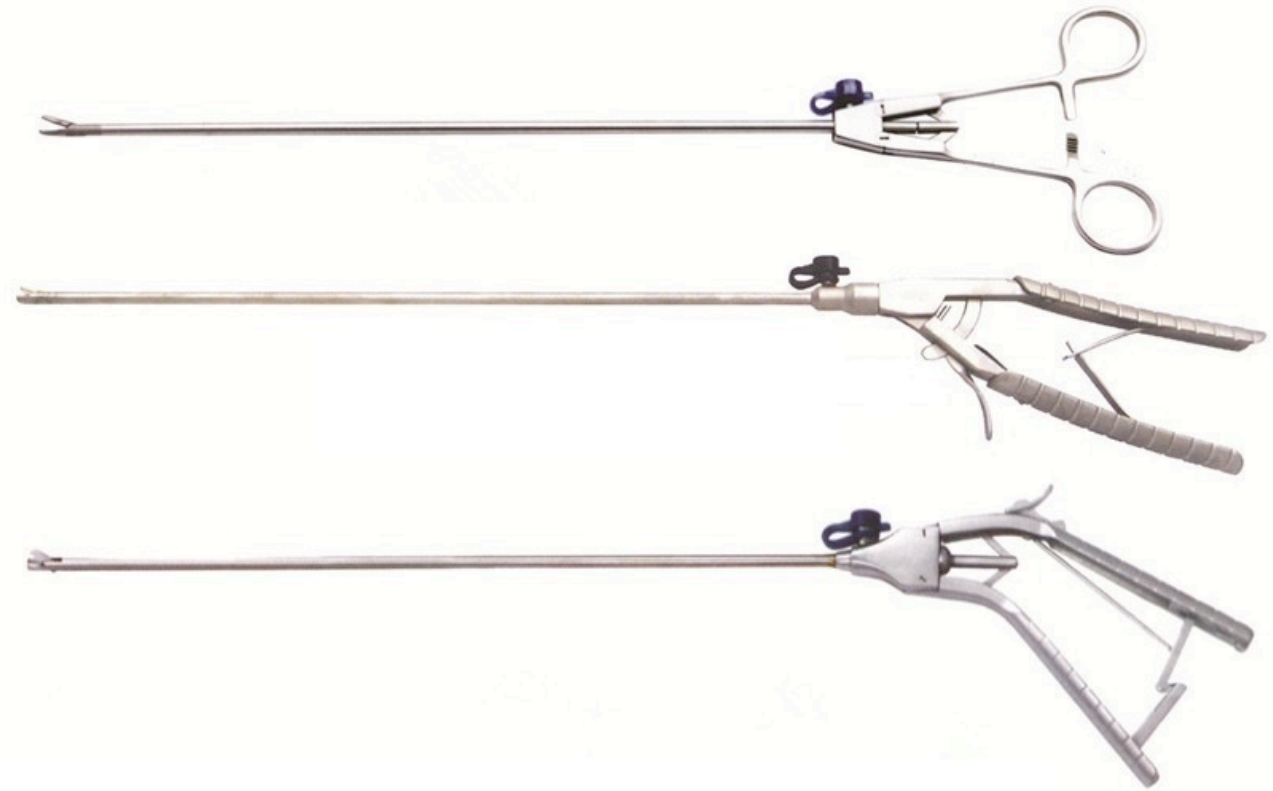
Suction and Irrigation instrument

Suturing instruments

- Needle holder
- Suture material
- Knot pusher (extracorporeal knot)

Suturing instruments

- Needle holder
- Intracorporeal knot tying
- Variety of handles and jaws



Suturing instruments

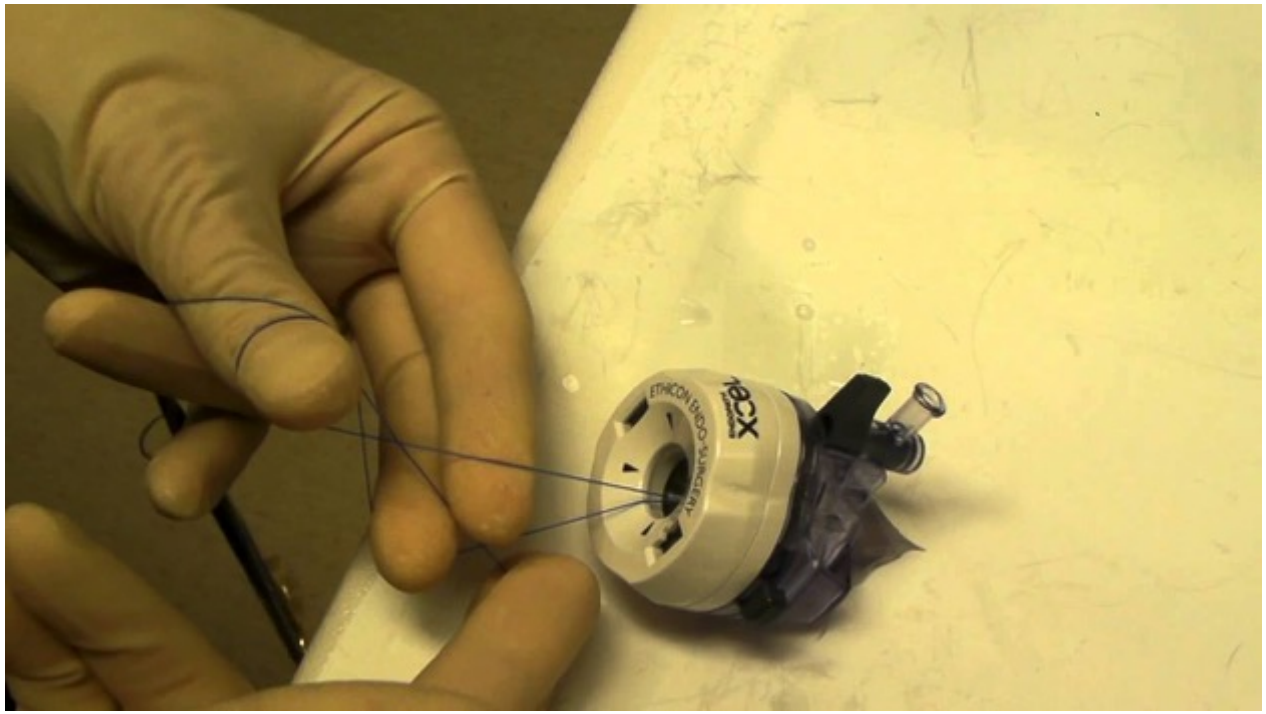
- Suture material

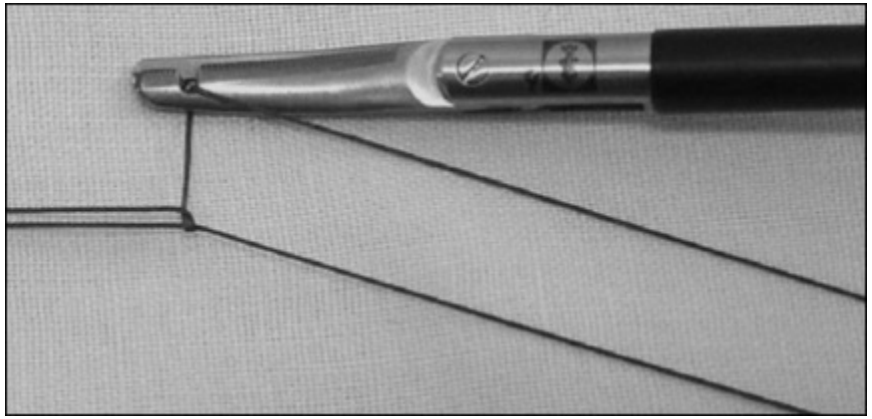
Barbed suture

- Unidirectional barbed
- Self anchoring loop
- Tight securely and quicker

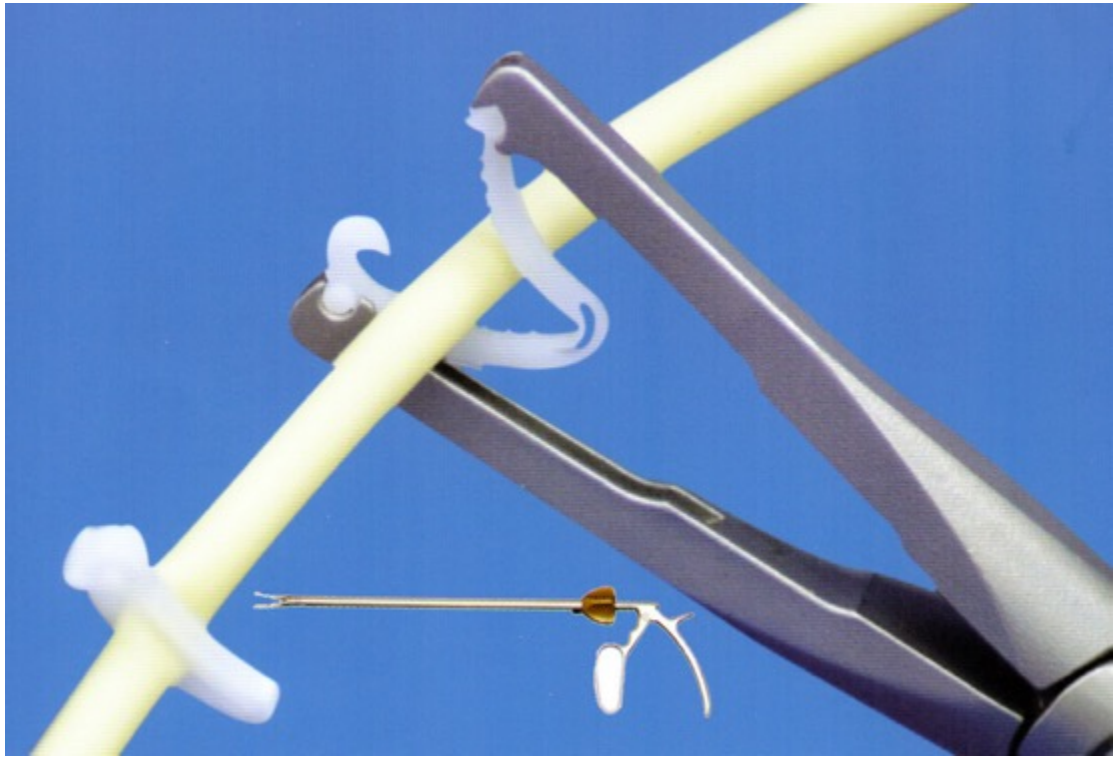
Suturing instruments

- Knot pusher (extracorporeal knot)





Staple and clip



Specimen retrieval product

Be familiar with the instruments….

End of modules: Thank You