Vardhman Trauma & Laparoscopy Centre Pvt. Ltd.

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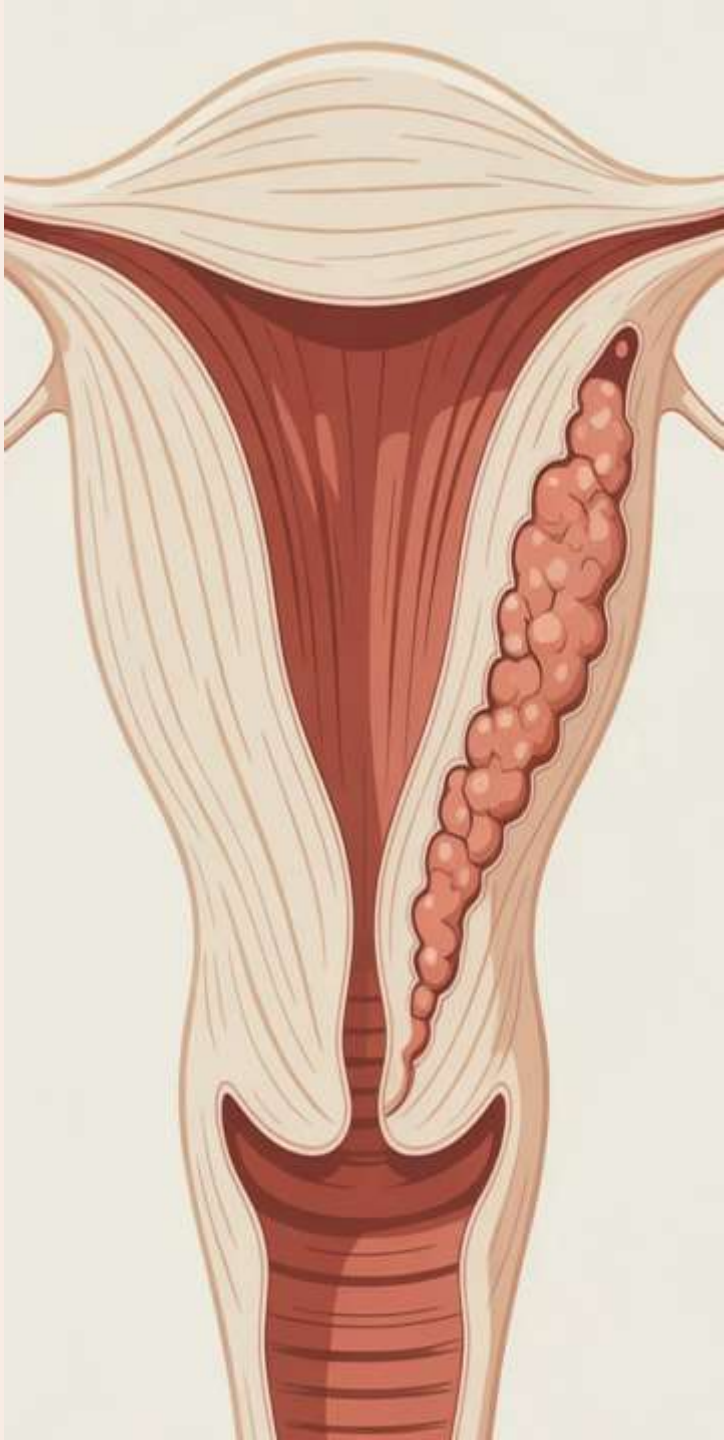
Key Note Address

Adenomyomectomy

(as a part of DIE)

Laparoscopic Approach



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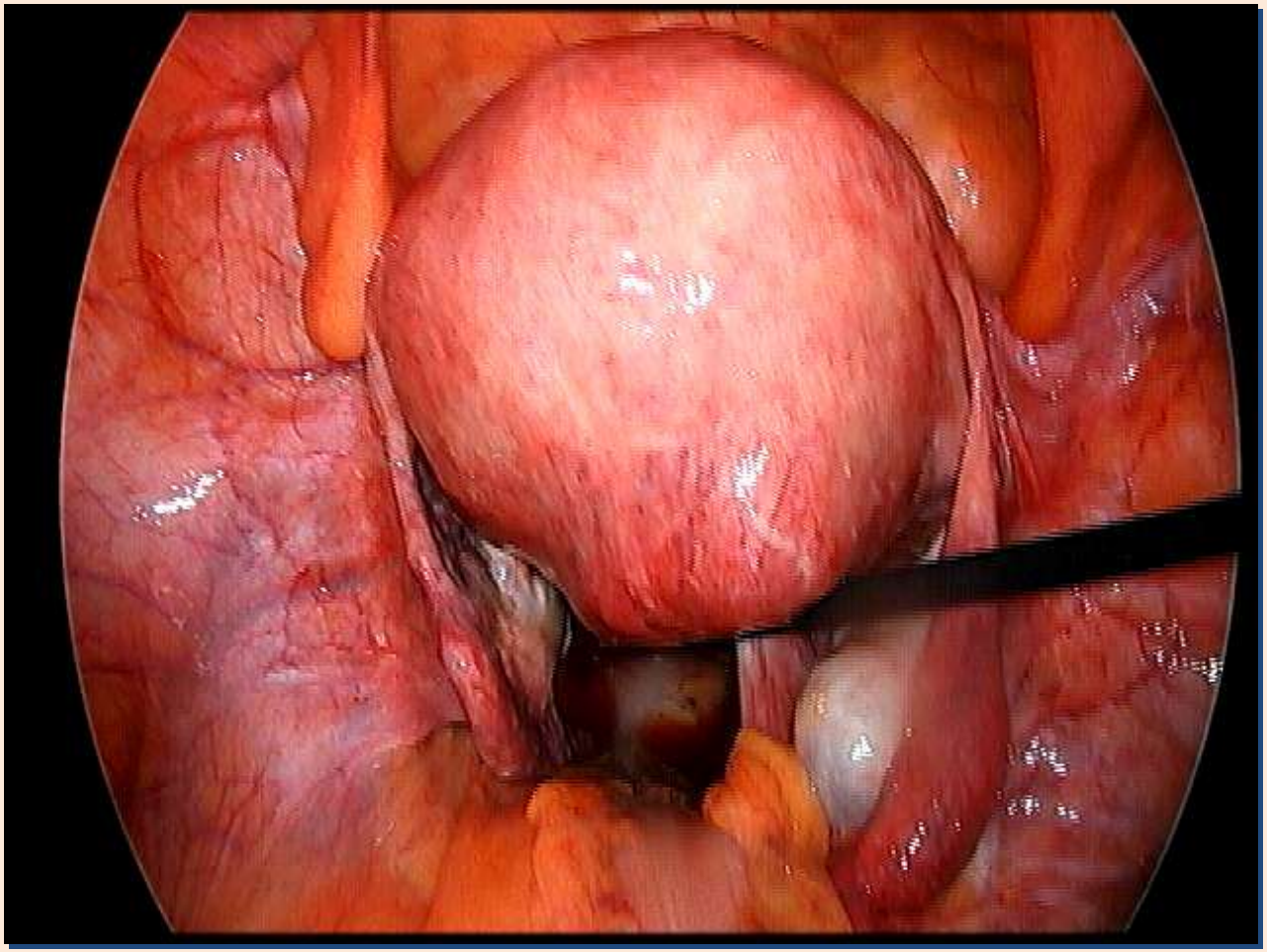
ADENOMYOMECTOMY



Introduction

- Adenomyosis is a benign disease of the uterus characterized by ectopic endometrial glands and stroma within the myometrium. It is associated with myometrial hypertrophy and may be either diffuse or focal.
- Adenomyoma describes a focus of adenomyosis within a leiomyoma (fibroid). Both conditions are common so it is not surprising that this overlap condition may occur.

Symptoms

- Uterine enlargement, heavy menstrual bleeding, dysmenorrhea and in some cases infertility.
- Found in multiparous women in their late reproductive or perimenopausal years
- Advances in imaging and improved clinical awareness have facilitated diagnosis in younger women, including those in their 20s and early 30s.

Evolution

- While hysterectomy remains the definitive treatment for women who have completed childbearing
- Growing demand for uterus-sparing interventions, particularly among patients with infertility or those desiring fertility preservation.
- Historically, adenomyomectomy was performed via laparotomy, but challenges such as poorly defined lesion margins, achieving hemostasis, and ensuring adequate uterine reconstruction limited its widespread use.

Evolution

- With advances in laparoscopic expertise, energy devices, and refined reconstruction techniques, laparoscopic adenomyomectomy has become feasible and is increasingly preferred in selected cases .
- This minimally invasive approach: offers
- Magnified visualization and surgical precision with the benefits of reduced morbidity,
- Shorter recovery, and effective symptom relief,
- Making it a valuable option in the contemporary management of adenomyosis

Incidence in Pelvic pain

- In studies of chronic pelvic pain in which women had hysterectomies, the incidence of adenomyosis is about 15% to 25%

Associated Conditions

- Leiomyoma (35 -55%)
- Pelvic endometriosis(27-70%)
- Endometrial hyperplasia(7%)
- Endometrial carcinoma(1.4%)
- Endometrial polyps(2.3%)

Association of adenomyosis with these conditions suggests a common underlying disorder like **hyperestrogenemia.**

Adenomyosis and Infertility

- The hypothesis of a possible link between adenomyosis and infertility is becoming more and more plausible.
- There is observation that adenomyosis is present even in younger women and can be associated with pelvic endometriosis and infertility.

(Kissler et al., 2007; Kunz et al.,2005).

Diagnosis

- CLINICAL HISTORY AND EXAMINATION
- TVS
- TRUS
- MRI
- MUSA

Bimanual Pelvic Examination

Diagnosis

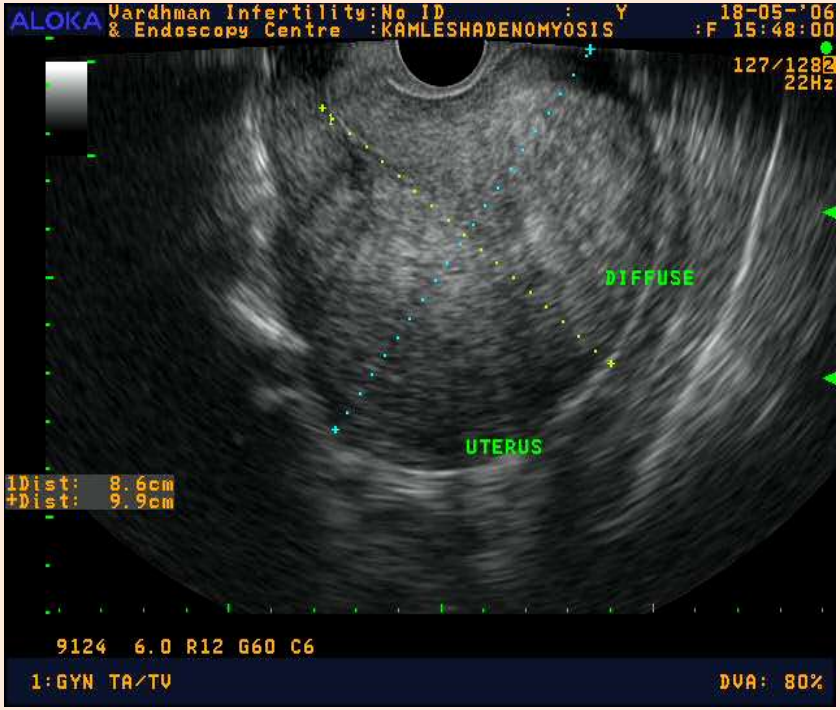
Transvaginal sonography (TVS) : First-line investigation

- Identify features such as asymmetric myometrial thickening
- Heterogeneous echotexture,
- Myometrial cysts, hyperechoic striations, and
- Subendometrial echogenic lines or buds.

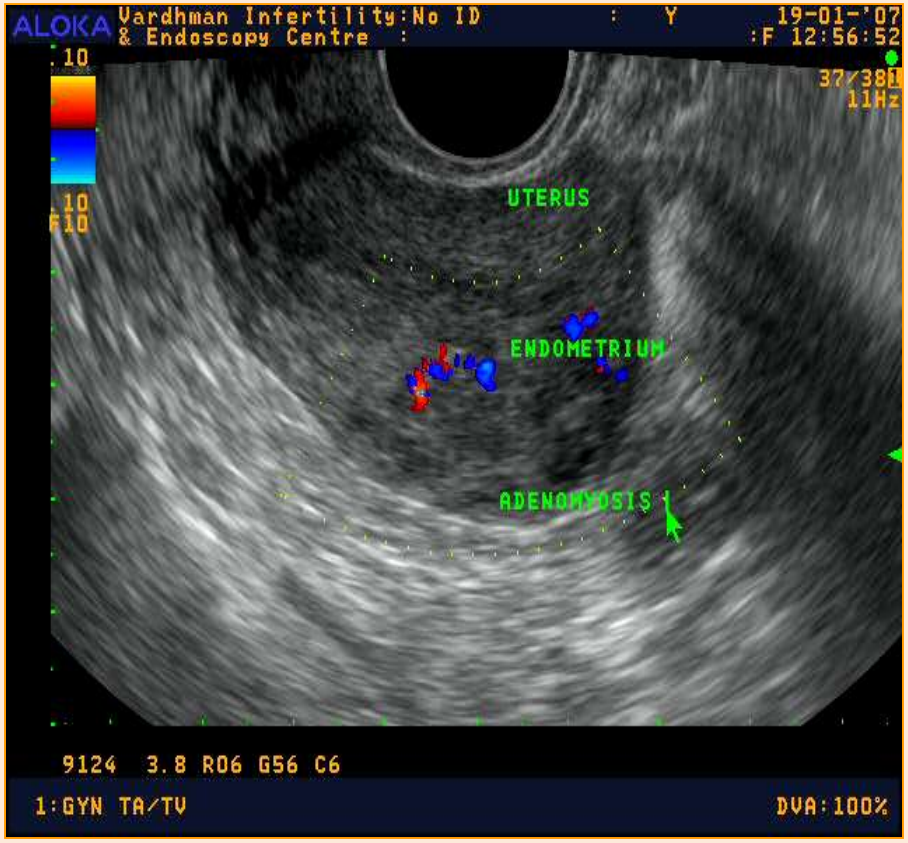
Transrectal ultrasound (TRUS): In cases where vaginal access is not feasible—such as in unmarried or sexually inactive patients

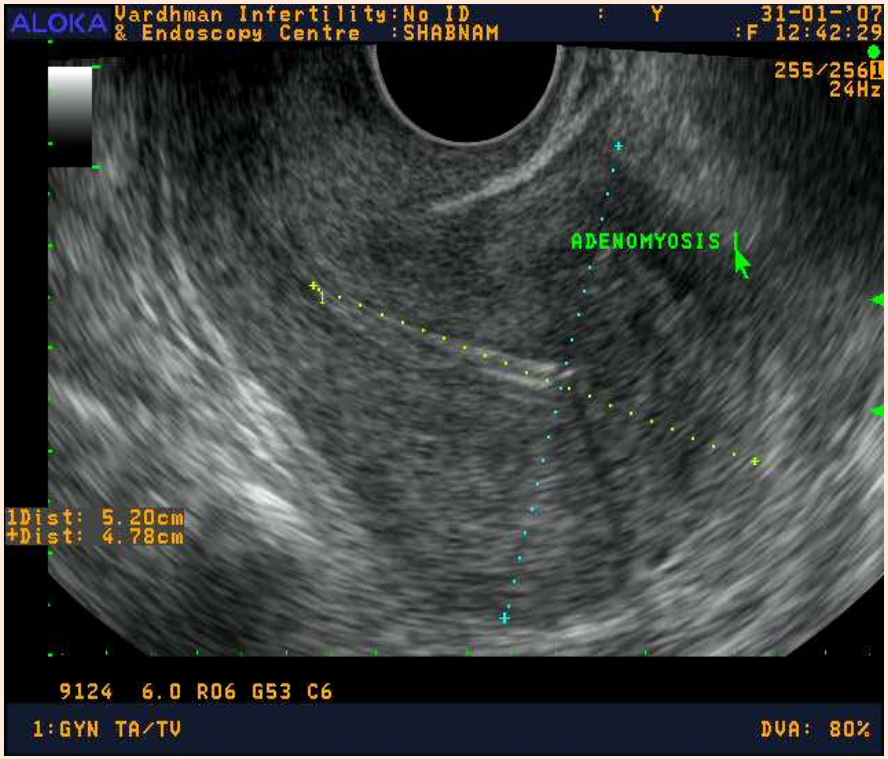
- Offers a valuable alternative, often providing superior visualization in retroverted or deeply sited uteri.

Adenomyosis

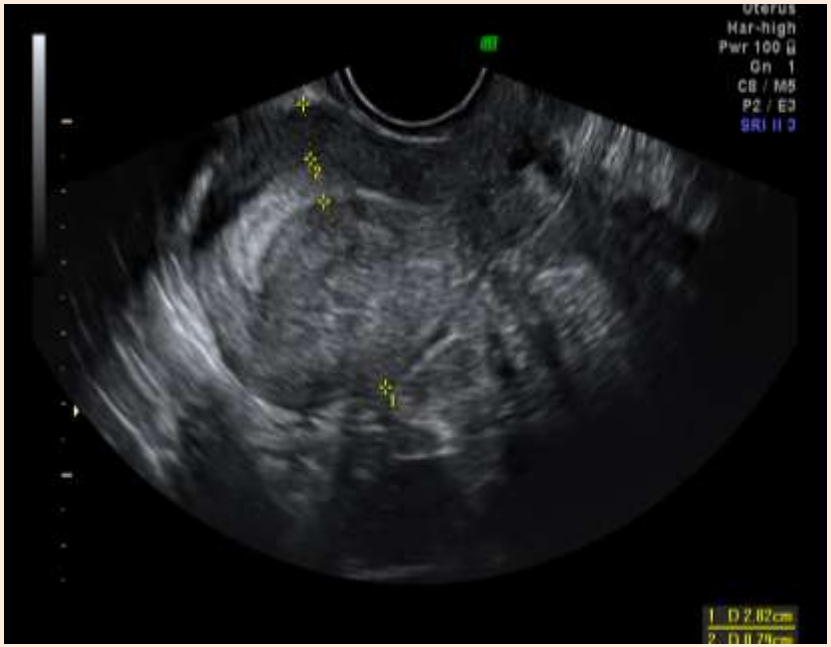


Adenomyosis





Transrectal Sonography



MRI

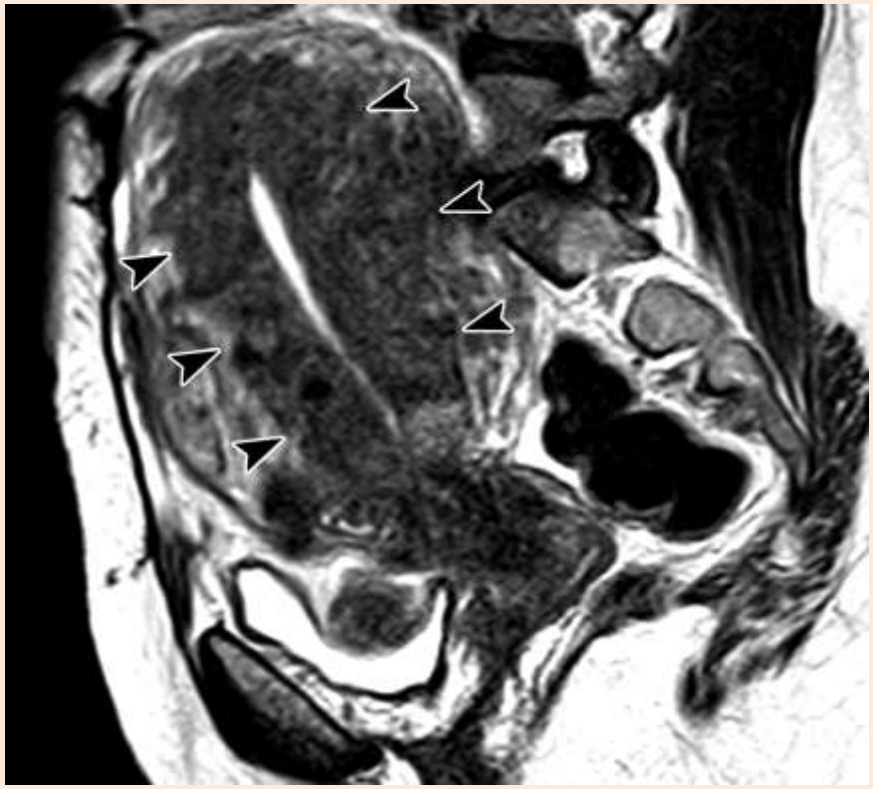
Magnetic resonance imaging (MRI): Gold standard due to its superior tissue contrast and ability to delineate the junctional zone (JZ).

- **Key MRI criteria**:

- A junctional zone thickness greater than 12 mm,
- Areas of low signal intensity on T2-weighted sequences
- High-signal-intensity foci on T1- or T2-weighted images representing hemorrhagic content.

MRI

Sagittal T2-weighted image shows extensive and diffuse enlargement of junctional zone (*arrowheads*) with ill-defined contours signaling diffuse adenomyosis.



ISUOG

- According to the International Society of Ultrasound in Obstetrics and Gynecology (ISUOG) consensus
- **Sonographic hallmarks of adenomyosis include**

➢ Myometrial cysts

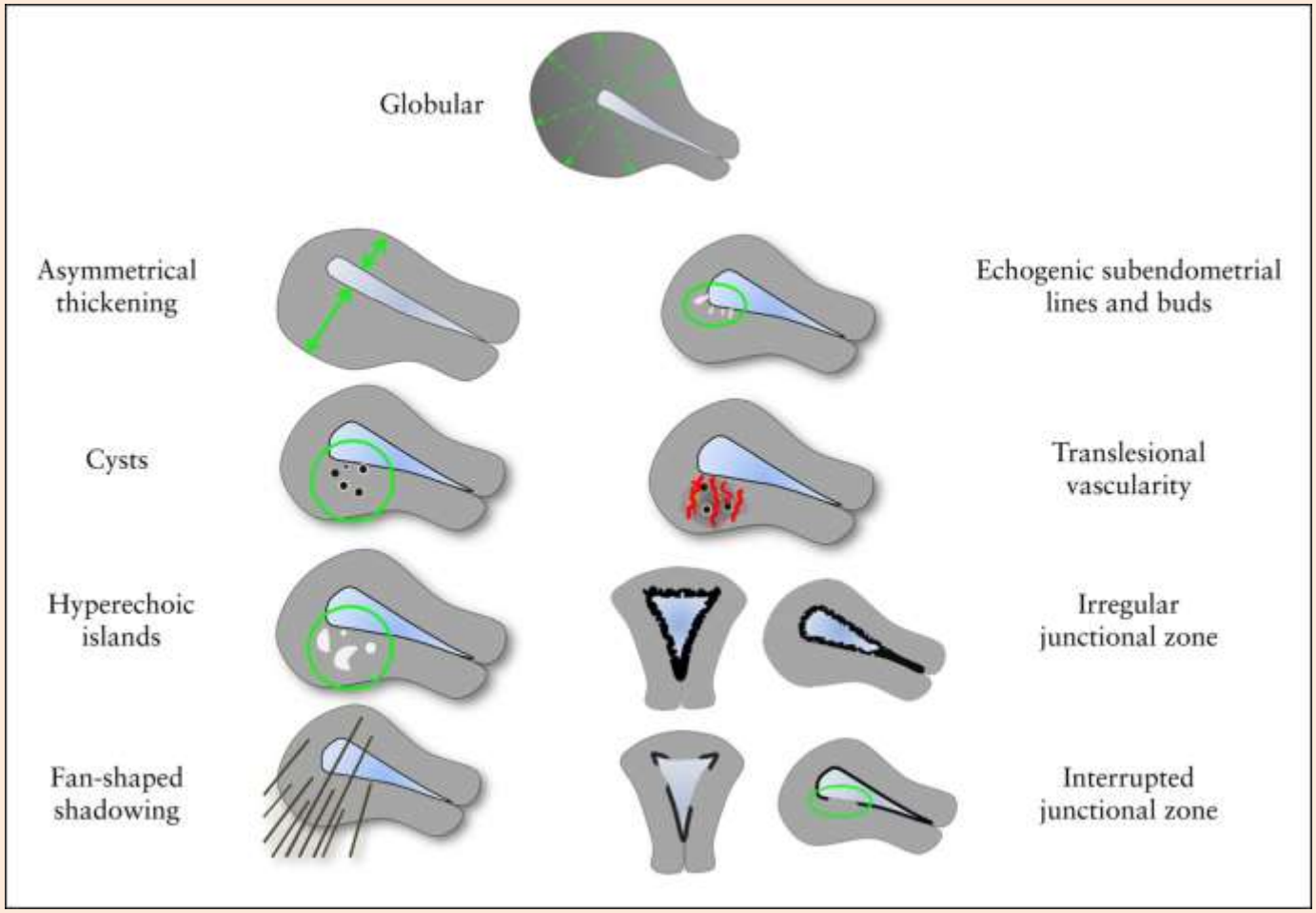
➢ Fan-shaped shadowing

➢ Irregular or interrupted junctional zone

➢ Hyperechoic islands within the myometrium

A problem well stated is a problem half solved…

Musa Features On Ultrasound For Diagnosing Adenomyosis



Morphological Uterus Sonographic Assessment (MUSA)

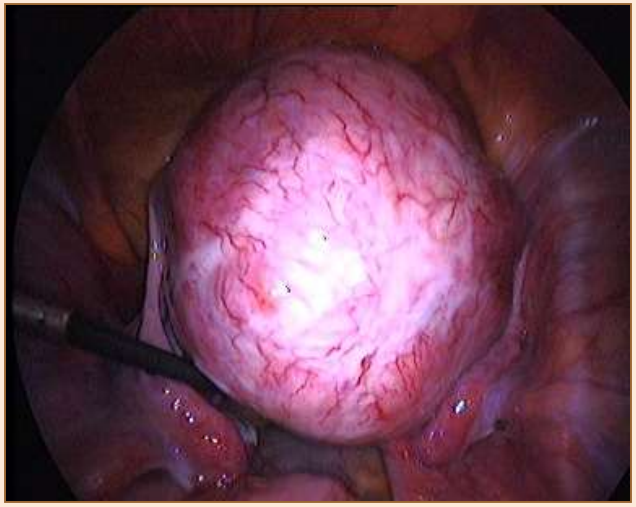
- Standardized
- Improve reproducibility and reduce inter-observer variability

- **Lesion Type:** Focal (adenomyoma) or diffuse adenomyosis.
- **Lesion Location:** Anterior, posterior, lateral, or fundal myometrium
- endometrial cavity (inner myometrium) or serosa (outer myometrium).
- **Lesion Extent:** Focal, multifocal, or diffuse spread across the myometrium.

- **Myometrial Echotexture Changes:** Including heterogeneous echogenicity, fan-shaped shadowing, myometrial cysts, hyperechoic islands, echogenic linear striations, and irregular endometrial-myometrial interface.
- **Junctional Zone Abnormalities:** Irregular thickening, interrupted or poorly defined JZ, and areas of low echogenicity representing adenomyotic infiltration.
- **Additional Descriptors:** Presence of cystic areas >1 mm, asymmetrical myometrial thickening, and degree of vascularity on Doppler assessment.

- By applying the MUSA criteria, clinicians can provide a detailed,
- Standardized clinical decision-making,
- Facilitates communication between radiologists and gynecologists,
- Differentiating adenomyosis from other uterine pathologies, such as fibroids, especially in complex or overlapping presentations.

Differentiation of Myoma and Adenomyosis on TVS



Treatment as
per patient…:TAILORMADE

Pre-operative Preparation

- Optimize surgical outcomes.
- In women with significant menorrhagia, preoperative administration of **gonadotropin-releasing hormone(GnRH) agonist**s can reduce uterine volume, diminish vascularity, and improve haemoglobin levels, thereby lowering intraoperative blood loss.
- Correct Anaemia: iron supplementation/ blood transfusion

Pre-operative Preparation

- **Bowel preparation** is recommended, particularly when adenomyosis coexists with deep infiltrating endometriosis (DIE), as extensive bowel mobilization or segmental resection may be required.
- A **thorough preoperative counseling session** should address the possibility of incomplete excision in diffuse disease, risk of recurrence, and potential for uterine rupture during a subsequent pregnancy, necessitating planned cesarean delivery

Preoperative and Operative Strategies

Effective preparation and precise surgical techniques are paramount for optimal outcomes in laparoscopic adenomyomectomy.

1

Preoperative Preparation

Correct anemia. Bowel prep for coexisting deep infiltrating endometriosis (DIE). Counsel on recurrence and uterine rupture risk.

2

Operative Setup

Lithotomy position, Trendelenburg tilt, general anesthesia. Indocyanine green (ICG) via cystoscopy identifies ureters. Jain Point for safe primary entry in complex cases.

3

Hemostatic Strategies

Vasopressin injection. Temporary uterine artery occlusion using bulldog clamps or the reversible shoelace technique with Vicryl for effective intraoperative hemostasis.

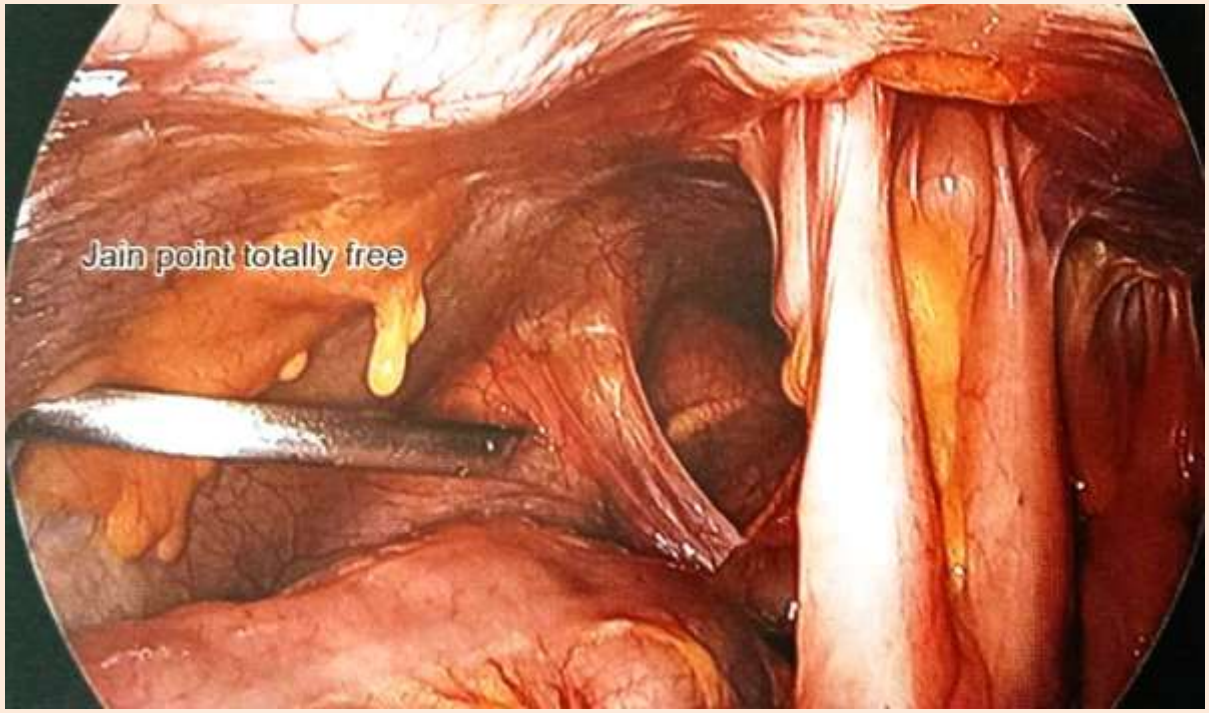
OT

- General anesthesia with endotracheal intubation
- lithotomy position with a moderate Trendelenburg tilt to facilitate bowel displacement from the pelvis
- Indocyanine green (ICG) is instilled directly into the ureter via a catheter inserted cystoscopically.
- **near-infrared (NIR) fluorescence**, the ureter fluoresces, allowing the surgeon to clearly identify its course, reduce the risk of ureteric injury(displaced/fibrosed)

JAIN POINT

- In cases of large uteri
- Umbilical entry is difficult due to prior surgeries or midline adhesions
- The Palmer's or **Jain Point** serves as a safe and ergonomic primary entry site.
- Jain point is a lateral mid abdomen paraumbilical port situated 10-13cm
- Direct and adhesion-free access to the peritoneal cavity,
- Reduced risk of bowel or vascular injury
- Its position also allows the same port to be used as a main working port surgery,
- Optimizing instrument triangulation and surgeon comfort.

JAIN POINT



JAIN POINT

- Standard port placement involves a camera port, two 5-mm working ports in the lower quadrants.
- The lesion is localized visually
- A dilute vasopressin solution is injected circumferentially into the myometrium around the lesion to achieve vasoconstriction and reduce blood loss.
- **Temporary uterine artery occlusion** is often used to minimize intraoperative bleeding while preserving uterine perfusion post-surgery

Technique of Adenomyomectomy

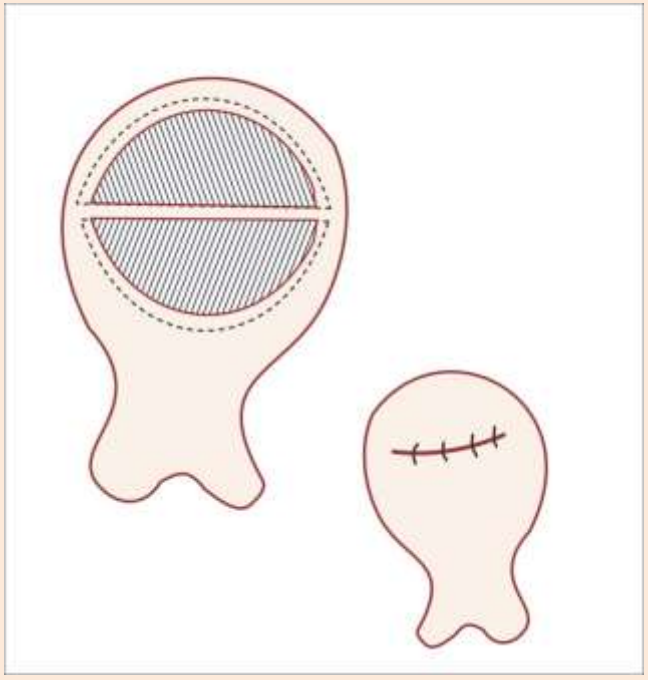
At our centre we follow the surgical approach to adenomyomectomy involving two types of uterine incisions—either **transverse** or **vertical**.

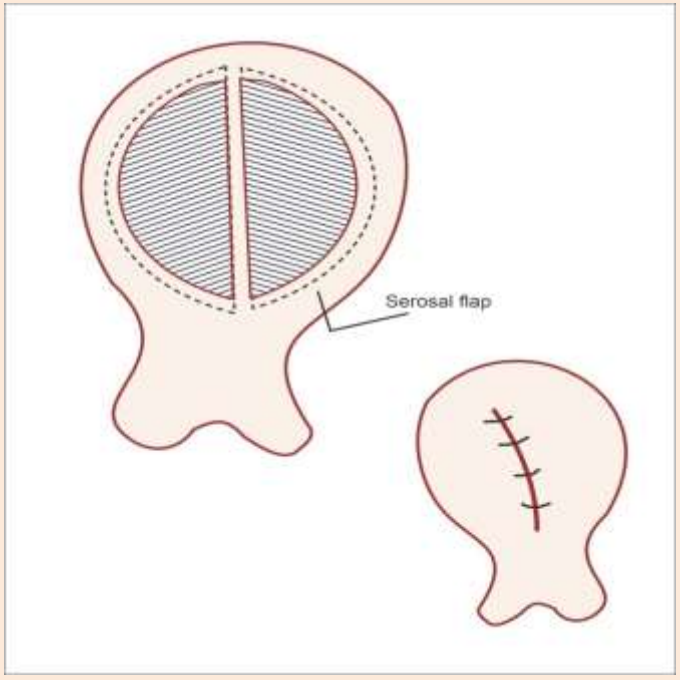
The choice of incision:

- Protuberance of the adenomyoma
- Distance from the fallopian tube
- Prominence on anterior or posterior surface of uterus.

Types of Incision

- Transverse
- Vertical



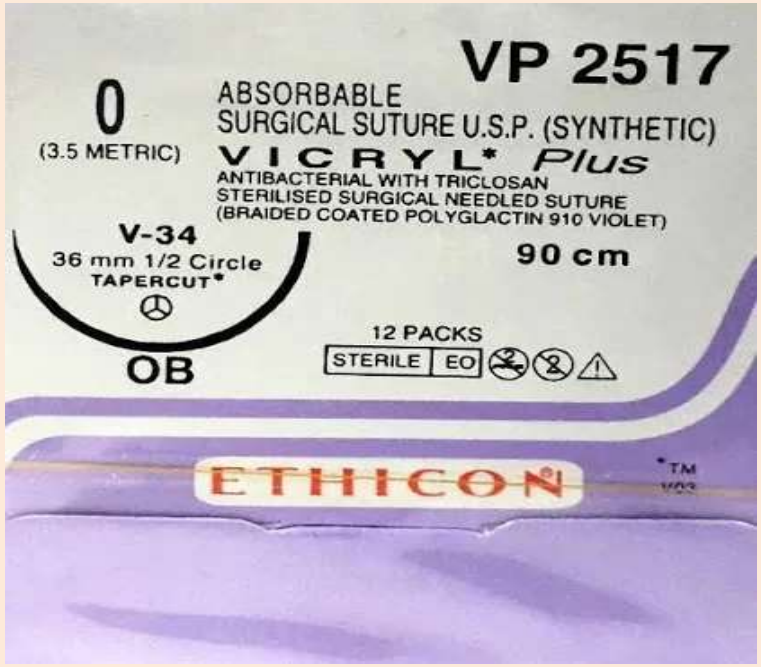


Technique

- Adenomyoma closer to the fallopian tube: **vertical incision** as the chances of extension laterally and damage to the tubes will be less.
- Harmonic scalpel / prefer **a monopolar L-shaped** hook to achieve a deep and precise incision. tissue dense and fibrotic
- With experience distinguish adenomyotic tissue from normal myometrium, as the texture and tissue resistance are subtly different.

Choice of needle

- 50mm round body curve needle (vicryl)
- 36mm taper cut needle



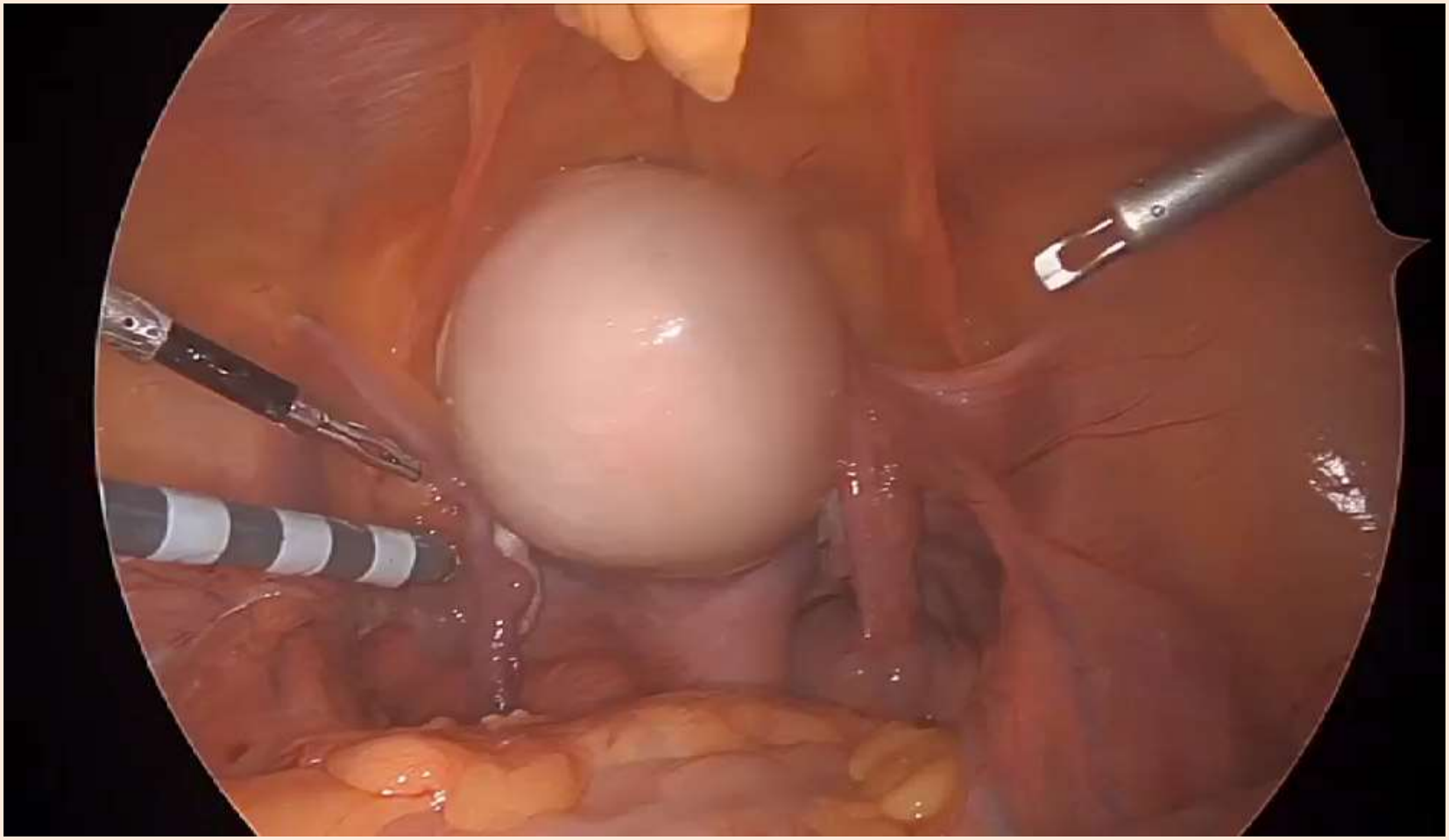
Transverse Incision

- Go deeper into the adenomyotic tissue
- Divide the entire adenomyotic tissue into two halves.
- Raise serosal flap by working beneath the subserosa.
- Coring technique is then employed
- Adenomyotic tissue is carefully scooped out beneath the serosal canopy in a semicircular fashion

Transverse Incision

- Big semilunar chunk of adenomyotic tissue is carved out.
- Leave about 1cm of the normal, healthy myometrium.
- Repeat SAME for opposite flap.
- Preservation of the serosa simplifies defect closure, provides complete coverage, ensures a tension-free approximation and eliminates dead space

Adenomyomectomy



Video

Vertical Incision

- A similar principle applies when using a **vertical incision**.
- Two semi-lunar flaps of adenomyotic tissue are fashioned and cored out beneath the intact serosa.
- This method closely mimics the standard myomectomy technique, making it familiar and reproducible for most gynaecologic surgeons.

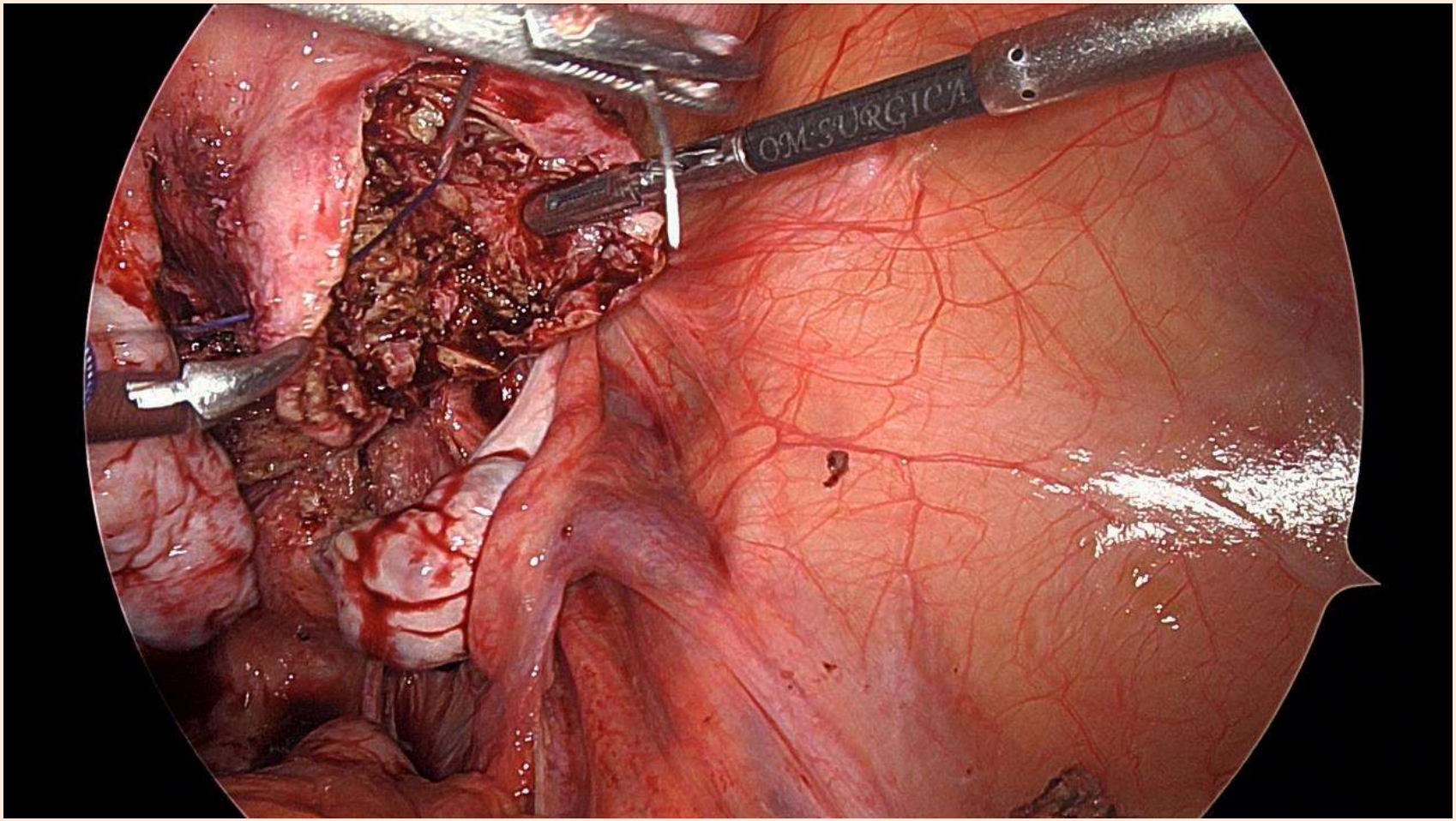
Closure Techniques

- According to the incision
- For **transverse incision**: continuous closure with a curved needle
- For **vertical incisions**: interrupted closure offers superior results
- First interrupted suture is placed at the mid-point of the incision, which effectively brings the two uterine halves together.
- Can also be applied in case of transverse incision in a diffuse adenomyoma when the uterus is very large.
- Subsequently, additional interrupted box sutures are placed sequentially from the midpoint toward the fundus and then toward the isthmus.

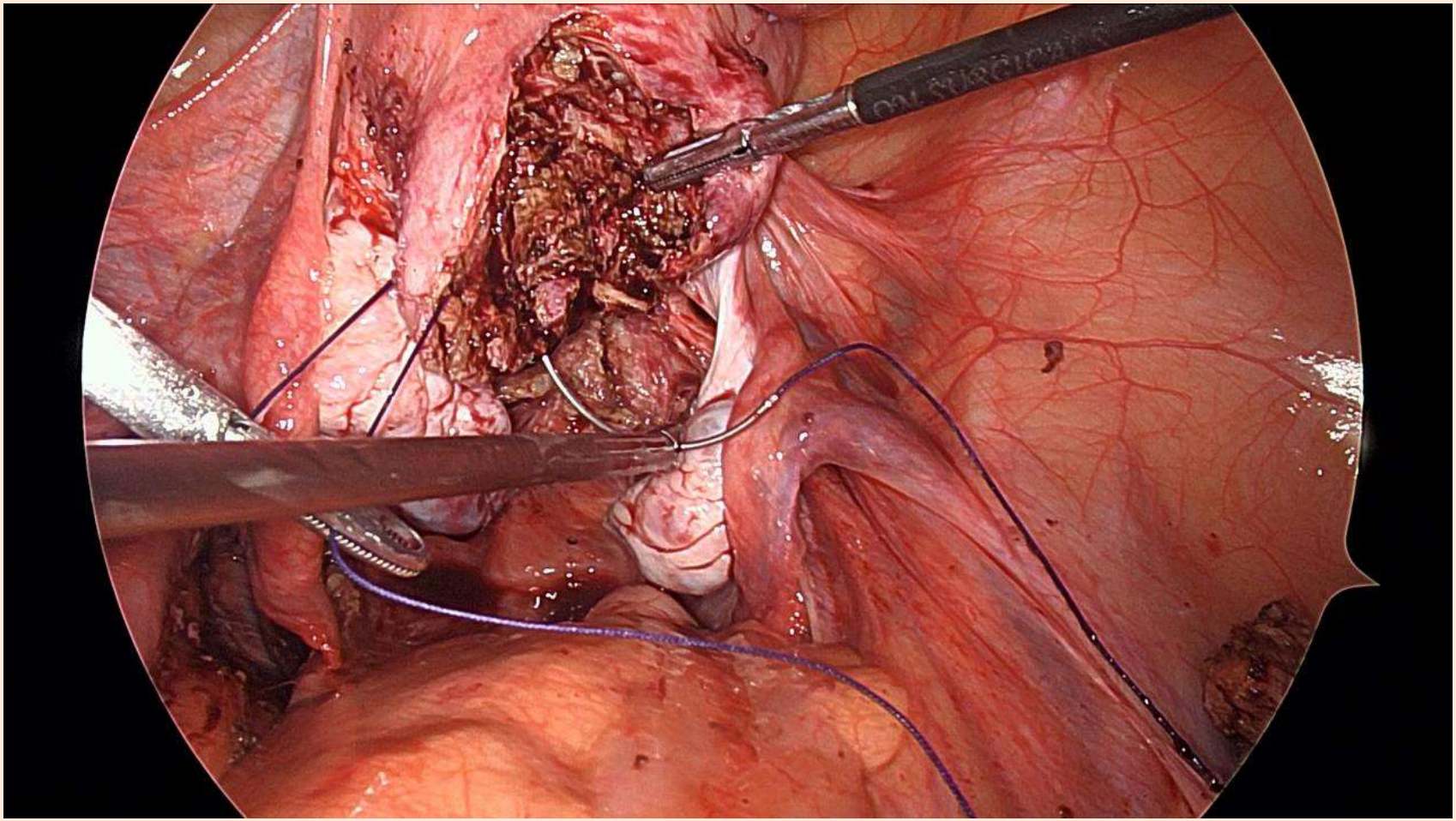
Box Suture Technique

- The **box suture technique** :deep bite from one edge, then placing two sequential bites through the residual myometrium, and exiting through the opposite edge.
- A return bite is then taken more superficially in the reverse direction, thus creating a box-like configuration that provides both depth and surface approximation.
- 2-3 box sutures above and below the midline are sufficient for secure closure. To achieve a smooth outer surface, a continuous running serosal suture using 2-0 Vicryl is placed over the repair.

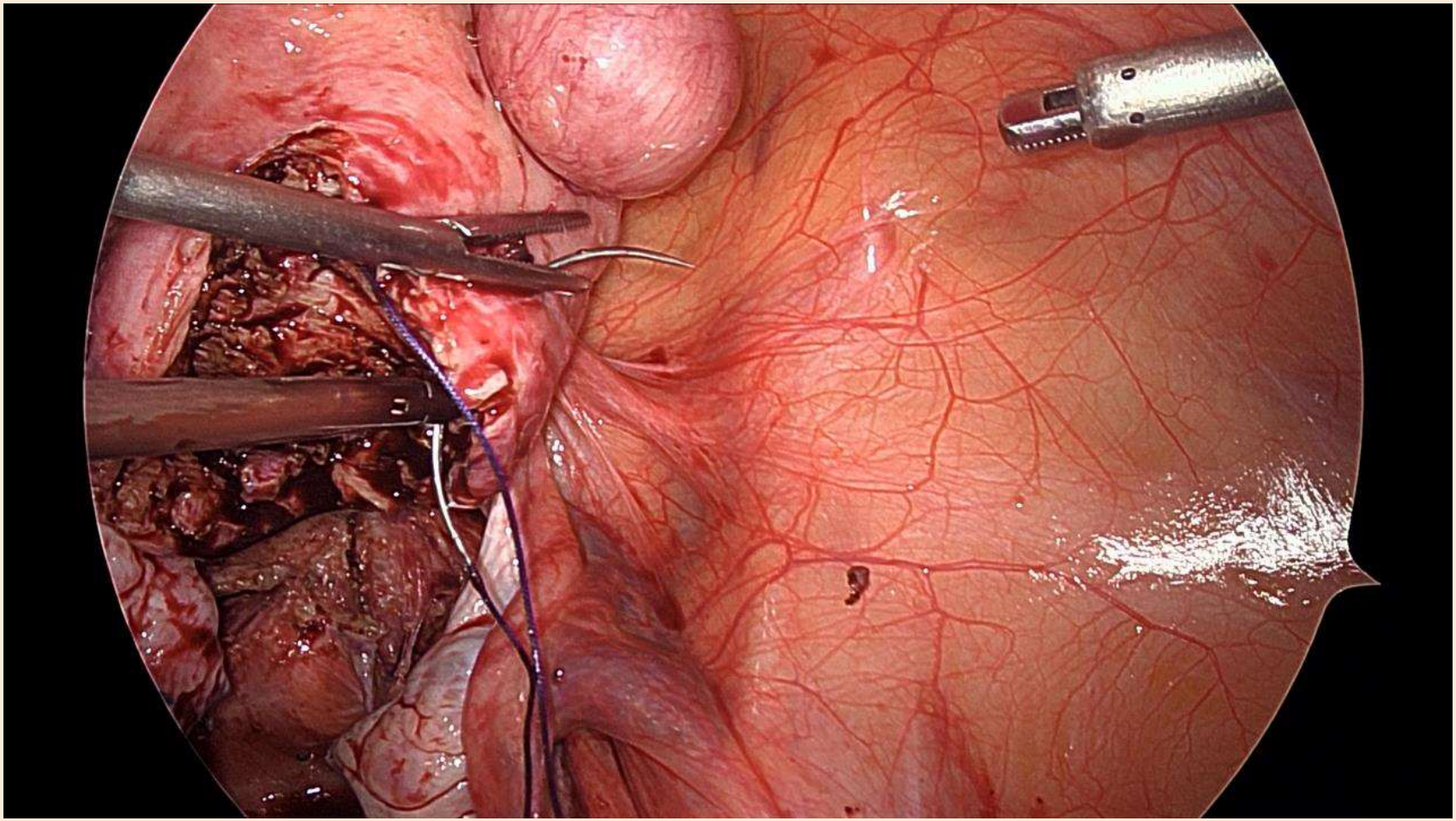
Inserting 50mm curved needle and taking a deep bite from one serosal end



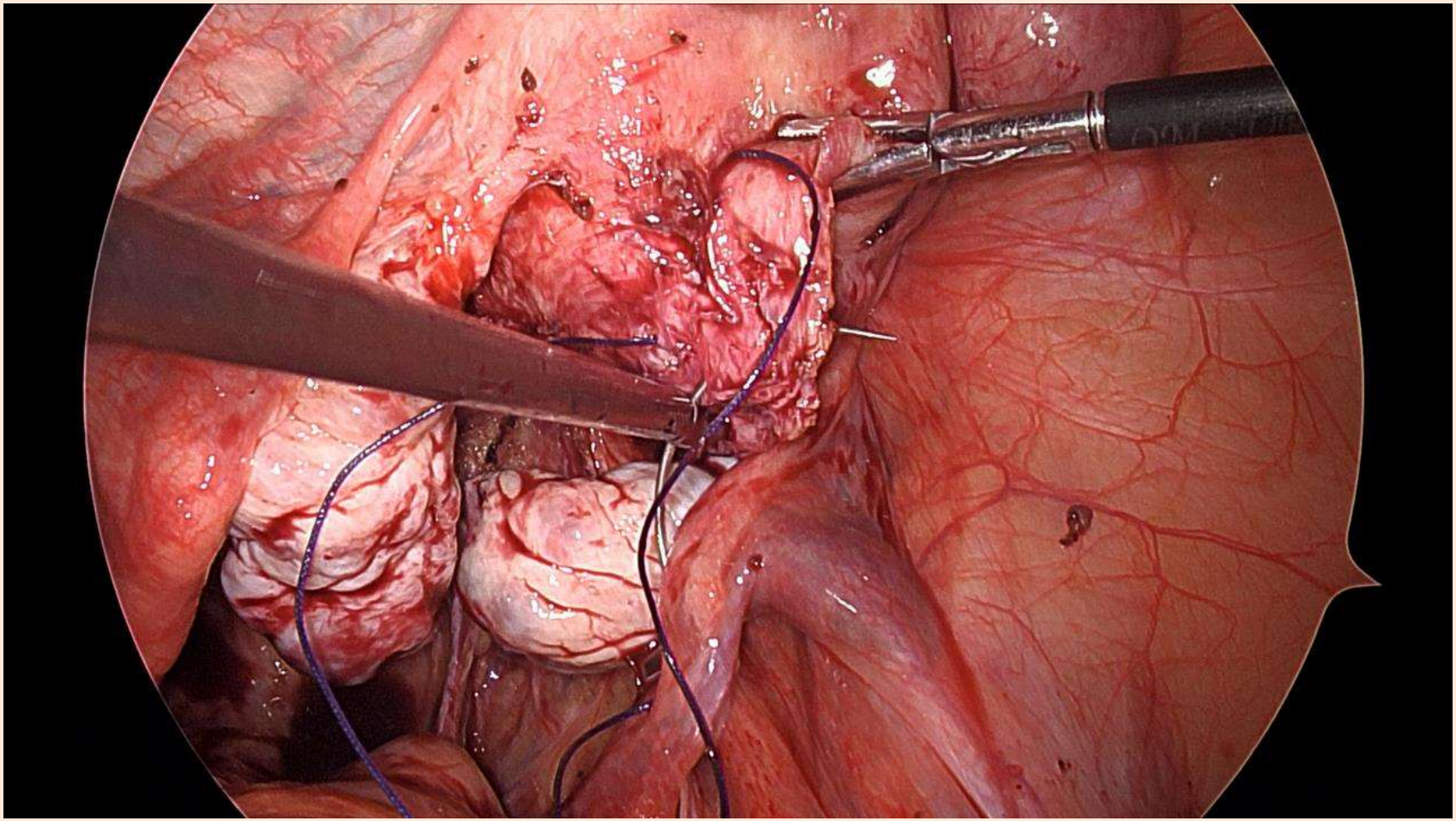
Taking two bites in the myometrium at the same depth



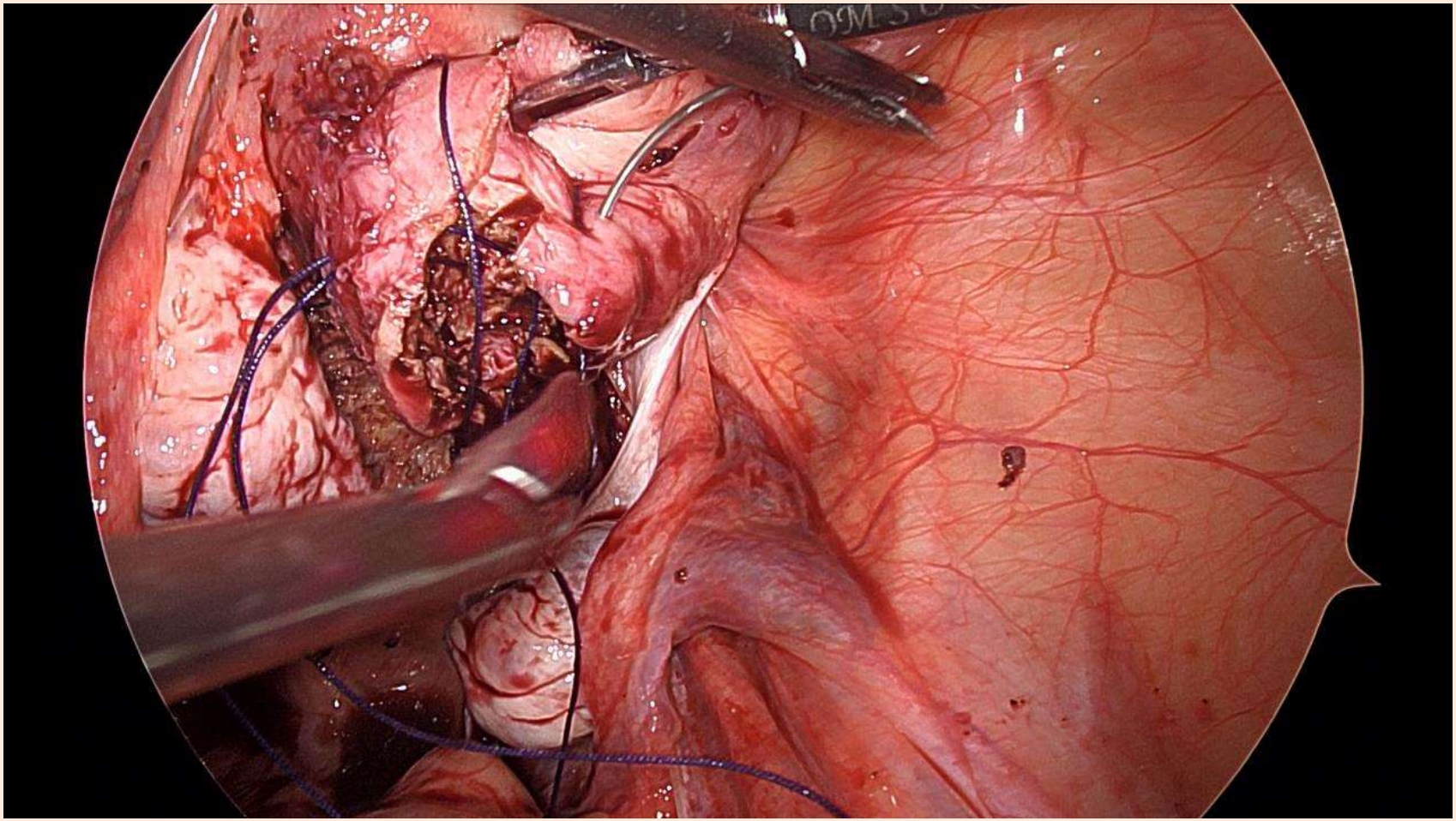
Coming out from the other serosal end in the same line



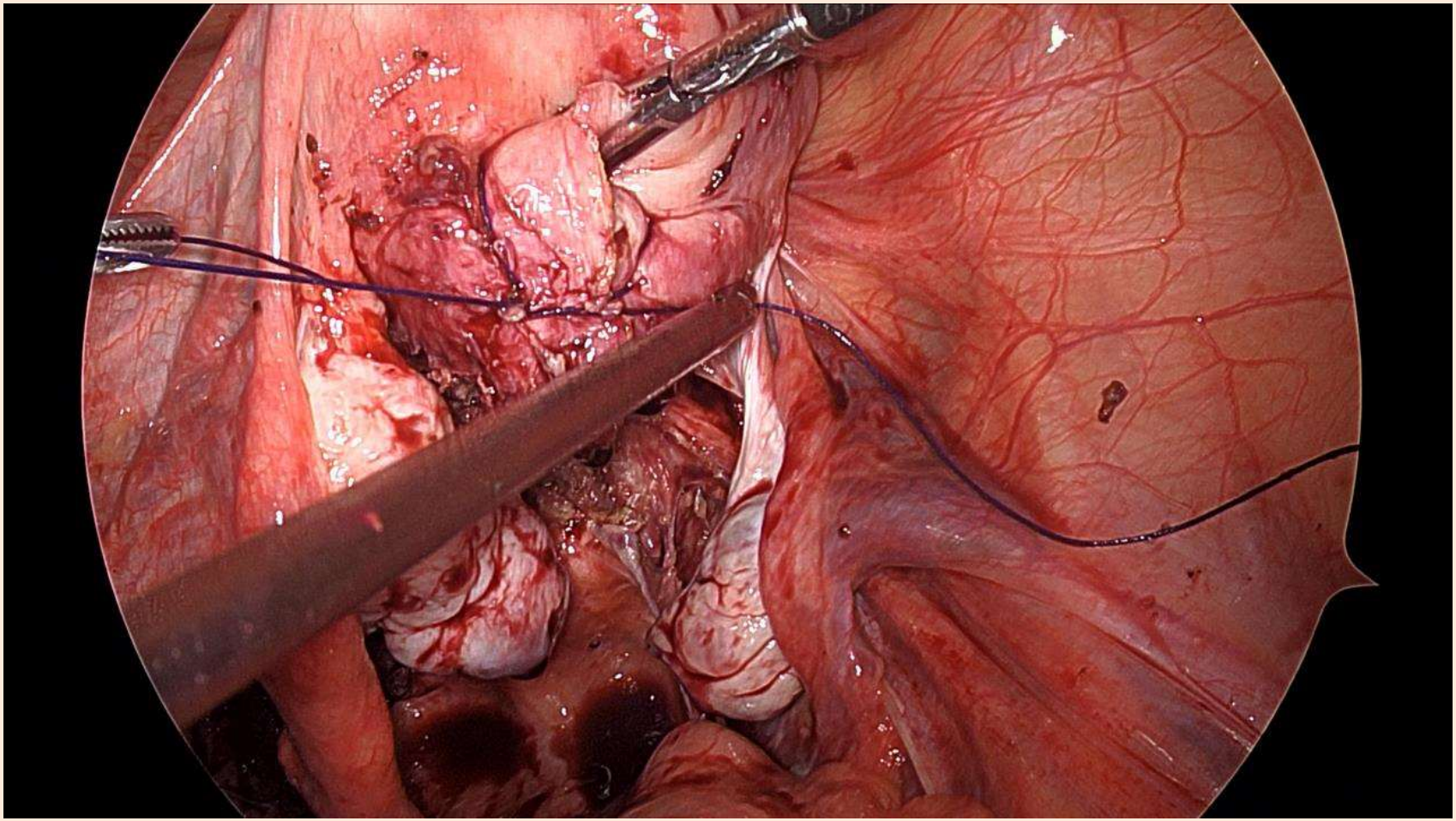
Now taking superficial bite from the same serosal end where the first deep bite was taken



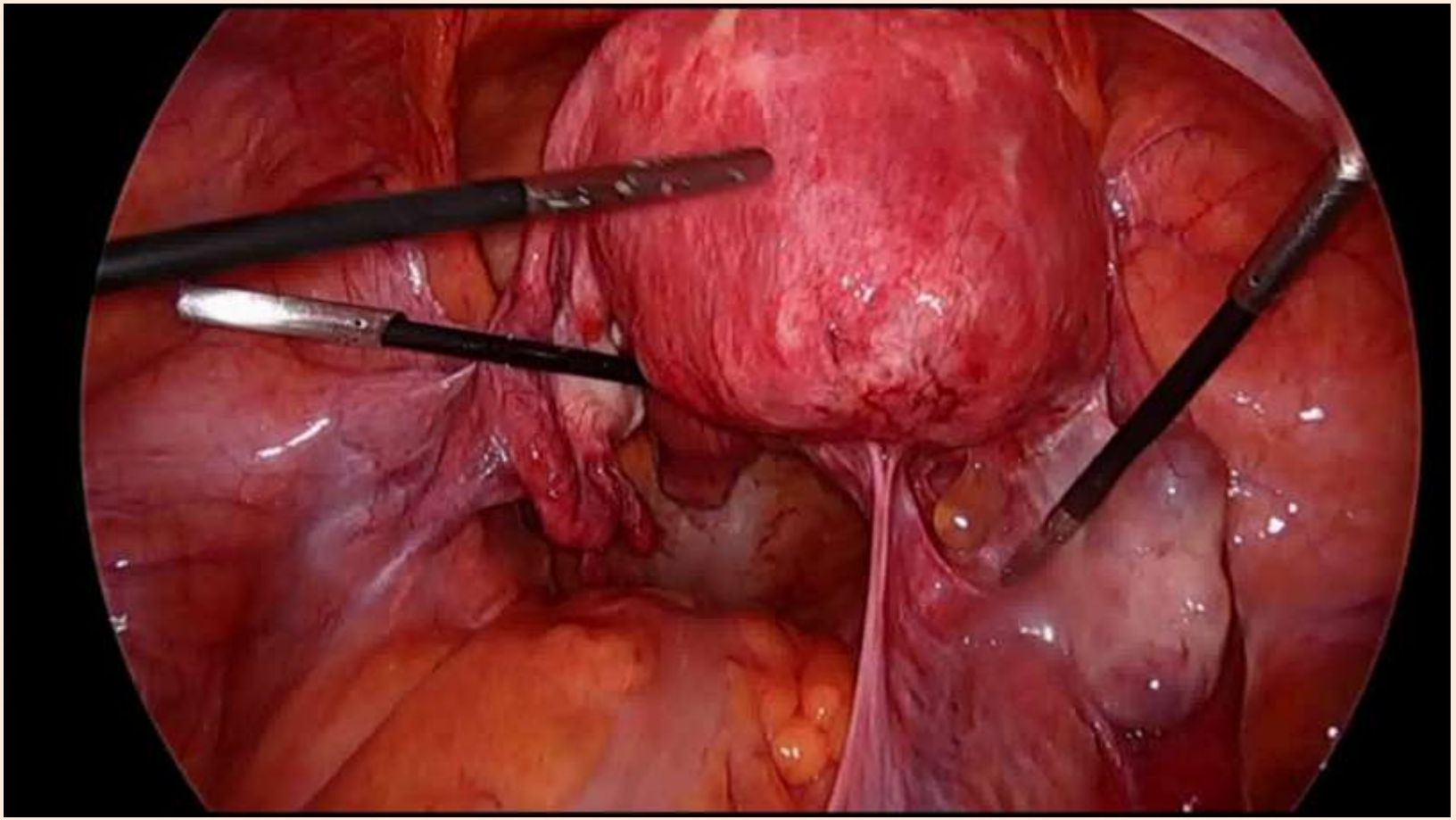
Taking out the needle from the other superficicial serosal end



Tying the knot eliminates the dead space gives complete serosal closure

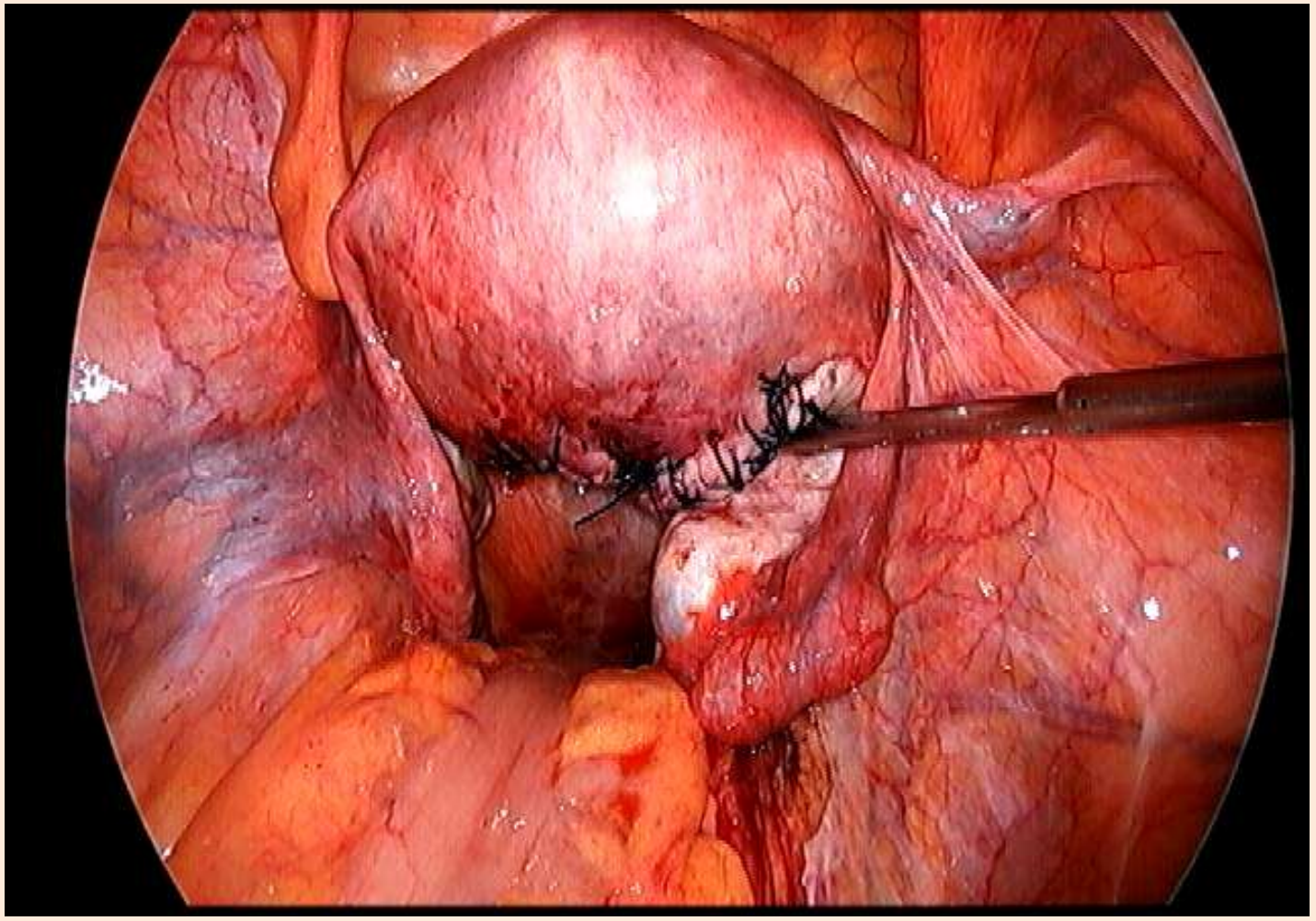


Adenomyomectomy



Video

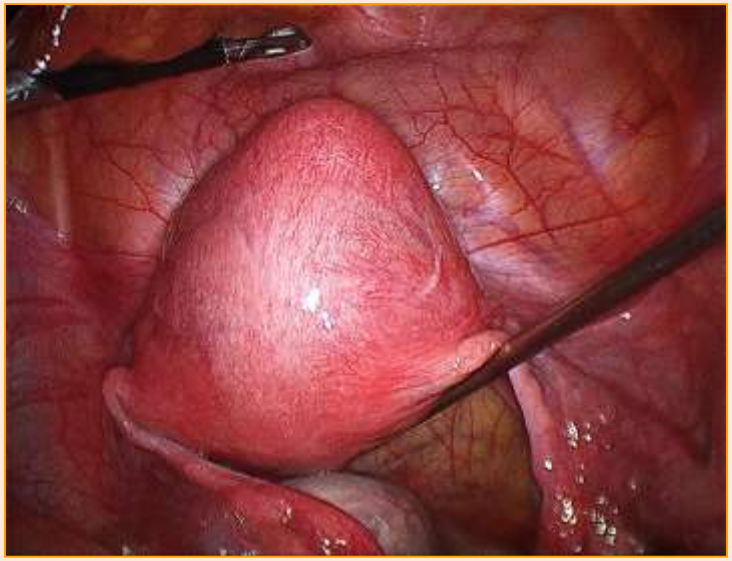
Adenomyomectomy

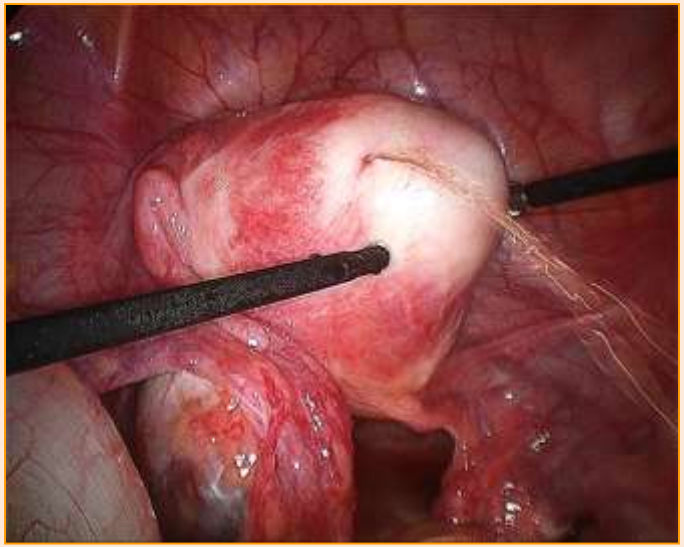


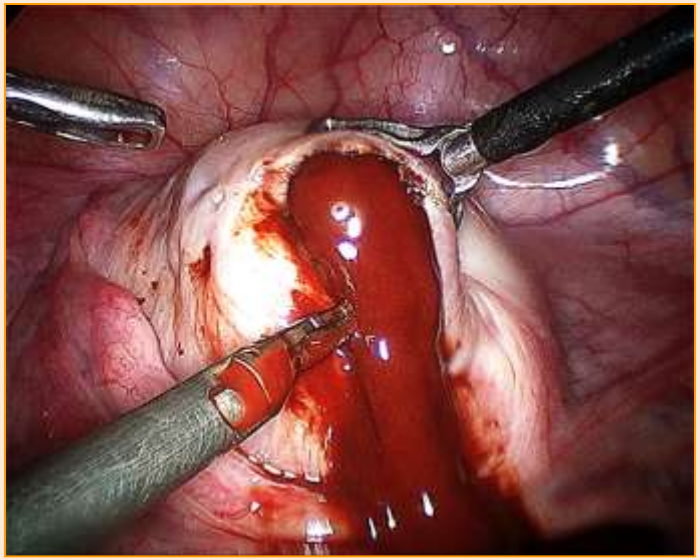
Juvenile Cystic Adenomyoma (JCA)

- **Origin:** Acquired form of adenomyosis (cystic variant)
- **Pathology:** Localized adenomyotic lesion with cystic degeneration
- **Location:** Usually within myometrium, not related to round ligament
- **Age of Onset:** Young women (<30 years), typically after menarche
- **Uterine Cavity:** Often normal, but uterus may appear bulky
- **Symptoms:** Severe, refractory dysmenorrhea and pelvic pain, unresponsive to medical therapy
- **Imaging:** Intramural cystic lesion, less well-circumscribed, with myometrial heterogeneity

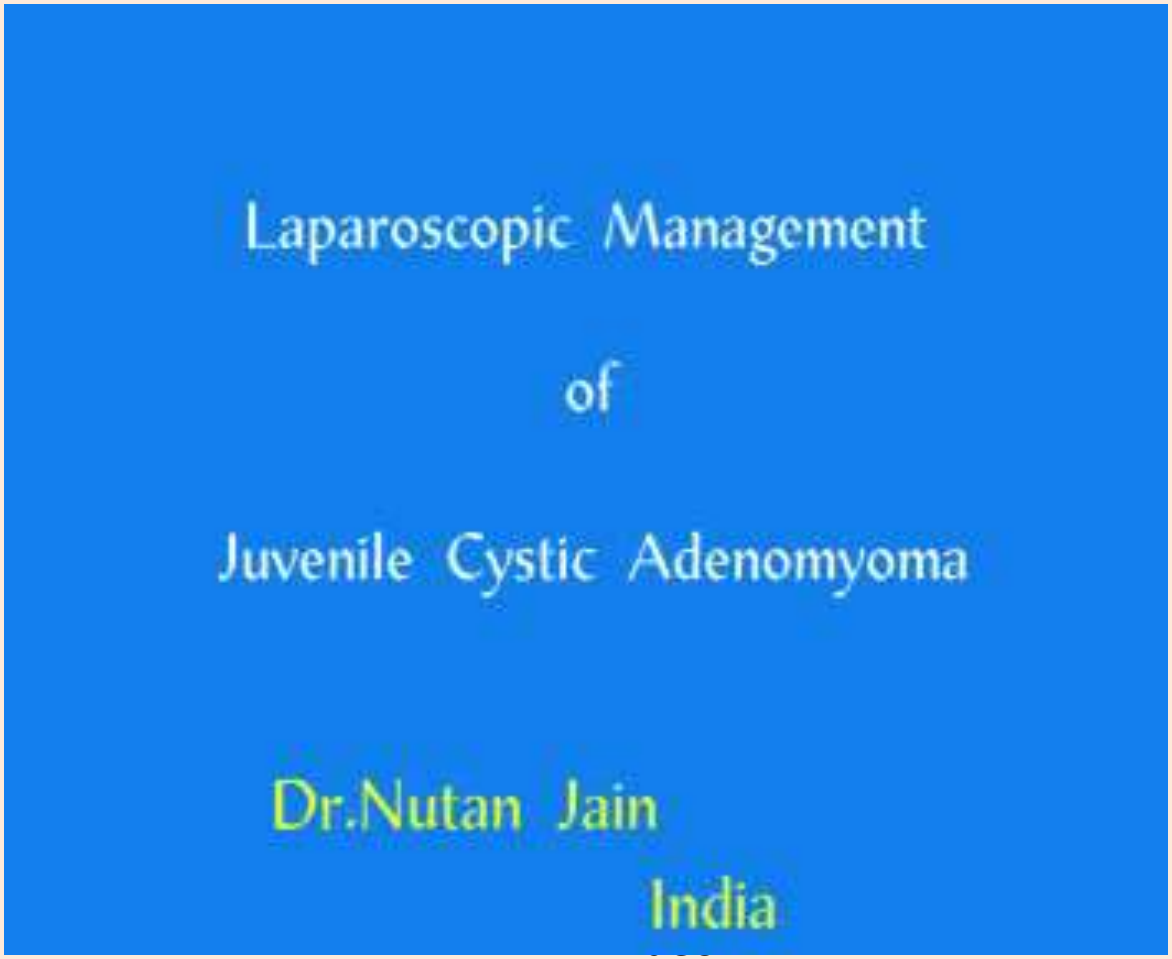
JUVENILE CYSTIC ADENOMYOMA





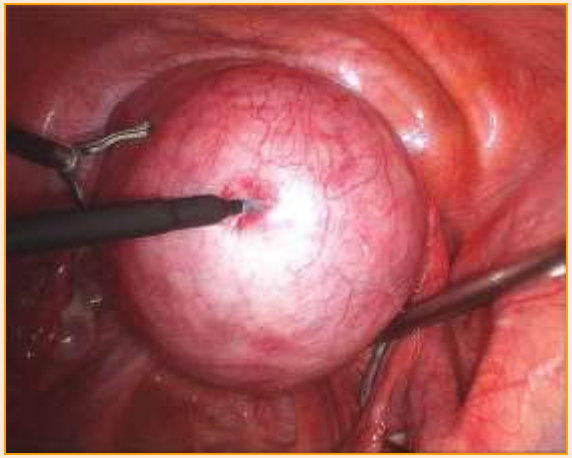


JUVENILE CYSTIC ADENOMYOMA



Video

Cystic Degeneration



Buttram VC Jr, Reiter RC. Uterine leiomyomata: etiology, symptomatology, and management. Fertil Steril. 1981;36:433–445.

Publication of Indian Society of Assisted Reproduction
Journal of Human Reproductive Sciences

CASE REPORT

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Cystic Adenomyoma simulates uterine malformation: A diagnostic dilemma: Case report of two unusual cases

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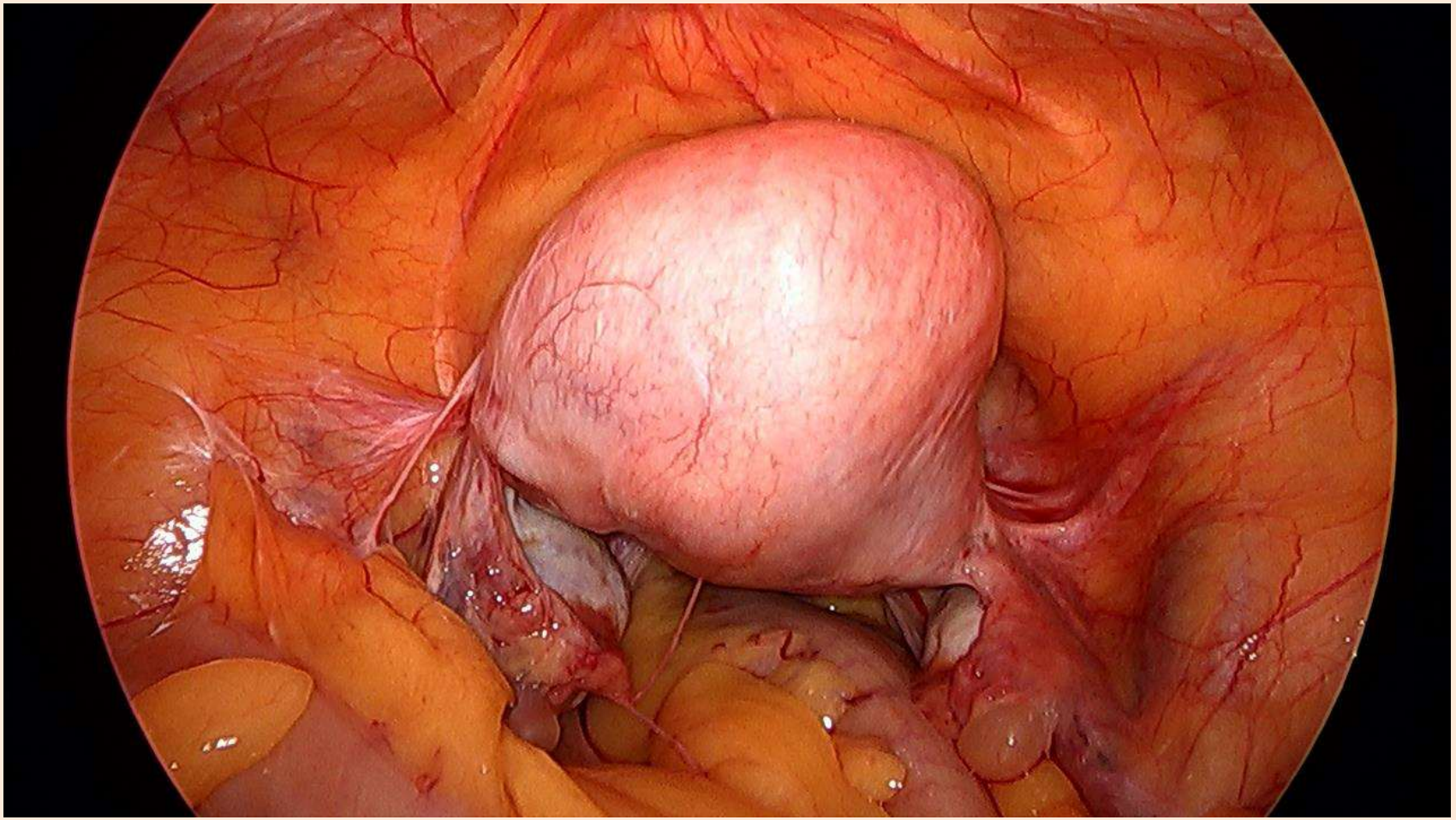
Abstract

Cystic adenomyosis is a rare form of adenomyosis mostly seen in middle aged women.We report two cases of cystic adenomyosis in juvenile patients, which simulate uterine malformation and presented as a diagnostic dilemma. The first patient initially was diagnosed as uterus bicornis with a hematometra in obstructed rudimentary horn while the second patient was diagnosed as broad ligament fibroid. Surgical exploration by laparoscopic approach confirmed the diagnosis and excision of the cystic mass relieved the symptoms of the patients.

Keywords: Adult cystic adenomyoma, juvenile cystic adenomyoma, mullerian duct anomalies, uterine bicornis

A case of Cystic Adenomyoma



Adhesion Barrier

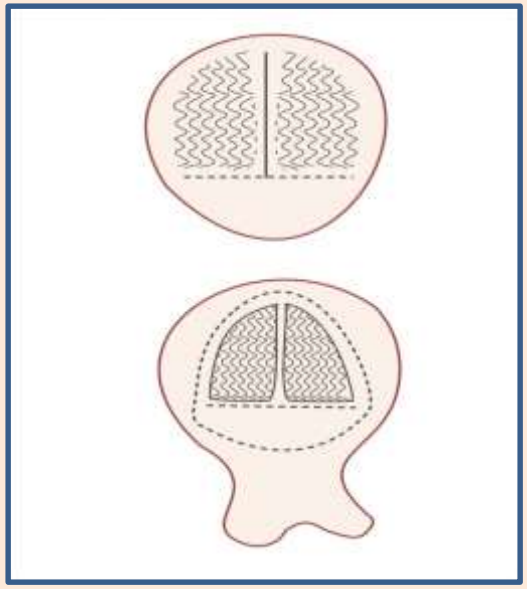
- Once the closure is completed, thorough suction and irrigation are performed.
- We do not routinely use solid adhesion barriers on the uterine surface.
- Hydrofloatation technique: 2- 3 litres of Ringer's lactate instilled into the peritoneal cavity, which serves as a fluid barrier to minimize postoperative adhesion formation.

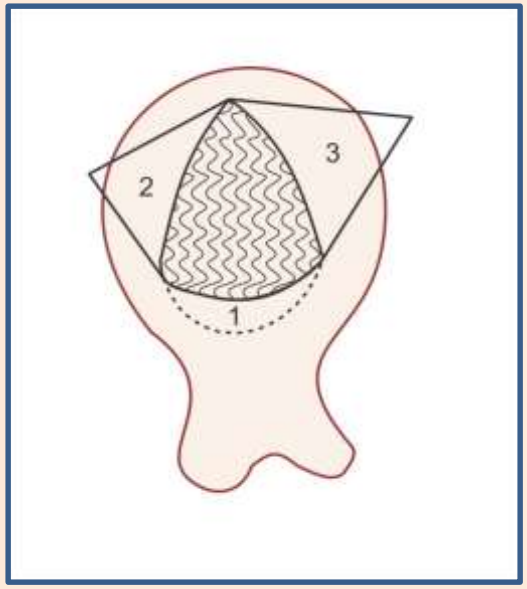
Triple flap / inverted ‘T’ incision technique

- Complete excision of adenomyotic tissue
- Minimizing the risk of rupture in subsequent pregnancy.
- **Inverted T-shaped incision** on the uterine wall
- Vertical midline cut combined with a short transverse cut at its lowerend.
- This step involves traction–countertraction to deliver the lesion progressively
- Hemostasis is maintained
- Excessive use of cautery can weaken the myometrium.

Triple Flap

- Restore the uterine contour and ensure robust closure
- The first flap approximates the deep myometrial edges,
- The second overlaps and reinforces the first to eliminate dead space
- Third closes the outer seromuscular layer, fully covering the suture line.
- This layered approach distributes tension, enhances vascularity to the repair site, reduces the risk of hematoma or ischemia, and strengthens the uterine wall for future pregnancies.
- The technique is especially valuable in large, deep adenomyotic lesions
- Excellent symptom relief, improved fertility outcomes, and low recurrence rates when combined with meticulous surgical dissection

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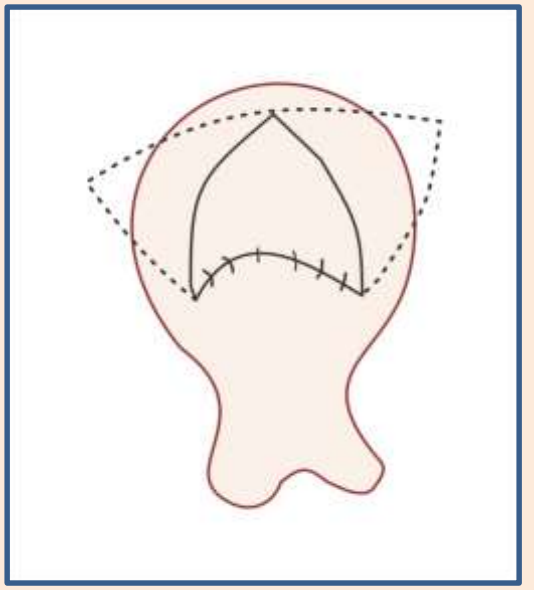
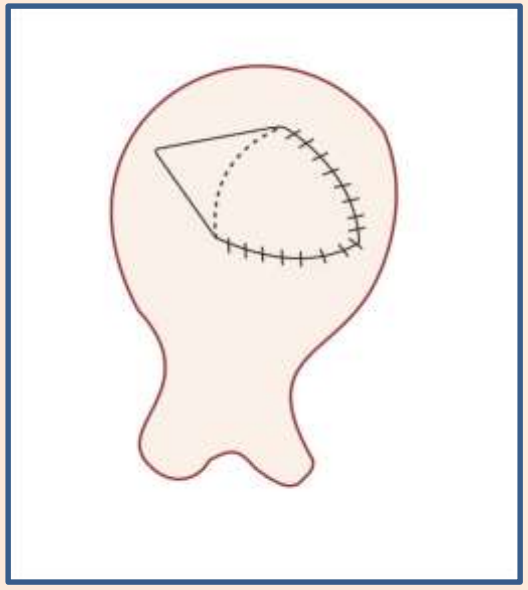
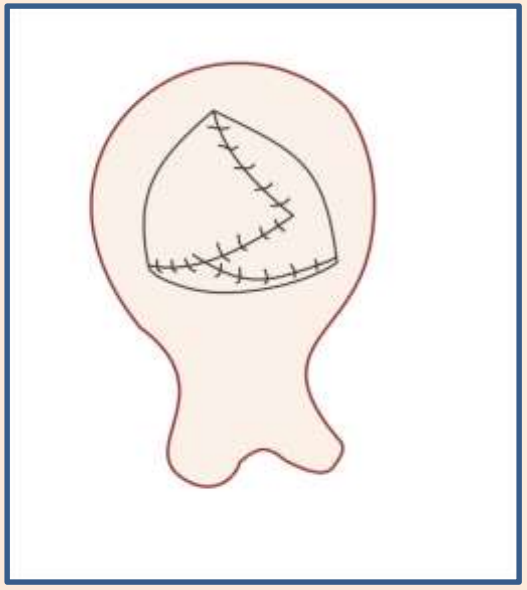
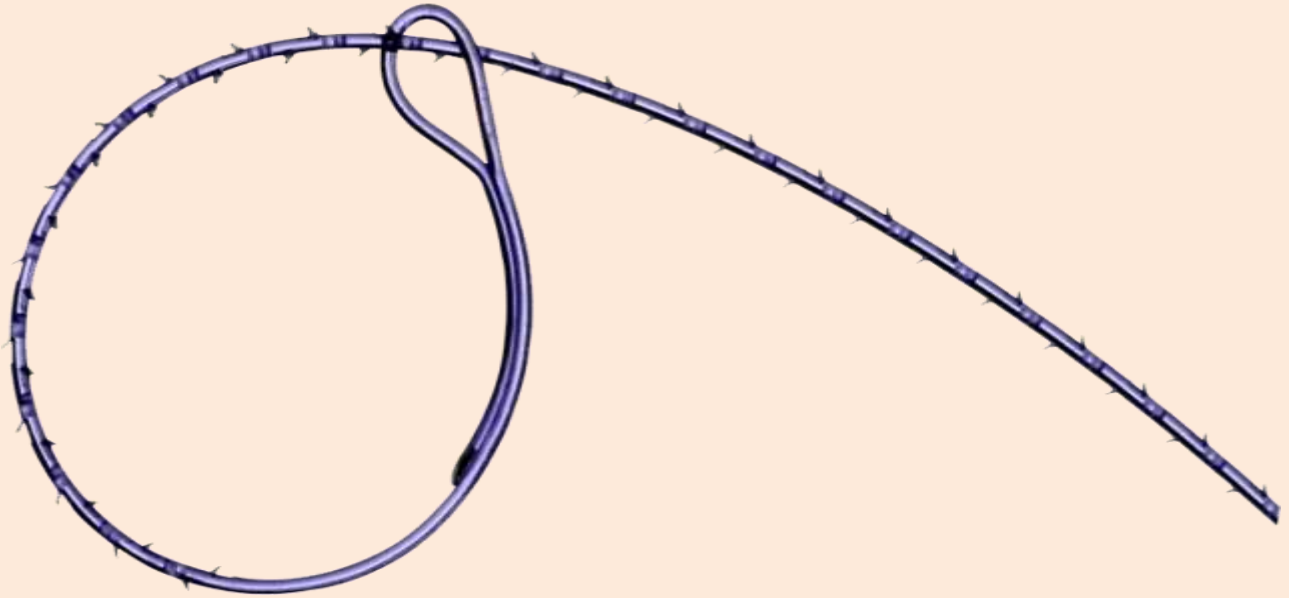






Type of Suture Material

- Barb suture
- Vicryl



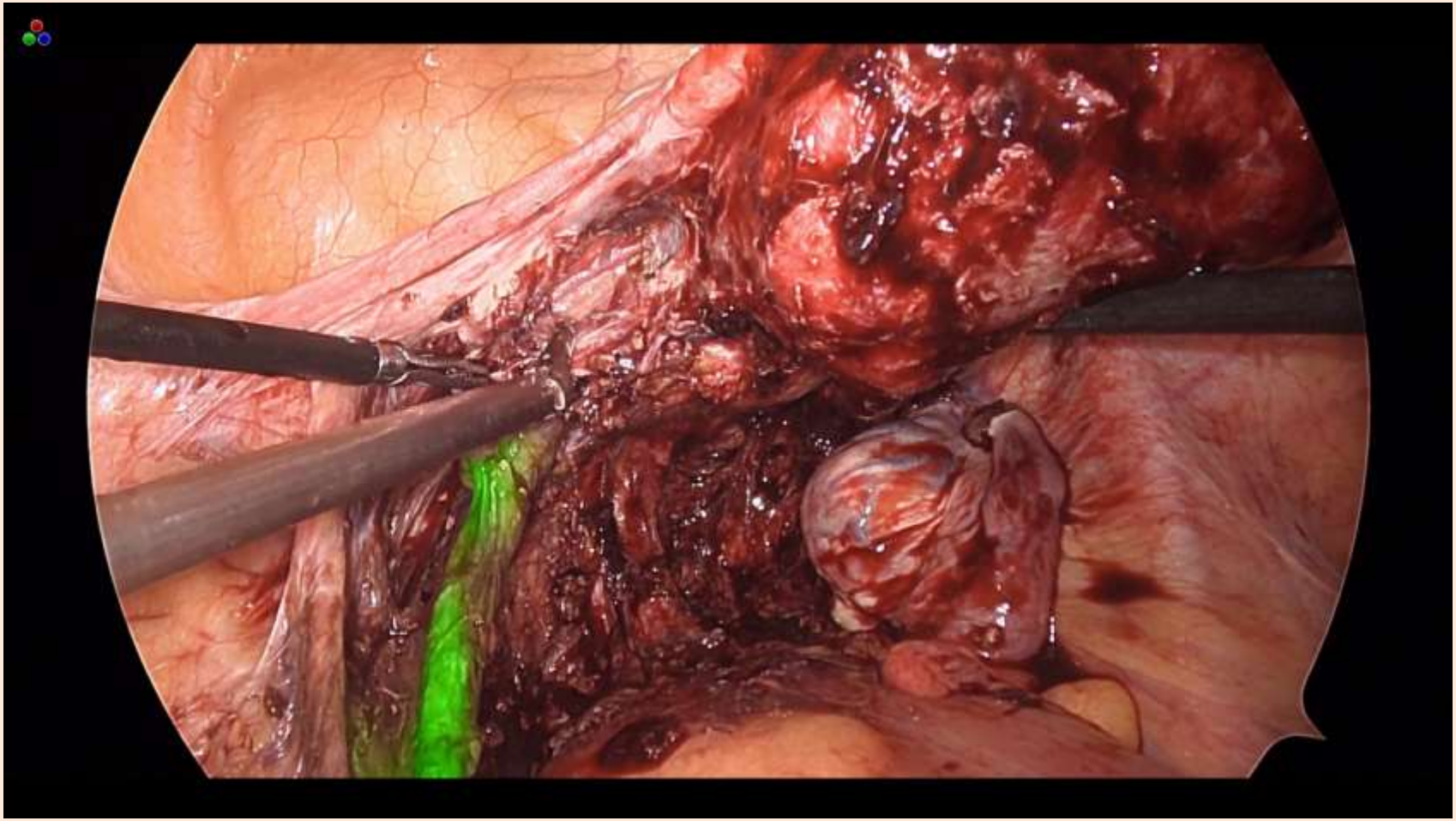
Deep Infiltrating Endometriosis

- DIE lesions are usually addressed first
- Including adhesiolysis, ureterolysis, and bowel mobilization, to improve exposure.
- The technique of excision remains the same .

Intraoperative Elastography

- Functional tissue characterization
- Differentiating residual adenomyotic tissue from normal myometrium based on stiffness, with color-coded overlays (blue indicating adenomyotic tissue and green representing normal muscle).
- **Indocyanine green (ICG) angiography** is also being increasingly adopted to evaluate uterine perfusion following resection and repair.

ICG in Ureter



Robotic-assisted adenomyomectomy further improves dexterity, precise dissection, and layered suturing, proving especially advantageous in cases involving large or posteriorly located adenomyotic lesions.

Role of Medical Management

- Control symptoms: dysmenorrhea, heavy menstrual bleeding, and chronic pelvic pain while preserving fertility and avoiding or postponing surgery.
- Since adenomyoma represents a localized form of adenomyosis, it shares a similar hormonal and inflammatory pathophysiology, and thus responds to treatments targeting estrogen suppression and modulation of endometrial activity.

Role of Medical Management

- NSAID’s DRUGS
- Combined oral contraceptives (COCs)
- Progestin based therapy
- Levonoregestrel releasing intrauterine system
- GnRH agonists
- Antagonists
- SPRMs
- Aromatase inhibitors

NSAIDs

- First-line options include nonsteroidal anti-inflammatory drugs (NSAIDs)
- Reduce prostaglandin-mediated uterine contractions and pain
- Do not affect the progression of disease.

Hormonal Therapies form the cornerstone of medical treatment

Combined oral contraceptives (COCs) :inducing endometrial atrophy and reducing estrogen fluctuations.

- Regulate cycles
- Decrease menstrual blood loss

Progestin-based therapies: exert anti-proliferative effects on ectopic endometrial tissue and are particularly beneficial in focal disease.

- Oral dienogest, norethisterone acetate, or depot medroxyprogesteroneactetate

The levonorgestrel: releasing intrauterine system (LNG-IUS) is highly effective in reducing heavy menstrual bleeding and pain, with the added advantage of localized hormone delivery and minimal systemic side effects.

Gonadotropin-Releasing Hormone (GnRH) agonists and antagonists

- Potent hypoestrogenic effects
- Shrink adenomyotic lesions and relieve pain,
- Short-term preoperative therapy or in women approaching menopause.
- Long-term use is limited by menopausal symptoms and bone density loss.

Selective Progesterone Receptor Modulators (SPRMs)

- Ulipristal acetate have shown promise in fibroids
- Limited and less consistent efficacy in adenomyoma
- Use is restricted in many regions due to concerns about hepatic safety.
- **Aromatase inhibitors,** though off-label, may be considered in refractory cases, especially when estrogen production within adenomyotic tissue is a driving factor.

Pro and Cons of Medical Management

- While medical therapy :effective in symptom control
- Its impact on lesion size in focal adenomyoma is generally less pronounced than in diffuse adenomyosis.
- Symptom recurrence after discontinuation (younger women with high estrogen levels)

Role of Medical Management

- **Best**: women seeking fertility preservation
- Those with mild to moderate symptoms
- Those wishing to delay surgery.
- In many cases, medical therapy serves as a bridge to definitive surgical excision or hysterectomy, depending on reproductive goals and symptom burden

Postoperative Management

- Adequate analgesia
- Early mobilization
- Thromboembolism prophylaxis.
- Antibiotics
- Future plan out

Follow Up

- Hormonal suppression with a levonorgestrel-releasing intrauterine system (LNG-IUS) or combined oral contraceptives may be considered to reduce recurrence risk.
- Patients are advised to defer conception for at least 6 to 12 months to allow complete myometrial healing.
- Follow-up imaging may be warranted in selected cases to assess uterine integrity before attempting pregnancy

Complications

- Hemorrhage due to the hypervascular nature of adenomyotic tissue and no clear tissue planes(large or deeply situated lesions).
- Incomplete excision :diffuse adenomyosis resulting in persistent or recurrent symptoms.
- Injury to adjacent pelvic organs—such as the bladder, bowel, or ureters—may occur, particularly in patients with coexistent deep infiltrating endometriosis (DIE) or extensive pelvic adhesions.
- Entry-related injuries to bowel or vessels are possible, especially in re-operated abdomens; in such cases, safe access via the Jain Point.

Long-Term Risks

- Recurrence of adenomyosis or uterine rupture during a future pregnancy due to compromised myometrial integrity
- Risk is highest if closure is suboptimal or if conception occurs too soon after surgery.
- Careful patient selection, meticulous multilayer myometrial reconstruction, and postoperative counselling regarding delayed conception and planned caesarean delivery are essential preventive measures

New Advancements

Intraoperative ultrasound (IOUS) provides high-resolution cross-sectional imaging of the uterus, enabling accurate localization of lesions, depth assessment, and marking of optimal incision sites.

HIFU

For patients unwilling or unsuitable for surgery, non-invasive modalities such as high-intensity focused ultrasound (HIFU) and magnetic resonance-guided focused ultrasound (MRgFUS) offer alternatives, though their effectiveness in long-term symptom control and fertility preservation is still under evaluation

Conclusion

- Laparoscopic adenomyomectomy is a pivotal advancement in the conservative management of adenomyosis,
- Durable symptom relief and fertility preservation
- Technically demanding
- Enables superior visualization, precise excision, and layered uterine reconstruction
- Ongoing innovation and long-term outcome studies remain essential to standardize techniques, broaden indications, and optimize reproductive results in this challenging patient population.

Thank you!

EXTRA

Accessory Cavitated Uterine Mass (ACUM), Adenomyoma, and Juvenile Cystic Adenomyoma (JCA): Diagnostic Challenges and Management

- Accessory cavitated uterine mass (ACUM), adenomyoma, and juvenile cystic adenomyoma (JCA) represent distinct gynecologic conditions that often mimic one another clinically, thereby creating diagnostic dilemmas. ACUM is a rare congenital Müllerian anomaly characterized by the presence of an accessory cavity lined with functional endometrium, usually situated near the insertion of the round ligament. In contrast, adenomyoma is an acquired, localized form of adenomyosis, while JCA represents a cystic variant of adenomyosis that typically manifests in young women soon after menarche.
- The clinical features of these entities vary according to their pathogenesis. Patients with ACUM usually present with severe dysmenorrhea and cyclical pelvic pain beginning early in reproductive life, caused by the accumulation of blood within the accessory cavity.

- Adenomyoma or adenomyosis, on the other hand, tends to present later with menorrhagia, chronic pelvic pain, and infertility, and the uterus may appear bulky or asymmetrically enlarged on examination. JCA presents in younger women, most often below the age of 30, with severe and refractory dysmenorrhea and pelvic pain that is unresponsive to medical therapy.
- Imaging plays a crucial role in differentiating these conditions. ACUM typically appears on ultrasound or MRI as a well-circumscribed intramural cystic lesion with hemorrhagic contents, located close to the round ligament, and hysteroscopy reveals a normal uterine cavity with bilateral ostia. Adenomyoma appears as a solitary intramural lesion, often difficult to distinguish from leiomyoma, with ultrasound demonstrating myometrial heterogeneity and the classic “venetian blind” shadowing. MRI in adenomyosis shows ill-defined lesions with a thickened junctional zone.

Accessory Cavitated Uterine Mass (ACUM)

- **Origin:** Congenital Müllerian anomaly
- **Pathology:** Accessory cavity lined with functional endometrium
- **Location:** Near round ligament insertion
- **Age of Onset:** Early reproductive life, soon after menarche
- **Uterine Cavity:** Normal on hysteroscopy with bilateral ostia
- **Symptoms:** Severe dysmenorrhea, cyclical pelvic pain
- **Imaging:** Well-circumscribed intramural cyst with hemorrhagic contents

Barbed Sutures

- Barbed sutures are specialized surgical threads with microscopic barbs along their length that anchor into tissue,
- allowing continuous wound closure without the need for knot tying.
- uniform tension distribution
- secure tissue approximation, and reduced operative time,
- minimizing the need for an assistant to maintain tension.
- Unidirectional and bidirectional forms
- improve efficiency and hemostasis in myometrial closure
- careful handling to avoid excessive tension and to ensure all exposed ends are buried, reducing the risk of adhesion formation.
- RISK: subacute intestinal obstruction

Temporary Occlusion

- These temporary occlusion techniques are particularly beneficial in large or deeply infiltrative adenomyosis, as they reduce blood loss, improve operative field clarity, shorten operative time, and avoid the need for transfusion—all while maintaining future fertility blood flow. This provides effective intraoperative hemostasis, facilitate meticulous adenomyoma excision, and ensure restoration of normal uterine perfusion once the procedure is completed.

Literature

- Laparoscopic adenomyomectomy has demonstrated significant improvement in pain symptoms and menstrual regularity, with reported pregnancy rates of 40–60% in patients with focal disease[31]. Outcomes are less predictable in diffuse adenomyosis due to residual disease, and elective cesarean delivery is generally advised to minimize the risk of uterine rupture.
- Chu et al. (2024) showed that laparoscopic adenomyomectomy offers superior long-term relief of dysmenorrhea and menorrhagia compared to medical or minimally invasive alternatives, and is associated with the highest spontaneous conception and live birth rates, particularly when multilayer uterine closure is performed [32]. Similarly, Moawad et al. (2024)[33] emphasized that conservative surgery, with or without adjunctive medical therapy, enhances fertility and perinatal outcomes, though the risk of rupture remains and standardized surgical protocols are lacking .
- These findings are supported by Ji et al. and Kwack et al., who reported postoperative pregnancy rates of 50–70% with optimal uterine reconstruction [34,35]. Isolated case reports also describe successful twin gestations and term deliveries following diffuse adenomyosis resection, highlighting the potential of precise surgical techniques in preserving reproductive outcomes[36]

- We can do microwave ablation or HIFU (high intensity focused ultrasound). 99% radiologic and 95% clinical success
- If diffuse then I prefer combination of uterine artery embolization plus microwave of bulky posterior aspect. 86-90% clinical success in terms of bleeding or pain.
- Case selection is important but overall decent results

Here’s a concise, evidence-based adenomyosis/focal adenomyomas—organized by modality and anchored to recent reviews, cohorts and meta-analyses.

Uterine Artery Embolization (UAE)

- Symptom control & durability: Across systematic reviews and contemporary series, overall symptom improvement typically ranges ~75–90% short-term, with durable benefit in ~70–85% beyond 1–3 years; outcomes tend to be better in mixed fibroid + adenomyosis than in pure/diffuse disease.

- A 2023 CVIR Endovascular review pooled short-term improvement 89.6% (pure) and 94.3% (mixed); long-term 74% (pure) and 84.5% (mixed).

- Quality of life / re-intervention: UAE improves bleeding, dysmenorrhea and bulk symptoms; reintervention for recurrence/progression is reported in roughly 10–30% over 2–5+ years (varies by diffuse vs focal disease and endpoints used). Technique (particle size, embolization endpoint) appears to influence efficacy.

Uterine Artery Embolization (UAE)

- Recent real-world data. 2024–25 cohorts report high symptom relief and hysterectomy avoidance (e.g., 88% satisfaction; 94% hysterectomy avoidance in a post-ablation failure cohort; in mixed disease >89% improvement across bleeding/pain/bulk).

- Fertility: Data remain limited and heterogeneous; pregnancies do occur post-UAE, but evidence quality is lower than for surgical excision in focal disease. UAE isn’t a first-choice fertility treatment but can be considered case-by-case.

High-Intensity Focused Ultrasound (HIFU; MR-guided or US-guided)

- Symptom/lesion response. HIFU reduces dysmenorrhea and bleeding and shrinks lesions; clinical benefit correlates with non-perfused volume ratio (NPVR)—NPVR ≥80% associates with <15% 5-year reintervention. Some series show higher long-term reintervention when NPVR is low.
- Fertility outcomes. The 2024 meta-analysis of 10 studies (n=557) reported pooled pregnancy rate 53.4% and live birth rate 35.2% after HIFU in women desiring conception (heterogeneous/low-certainty evidence).
- Long-term durability: A 2024 US-guided HIFU cohort reported cumulative reintervention ~10% at 3 years and ~22% at 10 years; durability improves with higher NPVR and in focal disease.
- Combination therapy: Network/meta-analyses suggest HIFU + progestin or GnRH-a may yield greater uterine/lesion shrinkage and lower recurrence than HIFU alone.

Thermal Ablation of Adenomyosis/Adenomyomas (RFA & PMWA; including transcervical RFA)

- Radiofrequency ablation (RFA). Focused reviews report substantial pain improvement; one 2023 synthesis found ~63% mean reduction in dysmenorrhea scores at 12 months after RFA for adenomyosis , with sparse but favorable data on bleeding and volume reduction. Early transcervical RFA series for focal adenomyomas show symptom improvement and lesion shrinkage.

Thermal Ablation of Adenomyosis/Adenomyomas (RFA & PMWA; including transcervical RFA)

- Percutaneous microwave ablation (PMWA): Single-center series show high clinical success (~80–100% symptom relief) and meaningful volume reduction; technique refinements (e.g., chilled intrauterine saline) can reduce endometrial injury on MRI. Risk-factor work highlights predictors of recurrence after PMWA.
- Comparative signal vs HIFU. 2024–25 reviews comparing ablation technologies suggest greater mean volume reduction and higher NPVR with PMWA/RFA than HIFU in adenomyosis cohorts, albeit across heterogeneous studies and without head-to-head RCTs

Practical selection (clinician-to-clinician)

- Focal adenomyomas (well-circumscribed, ≤4–6 cm, junctional zone thickening localized): Consider RFA or PMWA (percutaneous or transcervical) for targeted cytoreduction and robust dysmenorrhea relief; HIFU is reasonable if acoustic window is favorable and high NPVR is achievable.

- Diffuse adenomyosis or mixed fibroid+adenomyosis with heavy bleeding: UAE offers global devascularization and strong bleeding control with good hysterectomy-avoidance; expect somewhat higher reintervention risk in pure/diffuse disease. HIFU is an option when NPVR targets are achievable; consider combined HIFU+hormonal therapy for durability.

- Fertility desire: Evidence is most developed for HIFU (pregnancy ~53%, live birth ~35% in low-certainty data). UAE and thermal ablation have emerging but limited fertility evidence—use individualized counseling with reproductive specialists.

- Technique notes: For UAE, endpoint selection and particle strategy matter; for HIFU, plan to achieve NPVR ≥80%; for PMWA, intrauterine cooling can protect endometrium

Key sources you can cite in presentations/notes :

- UAE in adenomyosis—overview & outcomes: Mailli et al., CVIR Endovasc 2023; Mitranovici et al., J Clin Med 2025; Caridi et al., JVIR 2022; recent mixed-disease cohort JVIR 2025; embolization endpoints study 2025.

- HIFU—fertility & durability: Chen et al., Best Pract Res Clin Obstet Gynaecol 2024 (pregnancy/live birth); long-term USgHIFU reintervention to 10 yrs; NPVR≥80% as a technical success target; adjunct hormone network/meta-analyses.

- Thermal ablation (RFA/PMWA): Dedes et al., 2023 review; Guan et al., 2024 PMWA risk-factors (clinical success ≈82% significant + 18% partial); intrauterine chilled saline RCT-style safety refinement; transcervical RFA case series/review; comparative technology reviews showing larger volume reduction vs HIFU.