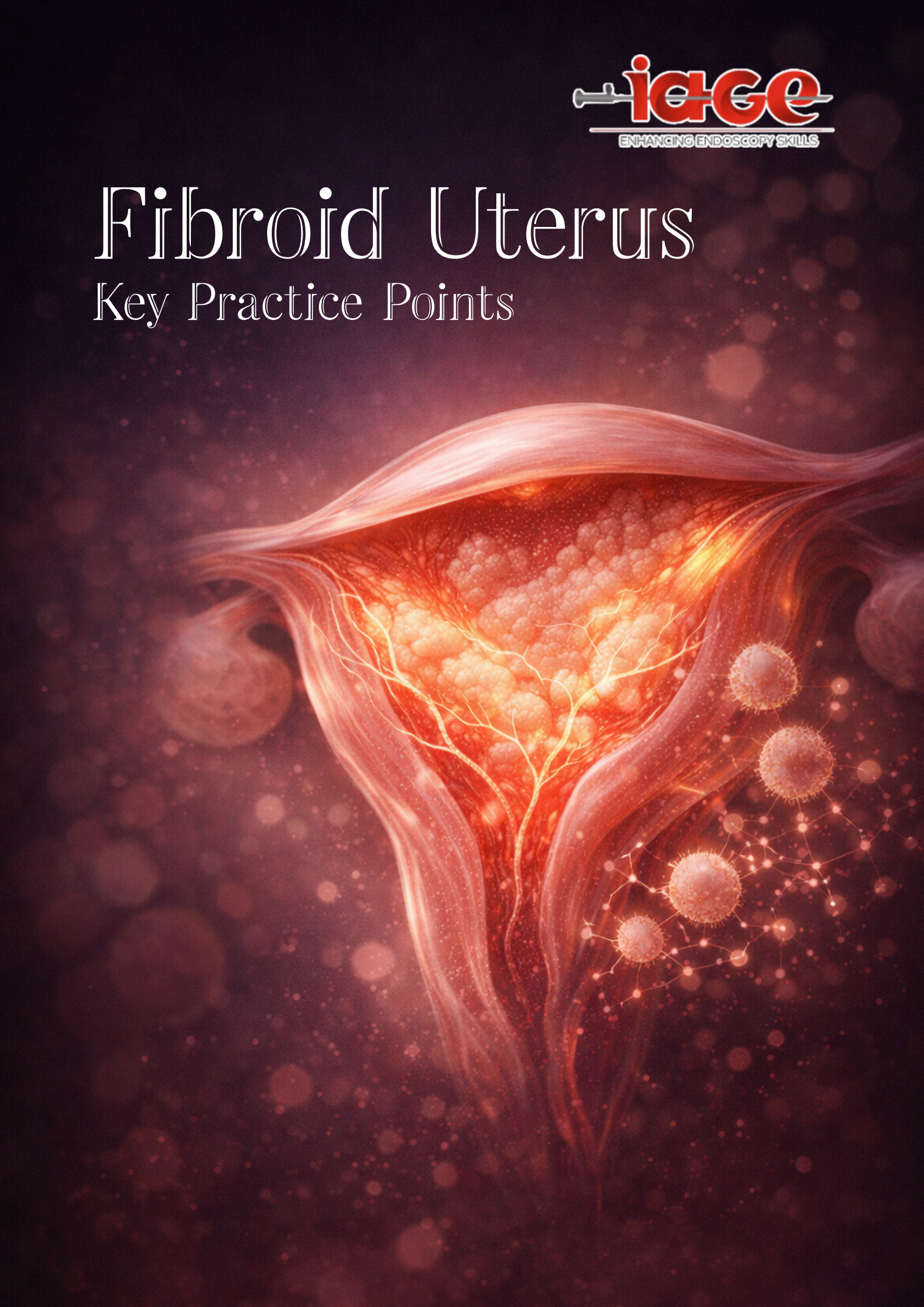
iage
ENHANCING ENDOSCOPY SKILLS

Fibroid Uterus

Key Practice Points



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President & Secretary's Message

Greetings from Team IAGE,

It is our pleasure and privilege to present before you the Good Practice Points for the management of common problems in gynaecology.

Gynaecological conditions are often complex and varied in their presentation, with significant variability in patient response to treatment. These guidelines have been developed to support clinicians in delivering consistent, evidence-based, and patient-centered care in their day-to-day practice.

We extend our sincere congratulations to everyone who has contributed to the development of these guidelines. Your dedication and expertise have been invaluable in shaping this important work. We would like to especially acknowledge Dr. Bhaskar Pal for the tremendous effort and diligence invested in this initiative, as well as Dr. Atul Ghanatra for his leadership during whose tenure this work was accomplished.

We also express my heartfelt gratitude to IAGE for providing us with this opportunity to contribute towards advancing clinical practice and improving patient outcomes in gynaecological care.

Thank you.

Best wishes
Dr Sudha Tandon
President IAGE
(2026-2027)

Best wishes
Dr Vidya Bhat
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1.1 Background:

Fibroid or Uterine leiomyomas are the most common pelvic neoplasm occurring in females. These are noncancerous monoclonal tumours arising from the smooth muscle cells and fibroblasts of the myometrium of the uterus. Overall prevalence reported is 4.5% - 68.6%. In India, the reported prevalence is 37.65 in rural and 24% in urban areas.

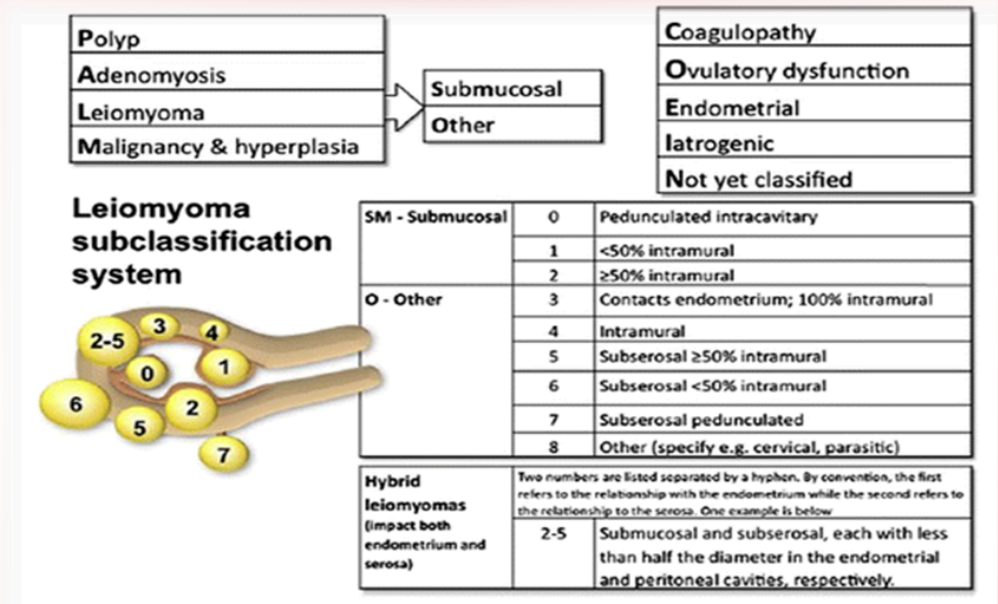
Understanding the epidemiology and pathogenesis of these common tumors is essential. The pathogenesis of uterine leiomyomas includes not only concepts of tumorigenesis but also the mechanisms by which leiomyomas exert their clinical manifestations. In reproductive age group, fibroids may become clinically apparent and can cause significant symptoms in approximately 25% of affected females. The clinician needs to understand how to relate the findings of leiomyomas to the symptoms, if any, experienced by the patient in a fashion that facilitates appropriate counselling.

1.2 Classification:

Many classifications are reported in literature to classify the fibroids into various categories. The most commonly used one is according to the location i.e. submucosal, intramural or subserosal.

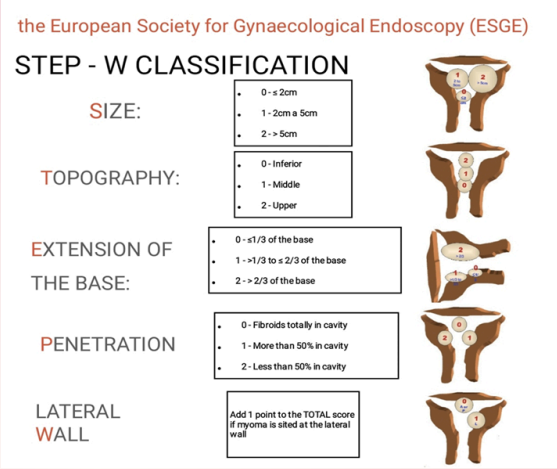
FIGO had recently classify the fibroids as per the location from 0 to 8, '0' being complete intracavitary to '7' is pedunculated and subserosal . Type 8 include cervical fibroid and all other unusually located ones (fig-1)

Figure-1: FIGO system of subclassification of Leiomyoma



Lasmar et al (2005) proposed a subclassification system for fibroid, which is found useful in clinical decision making in complex cases. This is also known as STEP-W classification (Size, Topography, Extension, Penetration, lateral Wall). Fibroid is scored under each of the criteria and the treatment modality can be decided as per the final score.(Figure-2).

Figure-2: ESGE system of subclassification of fibroid



SCORE	GROUP	COMPLEXITY AND THERAPEUTIC OPTIONS
0 TO 4	I	LOW COMPLEXITY HYSTEROSCOPIC MYOMECTOMY
5 TO 6	II	HIGH COMPLEXITY HYSTEROSCOPIC MYOMECTOMY
7 TO 9	III	CONSIDER ALTERNATIVES TO HYSTEROSCOPY

Lasmar et al, Journal of Minimally Invasive Gynecology (2005) 12, 308-311

FIGO and ESGE systems should be used for the classification of fibroids and pre-surgical scoring should be considered for selected clinical situations, where complex surgical procedures are anticipated. Type-2 fibroids need to be classified further depending upon the involvement of myometrium

1.3 Risk factors:

1. Age related Risks- The prevalence of leiomyomas increases with age until menopause, regardless of the symptoms. Older age at first birth is linked to lower risk, while longer intervals since the last birth correlate with an increased incidence of leiomyomas (proposed explanation being transient uterine ischemia following delivery, may induce ischemic regression of nascent leiomyomas)
2. Racial Association: The prevalence among Asian, Black women is higher as compared to the whiote counterpart (57% v/s 36%)
3. Early and Late Menarche -women with a menarche age < 10years have higher risks for leiomyoma development versus age > 16years (relative risk of 1.24: 0.68). Early menarche increases the risk while late menarche is protective.
4. Lifestyle, Diet and Environmental factors: Obesity, elevated estrogen level potentially increases risks and growth of fibroid. Dietary choices like red meat, omega 3-fatty acids, alcohol is seen to increase the risk while green vegetables, fruits, vitamin A likely reduces the growth by reducing the expression of estrogen, progesterone receptors (hence, inhibiting the growth response of leiomyoma to progesterone.
5. Hormonal Contraception: Continous Long acting progestins may provide protection against growth and cause reduction in the tumor volume.
6. Familial and Genetic predispositions: More than two frst degree realtives with fibroid increases the risks by 2.2-fold. Inherited mutations of MED12, Fumarate Hydratase, syndromes like Reed syndrome are associated with leiomyoma formation.
7. Pregnancy and Parity: Reproductive history, including parity (inverse co-relation), age at first delivery, and the interval between pregnancies, appears to influence the risk of developing uterine fibroids.

1.4 Clinical features:

Symptoms usually depend upon site, size, location and number of fibroids. These can range from asymptomatic to severe symptoms. The major symptoms are-

M: Menstrual, Mass
A: Anemia
P: Pregnancy (Infertility, obstetric related),
Pressure,
Pain
Others: Endocrine effects (very rare) –

- Polycythemia from autonomous production of erythropoietin
- Hypercalcemia from autonomous production of parathyroid hormone-related protein
- Hyperprolactinemia

1.5 Quality of Life:

Symptomatic fibroids substantially diminish a patient's quality of life and productivity. The Uterine Fibroid Symptom and Health-Related Quality of Life Questionnaire (UFS-QoL) is a disease-specific validated tool that effectively evaluates the impact of fibroids. It comprises two parts:
(1) Symptom severity score evaluating bulk and pain symptoms, menstrual bleeding, and fatigue, with a score of 0–100, where higher scores mean increased fibroid burden; (2) Health-related quality of life (score of 0–100) that evaluates domains such as concern, activity, energy/mood, control, self-consciousness, and sexual function, where a higher score is indicative of a better quality of life.
A thorough evaluation is done clinically and is co-related with Imaging.

1.6 Pregnancy and Myomectomy:

Pregnancies in patients with fibroids are generally uncomplicated. Complications tend to arise when there are multiple fibroids, when they are larger than 5 cm, or when they are located in the lower uterine segment. Conservative treatment is the preferred approach for managing symptomatic fibroids. Myomectomy is not routinely performed during pregnancy.
Indications for myomectomy during pregnancy:

- Symptoms persist after 72 hours of conservative management
- Torsion of a pedunculated fibroid
- Severe compression of other pelvic organs by large myomas
- Rapid growth potentially hiding malignancy

1.7 Diagnostic evaluation:

Imaging:

- TAS should be the first imaging modality, combined with TVS as needed.
- 3- D USG with power doppler (for diagnostic accuracy, junctional zone)
- SIS/SSG is useful for cavity assessment.(inproves contrast between myometrium, fibroid and cavity)[s/e- pain, invasive, infection]

- Hysteroscopy: office hysteroscopy to assess the number, size, location, protrusion in the cavity and relationship with the uterine stucture)

MRI

- Should be reserved for cases of-
- multiple fibroids
- Retroperitoneal/ broad ligament fibroid
- To differentiate adenomyosis and fibroid
- Suspicion of leiomyosarcoma

We recommend reporting the width of the inner free margin (IFM) for Types 4 and 5 fibroids and the outer free margin (OFM) for Types 2, 3, and 4 fibroids due to the impact on technique and the risk of surgical and ablative procedures. Atypical signal patterns on MRI are possible; for example, in cellular fibroids (T2-hyperintense) as well as in degenerated fibroids, depending on the type of degeneration (hyaline, cystic/hydropic, red/hemorrhagic/ carneous, apoplectic, myxoid, fatty). Ultrasound should be the first-line diagnostic modality, and magnetic resonance imaging should be reserved for complex cases and/or surgical planning.

Other investigations:

- Rule out Pregnancy
- CBC
- Endometrial sampling and pap's smear to rule out malignancy, if indicated

Appropriate use of imaging techniques to ascertain the diagnosis. TAS combined with TVS is a optimal modality for average size myoma. 3- D power doppler should be used in combination. SIS can be used for cavity assessment. When fertility preserving surgery is contemplated, proper fibroid mapping is warranted , which include the location of fibroids, their number, extension and size. In certain number of cases, MRI can be used reasonably especially when there is doubt regarding focal adenomyosis.

1.8 Treatment modalities:

As per the existing knowledge treatment can be expectant, medical or surgical methods. The recent treatment and the controversial ones will be dealt in detail.

- Determinants of treatment modality:
- Age of the patient
- Symptomatology
- Desire of pregnancy
- Desire of retaining uterus
- Absolute size of uterus
- Availability of therapy
- Experience of therapist
- Shared decision making

1. Expectant management:

Role of expectant management

Available data primarily come from the comparator arm of active treatment trials, typically only been studied for a duration of up to six to 12 months.

Candidates

- Asymptomatic patients
- Attempting pregnancy
- In an asymptomatic patient desiring pregnancy, fibroid >7 cm need to be removed
- lesion stable in serial imaging studies for one year
- Peri- or postmenopausal

Components of expectant management

- Periodic evaluation (usually annual) of the patient for new symptoms
- To contact their clinicians if new pelvic symptoms develop.
- Not appropriate if anaemia worsens or transfusion is required or if imaging raises suspicion for uterine sarcoma.

2. Medical management:

involves use of non-hormonal or hormonal therapies for uterine fibroids as also for controlling uterine bleeding. Estrogen upregulation of both estrogen receptors (ERs) and progesterone receptors (PRs) during follicular phase and progesterone induces mitogenesis during the luteal phase. Given the decline in systemic estradiol and, especially, progesterone, which is considered critical for fibroid growth, following menopause, the volume of leiomyomas is expected to decrease.

Medical management

- NSAID's (nonsteroidal anti-inflammatory drugs) and tranexamic acid
- Combined oral contraception
- The LNG releasing intrauterine system
- Progestins
- Gonadotropin-releasing hormone agonists

SPRMs:

- Progesterone receptor ligands - agonist, antagonist, partial, or mixed effects on progesterone target tissues.
- SPRMs such as ulipristal acetate (UPA), mifepristone, asoprisnil, and telapristone acetate have been investigated in various trials
- All decrease leiomyoma size and reduce uterine bleeding in a dose dependent manner.

Ulipristal acetate (UPA)

- An orally active synthetic SPRM, has a tissue-specific partial progesterone antagonist effect
- Recommended for those who are not eligible for surgery, for example where the risks of surgery outweigh the benefits or where the woman declines surgical treatment.
- Though rare, risk of acute liver injury should be explained

Every three monthly assessment with LFT pre- therapy, every three monthly on therapy and post- therapy only in patients in which surgery is not the option.
An informed and shared decision with the patient should be made.

Mifepristone (25 mg OD/BD; 3-6 months) decrease HMB and fibroid volume.

3. Surgical Management:

Determinants:
Age, symptoms, fertility, desire to retain the uterus

Myomectomy:

- Myomectomy is the option for women who wish to preserve their uterus. It may enhance fertility and benefit heavy menstrual bleeding, pelvic pain and/or pressure and reproductive issues.
- Though, there is no supporting evidence, removal of intramural fibroid have increased fertility potential
- Hysteroscopic Myomectomy: First-line conservative surgical therapy for the management of symptomatic intracavitary fibroids.
- For type-2 fibroids: touching both walls simultaneous or > 5 cms bulge, Laparoscopic removal should be considered
- < 5 cm can be dealt with hysteroscopically
- In any circumstances, combined hysteroscopic and laparoscopic removal should be avoided
- Laparoscopic myomectomy should be preferred over abdominal myomectomy as it is associated with advantages of faster recovery, less blood loss, diminished postoperative pain, fewer overall complications, and cosmetic advantage.
- Self-retaining, knotless sutures should be used
- All intramural and subserosal (FIGO 3-8) fibroids should be dealt by laparoscopic route.
- Pregnancy may be planned 2 months after myomectomy, irrespective of cavity is not opened or not.
- After adeno-myomectomy pregnancy should be attempted after 5-6 months after evaluating scar vascularity with the use of power doppler.

Treatment algorithm in patients who are not desirous of pregnancy

Laparoscopic Myomectomy: Special consideration

1. Consent:

- Other medical, interventional radiology, and surgical options for treatment.
- Potential complications, including conversion to laparotomy, likelihood of recurrence of symptoms and reproductive issues
- Risk of malignancy and risks and benefits of power morcellation.

Measures to reduce blood loss:

- Pre-op GnRH
- Intra-op: Intramyometrial Vassopressin
- Temporary uterine artery ligation

2. Antibiotics:

- Required if bowel or vagina is opened (ACOG)
- Practically, depend upon regional practice

3. Thromboprophylaxis:

- Obese patient,
- prolonged surgery
- at risk for venous thromboembolism and require appropriate thromboprophylaxis
- Thromboprophylaxis is a special concern especially in post- COVID era

4. **Morcellation: the greatest concern of laparoscopic surgeons**

- There are growing concerns regarding morcellation because of the chance of dissemination of undiagnosed malignancy and disseminated peritoneal leiomyomatosis.
- It must be stressed that leiomyosarcomas are rare and there are no accurate methods to diagnose them.
- The current recommendation is to discuss the benefits and risks of morcellation with the woman and perform contained morcellation where ever possible
- Morcellation should be used judiciously used in perimenopausal women and in cases with a high index of suspicion

- **An explained informed consent and shared decision making with the patient regarding morcellation.**
- **Malignancy in high risk patients should be reasonably rule out before surgery.**
- **If any slightest doubt of malignancy, any attempt of morcellation should not be made**
- **All surgeons attempting myomectomy should be well versed with the techniques of contained morcellation and should get proper training for the same.**
- **IAGE do not support open morcellation as spread of malignancy and diffuse leiomyomatosis are the matter of concern.**

1.9 Newer modalities:

Uterine artery embolization (UAE)

Indications

- Symptomatic fibroid with significant symptoms
- No longer desire fertility but want to preserve uterus
- Poor surgical risks

Contraindications

- Severely anemic & require immediate intervention
- Those desiring fertility
- Asymptomatic
- Pregnancy

- Pedunculated leiomyoma, adenomyosis, undiagnosed pelvic mass
- Active genitourinary infection
- Genital tract malignancy
- Severe coagulopathy
- Impaired RFT
- Contrast allergy
- Reduced immune status
- To avoid hysterectomy- absolute contraindication

1.10 COMPLICATIONS

- Post embolization syndrome- 10%-40%- fever, nausea, vomiting; resolves in 1 wk
- Vaginal expulsion of infarcted fibroid; incidence reported 10%
- Groin infection/bleed, renal damage(contrast induced), sexual dysfunction, gluteal muscle pain, sciatic nerve effects, ovarian sequalae
- Chronic vaginal discharge d/t retention to necrotic fibroid tissue
- Intrauterine infection <1% of procedures ; can lead to sepsis and need for emergency hysterectomy
- Treatment failure (Recurrence of new fibroid, regrowth of incompletely infarcted fibroid, technical failure, large size & numbers, prior fibroid surgery, coexisting pelvic disease)
- Transient/permanent amenorrhoea
- Risk of ovarian failure

Summary:

- Excellent treatment option for women with symptomatic fibroids who no longer desire fertility but want to avoid surgery
- Appropriate pre-procedure selection & careful follow up is a must
- UAE offers advantage over hysterectomy in terms of shorter hospital stay & quicker return to activities
- No evidence of benefit over surgery for satisfaction

Hysteroscopic morcellation:

- This is the latest technology to deal with submucous fibroids with lesser anticipated complications in the form of thermal injury, endometrial damage and intrauterine adhesions.
- Since, the technique is new and looks promising, but long term data is awaited.
- Procedure should be undertaken by the expert hands in a well-informed patient.

1.11 Emerging diagnostic modalities

While traditional imaging modalities such as ultrasound and MRI remain central in fibroid diagnosis, emerging modalities show promise in advanced fibroid diagnosis. Contrast-enhanced ultrasound (CEUS) uses intravenously injected microbubbles to enhance the vascularity of the myometrium. This technique can allow for evaluation of fibroid vascular patterns that can help distinguish sarcomas.

Ultrasound-based elastography techniques, such as strain elastography and shear wave elastography, can evaluate fibroid stiffness in relation to the surrounding myometrium. This experimental technique may assist with the diagnosis of adenomyosis and have the potential to guide and monitor treatment.

1.12 Unmet needs still to be addressed:

1. Diagnosis & prevention:

- Provider's education-The general practioneer should be sensitized to detect anaemia earlier and ask for menstrual history, if a female patient presents with anaemia to them. They can definitely help in early diagnosis and intervention resulting in lesser morbidity.
- Stress, hypertension, consumption of alcohol should be eliminated, if present.
- Vitamin D supplementation can be a protective factor in the development of fibroid.

2. Management issues:

Although, mane conservative medical and non-surgical methods are discussed and can be used. Patient should be counselled regarding possibility of sub-optimal response, recurrence of symptoms after stopping the treatment and need for surgery later in life, if these things remain unexplained, patient may have unrealistic expectations, financial burden, dissatisfaction and emotional trauma arising out of changing therapy.

3. Financial issues:

Many of the newer modalities of treatment like LNG-IUS, UAE and MRg FUS are not covered under medical insurance, resulting in more patients opting for surgical methods, despite being fit for conservative treatment. Professional bodies like IAGE and FOGSI should raise this matter with the stakeholders for appropriate decision.

Research gap:

- Most of the medical and conservative methods studied with placebo control arm, data comparing two treatment modalities are sparse. IAGE and the researchers should join hands to fill this gap
- A more robust classification system including patient's symptoms severity, fibroid specification, heterogenicity is required to help in management decision.
- Food and Drug Administration (FDA) has recently approved the use of the first oral gonadotropin-releasing hormone antagonist coupled with estradiol and norethindrone for the treatment of fibroids, which has shown to effectively reduce the blood loss in menstruation. This can be studied as a potential medical therapy.

Conclusion:

Fibroid is a common gynaecological problem encountered in day-to-day practice. Despite availability of so many treatment modalities, at times, optimum treatment cannot be provided. There is an unmet need to develop newer non-hormonal treatment modalities to decrease the number of hysterectomies being done for small fibroids.

A huge scope of research is present in this arena. Patient's counselling and education, provider's training and policy changes are needed to manage symptomatic fibroid disease in a better and more coherent way.

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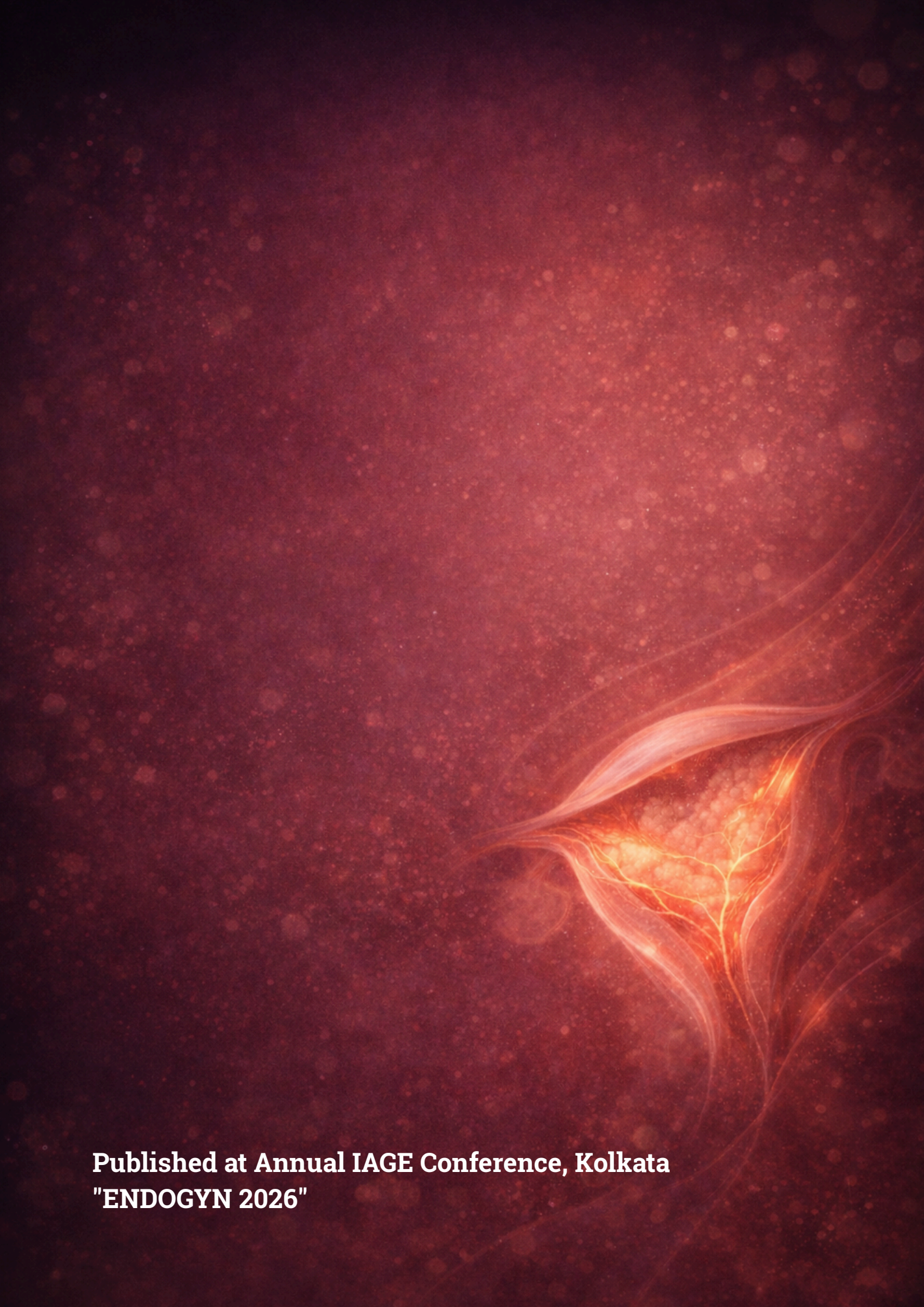

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