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AOGD BULLETIN

"Women's wellness-From tiny heartbeats to timeless strength"

THEME: ADVANCEMENTS IN MINIMALLY INVASIVE SURGERY IN OB-GYN: SMALL INCISIONS, BIG IMPACT

AOGD SECRETARIAT
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From the President's desk

President's Message

Dear AOGD Members,

Our team expresses their deepest gratitude to all the AOGD members for their active participation in the 47th Annual Conference of AOGD which lead to its grand success. The halls were full, the sessions were insightful, the post sessions interactions were pertinent and the exchange of knowledge was of high scientific standards. The topics were excellent but it was the faculty who lent credence to the program through their exceptional presentations which was structured yet concise to keep to the time limit. To top it all, the most gratifying part was the presence of the enthusiastic delegates who attended in significant numbers and remained till the end. The last clinical meeting was conducted by Vardhman Mahavir Medical Collage on 26th September 2025 and three interesting cases were discussed. I urge greater participation form our members, please mark the last Friday of each month in you calendar to e with us in the virtual platform, to learn something unique form the experience of the presenting team. The October bulletin is on minimal access surgery, a topic which interests all. I congratulate Dr Manisha and her team for selecting a hugely popular topic and I am sure it will be read by many.

I wish all the members happy festivities in the upcoming days. May the glow of the lamp illuminate our lives and those for whom we care.

President AOGD

From the Secretarial Desk

Dr Ratna Biswas
Honorary Secretary

Dr Sharda Patra
Joint Secretary

Dr Swati Agrawal
Joint Secretary

Dr Anuradha Singh
Joint Secretary

Dear Members,

Wishing you a happy festive month where the day resonates with positivity and the night radiates in the glow of the lamps !

September saw a slew of activities , the major highlight being the recently concluded, hugely successful 47th Annual Conference and the thirteen Preconference Workshops. We express our heartfelt gratitude to each and every member of our home team for their whole hearted contribution to the program , right from its inception to culmination. The conference and workshops generated a highly intellectual discourse of knowledge and ideas.

We thank our Subcommittee Chairpersons , RML and our home team for their valuable contribution in organizing the preconference workshops which focussed on specific topics .

Other activities held this month were:

- Webinar on FGR by Fetal Medicine & Genetics Subcommittee on 2nd September
- Public Awareness and Health Camp on the occasion of Swasth Nari Sashakt Parivar Abhiyan conducted by FOGsd under the aegis of AOGD at ISKCON TEMPLE on 17th September 2025.
- Non Communicable Diseases & Anemia Screening Camp on the 26th September and Free HPV Vaccination Camp by Public Awareness subcommittee

AOGD was also a partner organization in association with CMRE, FOGSI and other associations at the recently concluded CMRE International Symposium on Diabetes held from 26-28 September 2025 at Le Meridien .

The October Bulletin promises to be of special interest for all as it is on Laparoscopy. I congratulate the team headed by Dr Manisha for bringing forth yet another captivating periodical.

Best Wishes ,

AOGD Secretariat

From the Editor's Desk

Dr Pikee Saxena

Dr Manisha Kumar

Dr Vidhi Chaudhary

Dr Shilpi Nain

Dr Apoorva Kulshreshtha

Dr Divya Gaur
Co-editor

Dear readers,

Greetings from the editorial team.

We have come with another edition of AOGD bulletin for the month of October 2025. The theme of this issue is "Advancements in Minimally Invasive surgery in OB-GYN: Small Incisions, Big Impact.

Advances in minimally invasive gynecologic surgery (MIGS) allow surgeons to perform complex procedures through tiny incisions, offering significant benefits over traditional open surgery. These innovations result in less pain, shorter recovery times, and improved outcomes for patients.

We begin with details about energy sources which is the sheet anchor of hysteroscopic procedures. We will discuss the points to be taken into consideration during doing lap procedures in women with endometriosis, especially severe ones which distorts the anatomy. Lap myomectomy and morcellation is another very interesting and rapidly advancing field in which we are going to throw light on. It will be followed by vaginoscopy, which offers improved visualization, and a faster recovery. We would delve into the tips and tricks of operative hysteroscopy followed by a rapidly advancing field of fetoscopy. We have also collected recommendations for abdomen entry from SOGC and European association of endoscopic surgery guidelines regarding the purpose and benefit of indocyanine green fluorescence guided surgery. We will end with a quiz on Endoscopy.

Happy festivities to all AOGD members

The Editorial Team

Energy sources in gynaecological endoscopy: Principles, safety and future directions

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Karnataka

Introduction

Energy devices work through electrosurgery, ultrasonic energy, lasers, or hybrid methods. Their effects depend on power settings, tissue impedance, electrode design and application duration. Monopolar is versatile but carries higher risk of thermal injuries. Bipolar, ultrasonic, and hybrid devices offer greater safety with more localized effects.

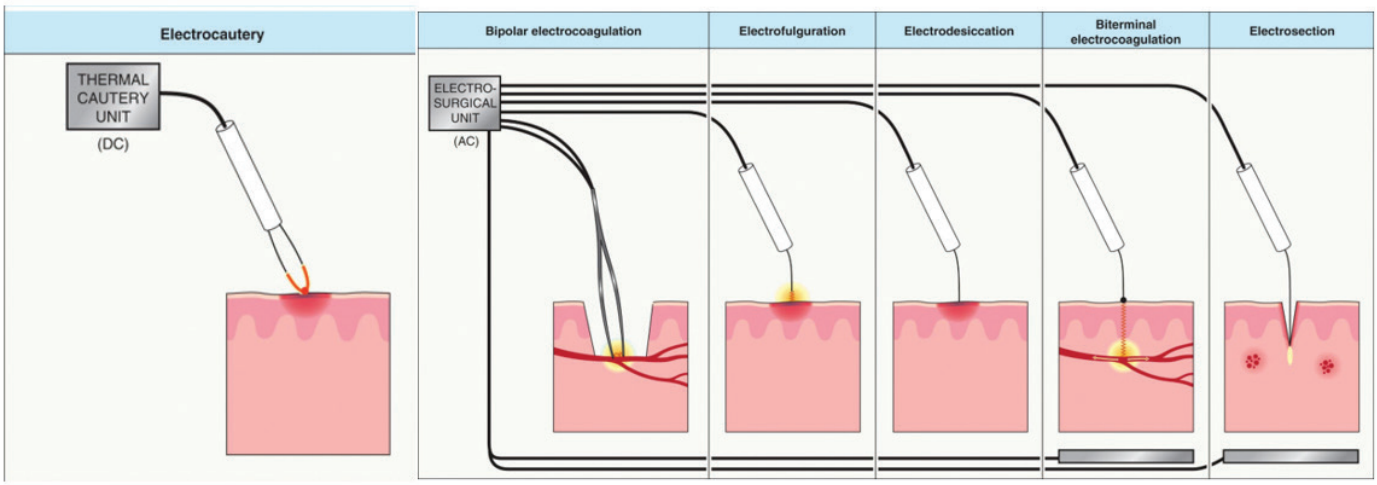

Fig 1: Electrocautery unit and electrosurgical unit

The terms electrocautery and electrosurgery are often used interchangeably in modern surgical practice. However, these terms define two distinctly different modalities. Electrocautery may be the utilization of electricity to heat a metallic object which is then accustomed to coagulate or burn. It is important to realize, there is no current flow with the object being marked or cauterized with electrocautery. (Fig 1)

Electrosurgery, on the other hand, uses the electrical current itself to heat the tissues. The current then flows through the tissues to produce heat from the excitation from the cellular ions. As a result, the electrical current must go through the tissues to produce the result such as cutting, desiccation, and fulguration. Achieving these effects depends on the following factors: current density, time, electrode size, tissue conductivity, and current waveform.[1]

1. **Current density:** As expected, the greater the current that passes through an area, the greater the effect will be on the tissue.
2. **Frequency:** Standard electrical current alternates at a frequency of 60 cycles per second. Electrosurgical units (ESUs) used in operating rooms convert standard electrical frequencies from the wall outlet, which are 50 to 60 Hz, to much higher frequencies, 500,000 to 3,000,000 Hz. This is important to minimize nerve and muscle stimulation, which occurs at electrical currents below 10,000 Hz.
3. **Time:** The length of time a surgeon uses an active electrode determines the tissue effect. Too long an activation will produce wider and deeper tissue damage. Too short an activation will result in absence of the desired tissue effect**.**
4. **Electrode Size:** With respect to electrode size, smaller electrodes provide a higher current density and result in a concentrated heating effect at the site of tissue contact. Following the same principle, the patient return electrode used in monopolar electrosurgery is large in relation to the active electrode in order to disperse the current returning to the electrosurgical unit and minimize heat production at this return electrode site.
5. **Tissue Conductivity:** Various tissue types have a different electrical resistance, which affects the rate of heating. Adipose tissue and bone have high resistance and are poor conductors of electricity, whereas muscle and skin are good conductors of electricity and have low resistance.
6. **Biophysics:** There are three main waveforms used in electrosurgery: cutting, coagulation and blend. The

electrosurgical generator has 'cut', 'coagulate' and 'blend' settings.[2]

Cutting Waveform: Cutting waveform is sinusoidal, direct current and utilizes high frequency continuous current with minimum voltage (50-80 watt). This leads to a sudden rise in temperature (>100°C) resulting in vaporizing of intracellular fluid, generation of a steam bubble and finally rupture of cell membranes which causes cleavage of tissue with great precision.

Coagulation Waveform: Coagulation waveform is low frequency, high-voltage, alternate current with periods of activation and de-activation. In between the intermittent bursts of current, heat dissipates into tissues, causing alteration of cellular proteins. A temperature of 60°C to 95°C results in protein denaturation, dehydration and finally leads to coagulum formation. The heating effect is wide, with considerable tissue damage as almost all the electrical energy is delivered to the tissue by direct contact.[3,4]

Blended Waveform: A blended waveform is a modification done to the cutting waveform for situations wherein haemostasis is needed along with cutting. It consists of a combination of both cutting and coagulation waves. Blend settings can be customized to deliver a combination of cutting and coagulation currents. (fig 2)

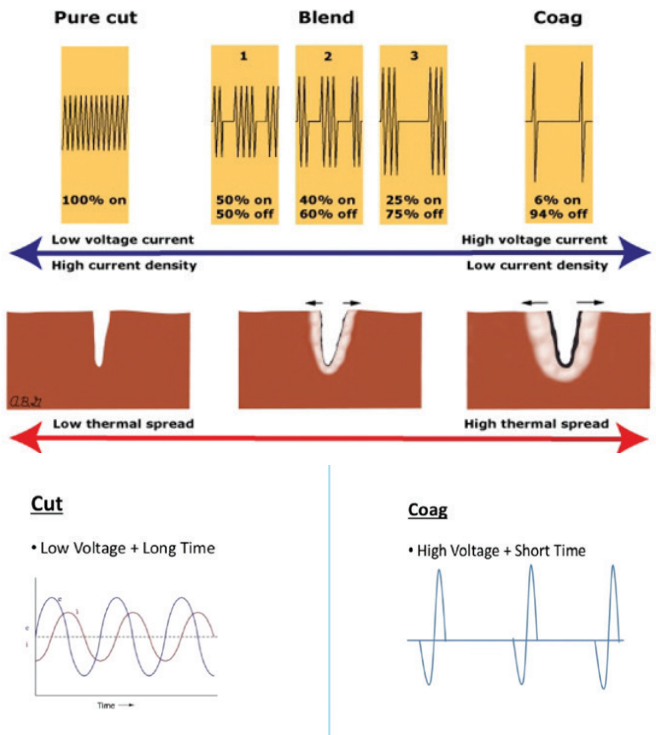

Fig 2: types of waveforms

Tissue effect of energy sources:

Vaporization: This effect results from a continuous cutting current waveform, with no tissue contact and generation of moderate degree of smoke.

Fulguration or spray coagulation: This results from an interrupted, coagulation current waveform, wherein there is no contact with tissue. The electrode is held some distance away from the tissue (3 to 4 mm) and very high voltages of current are used to elevate the temperature beyond 100° C. This results in significant scale charring and haemostasis (small vessels, <1mm) and appears as a spraying effect on the tissue.

Desiccation: This is a tissue effect which can be produced by both cutting and coagulation waveform. Direct tissue contact with the electrode converts electrical energy into heat within the tissue, resulting in deeper tissue necrosis and greater lateral thermal spread. This technique is utilized when dealing with large tumors or metastasis treatment in order to reach large tissue volumes.

Coaptation (sealing of small to medium vessels, <2mm): This is an effect of either cutting or coagulation current where there is contact with the electrode and compression of the vessel wall. The lateral spread is significant.[5]

Monopolar electrosurgery

It is the most commonly used electrosurgical modality due to its versatility and clinical effectiveness. In monopolar electrosurgery, the active electrode is in the surgical site. The patient return electrode is somewhere else on the patient's body (fig 3). The current passes through the patient as it completes the circuit from the active electrode to the patient return electrode. To complete the cycle, the current needs to exit the patient, and will invariably choose the path of least resistance to return to an electron reservoir, such as the ground.

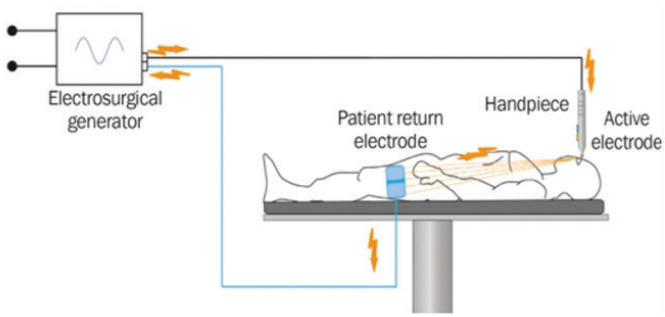

Fig 3: Common monopolar unit

Clinical use: Either the cutting or coagulation mode may be used to achieve the desired tissue effect. The cutting mode is preferred when thermal spread is undesirable, such as in close proximity to the ureter, bowel, or other vital structures. Due to higher voltage, the coagulation mode achieves better penetration through high-resistance areas, such as fatty tissue or scar tissue, and is also more applicable when fulgurating a large surface area with superficial bleeders, such as might be encountered following ovarian cystectomy.

Bipolar Electrosurgery

In Bipolar electrosurgical devices, the active and return

electrode are formed by the two jaws of the energy source. The main advantage of bipolar over monopolar electrosurgery is the ability to seal vessels upto 5 mm in diameter vis-a-vis monopolar which is generally suited for vessels 1-2 mm. The dissection capability of bipolar forceps is also good.

In bipolar diathermy, the probe resembles a pair of forceps (fig 4). The current passes down one side of the forceps, across the tissue, and up the other side of the forceps. It is therefore very localized and the rest of the patient does not form part of the circuit. No diathermy plate is required. Due to the forceps arrangement, bipolar diathermy is used mostly for coagulating bleeding vessels and is not usually suitable for cutting.

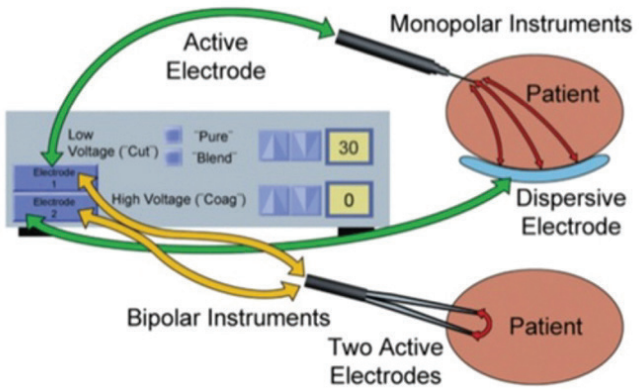

Fig 4: Bipolar unit

Bipolar devices use only coagulation current, which is responsible for their major drawback of lateral thermal spread. This can result in inadvertent electrical burns. Other technical drawbacks include tissue adherence to instrument jaws and requirement of another instrument for tissue cutting, which is cumbersome and increases operating time.[6,7]

Complications of electrosurgery

Energy sources employed during endoscopic procedures may result in alternate site burns, which are often overlooked and can pose a significant risk to patient safety due to their potentially fatal nature.[8] The inadvertent tissue damage can occur by following mechanisms:

Direct application: Accidental direct contact with tissue during energy application may result in unintended thermal injury. The severity of such burns is influenced by multiple factors, including the type of device employed, its power settings, the impedance of the tissue, and the duration of activation.

Residual heat: Energy devices can retain heat at their tips for varying durations even after deactivation, with ultrasonic energy instruments exhibiting higher residual heat.

Insulation failure: refers to degradation or compromise of the protective insulation surrounding the active electrode. Contributing factors may include repeated cleaning and sterilization processes, routine wear and tear, and the application of high-voltage output. The distal third of laparoscopic instrument is the most common site of insulation failure. Reusable instruments become prone to insulation failure after prolonged usage, especially due to repetitive passage through trocars and sterilization.

Direct coupling: arises when the active electrode comes into contact with another metallic instrument, such as a suction irrigator or a camera telescope.

Capacitative coupling: phenomenon where electrical current is established in the metal instrument running parallel to the active electrode, and not in direct contact with it. There is transfer of current from one conductor (active electrode), through intact insulation, into adjacent tissue without any actual contact with the tissue, finally leading to trauma.

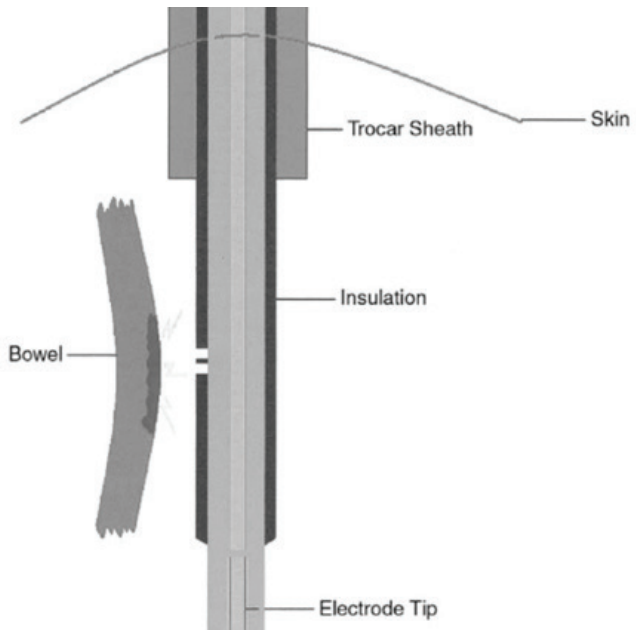

Fig 5: Insulation failure: any break in insulation leads to flow of current in alternate pathway

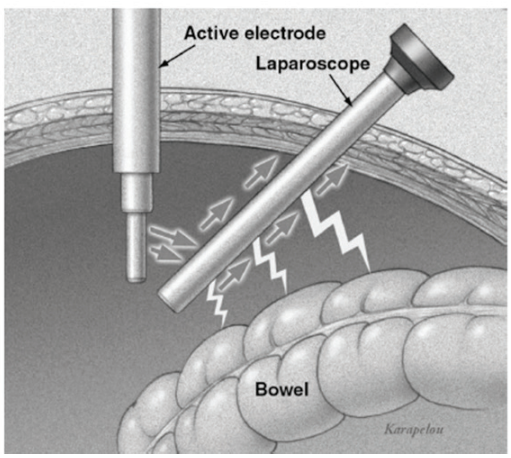

Fig 6: Direct coupling

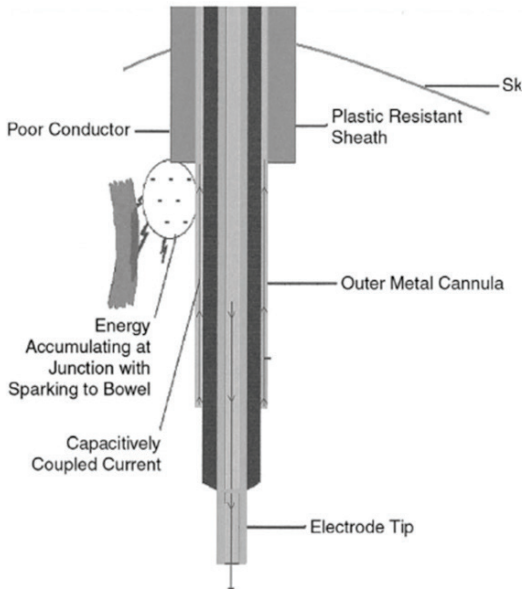

Fig 7: Capacitative coupling: If a plastic trocar sheath is used, the current will accumulate at the junction of the plastic and metal and seek an alternate path.

Preventive Measures

- Maintain a safe distance between electrosurgical devices and critical anatomical structures such as the bowel, ureter, and major blood vessels.
- Use a low voltage wave form
- Use brief intermittent activation
- Use bipolar electrosurgery where appropriate
- Minimize activation time to reduce the risk of lateral thermal spread.
- For haemostasis near vital structures, prefer mechanical methods such as sutures, clips, or staples over electrosurgical devices.
- Exercise caution to prevent inadvertent activation by avoiding accidental contact with the foot pedal.
- When not in active use, remove the electrode from the body or secure it in a dry, rigid plastic holder.
- Employ an audible activation tone to ensure team awareness during energy delivery.
- Refrain from contacting vital structures with the tip of the electrosurgical device immediately following deactivation.
- Utilize Active Electrode Monitoring (AEM) technology, avoid parallel alignment of cords, and reduce power settings to mitigate the risk of stray current burns associated with insulation failure and coupling phenomena.

Electromagnetic Interference: Electrosurgical procedures have the potential to disrupt the function of cardiac implantable electronic devices (CIEDs) and other neurological stimulators. Such interference may compromise device performance, induce myocardial injury, or precipitate serious cardiac events including arrhythmias and asystole.

Prevention Strategy: To mitigate the risk of electromagnetic interference, the following measures are recommended:

- Engage in preoperative consultation with a cardiologist.
- Employ bipolar or ultrasonic energy devices in patients who are highly dependent on electronic implants functionality.

Electrosurgical Smoke

Electrosurgical smoke can impair laparoscopic visualization, potentially compromising patient safety. The implementation of smoke evacuation systems is recommended to mitigate these risks and maintain optimal operative conditions.

Training Programme

The effective and safe utilization of electrosurgical devices necessitates a comprehensive understanding of the mechanisms by which electrosurgery achieves specific tissue effects. Pressing the need to develop a training programme with both theoretical and practical components to bridge the identified patient safety gap. For the best utilisation, surgeon needs to master the basics of electrosurgery.

Advanced Bipolar Devices

With the introduction of newer bipolar instruments, the entire concept of electrosurgery has undergone a profound change in the past decade. Newer Bipolar devices combine the principle of thermo-fusion, with application of optimal mechanical pressure to ensure that the denatured protein forms a coagulum and a strong seal is achieved. Large vessels, up to a diameter of 7 mm, and large tissue bundles can now be surgically sealed.

Advanced electro generators are available which sense tissue impedance and automatically control current flow by adjusting voltage and current continuously. Once the intended sealing level has been reached, an audio signal alerts the surgeon that the result has been achieved. This guards against prolonged device activation, decreases tissue charring and adherence to the instrument.

1. **Enseal :** It combines a high compression jaw with a tissue dynamic energy delivery system that results in tissue sealing and haemostasis. It has a blade that can seal vessels and lymphatics upto a diameter of 7 mm, and simultaneously cuts the sealed tissue.[9]
2. **LigaSure Vessel Sealing Technology:** It has the ability to sense when the sealing effect is achieved and automatically cuts off energy supply (fig 8). It can efficiently seal blood vessels and undissected tissue bundles upto a diameter of 7mm. The device provides

a combination of pressure and energy to denature proteins, forming a true, permanent, seal rather than just creating a proximal thrombus. Its lateral thermal spread is purported to be 2 mm. [10]

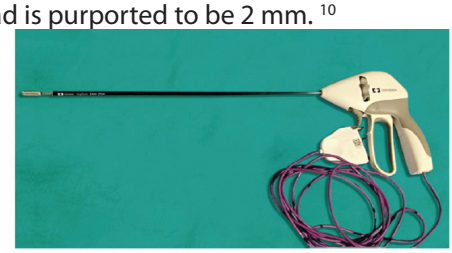

Fig 8: LigaSure Vessel Sealing Technology [Medtronic]

Ultrasonic devices

Ultrasonic laparoscopic energy sources are able to seal vessels and transect tissues. The tissue effects are the same as of bipolar devices but they are produced without the passage of electrical current through the patient or the tissue.

Principle of ultrasonic energy: IT is conversion of electrical energy into mechanical and thermal energy via ultrasonic vibrations. The electrical current is delivered to the handpiece that has a piezo electrode that convert electric energy to vibrating ultrasonic energy at frequencies from 23 to 55 kHz. In addition to mechanical friction, "cavitation effect" may facilitate transection. Cavitation occurs during tissue vaporization and the steam released from vaporized cells expands existing tissue planes, assisting dissection.

Harmonic Scalpel was developed to seal vessels up to 3mm in diameter. **Harmonic ACE+** is the latest developed instrument that uses "adaptive tissue technology" to regulate energy delivery according to tissue conditions, may seal vessels up to 7mm and provides an audio signal to the surgeon to minimize thermal spread (fig 9).

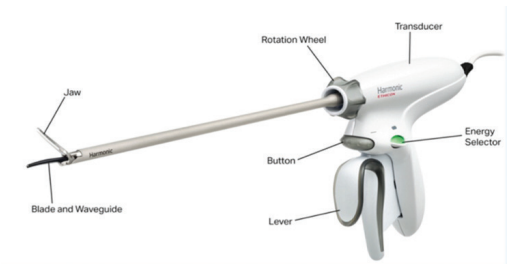

Fig 9: Harmonic scalpel

Thunderbeat

Thunderbeat is an instrument with the integration of both bipolar and ultrasonic energies delivered simultaneously from a single versatile instrument Patented technology by Olympus, America Inc. (San Jose, CA). Currently thunderbeat has superseded the two most used energy sources i.e; LigaSure vessel sealing system and Harmonic Scalpel.[11]

Plasma Kinetic Gyrus

The Plasma Kinetic Gyrus (PK) (Gyrus ACMI, Southborough, MA) is a bipolar electrosurgical device that uses plasma kinetic technology to deliver a high current at a very low voltage to the tissue. It has two tier jaw design with serrated surfaces for secure grasping.[12]

Principle: A series of rapid pulses allows a cooling phase during coagulation, thereby decreasing lateral thermal spread. It can seal vessel up to 7 mm by denaturing the protein within the vessel walls, forming a coagulum that occludes the lumen. It yields maximum temperature which is below 100 °C. It also incorporates a retractable blade into the jaws in order to cut the tissue after vessel sealing.

This system has two different modes

1.vapor pulse coagulation 2. plasma kinetic tissue cutting

Laser (Light Amplification by Stimulated Emission of Radiation) Laser is an energy source that does not include electrical current.

Principle: It acts by amplifying light of specific wavelength. CO2, argon, Nd: YAG, KTP-532 with different properties. The advantages of laser are the accuracy of targeting tissues and lack of lateral thermal spread. In gynecology they are mainly used for endometriosis ablation.

Plasma Surgery: The device has a 5 mm handpiece that can deliver argon neutral plasma energy. The system is electrically neutral and no ground pad is necessary When energy is provided to a solid, it melts to form liquid and then evaporates to form gas. If extra energy is provided then gas is ionized and becomes plasma which is unstable.

Table 1: Comparison of Tissue Effects of 4 Energy Modalities

Monopolar	Traditional Bipolar	Advanced Bipolar	Ultrasonic	
Tissue Effect	Cutting, Coagulation	Coagulation	Cutting, coagulation	Cutting, coagulation
Power Setting	50-80 W	30-50W	DEFAULT	55,000 Hz frequency
Thermal Spread	Not well assessed	2-6mm	1-4mm	1-4mm
Maximum Temperature	>100°C	>100°C	Not well assessed	<80°C
Vessel Sealing Ability	Not applicable	Not applicable	Seals vessels ≤7mm	Seals vessels ≤5mm
Technique	Not applicable	Not applicable	Tension free application	Tension free application

Conclusion

Energy devices are central to safe and effective gynaecological endoscopy. Surgeons must match device to context, apply lowest effective power, and remain vigilant about risks. Indigenous devices offer hope for reducing costs while maintaining safety. Future lies in smarter, safer, and more sustainable energy delivery systems.

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Endometriosis surgery under the scope: Small tricks that make a big difference

"Expect the best, plan for the worst, and prepare to be surprised"

Namita Jain
Senior Consultant, Paras Hospitals, Gurugram

Endometriosis is a chronic inflammatory condition with a prevalence of 6-10% in women of reproductive age[1]. It is an enigmatic disease with innate capacity to involve various structures with varying degrees of infiltration and adhesion formation. Currently, endometriosis is surgically subdivided into three different entities, which are frequently found together: peritoneal lesions, deep endometriosis and ovarian endometriotic cysts.

All patients with endometriosis should be offered an individualised, shared decision-making approach based on clinical history, symptoms and fertility status. When surgery is planned in such cases it should be strategically aligned with dual objectives of optimizing pain relief and enhancing reproductive outcomes. The choice between conservative and radical approach must be appropriately balanced based on severity and previous surgical history. Laparoscopic surgery in an equipped centre by an expert, ideally "done once, done right" should be emphasized to reduce perioperative complication and recurrence. The surgical techniques employed by surgeons vary widely. The evolution of endometriosis excision can be attributed to advances in surgical technology and rapid progress in laparoscopic image quality, which enable the surgeon to see fine anatomical structures such as small nerves. Most of the steps and the principles for optimal and safe excision of endometriosis are the same for all cases, regardless of severity. In this article, we review the principles of laparoscopic endometriosis surgery that can be utilised by all gynaecologists.

Preoperative planning

Prior to being offered surgery to treat ovarian endometriosis, the patients should be categorised according to their clinical history, symptoms and fertility status. Hence, the patient needs to have a frank discussion with the clinician regarding what their main priority at that moment in time is, the treatment of pain or subfertility. Various factors which favour surgery in such cases include good ovarian reserve, unilateral disease, severe dysmenorrhea, rapid growth or atypical sonographic findings, no previous history of surgical intervention and short duration of infertility.

A thorough examination is important to identify any local or vaginal lesions of endometriosis which can be a cause of dyspareunia, also vaginal and rectal examination for restriction of mobility, bilateral adnexal masses, tenderness or nodularity suggesting severity of the disease and technical difficulty in surgery.

Imaging plays a critical role in diagnosis, surveillance and surgical planning. A transvaginal ultrasound should be done in a systematic manner following International Deep Endometriosis Analysis group (IDEA) consensus. Magnetic resonance imaging (MRI) may detect small lesions less than 5mm. it may accurately detect rectovaginal disease and obliteration of pouch of douglas in more than 90% cases[2].

Multidisciplinary team management need also to be assessed based on suspected severe adhesions or involvement of ureter, bladder, bowel etc. Surgical planning should anticipate segmental resections of bowel or ureteric stenting. Preoperative bowel preparation should be considered in cases of rectovaginal or colorectal involvement.

In endometriosis surgery, the difference between a ordinary and an excellent outcome in terms of pain relief, recurrence rates, fertility and preventing complications often hinges in meticulous planning and attention to a few critical steps. Surgeon has to be patient enough and operate with the mindset of a plastic surgeon in order to enhance the fertility outcomes.

In endometriosis surgery, the laparoscope provides excellent views and allows the surgeon to visualise the pelvis in depth.

OR Setup, Port strategy and positioning

a) Patient to be placed in modified dorsolithotomy position. Use of pneumatic compression stockings in anticipated long surgical cases. Proper OT equipment and skilled personnel should be available to address potential complications.

b) Consider atleast 3 laparoscopic working port. The exact port placement should be left to surgeon discretion based on extent of disease and location of the disease. Consider palmer entry in case of previous multiple surgeries. Secondary ports should be individualized according to anatomical situation and surgical needs.

c) A uterine manipulator, a sponge in dorsal fornix of vagina if needed and a rectal probe can be mobilized individually to help in dissection of rectum from posterior vagina especially in cases with obliterated

pouch of Douglas and in women with severe bowel symptoms.

Surgical Principles

Steps of laparoscopic surgery

a) **Inspection-** Systematically inspect pelvic organs, upper abdomen including diaphragm and appendix (Table 1).

Table 1. Systematic surveillance[3]

Careful and thorough laparoscopic surveillance should include
Uterus
Fallopian tubes
Ovaries
Round ligament
Dome of the bladder
Anterior cul-de-sac
Posterior cul-de-sac
Ovarian fossa
Pelvic side wall
Ureter
Uterosacral ligaments
Rectosigmoid
Appendix
Diaphragm

a) **Routine peritoneal washing** is not routinely recommended. It is to be done in presence of clinically relevant ascites or suspicious looking ovarian cysts.

a) Ovarian endometriomas

- Separate the ovary from lateral pelvic wall, keeping the ureters under vision. It usually result in drainage of endometrioma.
- Extend the opening in order to expose the cyst cavity and an adequate incision should be given to remove the cyst in toto. Avoid multiple incisions. Drain the cyst in case non adherent from antimesenteric border.
- Identify the cyst wall by making an incision on the edge
- Inject diluted vasopressin (5 units in 200ml saline or 0.1-1unit/ml) between cyst lining and healthy ovarian tissue to achieve hydro-dissection.
- Once cleavage plane is identified, separate the cyst lining by gentle traction and counter-traction.
- Avoid blind or excessive diathermy. Avoid damaging the blood supply coming from ovarian or infundibulo-pelvic ligaments.
- Avoid exposing the raw areas (suture the ovarian opening by taking the stitches inside the ovary) to prevent adhesion formation.
- Occasionally thin flimsy layer is seen over the ovarian surface, its surgical removal helps in preventing luteinized unruptured follicle syndrome in future.
- Various other procedures, their potential risks and limitations has been enumerated in Table 2.

Table 2. Surgical procedures for endometriomas[4]

Technique	Potential risks and limits	Advantages
Ovarian cystectomy	Detrimental to ovarian reserve, particularly in cases of large endometriomas.	Most effective against endometriosis-associated pain. Lower risk of recurrence compared to other techniques.
Drainage and use of electroagulation	High risk of cyst and symptom recurrence, detrimental to adjacent normal ovarian tissue.	Preserves ovarian function. Can be considered prior to ART to improve accessibility of ovaries.
Drainage and use of CO_2 laser	Less effective than cystectomy to manage endometriosis-associated pain. Difficult to use in multiple endometriomas as reduced tissue penetration depth. Equipment cost. Risk of recurrence may be higher.	Preserves ovarian function. Comparable increase in spontaneous pregnancy rates to cystectomy. Less thermal injury to adjacent normal ovarian tissue than electrocoagulation.
Drainage and use of PlasmaJet	Not enough evidence regarding pain and fertility outcomes. Equipment cost.	Theoretically preserves ovarian function. Less thermal injury to adjacent normal ovarian tissue than electrocoagulation.
Alcohol sclerotherapy	High risk of cyst and symptom recurrence. No agreed concentration and duration of retention.	Preserves ovarian function. Suitable as pre-ART procedure. Can potentially be performed by fertility experts transvaginally, although thick endometrioma fluid may limit its feasibility.
Oophorectomy	Radical treatment, can cause premature ovarian insufficiency and associated risks if done bilaterally.	Definitive treatment for endometriosis-associated pain for patients without fertility aspirations.
Cystectomy with combined approach	Not enough evidence regarding pain and fertility outcomes. Equipment cost.	Potentially combines benefits of ovarian cystectomy and CO_2 laser.

Abbreviations: ART = assisted reproductive treatment.

The updated ESHRE guidelines recommend ovarian cystectomy as the preferred surgical intervention for endometriomas versus drainage and coagulation, based on evidence demonstrating a lower risk of recurrence and a greater likelihood of spontaneous pregnancy following cystectomy, particularly for cysts exceeding 3 cm in diameter[4]. A Cochrane systematic review by Hart et al. summarised the findings of two RCTs which demonstrated better outcomes of excisional surgery over drainage and coagulation of an endometrioma in achieving a spontaneous pregnancy among subfertile women, as well as fewer cyst recurrences and lower likelihood of further surgery and development of non-cyclical pain[5].

In addition to ovarian endometriomas, tubal anatomy also needs to be restored. Tubal kinking, hydrosalpinx, tubal blockages are very commonly seen. Tuboplasty should be attempted in such cases especially if tubes are salvageable and IVF is not immediately planned. However, in women undergoing IVF hydrosalpinx removal improves the IVF outcomes by reducing inflammatory cytokines and reflux into the endometrial cavity.

a) Deep Endometriosis

- Ovariolysis – Mobilizing ovaries from pelvic sidewalls improves the view of the operative field. It can be achieved by draining the endometrioma and sometimes temporary ovariopexy with sutures can be used.
- Mobilization of sigmoid – starting from the white line of Toldt to expose the left adnexa and underlying structures such as pararectal spaces and ovarian fossa
- Ureterolysis- To keep the ureter under vision throughout surgery to prevent injuries.
- Bowel adhesiolysis in posterior compartment- opening of pararectal spaces on each side helps in removing the adhesions and reaching the pouch of Douglas.
- Encourage use of cold scissors, blunt dissection or thermal instruments with less collateral thermal spread. Aqua dissection with or without vasopressin also helps in identifying the plane of cleavage and to separate the vital structures.

a) Multidisciplinary approach to DE

Bowel Endometriosis[6]

- DE involving the muscularis layer of rectum with no vaginal infiltration- pararectal spaces are opened longitudinally, medially from uterosacral ligaments and continued till the opening of healthy rectovaginal space. Once done, rectal shaving is done on ventral wall of the bowel to remove the endometrioma or DE nodule using mechanical dissection (cold scissors) or low thermic energy sources (CO2 laser, plasma).
- DE involving muscularis layer of bowel and the vagina- in addition to the dissection described above, resect the vaginal fornix adjacent to the uterine torus and to the ventral root of the uterosacral ligaments. Preserve a rim of healthy vaginal mucosa attached to cervix to facilitate vaginal closure.
- In case of bowel infiltration, extent of bowel circumference involvement has to be evaluated. There is a correlation between the depth of bowel infiltration and the circumference of bowel affected by the disease. A discoid excision or colorectal resection is carried out.

Urinary tract Endometriosis[6]

- Bladder endometriosis- The procedure starts with cystoscopy followed by catheterization and ureteric stents. As with hysterectomy, the dorsal wall of the bladder distally of the nodule needs to be dissected away from both the uterus and ventral wall of vagina thus opening the vesico-vaginal space. The step become easier by filling the bladder with 100ml saline. Once the nodule is identified, it is grasped and excised with macroscopically free margins. After excising, close the bladder defect with 3-0 PDS or absorbable monofilament suture. The stitch line should be water-tight and tension free.
- Ureteral endometriosis- inflammatory reaction due to endometriosis can lead to either extrinsic or intrinsic ureteral endometriosis. It can lead to hydronephrosis and sometimes damage to the kidneys. Ureterolysis is performed by freeing the ureter and excising the surrounding fibrotic tissue. Segmental resection (end to end anastomosis) and ureteral re-implantation may be indicated in cases after failed ureterolysis or when intrinsic ureteral lesion is identified. After ureteral surgery for ureteral endometriosis, patient should be monitored every 6months to avoid missing silent hydronephrosis.

a) **Radical excision and peritoneal stripping**- Radical excision of endometriosis is the targeted excision of endometriosis that can be extensive in patients with stage III or IV disease. In adults it frequently includes hysterectomy and or bilateral salpingo-oopherectomy for management of endometriosis associated pain. Peritoneal stripping describe extensive removal of peritoneum. No data to date exist to show that ablation or excision is superior for treatment of superficial peritoneal disease[3]. No added benefit has been shown for excision of superficial endometriotic lesions in comparison with the destruction or ablation in case of nondeeply infiltrative disease.

Hemostasis, adhesion prevention and fertility preservation

Haemostasis after cyst removal can be achieved using diathermy, suturing or a haemostatic matrix. A recent systematic review reported that non-thermal techniques were more preservative to ovarian function[7]. It highlighted that laparoscopic suturing was superior to bipolar coagulation when comparing both AMH and AFC. The type of suture was a continuous stitch using a monofilament suture, although in one included RCT a barbed monofilament suture was used with no significant changes in post-operative AMH levels. The use of oxidised regenerated cellulose (Surgicel) has also been shown in an RCT to reduce the risk of recurrence when used after a cystectomy or drainage of an endometrioma.

Documentation of findings

Operative template notes are particularly useful for documenting surgical findings (Fig 1 A-F). Taking photographs of anatomic regions and pathology provides documentation of the location, size and appearance of endometriosis. It documents the extent of disease. It is an important tool for other surgeons to understand patient's history and internal anatomy. High definition video recording and photo documentation support surgical completeness.

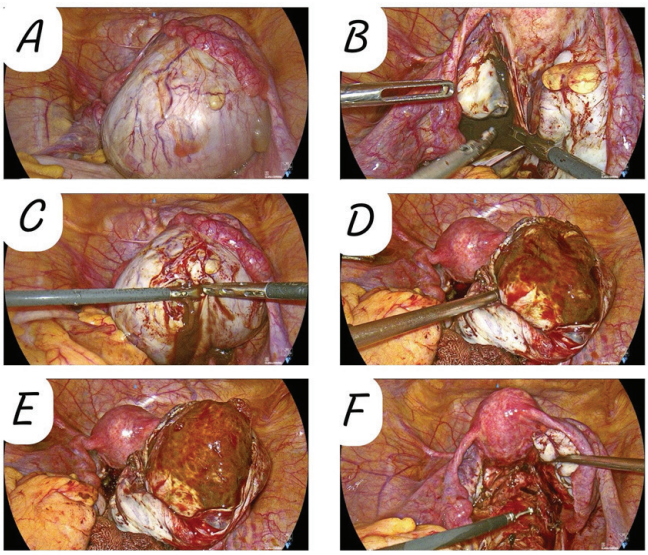

Fig 1. A Initial image with huge ovarian endometrioma. B. Left ovary adhered to ovarian fossa. C. Draining right ovarian endometrioma. D&E. Diluted vasopressin injection facilitating separation of cyst wall from healthy ovarian tissue. F. End image after complete adhesiolysis and ovarian repair.

Post operative strategy and recurrence prevention

It is imperative to emphasize the importance of ongoing medical therapy to suppress menstruation, pain, and endometriosis regrowth to optimize and prevent chronic pelvic pain, decrease repeat surgeries especially in women who do not wish to conceive.

Conclusion

A structured surgical approach with precision of a plastic surgeon and sound surgical principles from preoperative planning to nerve sparing excision facilitates safe and effective endometriosis surgery. Every step executed with patience can profoundly impact outcomes. Adherence to updated guidelines, meticulous techniques and individualized care is paramount.

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Laparoscopic Myomectomy and Morcellation: Current Techniques, Innovations and Controversies

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Introduction

Uterine Fibroids are benign, monoclonal tumors of the smooth muscle cells of the myometrium. They are remarkably common , affecting about one third of all women in the reproductive age group. It is one of the commonest presentation amongst patients attending the OPD and hence its management is of great importance.

Fibroids can be classified based on their location as per FIGO guidelines.[1]

Type 0—intracavitary (e.g., a pedunculated submucosal fibroid entirely within the cavity)

Type 1—less than 50% of the fibroid diameter within the myometrium

Type 2—50% or more of the fibroid diameter within the myometrium

Type 3—abut the endometrium without any intracavitary component

Type 4—intramural and entirely within the myometrium, without extension to either the endometrial surface or to the serosa

Type 5—subserosal at least 50% intramural

Type 6—subserosal less than 50% intramural

Type 7—subserosal attached to the serosa by a stalk

Type 8—no involvement of the myometrium; includes cervical lesions, those in the round or broad ligaments without direct attachment to the uterus, and "parasitic" fibroid.

Surgical management of fibroids depends on their size, location (FIGO classification) and fertility desires. While the traditional approach of laparotomy and myomectomy has long been done, minimally invasive surgery has now largely replaced open procedures due to faster recovery and less postoperative pain.for almost all kinds of fibroids. FIGO classification guides the approach: types 0 and 1 are usually managed hysteroscopically, whereas type 2 with >50% intramural extension require a high level of hysteroscopic skill and are generally approached abdominally. [2]

Laparoscopic myomectomy is the procedure of choice for types 3–7, offering reduced pain, shorter hospital stay, and quicker recovery compared to open surgery. However, removal of large fibroids through small ports often requires morcellation, which fragments tissues to allow extraction through the ports and which has also given rise to ongoing safety concerns.

Diagnosis and Imaging

Surgical management depends on accurate assessment of the size, number, and position of fibroids. TVS and MRI are the two main imaging modalities for establishing the diagnosis of fibroids.[1]

Sonography is the most readily available and least costly imaging technique to differentiate fibroids from other pelvic pathology. Sonographic appearance of fibroids can be variable, but often they appear as symmetrical, well-defined, hypoechoic, and heterogeneous masses.

MRI allows evaluation of the number, size, and position of submucous, intramural, and subserosal fibroids. MRI forms an important part of preoperative evaluation prior to myomectomy as it clearly documents location and position of fibroid relative to the endometrium,bladder and rectum and serves as an important guide for surgery

Laparoscopic Myomectomy and morcellation

A laparoscopic approach for myomectomy requires no special instrumentation beyond that used in standard laparoscopy. An energy device is required for incision of the myometrium. An ultrasonic system like the Harmonic scalpel is preferred over other energy sources because it is associated with decreased blood loss and reduction in thermal injury of the myometrium. A detailed review of imaging in the operating room allows proper surgical planning.

The patient is positioned in lithotomy position with arms tucked and padded. An examination under anesthesia is performed to plan port placement. Port placement should be based on the position and size of the fibroids to be removed . Usually 1 large 10 to 12 mm main port and three 5 mm ports are required to be placed. For tissue retrieval, however ,the 5 mm port may need to be replaced by 10 mm.

A large myomatous uterus requires higher port placement. For smaller fibroids, the main port is placed supra umbilically. Laparoscopic suturing may be more ergonomic if there are two ports on either the patient's right side for right-handed surgeons or left side for left-handed surgeons.[2]

After the primary port placement ,the ancillary 5-mm lateral trocars are then placed under direct vision. Lateral ports are typically placed at the level of the umbilicus, either lateral to the rectus muscle or in the lower quadrants lateral to the inferior epigastric vessels. The lower quadrant ports should be placed above the anterior superior iliac spine to avoid injuring the ilioinguinal/iliohypogastric nerves. The inferior epigastric vessels should be observed directly at laparoscopy to avoid injury. Typically, four ports are placed: an umbilical port, two lateral ports on the side of the principal surgeon, and one on the side of the assistant.

The larger port, typically 10 to 12 mm, is required for introduction and removal of large needles and also for tissue extraction by morcellation. For power morcellation, this port is typically placed supra umbilically whereas for manual morcellation ,a 12-mm accessory port is placed suprapubically ,which can be extended for extraction.

Minimizing blood loss and keeping the operative area avascular for clean surgery ,is very important. This is usually achieved by injection Vasopressin. Infrequently B/L uterine artery ligation or sometimes internal iliac artery ligation is also done to achieve an avascular field. .After a general survey of the peritoneal cavity, diluted vasopressin (20 units in 200 mL of normal saline) is injected into the myometrium and pseudocapsule around the myoma .An incision is made on the myometrium overlying the myoma, and the dissection then continues until the pseudocapsule is reached .Although traditionally as many fibroids as possible are removed from a single incision on the uterus, sometimes it is necessary to make multiple incisions to achieve rapid hemostasis after enucleation. A horizontal transverse incision is recommended for ease as it permits more ergonomic suturing.

Once the pseudocapsule is reached, a 5-mm tenaculum grasps the myoma to allow gentle traction-countertraction. Alternatively, a myoma screw can be used. During dissection of deep myomas, diluted methylene blue should be injected to distend the uterine cavity. This makes the cavity visible during dissection and quickly identifiable if entry occurs. Hemostasis can be achieved with judicious use of bipolar electrosurgery. Once enucleated, the leiomyoma should be placed in an easily visible area of the pelvic cavity for later retrieval .Multiple small fibroids,can also be strung together by a suture to avoid getting lost in the pelvis before retrieval.

Closure of the myometrial defect is always multilayered. Absorbable polydioxanone, polyglactin, or barbed suture 0 or 00-gauge suture on a curved needle with a tapered tip can be used. Barbed suture may allow less blood loss and faster closure. The serosa is approximated with 2-0/3-0 delayed absorbable suture in a running fashion. Baseball sutures may be used for closure of the serosa to avoid any dead space .The most critical step is closure of the endometrium. Inadvertent entry into the uterine cavity without separate closure could result in intracavity adhesions. Delayed absorbable 3-0 suture is used to close the endometrium without penetrating the endometrium. There should be no suture in the uterine cavity. A good suturing technique is essential in order to get a a strong scar and favorable pregnancy outcomes.

This is followed by retrieval of the fibroid. Traditionally, in laparoscopic surgery, tissue extraction is usually performed by morcellation. Power/electromechanical or manual (scalpel) extraction techniques can be used. [Figures 1-6]

Background of Morcellation; Controversies associated and Regulations

Morcellation is a technique of fragmenting myomas into smaller pieces, which can be removed through the small ports. For decades, gynaecologists have been using manual morcellation in hysterectomy , for removing a big uterus through a small abdominal incision or through vagina.[5]

With the advent of laparoscopy, there arose the need for electromechanical morcellators. Electromechanical devices ,commonly known as power morcellators were first introduced in 1993 .

The use of power morcellators, however fell into controversy and was later criticised because of the possible spread of an unsuspected leiomyosarcoma during morcellation. It was noted that due to the cylindrical nature of the instrument with its rapidly rotating tip ,there was an increased spread of the morcellated tissue pieces within the abdominal cavity and potential risk of inadvertent spread of leiomyosarcoma.[6] A number of liability suits also followed against the use of power morcellation in the US, ,leading to the formulation of certain regulations by the FDA (Food and Drug Administration).

The U.S. FDA issued a safety communication in 2014 warning against the use of laparoscopic power morcellators in the majority of women undergoing myomectomy or hysterectomy. This warning also led to a decrease in cases of laparoscopic myomectomy and hysterectomy.

In February 2020 the FDA released an updated Safety communication recommending that laparoscopic power morcellators for myomectomy or hysterectomy be performed only with a tissue containment system that is legally marketed in the U.S for use during laparoscopic power morcellation and is compatible only with specifically designed laparoscopic power morcellators. Additionally ,the guideline also forbids the use of laparoscopic power morcellators in postmenopausal women or those over 50 years of age[5] .

In December 2020, the FDA released an updated safety communication reaffirming that laparoscopic power morcellators for myomectomy or hysterectomy should only be performed with a tissue containment system

and only in appropriately selected patients. ;additional recommendations were also on thorough preoperative screening and shared decision making with patient.

Risk of leiomyosarcoma: The pressing questions to be answered are

1) Risk of unsuspected Leiomyosarcoma in a presumed leiomyoma
2) Role of pre operative evaluation
3) Risk of dissemination in cases of morcellation

Leiomyosarcoma (LMS) is a rare, aggressive malignant mesenchymal tumor accounting for 1% of all uterine malignancies. It spreads rapidly through the intraperitoneal and haematogenous pathways and is often diagnosed post operatively following myomectomy or hysterectomy.[3]

There is no consensus regarding the absolute risk of a presumed leiomyoma harbouring a leiomyosarcoma. As per a study done in China between 2008 to 2015, the prevalence of occult leiomyosarcoma , however, in a pre existing fibroid was substantially less than the overall prevalence and came at 0.07%. [4] Morcellation of an occult sarcoma, however, may upstage disease and worsen prognosis .

LMS is more common in perimenopausal women with a median age of 50 years. Total abdominal hysterectomy with bilateral salpingo oophorectomy.is the surgery of choice. Research has also shown that uterine size and rapid uterine growth are not associated with increased risk of leiomyosarcoma.[5]

Imaging of Uterine Sarcomas and pre operative diagnosis

The preoperative diagnosis of LMS may be possible. Diagnosis using total serum lactate dehydrogenase (LDH) and LDH isoenzyme 3 measurements along with gadolinium-enhanced diethylenetriamine pentaacetic acid (Gd-DTPA) dynamic MRI has been reported to be highly accurate . A form of MRI functional imaging called diffusion-weighted imaging (DWI) has also been used to distinguish between malignant and benign tumors.

The current morcellation techniques are:

- Power (mechanical/electromechanical) morcellation
- Manual morcellation (scalpel/vaginal/manual)
- Contained (in-bag) morcellation
- Hybrid method

Innovations and Technical Improvements

1. **In-bag/contained systems:** multiple commercial and improvised bags have been developed. They vary in design (single-port bags, dual-port extraction bags) and are now widely studied.
2. **Transvaginal contained morcellation:** involves placing the bag and performing manual morcellation through the vagina (or posterior colpotomy) to avoid abdominal contamination. Recent case series and cohort studies report safe use in selected patients.
3. **Hybrid and mini-lap approaches:** mini-lap extraction, bivalving, coring, or "paper-roll" techniques to remove large specimens without the use of power morcellator .
4. **Adjuncts to reduce dissemination:** improved bag materials, better bag deployment techniques, and intraoperative measures (irrigation, controlled suction) to reduce spillage

A comparative list of the current and newer morcellation techniques are as below:

Table: Comparison of Specimen Retrieval Techniques in Laparoscopic Myomectomy

Technique	Description	Advantages	Limitations/ Concerns
Uncontained Power Morcellation	Motorized device fragments a fibroid inside peritoneal cavity	Quick, efficient for large fibroids; preserves minimally invasive approach	Risk of tissue spillage and dissemination of occult sarcoma; discouraged by FDA (2014)
Contained (In-Bag) Power Morcellation	Specimen placed in retrieval bag, fragmented within containment	Preserves MIS benefits; reduces gross tissue spillage	Longer operative time; technical learning curve; risk of bag rupture 7,8
Manual Vaginal Morcellation	Fibroid is manually fragmented and extracted via posterior colpotomy or vaginal incision	Avoids abdominal spillage; low-cost; feasible in selected patients	Not always possible (large/ multiple fibroids, nulliparity); limited surgeon experience
Mini-Laparotomy Extraction	Specimen removed via 3–5 cm suprapubic/mini-lap incision, sometimes with scalpel morcellation	Safe; no risk of intraperitoneal dissemination; useful in high-risk patients	Larger incision; longer recovery compared with a purely MIS approach.
Hybrid / Alternative Techniques (e.g. coring, bivalving, paper-roll technique)	Fibroid is cut into strips or segments before removal	Avoids power devices; allows specimen retrieval when contained bags unavailable	Technically demanding;less standardized

Informed patient decision-making is critical, as morcellation of a malignancy may worsen prognosis.

Discussion

Laparoscopic myomectomy remains the preferred approach for many women with symptomatic fibroids due to its advantages of faster recovery, less postoperative pain and shorter hospital stay compared with open surgery. A major technical challenge, however, is specimen retrieval when large myomas are encountered. Morcellation—fragmentation of the specimen for removal through small incisions—has traditionally been performed using power morcellators. This technique, while effective, became controversial after the 2014 U.S. Food and Drug Administration (FDA) safety communication warning that power morcellation may disseminate unsuspected uterine sarcomas, potentially worsening prognosis .

In response to these concerns, innovations in contained (in-bag) morcellation have been developed, aiming to preserve the minimally invasive benefits of laparoscopy while limiting tissue spillage. Several systematic reviews and cohort studies demonstrate that , contained morcellation reduces visible dissemination compared to uncontained methods, though it increases operative time and requires technical expertise.

Current best practice supports the use of contained morcellation or alternative retrieval techniques whenever morcellation is necessary, with explicit preoperative counselling and careful patient selection.

Steps of Laparoscopic Myomectomy

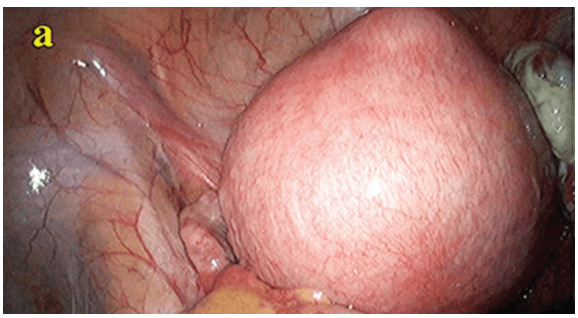

Figure 1-Fundal fibroid as seen on laparoscopy

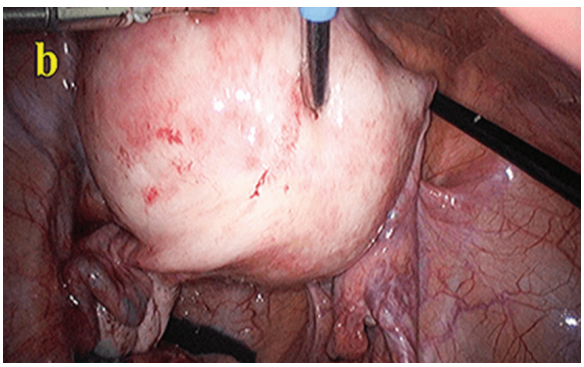

Figure 2-Vasopressin being injected by a long needle

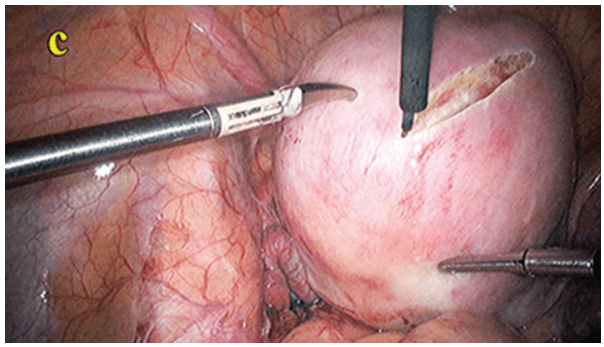

Figure 3-Transverse incision given on fundus using Harmonic scalpel

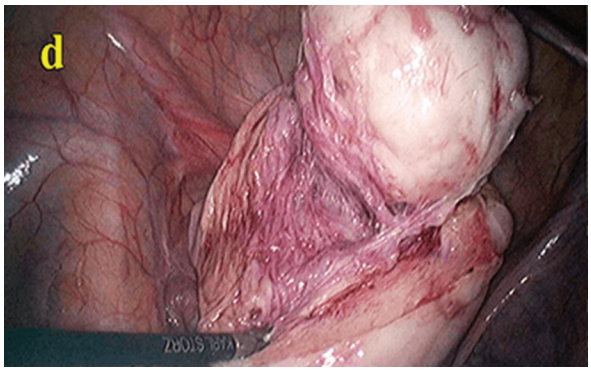

Figure 4-Myoma is enucleated from its bed

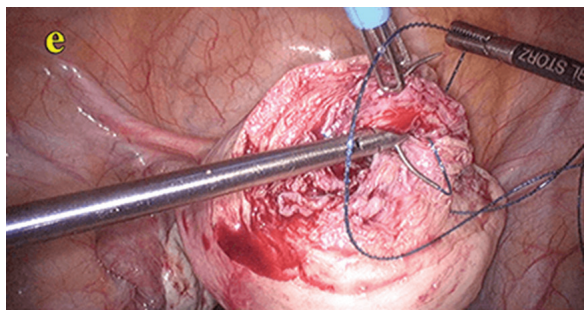

Figure 5- Myoma bed suturing

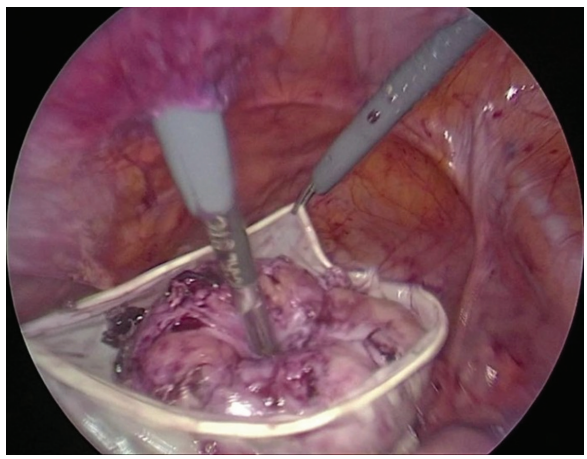

Figure 6-In bag morcellation

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Calendar for AOGD Monthly Clinical Meeting 2025-2026

26th September 2025	VMMC &Safdarjung Hospital
31st October 2025	DDU Hospital
28th November 2025	MAMC & LNJP Hospital
26th December 2025	Sir Ganga Ram Hospital
30th January 2026	Dr RML Hospital
27th February 2026	UCMS & GTB Hospital
27th March 2026	LHMC & SSK Hospital
24th April 2026	Hamdard Institute of Medical Sciences and Research

The 'No-Touch' Vaginoscopic Approach: Redefining Patient Comfort and Outcomes

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Introduction

Vaginoscopy is a medical procedure that uses a endoscopic camera to examine the vagina, cervix, and uterus, without a speculum during office hysteroscopy, This "no-touch" technique offers greater patient comfort, reduced pain, and a shorter procedure time compared to traditional methods. Vaginoscopy is used to diagnose and treat conditions such as abnormal uterine bleeding, endometrial polyps, and to investigate vaginal bleeding or discharge in children.[1,2] Vaginoscopy is suitable for office hysteroscopy in an outpatient setting and may ultimately improve patient satisfaction.

Indications (Diagnostic and therapeutic)[3,4]

1. Abnormal uterine bleeding-For taking Targeted Biopsy.
   - Postmenopausal bleeding(PMB) with an endometrial thickness >4 mm and irregular endometrium on transvaginal scan or endometrial thickness >5 mm on tamoxifen therapy
   - Recurrent postmenopausal bleeding
   - Unscheduled/intermenstrual bleeding with an abnormal endometrium on transvaginal scan (TVS) or refractory to medical treatment
   - Heavy menstrual bleeding with or an abnormal endometrium on TVS or refractory to medical treatment.
   - A non-diagnostic endometrial Biopsy in PMB or HMB
   - Postpartum bleeding with suspected chronic retained products of conception or arteriovenous malformation on TVU
2. Reproductive abnormalities
   - Subfertility associated with an abnormal ultrasound or hysterosalpingogram
   - H/O Late miscarriage/preterm labour
3. Identification (and retrieval) of lost intrauterine devices
4. Removal of small polyps
5. Paediatric Patients - It is a valuable tool for examining children, helping to confirm diagnoses and rule out malignancy.

Procedure

Outpatient Setting:

The procedure can often be performed in an outpatient setting with conscious sedation or even without any anesthesia.[5]

Preprocedural preparation

1. Written patient information explaining procedure advantages ,risks and consent for the procedure should be taken.
2. Miniature hysteroscopic systems (≤4 mm outer diameter) should be used for diagnostic outpatient hysteroscopy. Normal saline as distending media is preferred.
3. Administer standard doses of NSAIDs 1hour before the procedure .Routine use of opiate analgesia should be avoided.
4. Routine administration of intracervical or paracervical local anaesthetics Should be used where larger diameter hysteroscopes are being employed (outer diameter >5 mm) and where the need for cervical dilatation is anticipated (e.g. cervical stenosis).[6]
5. Routine cervical preparation with misoprostol before outpatient hysteroscopy is required if dilatation beyond Hegar 6 is anticipated. Cervical preparation reduces pain and improves feasibility associated with outpatient hysteroscopy but increases the risk of adverse effects.[7]

Technique [4]

- No Touch/No Speculum Technique

1. Place the hysteroscope into the vagina and allow the distension media to flow in and distend the vagina.
2. Advance the scope towards the posterior fornix and look for the cervix. If not immediately visible, work slowly backwards from the vault, angling the hysteroscope upwards as you go (as majority of uterus anteverted) and sweeping side to side until you identify the cervix and find the external os.
3. Steer the hysteroscope into the cervical os, along the canal and into the uterine cavity under direct vision. The camera provides a clear view of the vaginal walls, cervix, and, with proper technique, the uterine cavity.

4. Directed biopsies can be taken using a biopsy forceps via the operating channel of a rigid hysteroscope.

Tips to help identify the cervix via vaginoscopy

- Mucus, blood or coil threads training from the cervical os can be followed to locate the cervix.
- A 30° angled hysteroscope makes it easier to identify the cervix.
- If the cervix is difficult to locate consider eccentric placement, a deficient cervix flush with the vault, an acutely retroverted uterus with an anterior placed cervical os, or uterine prolapse with the cervix sited close to the introitus.
- digital examination to determine its position within the vagina can be performed if above methods fail to locate cervix.

Advantages [8]

1. Reduced Pain and Discomfort: The absence of a speculum minimizes pain and discomfort for the patient. There is proven a statistically significant reduction in pain and ,procedural time and Vaso -vagal episodes.
2. Shorter Procedure and Recovery: Both the procedure and the recovery time can be significantly shorter.
3. Greater Manoeuvrability: The "no-touch" approach allows the surgeon greater control and movement of the hysteroscope.
4. Failure rates and complications between the vaginoscopy and traditional hysteroscopy techniques are similar.

Vaginoscopy is an important diagnostic tool in the office setting of vaginal bleeding in prepubescent girls, reproductive age group and post-menopausal women allowing the ability to confirm a diagnosis, and importantly, to exclude malignancy. It offers good patient acceptability, minimal discomfort owing to its no touch technique. It can be used to carry out minor operative procedures like removal of intrauterine device, small non-vascular polyps in outpatient setting without the need of anaesthesia.

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Overcoming Challenges in Operative Hysteroscopy: A Practical Guide

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With the advancement of time, Hysteroscopy has evolved to be considered the gold standard procedure for investigating and treating various intrauterine pathologies. With the downsizing and compactness of the operative scopes and introduction of new surgical instruments, the outpatient operative hysteroscope is speedily transcending the traditional in-patient hysteroscopy performed in an operating theatre. Operative hysterocopy offers an excellent treatment modality for intrauterine pathologies but requires skill to overcome the challenges associated with its procedure. This chapter discusses the various challenges that may be faced by the endoscopist and the tips and tricks to overcome these for an uneventful outcome.

The various challenges faced during operative hysteroscopy may be associated with the improper patient selection, complexity of the case itself, ergonomics, entry of the scope, inadequate distension, loss of/ cloudy vision, fluid imbalance, specific procedure-related, instrument-related, and energy device-associated tribulations.

A. Preop Preparation

During operative hysteroscopy fluid absorption into the circulatory system can result from the absorption through the endometrial mucosa, the fallopian tubes, or even direct entry into the bloodstream through opened vessels during the procedure, such as myometrial venous sinuses. The thicker the endometrium, the higher the risk of fluid absorption and the procedure becomes more challenging. Therefore , operative hysteroscopy should be posted in immediate postmenstrual phase or in cases of irregular bleeding, gonadotropin-releasing hormones analogs (GnRH-a), danazol, progestins alone or combined with estrogens, may be started postoperatively to thin out the endometrium.

B. Erogonomics

Patient positioning: Lithotomy with buttocks hanging over the edge of the table to ease the maneuverability of the scope.

Surgeon Ergonomics:The table height should be adjusted to allow the surgeon to maintain a comfortable posture, with:

1. Elbows at 90°: The surgeon's elbows should be at a 90° angle, with forearms parallel to the floor.
2. Neutral spine: The surgeon's spine should maintain a neutral position, avoiding strain or bending.
3. Monitor placement: The monitor should be positioned directly in front of the surgeon to minimize neck strain.

The cables should be properly placed on the table and secured to drapes with towel clips to avoid physical strain for the surgeon, especially during longer surgery duration, and prevent the inflow and outflow tubes and light cable from kinking. The foot pedal of the energy source should be within easy reach of the surgeon.

The hysteroscopic drapes should be placed under the patient 's buttock for proper estimation of outflow

C. Difficult cervical Entry

Factors such as nulliparity, postmenopausal state, history of previous D& Cs, cesarean section, and previous surgical procedures on the cervix may lead to cervical fibrosis and stenosis leading to exacerbation of the difficulty in cervical dilation, increasing the risk of entry-related complications like false passage, cervical trauma and bleeding , increased operative time, uterine perforation and even abandonment of the procedure due to surgeon frustration.

It may be overcome by following methods:

1. Preoperative cervical ripening by misoprostol 400 mcg inserted per vaginally 4-6 hours prior to the procedure.
2. Preoperative treatment by vaginal estradiol for 14 days in postmenopausal women
3. Mechanical dilatation with hegar dilators (less preferred due to high chances of cervical injury, false tract, uterine perforation)
4. Hydrodilatation-advancement of hysteroscope under direct vision under pressure of fluid. Initially the outflow may be kept closed to maintain adequate intrauterine pressure.
5. Putting mechanical scissors/ bipolar energy source in the operative port of a smaller diameter operative sheath and cutting the fibres of the cervix
6. Ultrasound-guided navigation of the cervical canal by hysteroscope/ hegars dilator

D. False passage

Women with severe cervical stenosis, acutely anteflexed or retroverted uterus , previous caesarean sections, Asherman's

syndrome, and cervical fibroids are at a higher risk of false tracks during introduction of hysteroscopy. False passages occur when the hysteroscope navigates lateral to the actual os. In case the false passage is made during insertion of the hysteroscope, instead of a normal endometrial cavity with bilateral tubal ostia, a circular pattern of criss-cross muscle fibres of the cervix will be seen with no sight of any ostia. In cases where this possibility is anticipated and resistance is found on entry through the internal os, maintaining the inflow and closing the outflow will increase intracervical pressure, allowing the hydrodilatation of internal cervical os and progression of the scope into the uterine cavity.

If suspected to be in the false passage, the surgeon should withdraw the scope and tilt towards the opening leading to the internal cervical os and slowly advance under direct vision until it is introduced into the endometrial cavity (Tilt technique). In a few cases, dividing the bridge of tissue between the false and true passage using hysteroscopic scissors or a loop electrode will facilitate access. This may be attempted if the intervening tissue is less than 1 cm.

If the above procedures do not work or take a long time, the procedure should be suspended, as false passages may be associated with excessive fluid absorption. Further procedure should be deferred for 2–3 months to allow for healing of the track.

E. Bleeding

Bleeding during operative hysteroscopy may result from entry-related or procedure-related complications such as transaction of vessels in the myometrium during the operative procedure. It is the second most common complication after entry-related complications. Higher incidence rates have been demonstrated in cases of adhesiolysis (2.51%) and myomectomies with intramural components (3–4%).

Generally, the problem is resolved by increasing the intrauterine pressure although keeping it below the Mean arterial pressure. The pressure of distended uterine cavity tamponades the venous vessels. Small bleeding spots may be tackled with electrocautery with a rollerball or a wire loop. Ensuring a continuous media flow system facilitates the removal of blood from the cavity, simultaneously allowing for prompt continuation of the procedure. So, it is imperative to check if the outflow system is open to allow the continuous drainage of media out of the uterine cavity making the field clear. Once the procedure is complete, the intrauterine cavity pressure should be lowered slightly to identify any occult bleeding and allow for timely management.

Diluted vasopressin solution (0.05 U/mL) injected into the cervix has been shown to significantly reduce blood loss in patients with a high risk of bleeding during the procedure. Excessive bleeding can occur when the endomyometrial junction is breached during myomectomy or endometrial resection procedure. When the bleeding is excessive, it produces the "Japanese Flag Sign" obscuring the field of vision. This bleeding can be managed by putting in Foley's catheter with balloon inflation with 15-30ml mL of saline.

F. Cervical trauma

Cervical lacerations occur when significant traction is used on the handling surgical instruments applied to the cervix. This type of trauma occurs mainly during the dilation of the cervix and is more frequent in women with cervical stenosis .

Instead of a single-toothed vulsellum, the cervix should preferably be held with a double-toothed tenaculum or vulsellum forceps that distributes the force over a broader area, providing a less traumatic grasp.

Pre-operative evaluation is important to recognise patients who are at a higher risk of cervical trauma, by identifying relevant antecedents that may increase the risk of cervical stenosis, as well as examination of the cervix. In these patients, consideration should be given to the use of cervical ripening agents like misoprostol before the intervention. Other options include the insertion of osmotic dilators 24 hours prior to procedure to aid in cervical softening and the use of smaller diameter scopes.

G. Cloudy vision or loss of vision

Camera head should be adequately covered with camera cover to prevent the fluid from leaking out and fogging the lens.

Check that the inflow and outflow are open to ensure proper rinsing of the uterine cavity. If vision is cloudy, outflow valve should be opened and then reclosed, leaving it slightly open for fluid recirculation inside the cavity.

Improper distension may occur due to over-dilatation of cervix, which can be taken care of by applying an Allis forceps to hold the cervical lips hugging the os to avoid undue leakage of the distending fluid. The slices of the tissue in case of myomectomy or polypectomy may be taken out with grasping forceps in between the procedures to ensure vision clarity.

Always rule out uterine perforation in case of sudden loss of vision.

H. Fluid imbalance

Fluid overload due to excess absorption of distention medium, occurs in 0.2–6.0% of operative hysteroscopies and is a potentially serious complication . In 2018, ISGE/BSGE joint guideline on fluid management for hysteroscopy, defined fluid overload as a fluid deficit of more than 1000 ml with hypotonic solutions and 2500 ml when using isotonic solutions . Risk factors that increase fluid intravasation include high intrauterine distension

pressure, low mean arterial pressure, prolonged surgery, extensive surgical resection and large uterine cavities . Elderly women with cardiovascular, renal or other medical comorbidities are also at a higher risk. In high risk patients, the ISGE/BSGE guideline recommends using lower upper limits for defining fluid overload, with 750 ml for hypotonic solutions and 1500 ml for isotonic solutions.

In recent years, with the development of bipolar electrosurgical equipment and mechanical instruments, use of isotonic media is preferred over hypotonic media due to a better safety profile..

Careful fluid monitoring throughout operation by using automated fluid measurement systems have brought improvement as they allow for more accurate measurement of the fluid output when compared to manual measurements. During the procedure, the surgeon should use the lowest pressure to achieve a clear view of the uterine cavity, usually between 50 and 80 mmHg. Other important measures include a preoperative baseline serum electrolytes in high-risk patients or in those where a longer procedure is anticipated. The use of intracervical injection of dilute vasopressin before cervical dilation may decrease fluid absorption. Pre-operative administration of gonadotrophin-releasing hormone, especially in older women, may help reduce the intravasation of fluid.

In cases where the patient develops fluid overload, the procedure should be abandoned, strict fluid balance monitoring should be started and serum electrolytes measured. Inj furosemide should be administered and patient should be shifted to high dependency unit for intensive fluid management.

I. Electrosurgery related

When using a monopolar instrument, the current can be unintentionally diverted to another path, resulting in an area of very high current density on the vagina or vulva, leading to undesired electrosurgical injury (capacitive coupling effect) The surgeon must avoid an over-dilation of the cervix to

maintain a direct contact between the cervical canal walls and the outer sheath of the resectoscope. To reduce the risk of electrosurgical injuries, the pedals controlling the electrodes should be carefully placed in

a safe location to avoid unintentional start-up.

The surgeon, when possible, should prefer bipolar electrosurgery. In case if using a monopolar current, the electrode must be activated only when close or in contact with the targeted lesion. The intensity of the current is directly proportional to the risk of thermal injury, so high-voltage energy (i.e. coagulation) should be avoided as much as possible**.**

J. Venous air embolism

Gas embolism is another severe potential complication. In order to prevent this, following precautions should be taken:

1. Hysteromat set and tubing should be confirmed free of air and changed with every patient. All sites of connections should be leak proof and all air purged out before connecting to the sheath.
2. Pressure inside the uterine cavity should be kept <100 mm Hg during hysteroscopy.
3. Repeated insertions and removals of the hysteroscope during the procedure should be avoided.
4. Even a small injury of the uterine wall increases the risk of embolism and thus the anaesthesiologist should be kept informed.
5. Transthoracic echocardiography TTE/ Transesophageal echocardiography (TEE) probe should be used if available. TEE has the maximum sensitivity and can identify right-to-left shunting, and even 0.5 ml of air bubbles can be detected.
6. Central venous catheters, arterial cannulas, resuscitation equipment, and drugs should be kept ready
7. The use of N2O and steep Trendelenburg position should be avoided
8. Intracervical injection of dilute vasopressin helps in reducing the risk of embolism.

K.Specific Procedure Related Challenges

Hysteroscopic myomectomy

For less than 2 cm myomas, the base of the myoma is resected at the endometrium level, and the myoma is extracted with the loop or blindly with a curette.

For fibroids larger than 2 cm a progressive regression from the surface of the myoma toward the endometrium has to be performed.

For type 0 leiomyomas, in addition to resectoscopy (slicing technique), morcellation is recommended as it is faster. For type 1–2 leiomyomas, slicing technique is currently recommended with 90 90-degree loop with the excision beginning at the top of the lesion and progressing towards its base. The loop is placed beyond the lesion, while cutting is performed only during the return movement towards the cervix, with the angulation of the resectoscope axis to define the degree of resection depth. Fragmentation of the myoma can be performed with a semi-circle loop, with mono or bipolar energy, LASER fiber or morcellator.

The movement of the resection loop with energy can only be from fundus–cervix (Fig, 1), but without energy, it can be driven in any direction, as it will have only mechanical

action. The non-energy loop movement, called a cold loop, can be done in any direction to mobilize and enucleate the submucosal fibroid.

Another technique of myomectomy is enucleation of the myoma from its bed followed by myolysis. Enucleation may be done either by incising the endometrium around the submucosal myoma with cold loop/ scissors to reach the pseudocapsule or by slicing the myoma close to the myometrium. The mobilization of the myoma is performed from outside to the center, front to back, to progressively free it from the myometrium, without significant bleeding and thermal damage, and a lower risk of intravasation as it does not cut the myometrial vessels. Due to the crowding of myoma fragments in the uterine cavity, it is necessary to interrupt the procedure with emptying of the cavity, so that the vision of the cavity and the myoma is recovered. Hysteroscopic Tissue Removal Systems (TRS) alleviates the need for removal of fibroid "chips" from the cavity. It performs fragmentation and suction of resected polyps and fibroids. There are three main brands currently

available in the market (e.g., Myosure, Truclear, and Symphion), mainly used for types 0 and 1 intrauterine leiomyomas. It has a rapidly rotating blade which resects small portions of the fibroid, which are suctioned into a tissue trap for pathologic evaluation. If there are any signs of fluid overload, the procedure should be interrupted for second sitting around three months later.

Hydro-massage (alternately increasing and decreasing the intrauterine pressure) and bimanual uterine massage cause the intramural portion of myoma to pop up into the cavity, facilitating complete resection of type 1 and 2 myomas.

There may be uterine perforation in dealing with deep-seated myomas, a conservative approach with observation and antibiotics is sufficient in most cases of perforation with cold devices. However, in case of 'hot loop perforation', a laparoscopic (or laparotomic) exploration is mandatory to fully assess and treat possible damage to adjacent anatomical structures especially the gut.

As a word of caution, it is prudent to do a simultaneous laparoscopy in cases of larger myomas (3-5 cm) if there is a concern for uterine perforation.

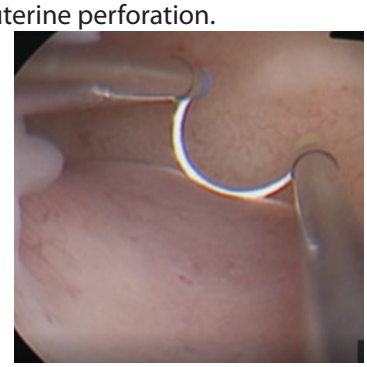

Fig 1: Resectoscope loop being placed beyond the fibroid and then activated to slice down from fundus towards the cervix

Polypectomy

Hysteroscopic scissors are best used with the plane of the blades oriented at 90 degrees to the pedicle/ base of polyp (Fig.2). In order to avoid cutting the whole polyp which may be difficult to remove as it starts to swim in the fluid current, a small portion may be left attached and held with a grasper and traction given farther from the base to detach the polyp mechanically and then extracted with the same grasper.

In case the polyp is located in lateral uterine wall, scissor placement is done by turning the light cable and not the scissors. For a fundal polyp, base is inaccessible, the cutting has to be done from above downwards, side to side, so that the diameter of the base is gradually narrowed down to a point which can then be cut. While cutting the tissue, the scissor blades should be clearly visible in the centre of the screen. The scissor is never thrust alone inside the cavity; it is the combined movement of the whole assembly advancing in and out. The hysterocope is removed along with the grasped polyp and grasper simultaneously.

Large polyps require a resectoscope/ morcellator as in myomectomy.

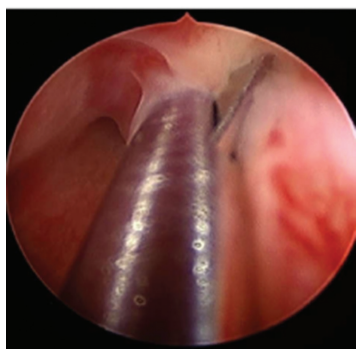

Fig 2: Hysteroscopic scissor blades placed parallel to the uterine wall to cut the polyp at its base

Septal Resection

It is actually a hysteroscopic septal incision and not an excision done for uterine septum. After identifying both the uterine cavities and ostia, the scope is withdrawn until just above the internal os to start the resection bit by bit by advancing the fixed side of the scissor blade into the septal tissue, and cutting continues with the other blade. The resection should start from the mid part of the septum. Other methods like monopolar or bipolar electrosurgery or laser using a loop or needle electrode, can also be used for septal resection. An ultrasound may sometimes assist in getting an idea of how much septal resection is needed further, safely preventing uterine perforation.

The endpoint of septal resection is confirmed by seeing bleeding vessels at the fundus and bilateral ostia are visible simultaneously in one line.

Adhesiolysis in Ashermann's syndrome

A diagnostic hysteroscopy should always be preceded by the main procedure to identify the landmarks. Using scissors, always start cutting filmy and central adhesions first, taking small bites at a time (Fig.3). Always cut from below and move upwards. After septal resection and adhesiolysis, the patient may be kept on estrogen for 14-28 days to prevent intrauterine adhesion formation.

Fig 3. Septal resection: The fixed blade of scissors is introduced into the partial thickness of the mid part of the septum, and cutting is advanced towards fundus.

Intrauterine device (IUD) removal

IUD removal is easily performed if the strings are caught hold with a grasper and the IUD can be retrieved easily. But sometimes it is challenging if the IUD is embedded in the myometrial tissue. In these cases, the visible portion of the IUD is grasped firmly with an alligator grasper, and the grasped IUD is pushed farther away to dislodge it from the tissue rather than pulling it out. After dislodging, it is easily taken out. Sometimes forgotten IUDs are fragile and portion of it may break inside while retrieving. Therefore, in these cases, IUD should be maneuvered in a way to make it upside down so that the widest transverse portion comes out first, followed by the thin vertical stem making retrieval smooth without it being stuck or broken somewhere during the procedure.

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Fetoscopy and Fetal Interventions- Expanding Horizons in Minimally Invasive Fetal Therapy

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Fetal diagnosis draws the map, and fetal therapy charts new paths to intervene while the fetus is still growing inside the womb. Fetoscopy is a procedure where small endoscopes, called fetoscopes are inserted through small incisions on the mother's abdomen and uterus, allowing direct visualization and intervention in the fetus and placenta under ultrasound guidance.

Need for Fetal Intervention

The development and improvement of the medical science, with newer diagnostic modalities like 3 D Ultrasonography and fetal MRI, have led to early and accurate detection of Fetal anomalies, early in pregnancy, thereby creating the possibility of early on targeted intervention.

The development of fetal therapy was driven by the realization that certain newborns, who are otherwise healthy, present with congenital anomalies so severe they threaten life itself. When these conditions are only discovered after birth, the delay before treatment can lead to irreversible damage—compromising the effectiveness of interventions postnatally and often resulting in death or lifelong disability in newborn.

As a result, fetal surgery has become one of the most rapidly advancing fields in maternal-fetal medicine, enabling doctors to address conditions in-utero that are linked with high rates of perinatal illness, death, and long-term complications.

Common Procedure and Expanding Indications for Minimally Invasive Fetal Therapy

By addressing certain conditions in utero, Fetoscopic surgery offers the potential to reduce perinatal morbidity and mortality while minimizing the risks associated with open fetal surgery. This allows us to explore the range of fetal disorders currently treated with fetoscopic techniques and highlight the therapeutic promise of minimally invasive fetal interventions. The following table documents the common indications and procedures for minimally invasive fetoscopic surgeries.

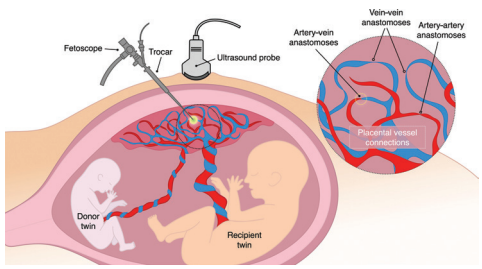
Indication	Interventions
1. Twin-to-twin transfusion syndrome (TTTS)	Fetoscopic laser photocoagulation of placental anastomoses
2. Congenital diaphragmatic hernia (CDH)	Fetoscopic Endoluminal Tracheal Occlusion (FETO)
3. Lower Urinary Tract Obstruction (LUTO)	Vesicoamniotic shunting (VAS)
4. Fetal Thoracic Abnormalities	Thoracoamniotic shunt
5. Myelomeningocele	Intrauterine Repair

1. Twin Twin Transfusion syndrome (TTTS)

Monochorionic twins share a common placenta with vascular anastomoses in the chorionic petal, which permits bidirectional flow of blood. This unique circulatory connection could lead to harsh complications by creating disparity between both fetuses. Complications include selective fetal growth restriction, hemodynamic syndromes like twin-to-twin transfusion syndrome (TTTS), Twin Anemia-Polycythemia Sequence (TAPS), and twin reversed-arterial perfusion (TRAP) and perinatal mortality.

Twin–twin transfusion syndrome (TTTS), affects 10% of monochorionic (MC) twin pregnancies. When twin-to-twin transfusion syndrome (TTTS) develops at an early gestational age, specifically before 26 weeks, and is left untreated, it is associated with a profoundly poor prognosis, with perinatal mortality rates surpassing 90%.As the cause of Twin-to-Twin Transfusion Syndrome (TTTS) is believed to stem from a chronic imbalance in blood flow between the twins through placental vascular connections, Fetoscopic laser photocoagulation (FLP) treats TTTS by directly targeting and sealing these abnormal placental blood vessel connections, addressing the root cause of the condition.

Laser photocoagulation is done through a single-entry point and intends to destroy the communicating vessels, thus treating the underlying cause of the disorder. The procedure is performed between the 16th and 26th weeks of gestation in monochorionic-diamniotic twins with TTTS-Quintero stage II to IV.



Liu, C.A. et al.BJA Education, Volume 23, Issue 5, 162 - 171

2. Congenital Diaphragmatic Hernia

Congenital diaphragmatic hernia (CDH) is defective development of fetal diaphragm that leads to discontinuity of the diaphragm and migration of abdominal organs like stomach, intestines, liver etc into the thorax. Due to this migration, the fetal lungs are not

able to develop properly, leading to a combination of pulmonary hypoplasia and pulmonary hypertension.

To provide counseling and to estimate the lung function, Ultrasound uses Lung to Head Ratio (LHR), Observed-to-expected Lung to head ration (o/e LHR).

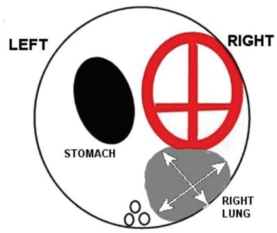


Figure adapted from Perinatology.com

The lung area contralateral to the CDH was originally obtained by taking the product of the longest two perpendicular linear measurements of the lung measured at the level of the 4-chamber view of the heart on a transverse scan of the fetal thorax. The product is divided by the head circumference (HC) to obtain the LHR.

Lung area = Length 1 X Length 2

The Lung area to Head circumference Ratio (LHR) = Lung area / Head circumference

Severe pulmonary hypoplasia is defined as corresponding with an o/e LHR <25% in isolated left-sided cases, correlating with a <20% survival rate.

Intrauterine treatment for CDH called fetal endoscopic tracheal occlusion (FETO) has been introduced to minimize pulmonary hypoplasia4, 5. By occluding the fetal trachea with a balloon, FETO allows the accumulation of lung fluid to stretch the lungs and enables the growth of airways and vasculature.

BALLOON PLACEMENT

A cannula is placed through the maternal skin, abdominal wall, and uterus and directed towards the fetal mouth, guarding to avoid the placenta. Adequate alignment to the fetal mouth is required and guided with ultrasound .The fetoscope is placed into the fetal mouth and the operator is able to visualise the tongue, uvula, epiglottis, and vocal cords . Once past the vocal cords, the balloon is positioned above the carina and saline is used for inflation. The correct position is verified with Ultrasonography

TRACHEAL OCCLUSION

This Balloon leads to complete tracheal occlusion, for the duration it is present .

LUNG GROWTH

Throughout pregnancy, fetal lungs typically produce exudate that subsists the lungs through the trachea, forming amniotic fluid. Placement of the balloon during the FETO procedure aims to prevent this fluid from leaving, helping the lungs expand in the thoracic cavity from fluid build-up and leading to lung growth.

BALLOON REMOVAL

Balloon removal can be done via fetoscopic retrieval, percutaneous puncture (ultrasound-guided) or tracheoscopic removal on placental circulation during cesarean section or in the immediate neonatal period . The approach to balloon removal is determined by the expertise available at each center, the feasibility of accessing the balloon for ultrasound-guided puncture, and the condition of both the mother and fetus at the time of removal.

The complications of FETO, Like all other minimally invasive Fetoscopic surgery are, Preterm Labour, Premature rupture of membrane, Failure of procedure, and chorioaminitis.

3. Lower Urinary Tract Obstruction

Congenital lower urinary tract obstruction (LUTO) encompasses a diverse group of anatomical malformations that impede urinary outflow at the level of the fetal urethra. The condition varies in both cause and severity and may lead to a cascade of prenatal changes identifiable through ultrasonographic assessment. LUTO commonly presents initially with bladder distension (megacystis) and is frequently associated with progressive hydroureter and hydronephrosis. In severe forms, the obstruction can result in the early development of oligohydramnios or anhydramnios, which subsequently leads to pulmonary

hypoplasia and carries a high risk of neonatal mortality.

If left unmanaged, fetal LUTO is associated with a mortality rate of up to 45%, primarily due to midtrimester severe oligohydramnios, which is strongly linked to pulmonary hypoplasia. Among infants who survive the neonatal period, as many as one third may progress to endstage chronic renal failure, ultimately requiring dialysis or renal transplantation.

Distinguishing genuine urethral obstruction from megacystis–megaureter–microcolon syndrome is essential, as the latter is a rare condition marked by functional intestinal hypomotility and significant bladder enlargement without mechanical obstruction. This syndrome exhibits a predilection for female fetuses and generally portends a poor outcome. The diagnosis can be challenging on ultrasound; therefore, it should be carefully considered when encountering female fetuses with lower urinary tract obstruction but normal amniotic fluid volume. In these cases, fetal intervention such as in utero shunting is typically not indicated or considered beneficial.

Percutaneous vesicoamniotic shunting represents the predominant approach for alleviating fetal lower urinary tract obstruction. This procedure entails the precise ultrasound-guided insertion of a double pigtail catheter—typically the Rodeck/Rocket or Harrison shunt—under local anaesthesia, positioning the distal segment within the fetal bladder and the proximal component in the amniotic cavity, thereby facilitating continuous diversion and drainage of fetal urine and is confirmed both immediately following the intervention and again several hours later, alongside verification of fetal viability.

The criteria for vesicoamniotic shunting in cases of lower urinary tract obstruction (LUTO) typically include the presence of an isolated obstruction in a male fetus with a confirmed normal karyotype, gestational age exceeding 16 weeks, evidence of oligohydramnios, and a favorable prognosis for renal function as determined by serial assessments of fetal urine, such as low concentrations of sodium and chloride ions.

Indicators of preserved renal function (fetal urine)

Na	<100mEq/L
Cl	<90mEq/L
Osm	<210mEq/L
Ca	<2mmol/L
PO4	<2mmol/L
β2-microglobulin	<6mg/L
Third successive bladder tap every 24 h interval	

Uncommon risks associated with fetal Vesicoamniotic shunting could be injury to fetal bladder, herniation of bower, risk of PROM and Shunt Expulsion.

4. Thoracic Fetal abnormalities

Thoracoamniotic shunting is a well-established therapeutic approach for managing fetal thoracic anomalies, including pleural effusions, chylothorax, and congenital pulmonary airway malformations (CPAMs).

Congenital pulmonary airway malformation (CPAM) is a developmental lung disorder that may present from the prenatal period through childhood. This malformation arises due to aberrations in embryonic lung development, occurring at various stages of lung morphogenesis, and results in abnormal bronchial formation.

Congenital pulmonary airway malformation is classified into five principal subtypes according to the Stocker system. Each subtype arises from a distinct segment of the bronchial tree, resulting in unique histopathological characteristics, clinical manifestations, potential for malignancy, and overall prognosis.

TYPE	
Type 0	Development arrested at the stage of trachea/ bronchia formation; tracheal epithelium. Cysts smaller than 0.5 cm; tracheal epithelium; presence of cartilage
Type 1	Development arrested at the stage of bronchia formation; bronchial epithelium. Large 4-10 cm cysts, cartilage rarely present, squamous- like epithelium.
Type 2	Development of the bronchial tree arrested at the glandular stage. Multiple cysts 0.5-2 cm, covered with columnar epithelium.
Type 3	Development of the bronchial trees arrested at the glandular stage, typical adenomatoid malformation. Multiple cysts < 0.5 cm, covered with columnar epithelium.
Type 4	Development arrested at the stage of bronchia formation; acinar epithelium. Maximum cysts size 7 cm, cartilage absent, association with pleuropulmonary blastoma.

The course of congenital lung malformations identified before birth is variable, and the majority of pregnancies proceed without complications. However, the outlook significantly deteriorates if the fetus develops signs of hydrops, at which point consideration of fetal intervention becomes warranted.

In this a customized pediatric shunt is used, which is

advanced percutaneously, which is advanced to fetal thorax and other part is left trailing behind in the amniotic fluid. This leads to drainage of fluid from pleural cavity, leading to expansion and development of fetal lungs.

The possible complications with Shunt placement includes displacement of shunt, Preterm labor, infections etc.

5. Myelomeningocele

Myelomeningocele repair, also referred to as fetal spina bifida surgery, is performed during gestation to close the spinal defect. Several surgical methods exist for fetal spina bifida correction. The traditional approach employs a large uterine incision, which is associated with increased maternal risks, such as obligatory cesarean delivery in both the current and all future pregnancies, and potential complications like uterine rupture at the scar site after surgery. In light of the considerable maternal risks linked to open fetal surgery, a minimally invasive alternative—fetoscopic spina bifida repair—is now being offered in certain cases.

In utero myelomeningocele (MMC) correction can be accomplished via an open approach, a fetoscopic technique, or a hybrid method incorporating maternal laparotomy with fetoscopic access to the uterus. Prenatal intervention for MMC has substantially transformed management by reducing the incidence and severity of Arnold-Chiari II malformation, lowering the requirement for ventriculoperitoneal shunting, and enhancing motor function outcomes. However, women who undergo prenatal surgery are at greater risk for pregnancy-related complications, such as oligohydramnios, chorioamniotic membrane separation, placental abruption, and premature rupture of membranes. Additionally, approximately one third of mothers experience dehiscence or significant thinning at the site of the uterine surgical scar at delivery.

Therefore, more research is still required for inutero minimally invasive Fetoscopic surgery, to decrease maternal morbidity and increase good fetal outcomes.

Complications of fetoscopy procedures in comparison to open fetal surgery

A systematic review and meta-analysis Maternal complications following open and fetoscopic fetal surgery done by Adalina et al found that for fetoscopic fetal surgery [5], the severe complication rate was approximately 2% and minor complication rate was 4%. Individual complications were as follows: -

1. **Bleeding**: Haemorrhage severe enough to prompt delivery or termination of pregnancy at the time of surgery as a life-saving procedure for the mother (Clavien-Dindo grade III) occurred in 0.92% of open fetal (95% CI, 0.46-1.62) and 0.26% of fetoscopic surgeries.
2. **Blood transfusion** : Intraoperative blood transfusion was required in 1.00% of patients undergoing open fetal surgery (95% CI, 0.53-1.64) and in 0.27% undergoing fetoscopic surgery (95% CI, 0.18-0.38).
3. **Chorioamnionitis**: Chorioamnionitis following open fetal surgery or endometritis following an EXIT procedure occurred in 4.13% of women (95% CI, 3.03-5.40), and in 1.45% undergoing fetoscopic surgery (95% CI, 1.06-1.90).
4. **Premature rupture of membranes**: PROM was reported to have occurred in 47.78% following open fetal surgery (95% CI, 23.01-73.16) and in 36.31% following fetoscopic surgery (95% CI, 22.00-51.99).
5. **Pulmonary edema**: Pulmonary oedema occurred in 4.32% of open fetal surgery cases (95% CI, 2.32-6.90), and in 0.63% of fetoscopic cases (95% CI, 0.43- 0.87).

Tips and Tricks of fetoscopy procedure

Effective fetoscopy relies on a steep learning curve, skilled technique, and careful procedural planning, often combining ultrasound guidance with direct endoscopic visualization. Key tips and tricks address preparation, instrument handling, and overcoming visibility challenges to improve outcomes.

Preparation and planning

- **Initial evaluation:** Before the procedure, perform a detailed ultrasound to determine the best entry site for the fetoscope. The insertion point should ideally be in an area devoid of placenta.
- **Simulated practice:** For trainees, practicing on a high-fidelity fetoscopy simulator is critical for acquiring the necessary dexterity and skills before operating on live patients.
- **Gestational timing:** For many procedures, fetoscopy is performed during the second trimester (e.g., 18–20 weeks), as the fetus is large enough for visualization but has not yet grown to a size that makes the procedure riskier.
- **Patient readiness:** Ensure the patient is appropriately prepped. This may include fasting before general anesthesia, and discussing any pre-existing conditions. Address the patient's anxieties by explaining the procedure and potential outcomes.

Instrument and technique

- **Instrument choice:** Select a fetoscope with the appropriate diameter and lens angle for the specific procedure and placental location. A larger 2-mm scope often provides better visualization than smaller sizes.

- **Dual-screen visualization:** Use both endoscopic and sonographic images on separate screens to maintain orientation within the uterus. This dual-modality approach is essential for accurate instrument guidance.
- **Insertion technique:** Insert the fetoscope under continuous ultrasound guidance. Advance the trocar slowly and carefully to avoid piercing the placenta.
- **Operating sheath:** For specific procedures like fetoscopic laser coagulation, use a double-lumen operating sheath to allow the simultaneous use of the fetoscope and a laser fiber.
- **Maintaining vision:**
    - Fill the uterus with clear fluid, such as warm, isotonic Hartmann's solution, which improves visualization.
    - If the fluid becomes turbid or bloody, replace it through the operating channel.

Intraoperative guidance and manipulation

- **Correct orientation:** It can be confusing to correlate the ultrasound view with the endoscopic view, but experience improves the ability to orient yourself. Note the relative positions of the umbilical cord and placental vessels.
- **Placental vessel coagulation (for TTTS):**
    - Aim for a perpendicular angle between the fetoscope and the target vessel for optimal laser effect.
    - Use a "no-touch" technique, keeping the laser fiber tip a few millimeters from the vessel surface to maximize coagulation and prevent rupture.
    - Treat vessels systematically, from periphery to center, to reduce congestion and risk of rupture.
- **Instrument handling:** When advancing a laser fiber or other instrument, move it slowly to avoid lacerating vessels or other tissue.

Overcoming challenges

- **Incomplete visualization:** If visibility is poor due to hazy amniotic fluid or incorrect positioning, consider adjusting the type of fetoscope or flushing the amniotic fluid. In some cases, a more extensive visualization may not be possible, and the risks must be weighed against the benefit.
- **Learning curve:** As fetoscopy has a significant learning curve, beginners should practice extensively on simulators and first observe procedures performed by experts. This initial training should ideally involve non-viable pregnancies (e.g., in medical termination of pregnancy cases) under ethical approval.
- **Adapting to different settings:** In dynamic clinical environments, be prepared to create a quiet, private space. For portable needs, use lightweight, compact equipment.

Pre-procedure planning

- **Use advanced imaging:** Before the procedure, perform detailed ultrasounds with color Doppler imaging to precisely map the placenta and identify blood vessels. For complex cases, such as an anterior placenta, fetal MRI can also be beneficial.
- **Optimal entry site:** Carefully select the access site for the fetoscope, choosing a placenta-free window whenever possible. In cases of an anterior placenta, a curved fetoscope may be needed to achieve the best view of the vascular equator. Proper surgical table positioning can also create a better angle for entry.
- **Coordinate the team:** Ensure the operating room is set up for optimal visibility, with ultrasound and fetoscopy monitors positioned side-by-side. The team should practice with the equipment to become skilled before operating on a patient.
- **Post-procedure antibiotic:** For most procedures, administer an antibiotic into the amniotic fluid at the end of the operation to reduce the risk of infection.

Intra-procedure techniques

- **Fluid management:** Bleeding can cloud the visual field. If this happens, perform an amnio-exchange by suctioning the amniotic fluid and replacing it with warm, clear Ringer's lactate to restore visibility.
- **Manage instrument entry:** If using an integrated fetoscope with blunt instruments, introduce a guide wire into the amniotic space first. A cannula is then inserted over the wire using the Seldinger technique, making for a safer entry.
- **Laser vessel coagulation (for TTTS):**
    - Thoroughly map all connecting vessels across the intertwin membrane. Complete mapping and remapping before starting the laser is crucial to minimize procedure time.
    - Follow vessels from where they cross the membrane to their insertion point. For large vessels, laser the two ends first to narrow the caliber before coagulating the center.
    - Maintain distance. Do not touch vessels with the laser fiber, which can cause them to rupture and bleed.
- **Fetal positioning (for FETO/CDH):** For procedures requiring fetal intervention, such as placing a tracheal balloon for congenital diaphragmatic hernia (CDH), correct fetal positioning is critical. An intramuscular injection of a fetal anesthetic cocktail can help immobilize the fetus.

Conclusion

In conclusion, while not universally applicable, fetoscopic surgery is establishing itself as a transformative and increasingly preferred option for fetal therapy in appropriately selected patients, with the dual aims of maternal safety and optimal fetal benefit. Fetoscopy has reinvigorated the field of fetal surgical intervention, with minimally invasive techniques making such procedures a feasible choice for prospective parents. Nonetheless, its clinical utility is confined to select indications and should be undertaken by highly experienced practitioners to ensure optimal outcomes. Additionally, since many fetal diseases represent medically and ethically complex situations, there is strong advocation for the development of multidisciplinary therapy teams.

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Recommendations for Laparoscopic Entry for Gynecological Surgery

SOGC Guideline No. 412, March 2021 (Replaces No. 193, May 2007, reaffirmed July 2017)

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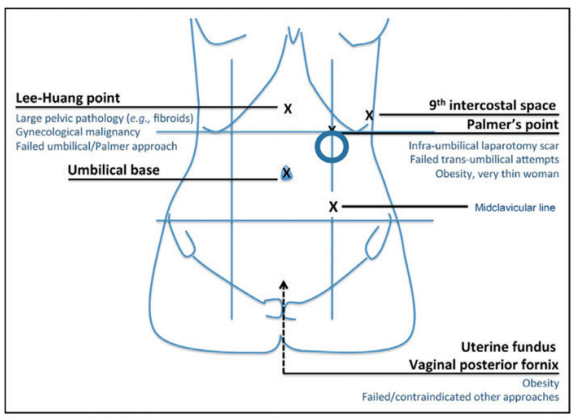
Introduction

Laparoscopic entry and access into the abdomen may be challenging and have been associated with injuries to abdominal viscera and blood ves- sels. The overall injury rate at the time of entry is estimated to be 1 per 1000 cases, and this rate has remained the same over the last 40 years. The majority of these injuries are due to the insertion of the primary umbilical trocar. If surgeons fail to recognize the injury or intervene in a timely fashion, morbidity, mortality, and medicolegal issues can result.

The objective of the guideline is to evaluate the benefits and risks of laparoscopic surgery and provide clinical direction on entry techniques, technologies, and their associated complications in gynaecological surgery. The recommendations are as follows:

Recommendations in brief

Figure. Anatomy of the anterior abdominal wall and Veress needle insertion sites.



Adapted from Taskforce for Abdominal Entry (https://www.ejog.org/article/S0301-2115(16)30138-5/fulltext).

- Alternative insertion sites for the Veress needle (e.g., left upper quadrant [Palmer's point], transvaginal, or transuterine) should be considered (1) when an umbilical entry is considered complicated, based on patient history and characteristics (e.g., suspected or known periumbilical adhesions, history or presence of umbilical hernia, low or high body mass index) or (2) after 3 failed attempts at umbilical Veress needle insertion (I-A).
- Elevation of the abdominal wall during insertion of a Veress needle or primary trocar is not routinely recommended because it does not avoid visceral or vessel injury (II-2E).
- Because the position of the umbilicus in relation to the aortic bifurcation varies according to the patient's body mass index, the angle of insertion of the Veress needle at the umbilicus should be adjusted accordingly—from 45° in women of normal body mass to 90° in women with obesity (I-A).
- Previously recommended Veress needle safety checks or tests, such as the saline drop test and aspiration for fluid, have not been found to confirm position and therefore are no longer recommended as best practice (I-A).
- Wiggling the Veress needle from side to side should be avoided; this can increase the risk of complications (II-1E).
- It is appropriate to leave the source of gas attached to the Veress needle so that the surgeon can use the pressure gauge to measure the intraperitoneal pressure (<10 mm Hg) as the most reliable indicator of correct placement of the Veress needle (I-A).
- The volume of CO2 insufflated with the Veress needle before trocar insertion should depend on intra-abdominal pressure. Adequate pneumoperitoneum insufflation should be determined by a pres- sure of 20–30 mm Hg rather than by CO2 volume (II-1 A).
- During entry using Veress needle insufflation, intraperitoneal pres- sure may be increased immediately before insertion of the trocars. Transiently high intraperitoneal pressure does not adversely affect cardiopulmonary function in healthy patients (II-1 A).
- The threaded, reusable, visual cannula may be considered a safer instrument for peritoneal entry than conventional trocars (II-2 B).
- Direct trocar insertion may be used in accordance with the sur- geon's training, experience, and preference (I B).
- Open (Hasson) entry may be used in accordance with the sur- geon's training, experience, and preference (II-2 C).
- Because there is no clear consensus on the optimal method of peritoneal entry, surgeons should use the

technique with which they are most comfortable and experienced (II-2 C).

- In women requiring intra-abdominal surgery in pregnancy, Veress needle insufflation at the umbilical site can be employed until 14 weeks gestation (if there are no contraindi- cations), and open (Hasson) entry or left upper quadrant insuf- flation are preferable after 14 weeks gestation (II-2 B). After 24 weeks gestation, an open (Hasson) entry is recommended (II-2 B).

Table 2. Estimated complication rates associated with techniques and instruments during laparoscopic entry

Complication	Closed entry		Direct trocar insertion	Open entry	Optical trocar	Visual threaded cannula
	Veress needle or trocar	Veress needle				
Bowel	0.04%–0.2%	0.0024%[a]	0.11%	0.06%–0.1%	0.8%	0.001%
Major vessel	0.01%–0.2%	0.006%	Cases reported; rate unknown	Cases reported; rate unknown	Cases reported; rate unknown	0.0%
Preperitoneal insufflation		>3.0%	Not applicable	Not applicable		
CO_2 embolism		0.001%				

[a] Approximately 20% of all bowel or major vessel injuries associated with the closed laparoscopic entry technique are attributed to the Veress needle.

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European Association for Endoscopic Surgery (EAES) consensus on Indocyanine Green (ICG) fluorescence-guided surgery

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Introduction

The European Association of Endoscopic Surgery (EAES) initiated a consensus development conference with the aim of creating evidence-based statements and recommendations regarding use of Indocyanine green fluorescence for the surgical community.

The consensus statement regarding Gynaecologic surgery were as follows:

- ICG fluorescence-guided imaging in gynaecologic surgery is used primarily for sentinel node dissection in endometrial and cervical cancer: indeed, accurate identification of sentinel lymph nodes in patients with cancer improves the detection of metastatic disease, and might decrease surgical morbidity.
- In this field, ICG lymphography has already proven to be a feasible, safe, time-efficient and reliable method for lymphatic mapping, with better bilateral detection rates; it would also avoid patients' exposure to radioactive tracers, and for this reason, in some countries, ICG sentinel node mapping has already become the gold standard.
- Experience in vulvar cancer is more limited, with ICG used together with Tc-99 m as a dual tracer and alone in video endoscopic inguinal lymphadenectomy, while in early ovarian cancer, results are still preliminary but promising [133].
- A total of 4260 records were identified. Following abstract screening for eligibility, 28 full texts were included for potential data extraction and assessment of the risk of bias. However, given the number and quality of studies found, 15 articles were finally included in the qualitative analysis: 2 RCTs and 13 prospective studies [134–148].
- Both RCTs were comparing ICG versus methylene blue in sentinel nodes detection in cervical and uterine cancer; in particular, the FILM trial, published in the Lancet Oncology in 2018, was designed as a non-inferiority trial but ended up demonstrating that ICG mapping was superior to standard blue dye, being able to identify sentinel lymph nodes in a much larger proportion of patients, to detect at least one sentinel node and more effective in bilateral sentinel nodes identification.
- It also has to be mentioned that in this setting the research and article screening was not conducted by a team of gynaecologists, however the analysis of the articles included and the creation of the statements was strongly based on a systematic review and consensus statement paper recently published on Annals of Surgical Oncology [133].
- During the online survey, less than 60% of EAES surgeon members showed agreement on this topic, while almost 40% of them gave a "don't know/no opinion" answer; for this reason, the expert panel decided not to run a second-round survey on this topic: since EAES members are mostly general/abdominal surgeons, we present hereby literature search results and expert's discussion result, although no consensus was reached on Gynaeco- logic surgery setting.

Statements

i. In surgery for endometrial, cervical and vulvar cancer, ICG fluorescent lymphatic mapping for sentinel node dissection and lymph nodes detection is safe and feasible (L o E: strong).

ii. In surgery for endometrial, cervical and vulvar cancer, ICG fluorescent lymphatic mapping for sentinel node dissection and lymph nodes detection can be as effective as radioactive tracers and more effective than other dye tracers (LoE: strong)

Recommendation

We recommend the use of ICG fluorescence lymphatic mapping during surgery for endometrial and vulvar cancer.

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Laproscopy Quiz

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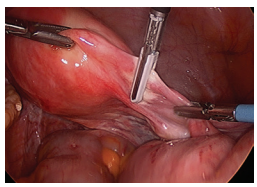
Q1. What is the correct angle of insertion OF THE DEVICE SHOWN IN IMAGE at the umbilicus in a non-obese patient?

A) Perpendicular (90°) to the skin
B) 30° to 45° towards the pelvis
C) Parallel to the skin
D) 60° to 75° away from the aorta

Q2. What is the principle advantage of THIS position in laparoscopic gynaecologic surgery?

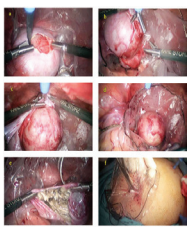
A) Better access to upper abdomen
B) Easier Trendelenburg tilt, better exposure of pelvis
C) Reduced risk of compression neuropathy
D) Minimizes venous congestion in lower limbs

Q3. Common complications of radical laparoscopic hysterectomy include all EXCEPT:



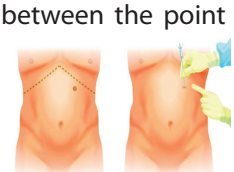
A) Atonic bladder
B) Ureterovaginal fistula
C) Pelvic lymphocele
D) Rectal atony

Q4. Which of the following statements about bowel resection, in surgery, shown in the image is TRUE?



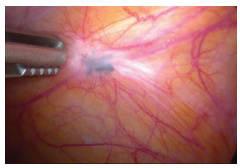
A) Segmental resection has the same complication rate as conservative shaving
B) Anastomotic tension is a risk for dehiscence, so mobilization (e.g. splenic flexure) may be required
C) Double circular stapler (DCS) technique is safer than segmental resection
D) All lesions regardless of size should be resected

Q5. On average, what is the distance between the point shown in image and the aorta?



A) 6 cm B) 8 cm
C) 10 cm D) 12 cm

Q6. What is the most common SITE and laparoscopic method recommended for complete removal and pathological assessment of the lesion shown?

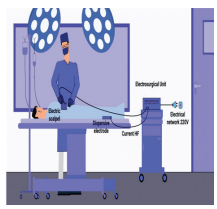


A) Uterosacral ligament, excision
B) Vagina, ablation
C) Cervix, excision
D) Uterosacral ligament, ablation

Q7. What is the surgical procedure being performed on the uterus shown in the image and what instrument is typically used to achieve the plane of dissection?

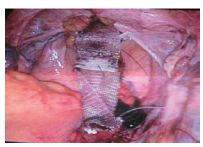
A) laparoscopic cystectomy and scissors
B) laparoscopic myomectomy and harmonic scalpel
C) laparoscopic salpingectomy and babcock forceps
D) laparoscopic adhesiolysis and Maryland forceps

Q8. What is a common mechanism for unrecognized bowel injury during laparoscopic use of energy DEVICE SHOWN IN IMAGE?



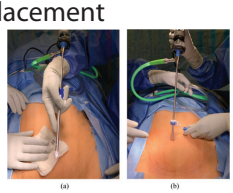
A) Blunt trauma from trocar insertion
B) Direct mechanical injury by the cautery tip
C) Insulation failure or capacitive coupling
D) Gas embolism from pneumoperitoneum

Q9. The mesh shown in the image is being attached to which specific sacral structure for apical suspension?



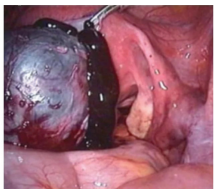
A) Sacral promontory
B) Sacrum
C) Anterior longitudinal ligament
D) Pubic symphysis

Q10. Which statement about this entry is TRUE?



A) The "hanging drop" test is the most reliable for confirming intra-peritoneal placement
B) Initial intra-abdominal pressure < 10 mmHg during insufflation is suggestive of correct placement
C) Double click sensation is pathognomonic of safe entry
D) Aspiration test (to check for return of blood or bowel contents) is the gold standard

Q11. In terms of fertility outcomes, what is a known risk of laparoscopic surgery for this condition ?



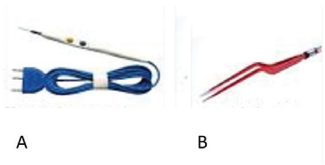
A) Reduced ovarian reserve due to stromal damage

B) Increased risk of pelvic inflammatory disease

C) Higher recurrence rate compared to aspiration

D) Increased risk of ovarian torsion

Q12. Compared to A electrosurgery, B energy



A) Has higher risk of capacitive coupling

B) Requires a grounding pad

C) Has a higher chance of collateral damage

D) Is more focused and safer near vital structures

ANSWERS

1.B 2.B 3.D 4.B 5.C 6.A 7.B 8.C 9.C 10.B 11.A 12.D

AOGD Clinical Meet from VMMC & Safdarjung Hospital held on 26th September 2025

A Twist in the Tale: Jeopardising diagnosis in a postmenopausal woman

Prashath S Uppin, Shreya, Anjali Dabral, Rekha Bharti, Panchampreet Kaur, Anita Kumar, Meenu Choudhary, Triveni G S

Vaginal torsion is a rare occurrence and in postmenopausal women it can mask early symptoms of malignancy. Squamous cell carcinoma (SCC) of cervix is known for invading into surrounding tissues but can unusually spread more extensive into the uterus. IHC is an important tool for accurately diagnosing such cases. We present an interesting case of a postmenopausal woman who presented with abdominopelvic mass.

72 years woman, P4L4A2, postmenopausal for 25 years, presented with chief complaints of pain abdomen and increased frequency of micturition for 4 months. She did not complain of vaginal bleeding or discharge. She was thin built with normal general physical, breast, respiratory and CVS examination. On abdominal examination, she had a non-tender 16 weeks abdominopelvic mass with restricted mobility. On pelvic examination, cervix was not visualized, and vagina was short with only 3 cm of vagina visible. On digital examination also cervix was not felt, a cystic mass of 8X6cm was felt above vagina and another firm mass 10X8cm felt on posterior & left side of cystic mass. Both masses had smooth surface, restricted mobility & were non-tender. Uterus was not felt separately. On P/V/R examination- Same masses were felt, the posterolateral mass was compressing the rectum but rectal mucosa free, no nodules were felt in POD. Ultrasonography reported a large cystic lesion measuring 11.5 X 10.6 cm with internal echoes and septations seen in left adenexa s/o ovarian cyst. MRI showed a large left adnexal predominantly cystic tubular structure with thick complete septa and irregular, nodular eccentric solid components. There was no ascites. Uterus not seen (?post-menopausal atrophic). CECT upper abdomen was normal without retroperitoneal lymph nodes. Her routine investigations were normal. Tumour markers for ovarian epithelial and germ cell tumors were also normal. Patient was posted for staging laparotomy. To our surprise the vagina was found to be twisted by approximately 270o with hematocolpos and hematometra, B/L adnexa was normal. Hysterectomy with B/L salpingo oophorectomy was done. Cut section showed a growth in the endometrial cavity. Pelvic lymphadenectomy was done and samples were sent for histopathology.

Grossly cervix, tubes and ovaries were normal. Endometrial cavity shows irregular growth occupying fundus & uterine body. 10x3x2cm extending into lateral part of posterior uterine wall, with >50% of invasion into myometrium. Histopathology showed moderately differentiated squamous cell carcinoma with 1.8 cm depth of invasion in the myometrium and all margins (parametrial and uterine serosal) were free of tumor, pelvic lymph nodes were free of tumor. However, immunohistochemistry was Negative for Vimentin, ER/PR, CD10, CEA, and WT1 but positive for PanCK, p63, p16, P53: wild type with Ki67 ≥90%. Further sections from the normal looking cervix revealed posterior cervical wall tumor, extending into uterine corpus with 0.5cm depth of tumor in the cervix. A final diagnosis of vaginal torsion with hematocolpos, hematometra with moderately differentiated squamous cell carcinoma cervix, stage 1B1 with spread to uterine corpus was made. Her postoperative period was uneventful. She is planned for PET-CT after 8 weeks of surgery followed by adjuvant chemo-radiotherapy.

A TEMPESTUOUS PUERPERAL COMPLICATION- FROM RECOGNITION TO RESOLUTION

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INTRODUCTION

Sepsis is the third most common cause of maternal deaths worldwide and contributes to 24% of all the maternal mortalities in India. Purpura fulminans is a rare life-threatening condition associated with a high mortality rate of 50%. Only 6 cases of postpartum sepsis induced purpura fulminans have been reported worldwide. We report one such case managed successfully at our hospital

CASE SUMMARY

A 21-years old P2L2 lady at postnatal day 13 of full-term vaginal delivery presented with complaints of fever, shortness of breath and bluish discoloration of hands and feet for 1 week. She had an unsupervised antenatal and delivered a live girl child at a primary health centre; following which she developed fever associated with shortness of breath and bluish discoloration of hands and feet. On examination, she was conscious, oriented and febrile with quick SOFA score of 2. She had a sub-involuted uterus and foul smelling lochia. Both upper and lower extremities were edematous with bluish discoloration

and bullous eruptions. She was admitted to Obstetric Critical Care Unit where intensive resuscitative treatment was started. POCUS ultrasound revealed bilateral pleural effusion and retained products of conceptus in the uterus. ABG analysis revealed metabolic acidosis with lactate level of 6 mmoL/L. Screening doppler scan of limbs showed an echogenic thrombus in left saphenofemoral artery. Lab investigations suggested leukocytosis, moderate anemia, mild thrombocytopenia, hyperbilirubinemia and deranged coagulation. Interdisciplinary consultations suggested a diagnosis of sepsis induced purpura fulminans. She was started on injection enoxaparin and taken up for evacuation of uterine contents. Foul smelling retained products of conceptus were evacuated. Later due to deteriorating hemodynamics caused by secondary post-partum hemorrhage an emergency hysterectomy was done which revealed adherent products of conception. She had recurrent seizures in postop period and put on invasive mechanical ventilation. The microbial culture of POC's showed Escherichia coli. Based on antibiotic sensitivity, antibiotic therapy was reviewed. The gangrene gradually resolved with dressings and supportive management. She was discharged at day 30 of admission in healthy condition on oral apixaban for the next 6 months. APLA testing was advised at 12 weeks of delivery, which were later reported negative. Tests for protein C, S and antithrombin III deficiency were reported normal. On 3 month follow-up, she has been stable and few of her digits were auto-amputated.

DISCUSSION

Sepsis is a significant life-threatening condition, which can be associated with purpura fulminans, multiple organ dysfunction, disseminated intravascular coagulation, and massive tissue necrosis with considerable morbidity.

Purpura Fulminans is characterised by haemorrhagic infarction of the skin due to disseminated intravascular coagulation and dermal vascular thrombosis leading to series of skin changes, including the development of erythema, petechiae, ecchymoses, and haemorrhagic bullae, which ultimately leads to gangrenous necrosis of the tissues. It is syndrome which eventually causes septic shock and multi-organ failure. Sepsis induced purpura fulminans is usually caused by severe infection by gram negative bacteria, most common being Escherichia Coli.

In all the previously reported cases worlwide, all patients presented within 3-8 days of delivery complicated with puerperal sepsis induced DIC and only one had a background history protein C deficiency.

Escherichia coli was the microbial cause for sepsis in most of the cases. Management included intensive antibiotic therapy, anticoagulation therapy and supportive care. Hemodialysis was initiated in 2 cases for sepsis induced acute renal failure. Extensive limb amputations were done in 2 cases as the gangrenous limbs got infected with secondary infections and spontaneous autoamputations of gangrenous digits occurred in rest of the cases. Role of corticosteroids is controversial and treatment of DIC with therapies against coagulation cascade (such as heparin, anti-thrombin III and activated protein C) and therapies augmenting fibrinolysis (recombinant tissue plasminogen activator, fresh frozen plasma, cryoprecipitates) should be individualised.

CONCLUSION

Successful management of purpura fulminans involves early diagnosis, intensive treatment with antibiotics and anticoagulation therapy. Surgical treatment in the form of aggressive debridement, fasciotomies and skin grafting is also paramount. Early recognition of pathophysiologic mechanism and multidisciplinary management may limit mortality as well as morbidity.

Title: Beyond the Womb: A Life That Refused to End

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Department of Obstetrics & Gynecology, VMMC & SJH, New Delhi

Introduction:

Intra-abdominal pregnancy is a rare and life-threatening form of ectopic gestation, constituting less than 1% of all ectopic pregnancies. Diagnosis is challenging, especially in advanced gestation, and management requires prompt surgical intervention and multidisciplinary care.

Case History:

A 25-year-old woman, G3P2L2 presented with abdominal pain and perception of fetal movements and mass since three months after undergoing surgical MTP in a private hospital at two months' amenorrhea (no documents available). She had no complaints post procedure. Outside USG suggested of SLIUF corresponding to 24 weeks of POG with s/o placenta accreta and oligohydramnios. On referral to SJH further USG and MRI confirmed single extrauterine fetus with extrauterine vascular placental tissue and empty uterine cavity. After admission patient become hemodynamically unstable, an emergency laparotomy was performed with multidisciplinary team. A live 700-gram male fetus was delivered from the abdominal cavity, hemoperitoneum of 400-500cc present. The placenta was found adherent to the uterine fundus, omentum, lower abdominal wall, and bowel. Placenta was removed from adherent sites. Cesarean hysterectomy done and hemostasis achieved. Intraoperatively, the patient had 2.3 litres of blood loss. The patient received adequate blood transfusion and postoperative ICU care. She recovered uneventfully and was discharged on postoperative day 10. Histopathological report was suggestive of intra-abdominal pregnancy , content in the uterine corneal and

isthmus region.

Discussion: Abdominal pregnancies are extremely rare. Incidence is 1 in 10,000-30,000 and may be primary (direct implantation onto peritoneal surfaces) or secondary (reimplantation following tubal abortion/rupture or uterine perforation). The present case represents a secondary abdominal pregnancy, most probably resulting from uterine perforation following dilatation and evacuation or tubal abortion

Clinical diagnosis is difficult due to vague symptoms such as abdominal pain, palpable mass, or persistence of fetal movement despite prior pregnancy termination. Imaging modalities—ultrasound and MRI—are critical for diagnosis and surgical planning. MRI provides superior delineation of placental adherence and vascular connections.

Management depends on gestational age and maternal stability. In early gestation (<20 weeks), surgical removal is advised. In advanced gestations, if the fetus is viable and the patient stable, planned laparotomy with multidisciplinary team may be considered. In emergencies or active hemorrhage, immediate surgery is mandatory. When the placenta adheres to vital organs, it may be left in situ to avoid fatal bleeding, followed by serial ultrasound and beta HCG for placental sub involution. Role of methotrexate therapy is controversial.

Conclusion

Secondary intra-abdominal pregnancy is an exceptionally rare and potentially fatal condition. Early detection, careful imaging, and timely surgical intervention are key to reducing morbidity and mortality. This case highlights the dangers of incomplete evacuation during early pregnancy procedures and the need for vigilant follow-up. A coordinated multidisciplinary approach involving obstetricians, surgeons, anesthesiologists, blood bank and radiologists is essential for successful management and optimal maternal outcomes.

AOGD Subcommittees Chairperson Election (2026-28)
Call for nominations

Nominations are invited from eligible AOGD members for the post of chairperson of following subcommittees:

1. Infertility & Reproductive Endocrinology Sub-committee
2. Community health & Public Awareness Sub-committee
3. Safe Motherhood Sub-Committee
4. Medico-legal sub-committee
5. Menopause and Geriatrics Subcommittee

Last date for submission of nominations is **15/12/2025**

- ✓ Applications by desirous candidates should be submitted on the prescribed form available on AOGD website (www.aogd.org) / bulletin / office, with due entry in the office register in a sealed envelope & through email aogdlhmc2025@gmail.com
- ✓ Nominations as per the eligibility criteria should reach AOGD secretariat: Department of Obst. & Gynae LHMC & SSK Hospital, New Delhi- 110001 (Phone no. 9717392924) by **15/12/2025.**

Dr. Ratna Biswas (Secretary AOGD , 9971372695

Important announcement : The chairpersons after being nominated have the responsibility to call for application for members of their respective subcommittee for up to a maximum of 10 members.

Eligibility Criteria for AOGD Sub-committee chairperson

1. The chairperson of a sub-committee should have been a member of the sub-committee in question for at least one term, with one term being equivalent to two years, prior to his/her appointment as chairperson of that sub-committee.
2. He/she should have been a member of the AOGD for fifteen years.
3. He/she should have experience in the field related to the subcommittee.
4. He/she should have completed at least fifteen years from the date of his/her registration as a medical practitioner. Further, he/she should have held a senior / faculty position for not less than that of associate professor, senior consultant or an equivalent there of in his/her respective organization, for a period of at least five years .
5. No person should hold chairperson ship of the same subcommittee for two consecutive terms with each term comprising of two years. Further, a person who has been chairperson of one subcommittee cannot be nominated as chairperson of another subcommittee unless separated by a duration equivalent to two terms of the subcommittee.
6. The Executive Committee may lay down additional criteria for the eligibility and pre-requisites for appointment as chairperson of each sub-committee from time to time.
7. An eligible member must send an application for nomination as chairperson of a sub-committee stating therein his/her previous experience in the field related to the sub-committee and future vision for furthering the goals of the AOGD through such sub-committee. One person shall not apply for chairpersonship of more than one sub- committee at a time. The application shall be scrutinized by the Executive Committee of AOGD for nomination as chairperson.
8. In the event of more than one application being received for appointment as chairperson of a subcommittee, and in the absence of unanimous decision of the Executive committee in this regard, the Executive Committee shall decide the nomination by cast of secret ballot.
9. The tenure of the chairperson of subcommittee shall be for a period of two years.

The Association of Obstetricians & Gynaecologists of Delhi

Nomination Form

Name:_____

Designation/Affilation_____

AOGD Membership no:_____

Official Address:_____

Residential Address:_____

Phone:_____Email:_____

Bio Sketch (Relevant to the Eligibility Criteria in 250words)

Post Applied for

Sub-committee Chairperson
2026-28

Subcommittee Name

Proposed by – Name AOGD Membership no. Signature

1.

Seconded by

1.

2.

Nominations should reach at AOGD Office
For any Query please call Mrs. Sarita : 9211656757, 9717392924

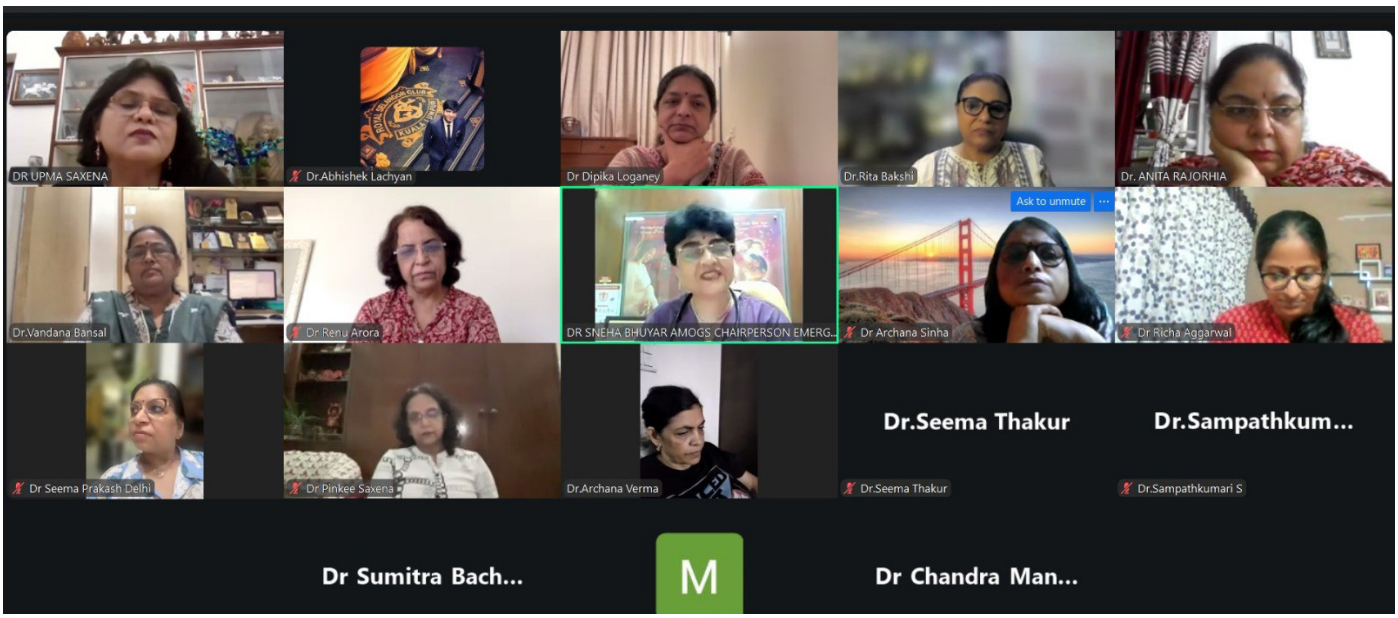
Prize Winners

Competition Paper/ Free Paper/Poster/Quiz
47th Annual Conference AOGD
13th - 14st September, 2025

Category	Award	Name	Institute	Title
Dr Neera Agarwal's Medal for Best paper on theme topic: **Maternal Health**	**Gold Medal**	Dr Sampada Kundal	AIIMS	Muscle Fatigue and Motherhood: Myasthenia Gravis in Pregnancy
Dr Suneeta Mittal's Medal for Best paper on theme topic: **Population Stabilization**	**Gold Medal**	Dr Ayushi Hada	LHMC & SSK Hospital	Empowering Choices : Implants Reshaping the future of LARC
Dr U.P Jha & Raj Soni's Medal for Best paper on theme topic: **Endoscopy**	**Gold Medal**	Dr Ayushi Negi	AIIMS	Healing the Scar: Fertility restoration post -isthmocoele repair
Dr U.P Jha & Dewan Balakram's Medal for Best paper on theme topic: **Gynae - Oncology**	**Gold Medal**	Dr Jagriti Bajaj	MAMC	Effectiveness of Antepartum Health Education on Awareness and Acceptance of Human Papilloma Virus (HPV) Vaccine in Postpartum Period
Mr S. Bhattacharya & Dr Ganguli's Medal for Best paper on theme -**Miscellaneous Category**	**Gold Medal**	Dr Srishti	VMMC & SJH	A Prospective Study on Predictors and Outcomes of Surgical Site Infections Following Elective Caesarean Section
Best paper on theme topic: **Reproductive Endocrinology**	**Gold Medal**	Dr Sowmiya Rajendran	LHMC	Beyond Insulin-TyG Index as a Cost-Effective Marker of Insulin Resistance in PCOS
Poster Presentation	**Gold Medal (tie)**	Dr Garima Wadhwa	AIIMS	A Benign Masquerade of Malignancy: Diffuse Peritoneal Leiomyomatosis – A rare Case Report
	Silver Medal (tie)	Dr Monika Jain	MAMC	Recurrent Vulvar Aggressive Angiomyxoma with Hormonal Receptor Shift following Treatment Interruption- A Rare Case Report
		Dr Parul Kargwal	VMMC & SJH	Zoomed Zoned verified: The diagnostic leap from conventional to three ring vulvoscopy .
Slogan	**1st Prize**	Dr Kanika Chopra	LHMC & SSKH	
Research Paper- **Best Competition Paper**	**Gold Medal**	Dr Divya Khurana	SRHC NARELA	Rapid cycle improvement model as an effective quality tool for rationalizing oxytocin usage in third stage of labour
	Silver Medal	Dr Nisha Chopra	VMMC & SAFDARJUNG HOSPITAL	Grobman Score for Predicting Successful Trial of Labor After Cesarean in a North Indian Population
	Bronze Medal	Dr Megha	LHMC & SSK Hospital	Accuracy of Modified Cardiovascular Sequential Organ Failure Assessment (M-Cv Sofa) Score For Predicting The Duration of Critical Care Unit Stay in Maternal Sepsis
Dr Batra's Medal winner of **AOGD Quiz**	**Gold Medal**	Dr Saipriya & Dr Shivangi Singh		
	1st Runner Up	Dr Rahul & Dr Shagun		
	2nd Runner Up	Dr Nilufer & Dr Akanksha		
Dr S N Mukherjee **Rotating Trophy**	**Best AOGD Monthly Clinical Meeting**	VMMC & Safdarjung Hospital		

Events Held 2025

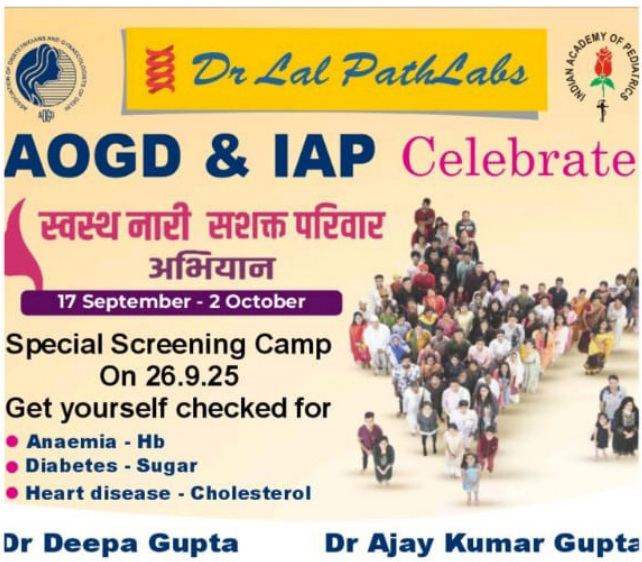
Webinar on "Understanding Fetal Growth Restriction: Practical, Case-Based Learning for Obstetricians" conducted by Fetal Medicine & Genetics Subcommittee on 2nd September, 2025



Awareness talk on Menstrual Hygiene and Anemia on the occasion of Swasth Nari Sashakt Pariwar Abihiyan for Adolescent girls conducted by Community Health & Public Awareness Sub Committee at a Govt school, Daryaganj on 17th September, 2025

Public Awareness and Health Camp on the occasion of Swasth Nari Sashakt Parivar Abhiyan conducted by FOGsd under the aegis of AOGD at ISKCON TEMPLE on 17th September 2025

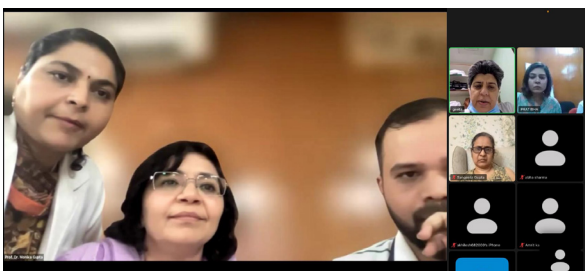
Non Communicable Diseases & Anemia Screening Camp Organized by Community health and Public Awareness Subcommittee under Swath Naari Shashakt Pariwar Abhiyaan on 26th September

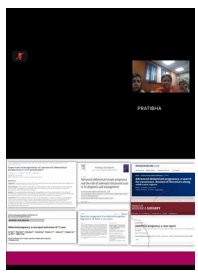


AOGD was a partner organization in the recently concluded CMRE International Symposium on Diabetes held from 26 to 28th September 2025 at Le Meridien , New Delhi.

HPV VACCINATION Camp for Specially abled Children conducted by Community Health and public awareness Subcommittee in association with IAP at Premala Bai Chavan school

The AOGD Monthly Clinical Meeting (virtual) conducted by the Department of Obst & Gynae, VMMC & Safdarjung Hospital on 26th September, 2025





AOGD Pre-Conference workshop on 11th September 2025

Workshop on "Mastering Pelvic Organ Prolapse Surgery: Techniques, Complications, and Comprehensive Management" conducted by Urogynaecology Subcommittee at Auditorium, Sant Parmanand Hospital, Civil Lines,


Workshop on "Laparoscopy and beyond: A hands-on workshop conducted by Endoscopy Subcommittee at Auditorium, Sir Ganga Ram Hospital


Workshop on "From Imaging to Incision: Advancing Precision in Gynae-Oncologic Surgery" conducted by Oncology Subcommittee at Dr Ramalingaswami Board room AIIMS, New Delhi


Workshop on "Detect Early & Treat Effectively: Cervical and Breast Cancer Prevention" conducted by Breast & Cervical Cancer Awareness & Prevention Subcommittee at Conference Hall Library Block, UCMS & GTB Hospital, Delhi


Workshop on "Bringing quality control into managing PCOS" conducted by QI Obst. & Gynae Practice Subcommittee at Hotel Eros Nehru Place

Workshop on "From Risk to Resilience: Preventing Preventable Maternal Mortality" conducted by Safe Motherhood Sub-committee at Northern Railway Hospital Auditorium, Connaught Place

Workshop on "Menopause prescription: Hormones and more, Master the art" conducted by Dept. of Obst. & Gynae LHMC & SSK Hospital & AOGD at Mini Auditorium, 5th Floor, New Academic Block, LHMC

AOGD Pre-Conference workshop on 12th September 2025

Workshop on "Demystifying Primary Amenorrhiea, Metabolic Syndrome and Contraception in Adolescents" conducted by Adolescent Subcommittee at Kailash Deepak Hospital, Kakarduma


Workshop on "Endometriosis Decoded What the text books don't tell" conducted Endometriosis Subcommittee at AIIMS Gynae Seminar Room


Workshop on "VAX TALK .... Adults Too Need Vaccines" conducted by Community Health & Public Awareness Subcommittee at Sir Gangaram Hospital Auditorium

Workshop on "Bump to Birth: Foundations of Fetal Health & Genetics" conducted by Fetal medicine & genetics Subcommittee at Old LT, Behind OPD Block, VMMC & Safdarjung Hospital


Workshop on "IUI to IVF Masterclass: Enhancing Success Through Protocol Precision" conducted by Infertility & Reproductive Endocrinology Subcommittee at Mini Auditorium, LHMC

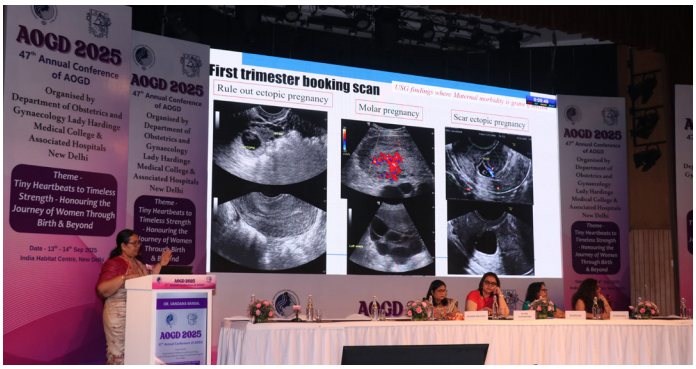
Workshop on "Postpartum Haemorrhage: Prevention & Cure- Learn The Art" conducted by Dept. of Obst & Gynae Dr Ram Monahar Lohia Hospital at Hotel Eros, Nehru Place

Glimpses of Conference

47th Annual Conference of AOGD conducted by Dept. of Obst & Gynae LHMC & SSK Hospital at India Habitat Centre, New Delhi on 13th & 14th September 2025


DEFINITION
AOGD 2025


47th Annual Conference of AOGD
Organised by: Department of Obstetrics and Gynaecology


First trimester booking scan
Rule out ectopic pregnancy
Molar pregnancy
Scar ectopic pregnancy
AOGD 2025


AOGD 2025
47th Annual Conference of AOGD


Gestational Diabetes Mellitus (75mg glucose load)
Cut-off values
2-hour BG ≥ 140mg/dl
Gestational Glucose Intolerance (GGI) (75gm glucose load)
2-hour BG > 120mg/dl and <140mg/dl
Early Gestational Glucose
2-hour postprandial
BG ≥ 110mg/dl
AOGD 2025
DR. PIKEE SAXENA


AOGD 2025


Theme - Tiny Heartbeats to Timeless


EXIT
DR KULDEEP JAIN
DR SUDHA SALHAN


AOGD 2025
47th Annual Conference of AOGD


47th Annual Conference of AOGD
Dr. JB Sharma
AOGD 2025
47th Annual Conference of AOGD
Organised by:
Department of Obstetrics and Gynaecology
Lady Hardinge Medical College & Associated Hospitals
New Delhi


DR. RITU GOYAL
DR DEBASIS DATTA


DR. HIMSWETA SRIVASTAVA
DR SURVEEN GHUMMAN


AOGD 2025
47th Annual Conference of AOGD
Dr. Amita Jain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Dr. Alka Kriplani


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DR. SHARDA PATRA
DR. URVASHI MIGLANI


AOGD 2025
47th Annual Conference of AOGD


Organised by: Department of Obstetrics and Gynaecolog
Lady Hardinge Medical College & Associated Ho tals, New


47th Annual Conference of AOGD


Lady Hardinge Medi College & Associated Hos
rough Birth & Beyo


Lady Hardinge Medical College Associated Hospitals,
Theme - Tiny
meless Strength - Honouring
& Beyond


Theme - Tiny Heartbeats to Timeless
the Journey of Women Through Birth & Beyo

Association of Obstetricians & Gynaecologists of Delhi

MEMBERSHIP FORM

Name:.....

Surname: .....

Qualification (year): .....

Postal Address: .....

City:..... **State:** ..... **Pin code:** .....

PHOTO

Place of Working: .....

Residence Ph. No. ..... **Clinical / Hospital Ph. No.** .....

Mobile No:..... **Email:** .....

Gender: Male:..... **Female:**.....

Date of Birth: Date.....**Month** ..... **Year**.....

Member of Any Society:.....

Proposed by .....

Cheque/DD / No: .....

Cheque/Demand Draft should be drawn in favour of**: Association of Obstetricians and Gynaecologists of Delhi**

FOR ONLINE TRANSFER THROUGH NEFT/RTGS

Name of Account: Association of Obstetricians and Gynaecologists of Delhi
Account no: 5786412323
Name of Bank: Central Bank of India
Branch: LHMC & SSK Hospital
IFSC code: CBIN0283462
MICR code: 110016067

ASSOCIATION OF OBSTETR

12418708@cbin

BHIM UPI

For Life Membership	: Rs. 11,000 + Rs. 1,980 (18% GST applicable) = Rs. 12,980
For New Annual Membership*	: Rs. 2,000 + Rs. 360 (18% GST applicable) = Rs. 2,360
For Old Renewal Membership+	: Rs. 1,200 + Rs. 216 (18% GST applicable) = Rs. 1,416

Encl.: Attach Two Photocopies of All Degrees, DMC Certificate and Two Photographs (Self attested)

*** Annual Membership is for the calendar year January to December.**

*** In case of renewal, mention old membership number.**

Note: 18% GST will be applicable as FOGSI requires it.

Send Complete Membership Form Along With Cheque / DD and Photocopy of required documents to the secretariat.
For online transaction send scan copy of all documents with payment slip on given mail id

Secretariat
Department of Obstetrics and Gynaecology
Lady Hardinge Medical College & SSK Hospital, New Delhi-110001
Tel.: 011-23408297, (M): 9717392924 | Email Id: aogdlhmc2025@gmail.com

AOGD SECRETARIAT
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Tel.: 011-23408297, (M) : 9717392924 | Email Id: aogdlhmc2025@gmail.com