

Ideal requirements for Operation Theatre (OT) in Minimal Access Surgery

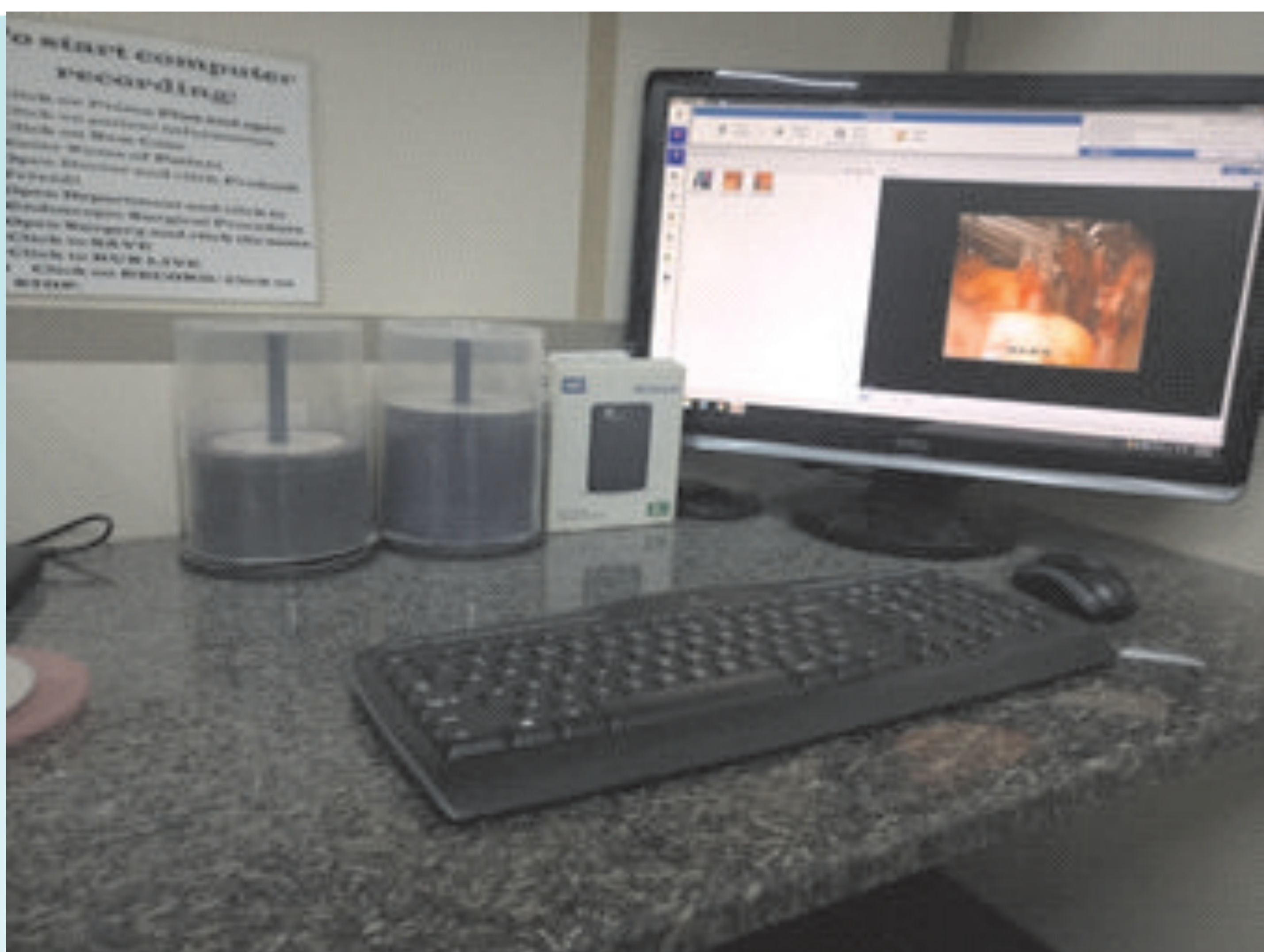
Basic OT requirements (low cost setup)

1) Minimum OT measurement is 20ftX20ft

2) Endoscopic equipment:

- Video monitor
- Light source
- Electrosurgical Generator
- CO2 Insufflator
- Endovision Camera
- Morcellator

(With an inbuilt protection by complete voltage transformer and circuit buster which ensures safety to these valuable equipment's.)



3) **Video Monitor** - The position of the monitor should be at the level of the eye of the surgeon 1meter away. Video recording can be done for future training reference and for patient viewing



4) **Anaesthesia trolley** - Boyles machine with monitoring facility of O2, ETCO2, ECG with Defibrillator, NIBP is utmost essential.



5) **OT Table** - Basic OT Table with facility for padded simple stirrups with 45 degree angle to provide good support and allow proper position and with double pelvic cut.

6) Hand Instruments

A) Endoscope- Diameter of Laparoscope vary from 5-10 mm an angle of view from 0-30 degrees. Though most commonly laparoscope used are straight 0 degrees, Advanced and difficult cases 30 degrees to be forward –oblique.

B) Trocars- In Primary trocars we prefer 10 mm metal cannula, reusable with multifunctional valve.

Insecondary Trocars 5 mm flower valve(Apple)trocars that are threaded may be used for easy insertion and removal of thread with needle and specimen.

C) Veres needle – Normal metal reusable needle which is 12 cm in length is preferred from cost point of view.

D) Forceps/ Grasper- 5 mm is used to grasp dissection coagulate and also in suturing. They can be atraumatic or traumatic.

E) **Scissors**- Can be curved, straight, hooked or serrated. Commonly used is the curved, metzenbaum type of scissor.

F) **Aspiration or Injection needle** -16 -22 gauge calibrated needle can be used.

G) **Irrigation aspiration cannula** - 5 mm simple cannula with 2 ways- upper end to irrigate and lateral end for suction (an adjustable suction machine and C infusor)

H) **Monopolar puncture needle** - Very fine basic needle with spring control on finger grip at the end used in cases of PCO drilling, puncture of cyst, to take fine incision for salpingostomy in unruptured ectopic pregnancy.

I) **Monopolar spatula** - Uses monopolar current to make precise incision, used mainly for incision on uterine wall during lap myomectomy. Preference of instrument varies with different surgeons.

J) **Bipolar forcep-spatulated/ Kleppingerforcep** are used for coagulating bleeding vessel, endometriosis. Where as broad spring action is used for coagulating pedicles for hysterectomy

K) **Suturing Instruments** - Needle holders

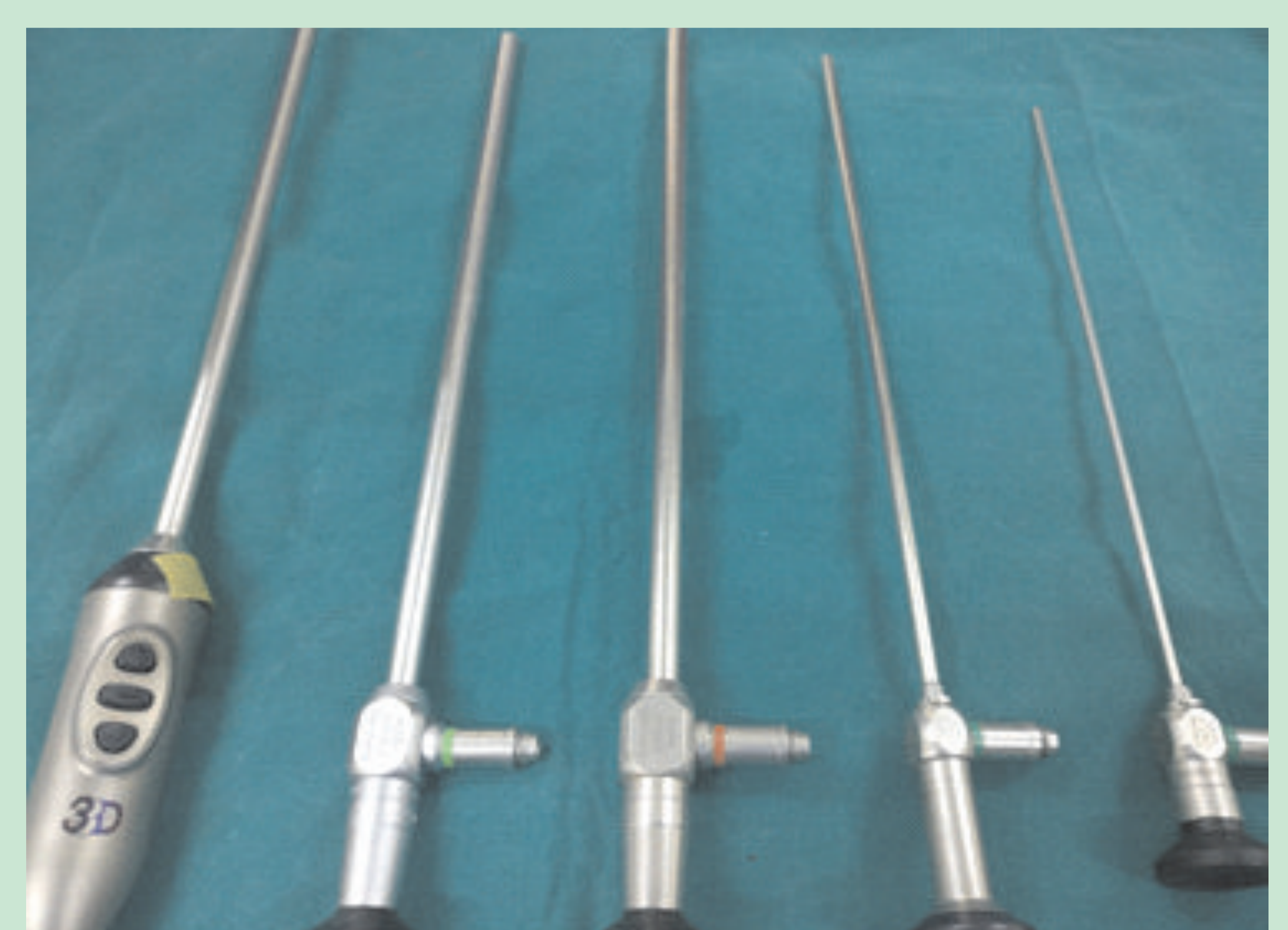
- 1) Straight serrated small tip
- 2) Parrot beak
- 3) Curved Flamingo tip

Are minimum essential for intracorporeal suturing.

There is also an extracorporeal knot pusher and closed knot pusher.

L) **Myoma screw(optional)** - 5 mm is , preferred for laparoscopic surgery 5 mm screw which allows stabilizing fibroid or uterus and applying traction with Improved visibility and access. (10 mm Optional)

M) **Tissue morcellator** - Morcellators are electromechanical 10 mm, 12 mm, 15mm in size. Usually 15mm reusable morcellator are cost effective.



ATRAUMATIC	TRAUMATIC
Fenestrated grasper	Serrated toothed like allis forceps
Maryland dissector	Short and long claw forceps
Bowel grasper	Single toothed Tenaculum
Fine forceps like mixer useful in uterine dissection	



Advance OT Requirement (Optional)



3D OT Setup with Allen Stirrups with 3D Monitors

- Endovision camera with HD and 3D facilities
- Larger OT setup with individual monitor for surgeon and assistant
- Operating table with Allen stirrup with padded shoulder rest and prominent double pelvic cut
- Trocars- Newer version of trocars which is ternamian trocar sheath is a safe trocar sheath to visualize the layers of abdominal wall. Disposable apple (plastic) trocars as a secondary trocar.

Specialized instruments



- **For extracorporeal knot the most effective knot pusher are :-**
 - 1) Trivedi's Knot Pusher
 - 2) SWEC Knot Pusher
 - 3) Clarke- Reich Knot Pusher- to push half hitches under traction on thread
- **Clip Applicator** - 5/10 -11mm sleeves for reapproximation of peritoneal surface and for hemostasis of medium size vessels
- **Laparoscopic Specimen Retrieval bag** - Lap sac, Endocatch, Endopouch of different size and volume to prevent spillage, Moresafe bag for in bag morcellation.
- **Microlaparoscopy Instruments** - During microlaparoscopic surgeries 3 mm laparoscope along with all hand instruments with 3 mm diameter are used.
- **Morcellation** - Different generation of morcellator and different designs of various companies are available.
 - 1) Re-usable Electromechanical morcellator Rotocut
 - 2) Versator

Advanced Energy sources



- 1) Ultrasonic Energy-** Introduced for tissue dissection, cutting with minimal coagulation, instruments are Harmonic, Harmonic Ace, Harmonic Ace +
- 2) Vessel Sealer-** Small to 7 mm vessels in diameter can be desiccated by appropriately applied energy:
 - i. Bipolar Transector Maryland forceps – GyrusInc PKS
 - ii. Bipolar coagulating & cutting forceps with standard ESU by ACMI
 - iii. Enseal– seal & cut Ethicon J & J.
 - iv. Ligasure “Impact” Sealer and divider-Covidein FORCE Triad
 - v. Thunderbeat Sealer and divider- Olympus
 - vi. Laparoscopic stapling system
- 3) Lasers(optional):** 1) Co2 laser 2) NdYAG laser, KTP and Argon laser