ROLE OF LAPAROSCOPY IN GYNAECOLOGY

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LAPAROSCOPY

- Performance of surgical procedures using endoscopes in

  the peritoneal cavity- Laparoscopy

  inside the uterus- Hysteroscopy

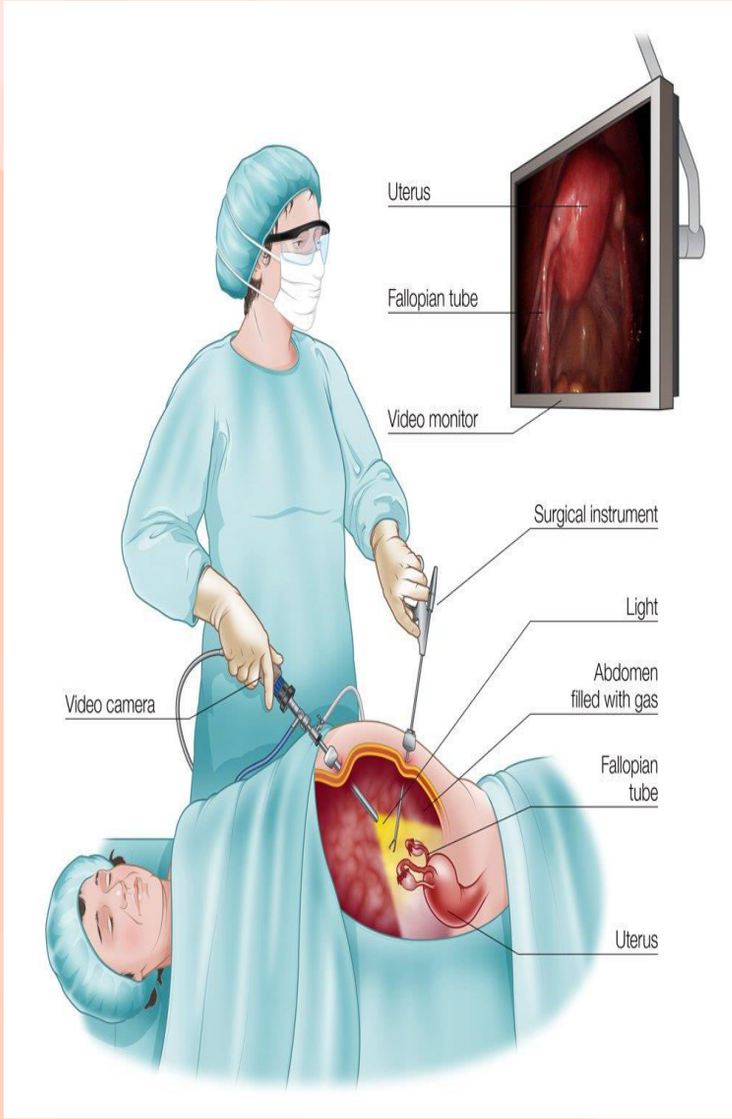
- a surgical procedure in which a fibre-optic instrument is inserted through the abdominal wall to view the organs in the abdomen or permit small-scale surgery.

HISTORY

- In 1910, Hans Christian Jacobaeus of Sweden performed the first laparoscopic operation in humans.
- In 1960, Fomestier & co-authors made laparoscopy popular with the use of fiberoptic cables & cold knife
- Harry Reich , USA – 1st surgeon to perform Laparoscopic hysterectomy

ADVANTAGES:

- Smaller scars
- Lesser blood loss
- Less pain
- Short hospital stay
- ↓risk of infection
- Faster recovery



DISADVANTAGES

Expensive instruments

Greater skill

Less operative field

CONTRAINDICATIONS :

ABSOLUTE

1. Obvious therapeutic indication such as peritonitis, abdominal injury etc
2. Uncorrected coagulopathy
3. Haemodynamic instability

RELATIVE: Critical ICU pts, Anterior abd. wall infection, recent laparotomy

Pregnancy, morbid obesity, cardiopulmonary compromise.

PRE-OP PREPARATION

- All necessary blood investigations, urinalysis, CXR, ECG to be taken
- Description of procedure
- Informed consent regarding benefits & risks associated with procedure including conversion to open procedure
- Routine mechanical bowel preparation is abandoned - It is advisable in severe cases when dissection of cul-de-sac is anticipated.

FASTING PROTOCOLS- as per ISJ for laparoscopy

Ingested material	Duration of fasting required
Clear fluids	2hrs
Milk	6hrs
Light meal	6hrs
Heavy meal (meat/ fatty food)	8hrs

PREMEDICATION

- Antiemetics such as T.ondansetran to reduce post-op nausea & vomiting
- Antibiotic prophylaxis is not mandatory as there is no significant benefit noted.
- Routine DVT prophylaxis is only needed in cases of additional risk factors. In low risk & benign conditions it is not advisable
- Reserve for blood & blood products

POSITIONING

LOW LITHOTOMY POSITION

- Preserve sacroiliac angle with slight knee flexion
- Protect the lateral aspect of knees to prevent peroneal nerve damage
- Arms adducted & pronated to facilitate surgeon's mov

TRENDELENBURG POSITION

- To allow bowel to come out of the pelvis
- To facilitate visualisation

Foley's catheter to be inserted aseptically

PERITONEAL ACCESS

- Entry into the abdominal cavity must be considered carefully as it is associated with large no. of complications.

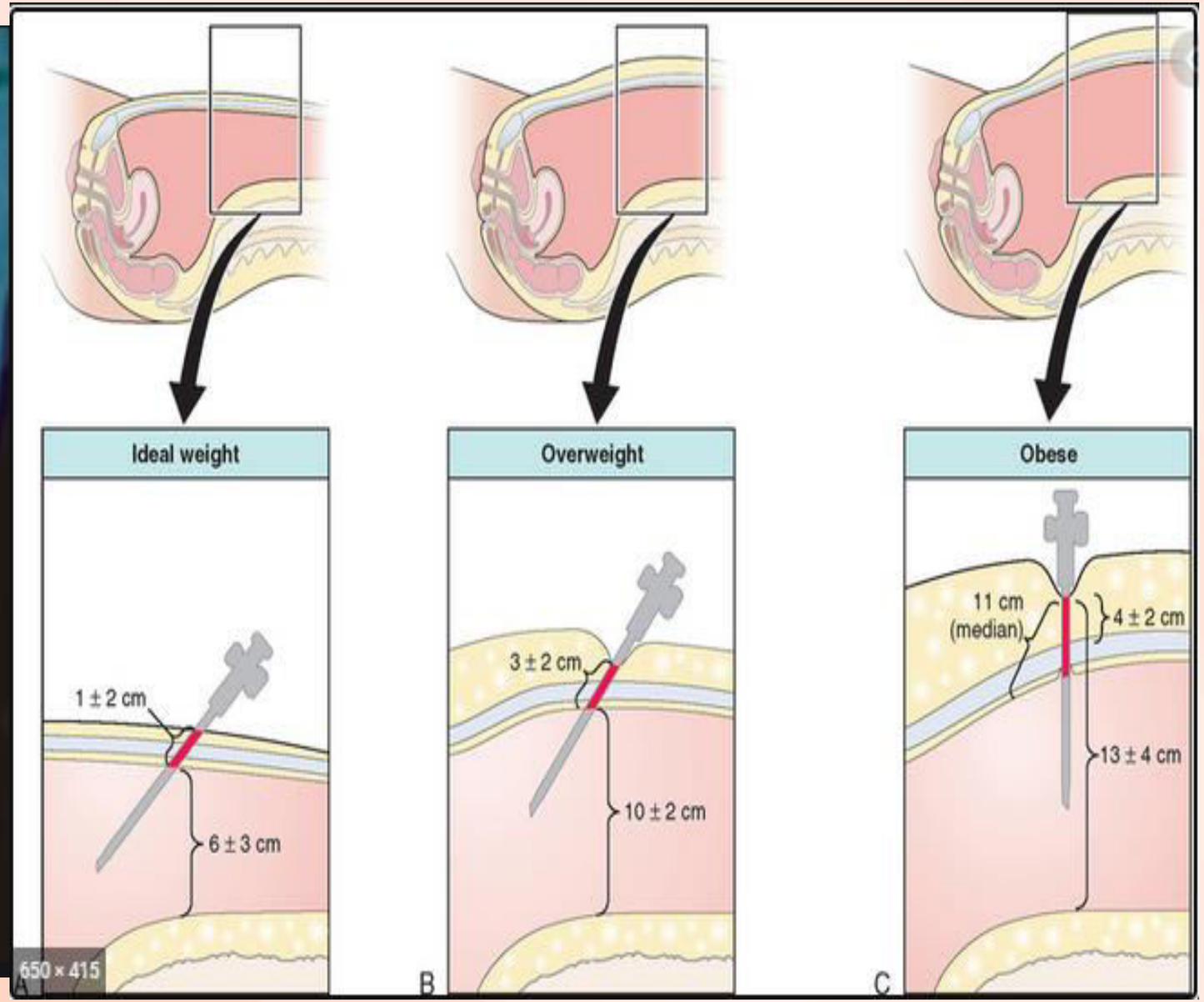
1. ACCESS SITES- Primary site is umbilicus

   - ✓ Thinnest area
   - ✓ Minimal SC fat
   - ✓ Fusion of fascial layers with peritoneum

   umbilicus is not accessible – L upper quadrant

   Pregnancy , Pelvic mass, Prior surgery in lower or mid abdomen

VERESS NEEDLE: midline, sagittal plane



DETECTION OF MALPOSITION:

a. Initial intraperitoneal pressure:8-10mm Hg- MOST ACCURATE
b. Aspirate the contents
c. Injection of saline & lifting abdomen – suction
d. Compressing xiphoid- increases pressure
e. Integrated cannula with small diameter laparoscope (2mm)

INSUFFLATION

- Amount of gas depends on intraperitoneal pressure
- CO_2 commonly : Non-combustible – safe to use

  soluble in blood - ↓ risk of gas emboli
- Other gases: N_2O (better analgesia), helium.
- 25-30mm Hg : Preferable for cannula positioning

  extra volume to reduce the chance of trauma
- 10-15mm Hg : After placement of cannula
- High flow rates useful for maintaining exposure during smoke suction

CANNULAS

Various sizes-

- 5mm- instrumentation
- 10mm- laparoscope &

  tissue retrieval
- 12mm- Robotic surgeries
- 15mm- morcellation

LAPAROSCOPE

- Dual purpose: Light transmission

  Obtain image

- The wider the diameter- brighter
- Wider diameter lenses- improved view
- Ideal illumination : 10mm
- Viewing angle: 0-45◦
- Zero : Standard gynaec surgery
- 30◦- difficult situations

SITE OF INSERTION

- Most consistent landmark-

Median umbilical ligament

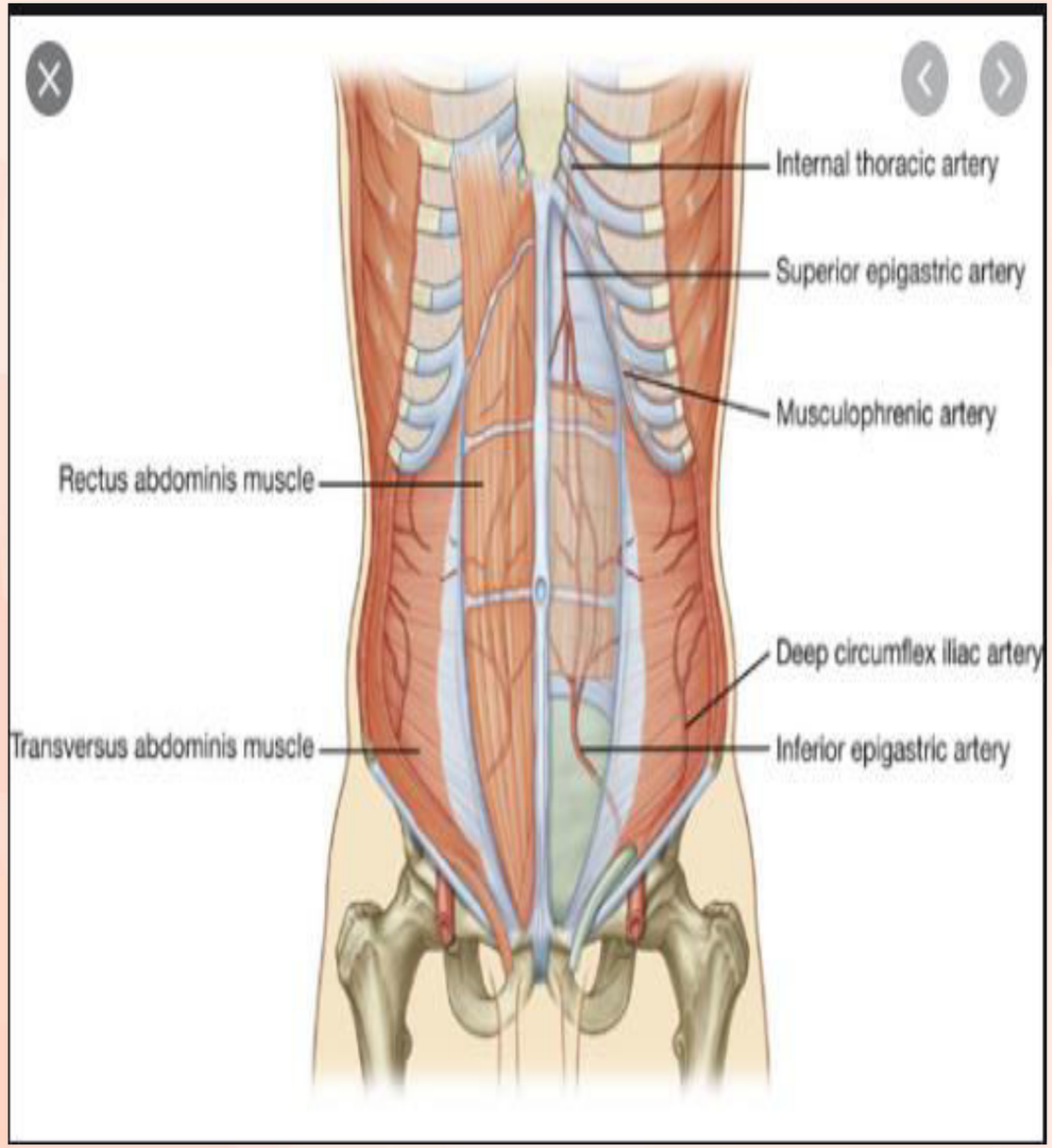
Exit of round ligament

- Anatomical landmarks-

5cm superior to pubic symphysis

8cm from the midline

(as per Hurd et.al & Saber et.al)

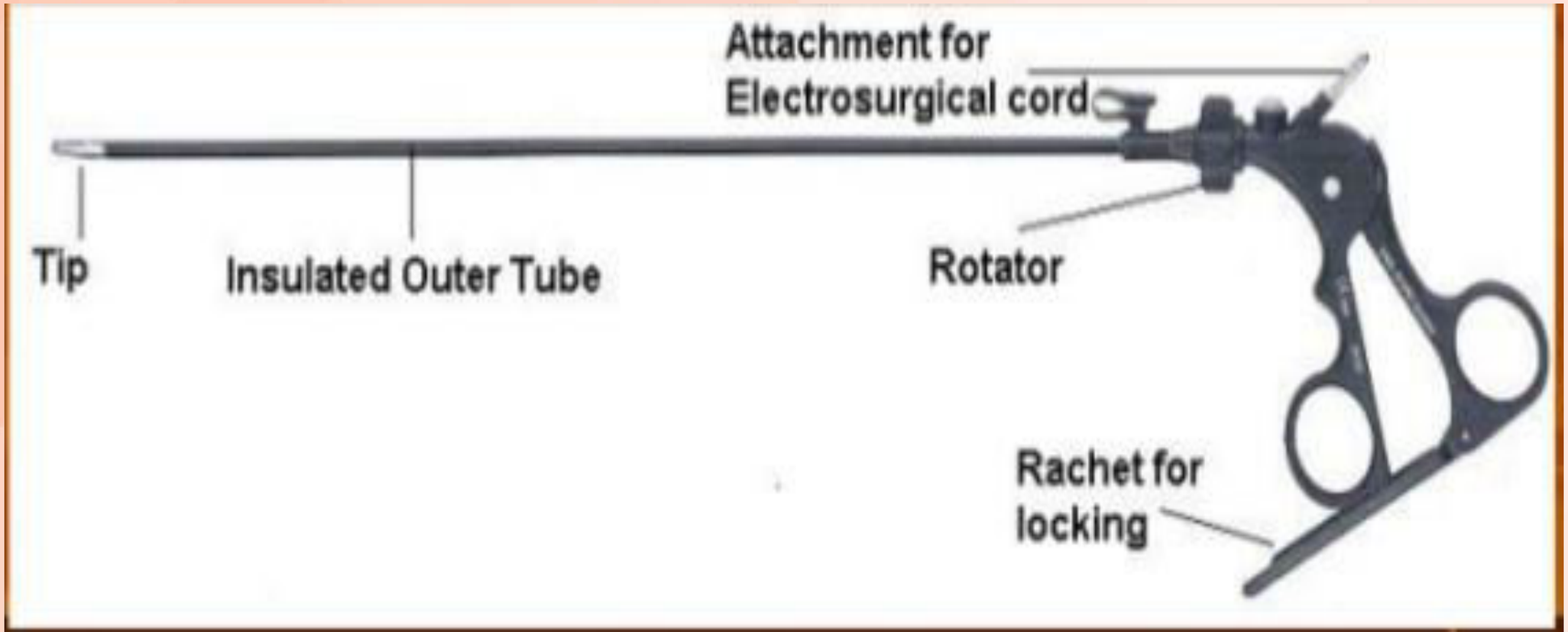


INSTRUMENTS

- Various sizes: 28cm – sr paediatric surgeries

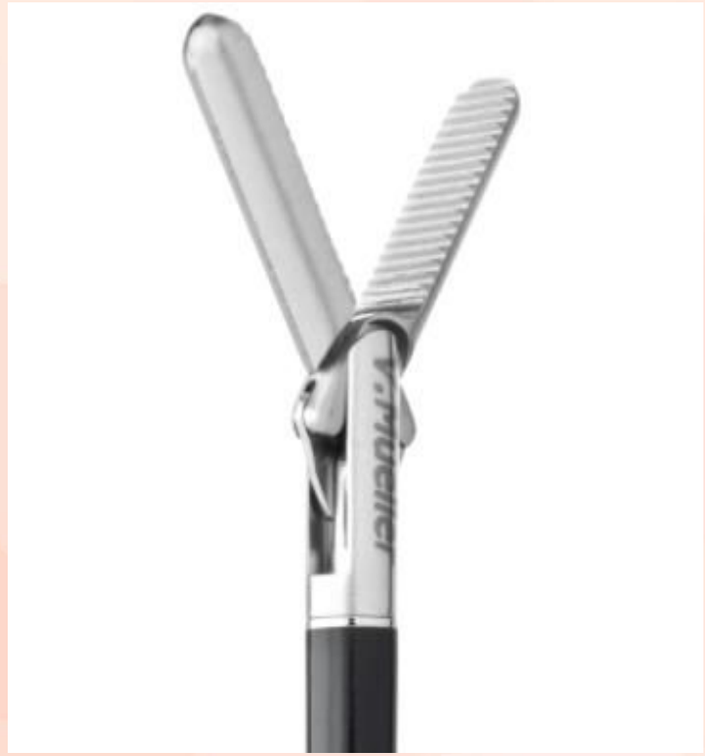
  36cm – adult surgeries

- Parts



- ATRAUMATIC FORCEPS : Holding soft tissues such as bowel, tubes

  Reversible deformation



- SEMITRAUMATIC FORCEPS: Deeper serrations so they cause trauma

  For removable organs

- **MARYLAND DISSECTOR:** Similar to artery forceps

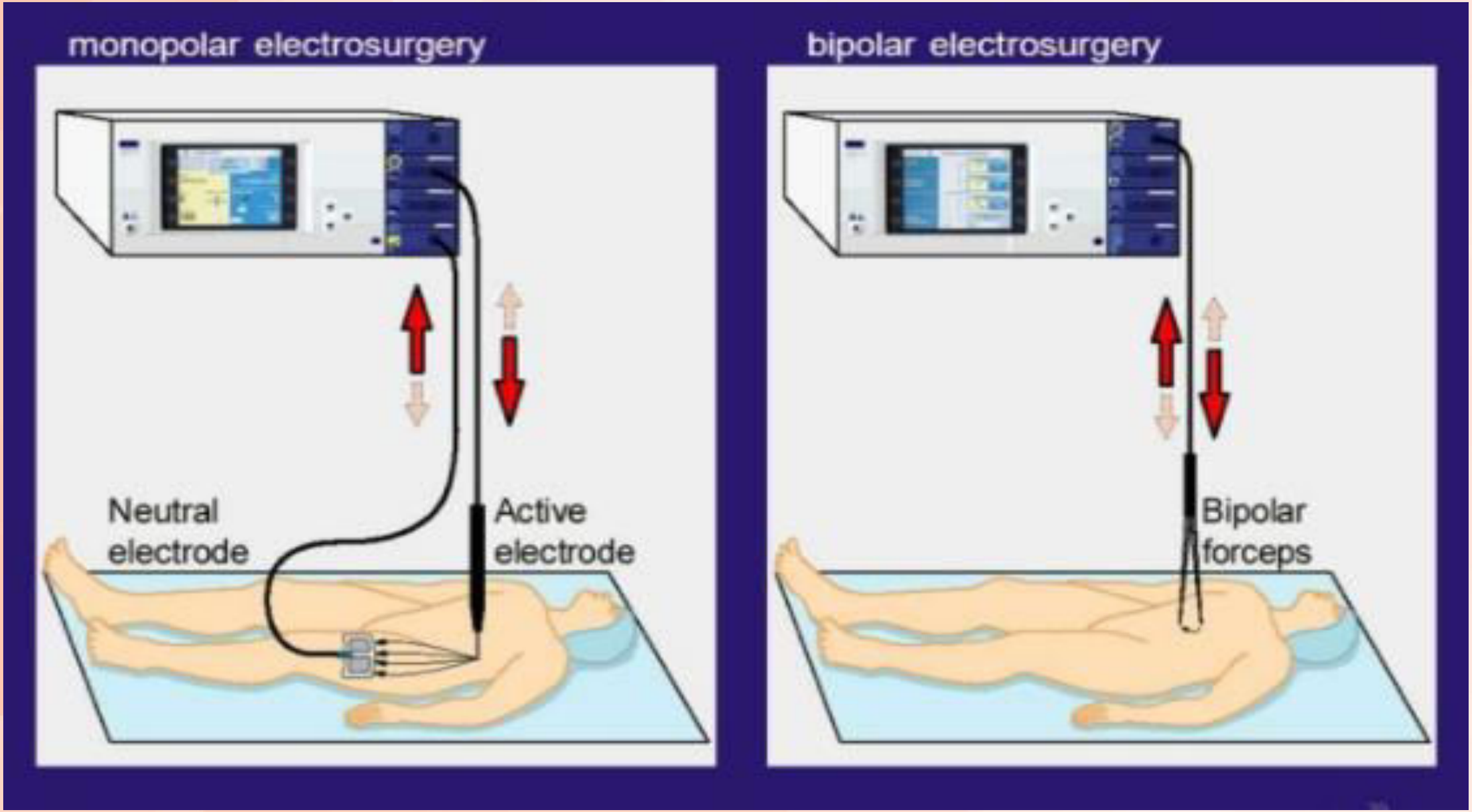
  Used for stripping of tissues such as UV fold of peritoneum

  Formation of window while dissecting (IFP ligament, Uterines)

  Haemostasis

- RUBY DISSECTOR: Maryland dissector with bipolar

MONOPOLAR Vs BIPOLAR



HARMONIC

- Ultrasonic cutting accomplished mechanically using blade that oscillates back & forth in linear fashion.
- Oscillation by vibrating element

  Located in handle
- @ 55kHz oscillation
- Distance of oscillation-

  efficiency of cutting

- Thermal tissue coagulation injury to tissue

- SCISSORS

STRAIGHT

for dissecting tissue such as serosal layer of myoma

CURVED

for dissecting vessels

- SPATULA: Fulgeration of tissue

MYOMA SCREW

Clockwise direction @ 30◦ angle

- SUCTION & IRRIGATION:

✓ Towards us- suction

Midline- neutral

✓ Smaller hole: irrigation

✓ From dependant area

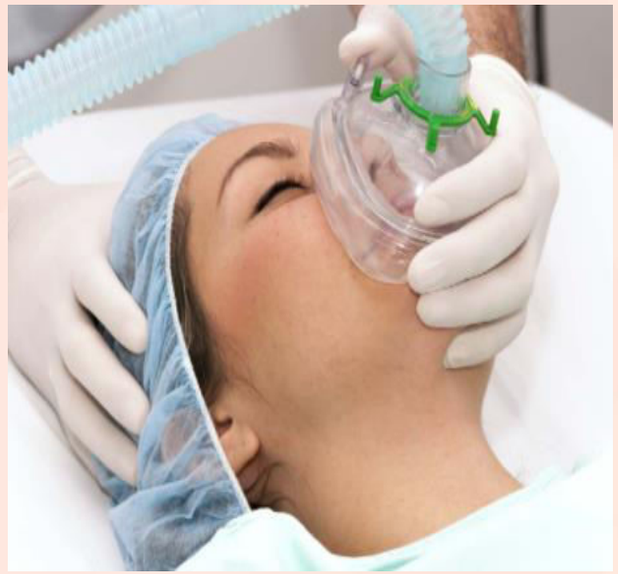
✓ To be done in impulses

✓ Various sizes 5mm & 10mm

✓ Can be used for tissue separation

COMPLICATIONS

- **ANAESTHETIC** : Due to GA- hypoventilation, hypotension, Esophageal intubation, Cardiac arrhythmias, arrest



  - Enhanced risk - Trendelenburg position with ↑IPP

↓

Greater pressure on diaphragm

Higher risk of hypoventilation, ↑CO2 & met. Acidosis

  - Use of anesthetic agents- Relaxation of esophageal sphincter

↓

GERD, Bronchospasm & Pneumonitis

- **CARDIOVASCULAR COMPLICATIONS :**

1. **Cardiac arrhythmias-** due to hypercarbia, met. acidemia

   - can be avoided by N2O gas & with IPP = 12mm Hg

   - gasless laparoscopy

2. **Hypotension-**

   High IPP → dec. Venous return

   → vagal discharge

- **INSUFFLATION COMPLICATIONS :**

1. **CO2 Embolus**: may be due to direct IV injection

   Sudden hypotension, cyanosis, arrhythmias, heart murmurs

   Pulmonary edema

   Rt heart failure- accelerating pulm. HTN

   Treatment: Place the pt in lateral decubitus position

   Evacuate the gas from the peritoneal cavity

   Central venous line for aspiration of gas from heart

2. **Excess CO2 access**: peripheral vasoconstriction

   ↓ Splanchnic blood flow due to high IPP

EXTRAPERITONEAL INSUFFLATION:

improper insufflation needle positioning

1. Subcutaneous emphysema – identified by palpation of crepitus
2. Mediastinal emphysema
3. Emphysema in omentun & mesentry

PREVENTION: proper positioning & lifting abdominal wall

TREATMENT: Remove & repeat the procedure

Go for open laparoscopy

Leave the laparoscope & insert veress needle(direct vision)

Mild SC emphysema-treated by evacuate the pneumoperitoneum

- **ELECTROSURGICAL COMPLICATIONS:**

secondary to thermal injury

1. Active electrode trauma
2. Current Diversion
2. Insulation defects
3. Direct coupling – Instrument touches & energizes another uninsulated
5. Dispersive electrode burns

Causes the potential extent of zone of coagulative necrosis

Usually Visceral injury may not manifest till 2-10 days after surgery

↓

Peritonitis

AVOID: Direct control of electrodes by surgeon

HEMORRHAGIC COMPLICATIONS :

1. **Great vessel injury-** Secondary to insertion of insufflation needle

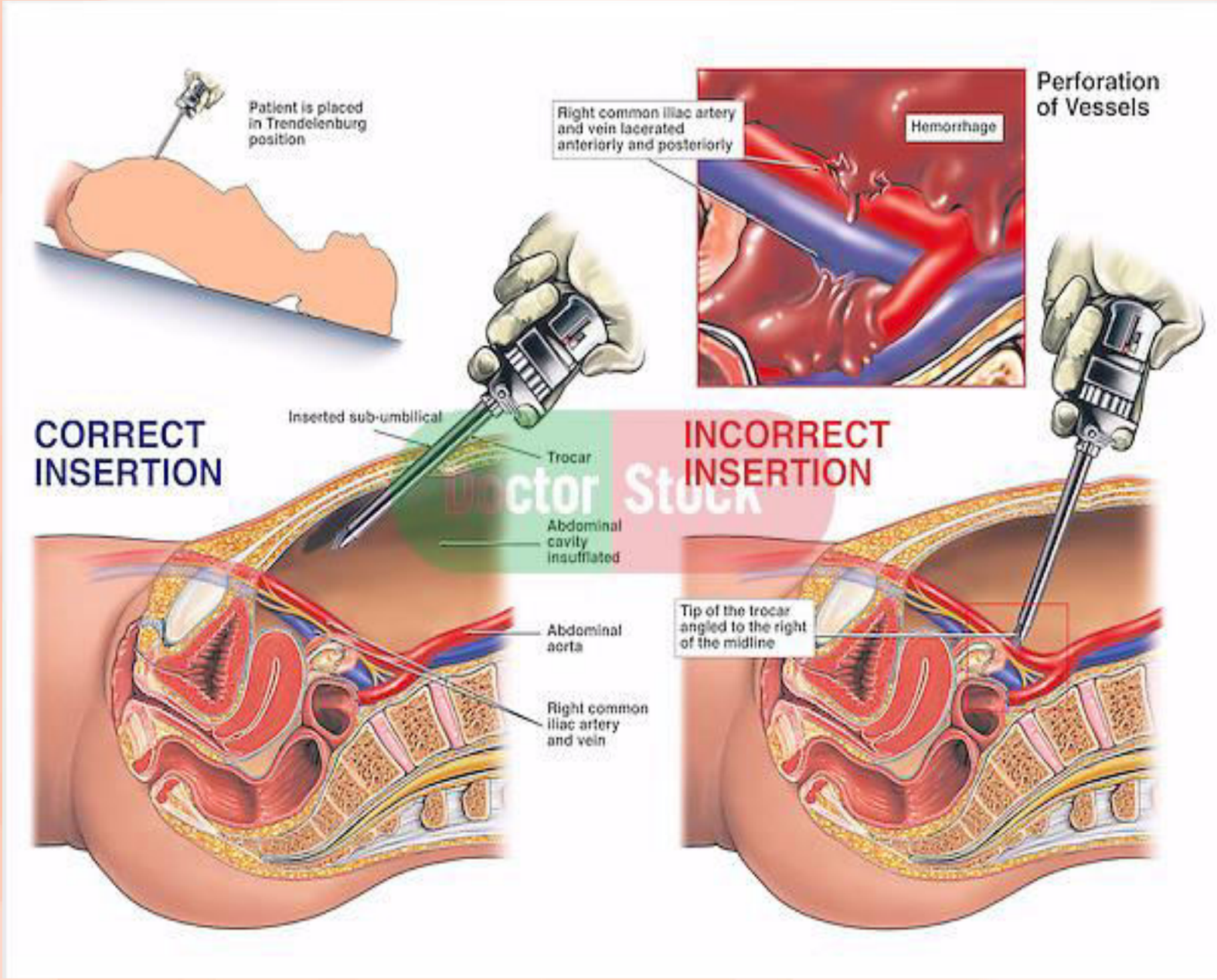
   - MC: Aorta & Common iliac artery

- Diagnosed by aspiration of blood from insufflation needle
- Pt presents – profound hypotension ± Hemoperitoneum

  Hypovolemic shock
- Mx- Leave the needle in place

  Immediate laparotomy with midline incision

  Transfuse blood & blood products.


Patient is placed in Trendelenburg position
Perforation of Vessels
Right common iliac artery and vein lacerated anteriorly and posteriorly
Hemorrhage
CORRECT INSERTION
Inserted sub-umbilical
Trocar
Abdominal cavity insufflated
Abdominal aorta
Right common iliac artery and vein
INCORRECT INSERTION
Tip of the trocar angled to the right of the midline

2. **Abdominal vessel injury-** Superficial & deep inferior epigastric vessels

Diagnosed by blood dripping down through the cannula,

Postop appearance of shock,

Abdominal wall discoloration & hematoma

Mx: Superficial vessels heal spontaneously

Deep vessels- Straight ligature carrier to repair

Insertion of foley's catheter, put on traction for 24 hrs

If mass enlarges- wound exploration

NO ASPIRATION OF WOUND

3. **Intraperitoneal vessel injury-** delayed diagnosis

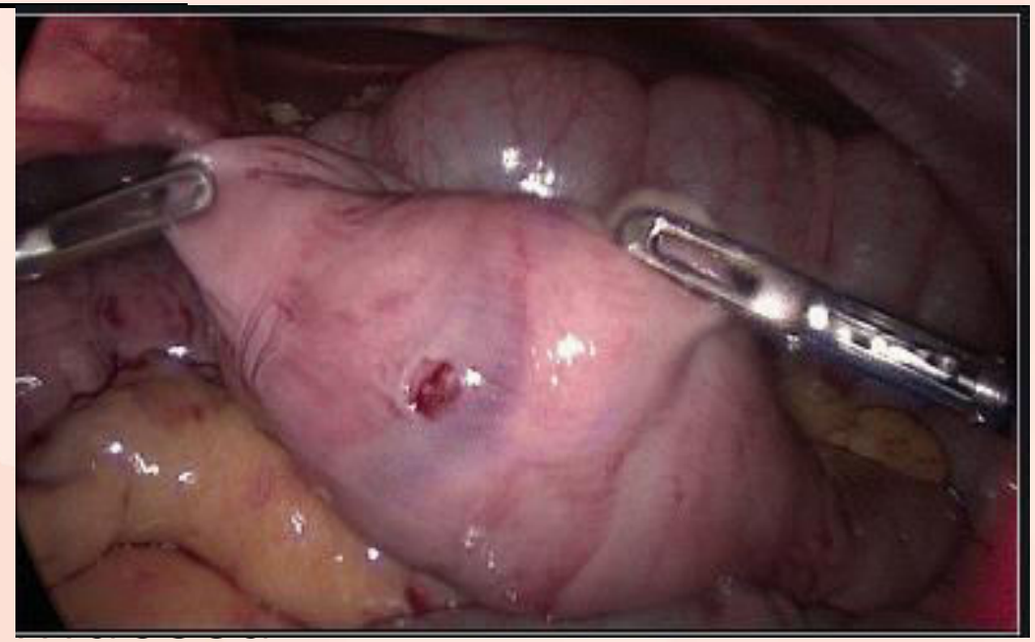
Presents with delayed haemorrhage

Restricted visual field

Temporary occlusive pressure by CO_2 in peritoneum

Diagnosis – venting out CO_2→ inspect the cavity

GASTROINTESTINAL COMPLICATIONS:



1. Insufflation needle injuries
2. Trocar / obturator injuries
3. Thermal/ dissection injuries

Diagnosed by Identification of bowel

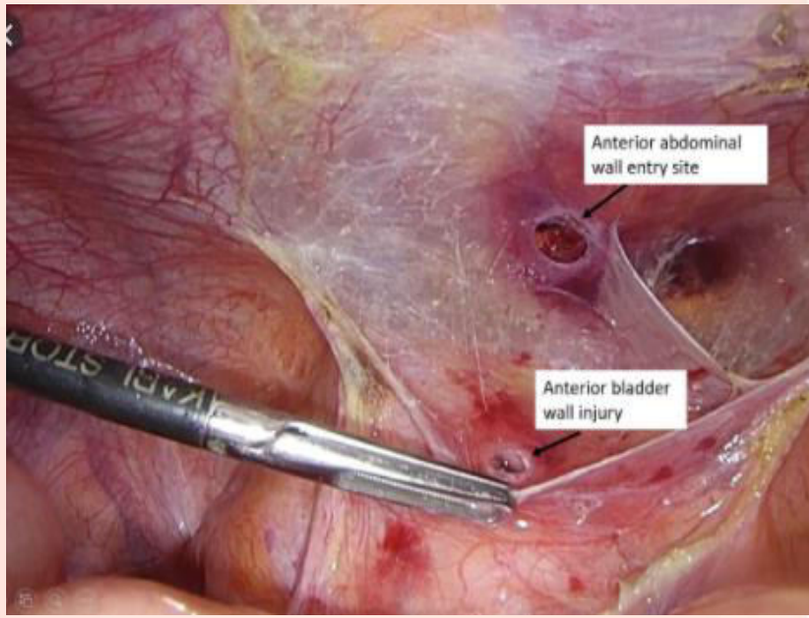
gastric entry - ↑ filling pressure

Rx : small defect- double layer 2-0 or 3-0 absorbable sutures

Large defects- resection & reanastamosis

- **UROLOGIC INJURIES:**

1. **Bladder injury-** perforation of undrained bladder during entry



- during bladder dissection

Diagnosed by direct visualisation

Haematuria, Pneumaturia

Confirmed by injecting methylene blue

Rx: Small (1-2mm) – bladder catheterization for 3-7 days

Large: 2-0/3-0 absorbable sutures

Thermal burn – excise the tissue

2. **Ureteral injury** - Electrosurgical trauma: MC

Mechanical dissection

Diagnosed by visual inspection

demonstration of leakage by indigo caramine dye

If unrecognized- fever, flank pain & leucocytosis- few days to weeks

Rx: ureteral stent left in place for 10-12 days

Excision & reanastamosis

Ureteric reimplantation

- **NEUROLOGICAL INJURY** :

Due to poor positioning / surgical dissection

Common peroneal nerve compressed by stirrups

Femoral/ sciatic nerve overstretched by excessive flexion

Brachial plexus- surgeon's pressure / Trendelenberg's position

Prevention- Positioning pt prior to anesthesia

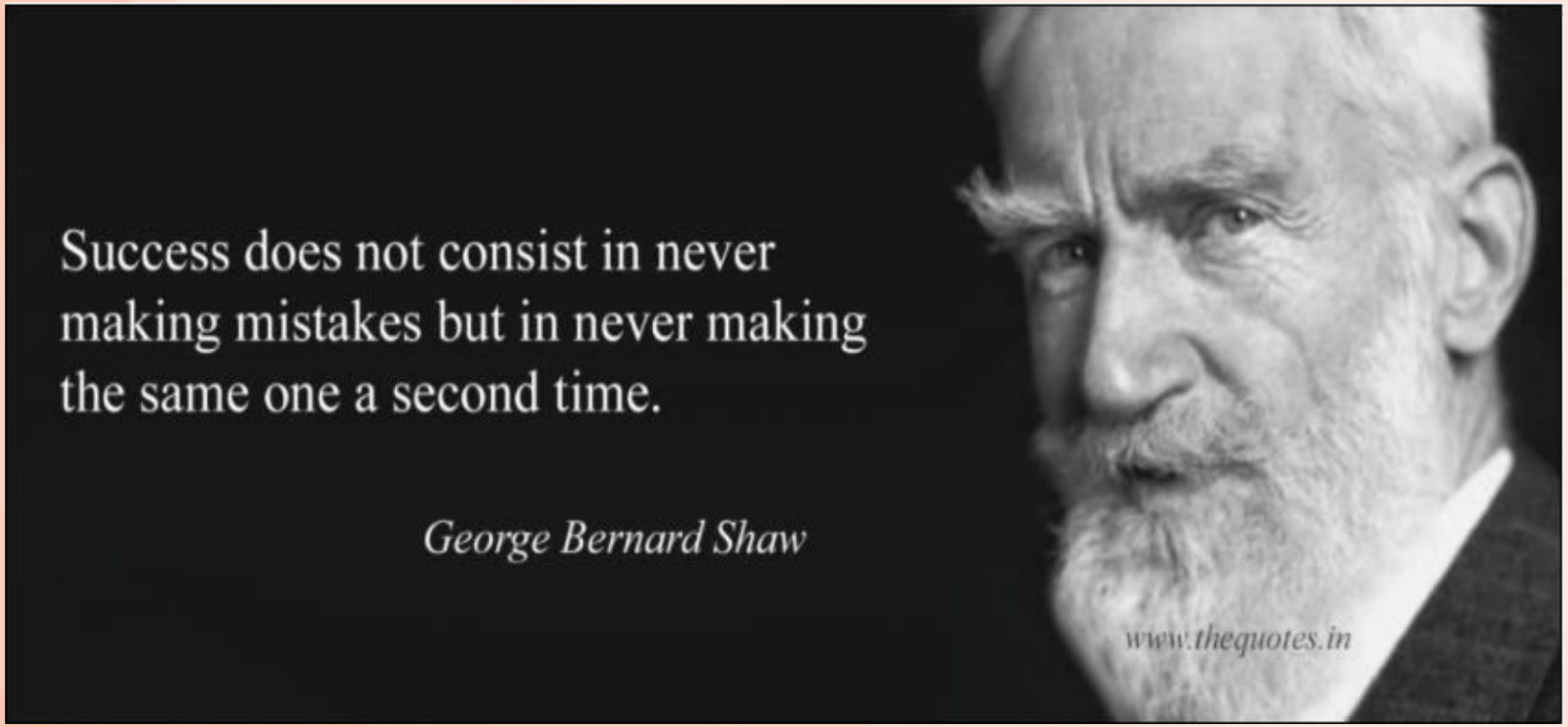
Recovery- Spontaneous in 3-6 months, physiotherapy

WOUND INFECTION:

- Rare & minor skin infections
- Monitor body temp. >38◦C
- Rx: expectant management, antibiotics

  drainage

WOUND DEHISCENSCE & HERNIA


Success does not consist in never making mistakes but in never making the same one a second time.
George Bernard Shaw
www.thequotes.in

THANK YOU