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Awards

Distinguished Doctor Award by Delhi Medical Association Mar. 2023 & 2025
IVF Excellence Awards 2024 of OB-GYN of the year-North by Voice of Healthcare
Most Influential & Inspiring Women's Leader in Health Care - Medgate Today Magazine Mar. 2022
Icon of the year (IVF Specialist) North – Economic Times Feb. 2022
Gaurav Samman & Woman Icon Award 2018
Recipient of Dr. Kamak Goel IMA award 2016

International

ADENOMYOSIS
&
INFERTILITY

Definition

Adenomyosis is a benign uterine pathology,

characterized by the presence of endometrial glands and stroma within the myometrium, leading to hypertrophy and hyperplasia of the smooth muscle cells of the myometrium itself.

Epidemiology

- **Incidence :**
- 16–60 years: 1%.
- Highest for women aged 40–45 years,
- Early 40s : symptomatic adenomyosis.
- Coexistence of endometriosis and fibroids: 18% and 47%, respectively.
- 82% of women requiring hysterectomy and 38% using chronic pain medications.

Risk factors

- age>40 years
- Increased Parity
- Early Menarche
- Previous Miscarriage,Curettage, uterine surgery : caesarean section, myomectomy etc.
- Tamoxifen treatment
- OC Pills use
- short menstrual cycles, elevated BMI
- Low risk- in smokers.

Key Theories of Adenomyosis Development

1. **Invagination (Tissue Injury and Repair):**

d

- Endometrial epithelium, instead of being completely expelled, may infiltrate the myometrium due to an alteration in tissue repair mechanisms and regulation of the inflammatory response,like in cesarean sections or dilation and curettage.
- Alterations in the uterine microenvironment and excessive stimulation by estrogen may favor the survival and proliferation of infiltrating endometrial cells

2. **Metaplasia (Embryonic or Stem Cell Origin**s):

- Develop from displaced embryonic müllerian remnants or the differentiation of adult stem cells within the uterine muscle.

3. **Invasion from Outside to Inside (Ectopic Endometrial Invasion):**

- Endometrial tissue, possibly originating from endometriosis, can invade the myometrium directly, leading to adenomyotic lesions.
- 4.**Hormonal Imbalance:** Estrogen and progesterone receptor dysregulation can influence endometrial cell proliferation and invasion, which may contribute to the development of adenomyosis.

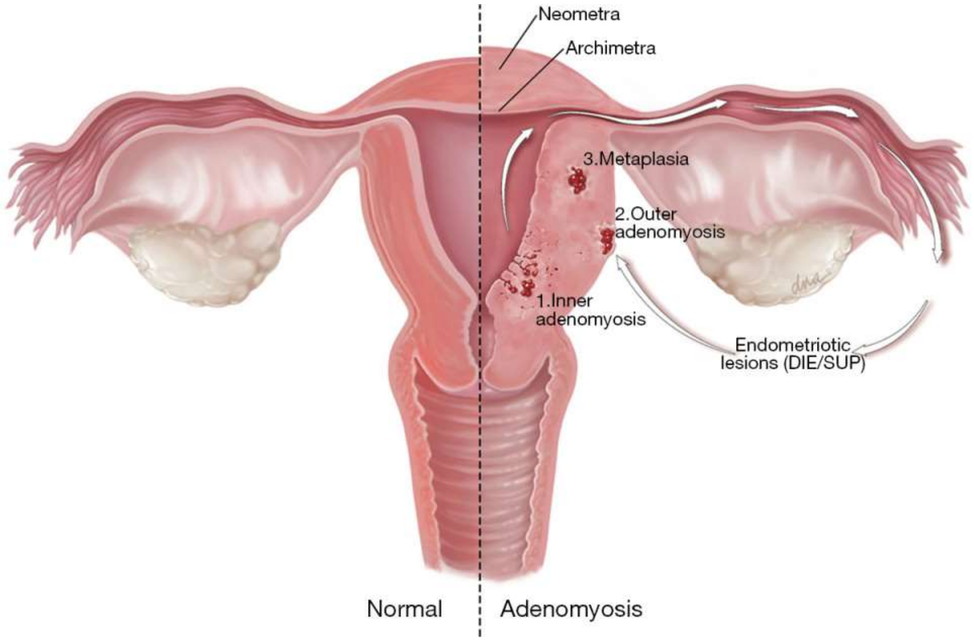
- 5. **Genetic and Epigenetic Factors:** Studies are investigating the role of genetic and epigenetic factors in determining the susceptibility to adenomyosis.

Pathogenesis

- **INNER ADENOMYOSIS :** Invasion of eutopic endometrium into the myometrium.

- **OUTER ADENOMYOSIS:** invasion of ectopic endometrial cells from adjacent endometriosis lesions DIE into the myometrium.

- **INTRAMURAL:** Metaplasia, without involvement of the junctional zone or serosa.



TYPES

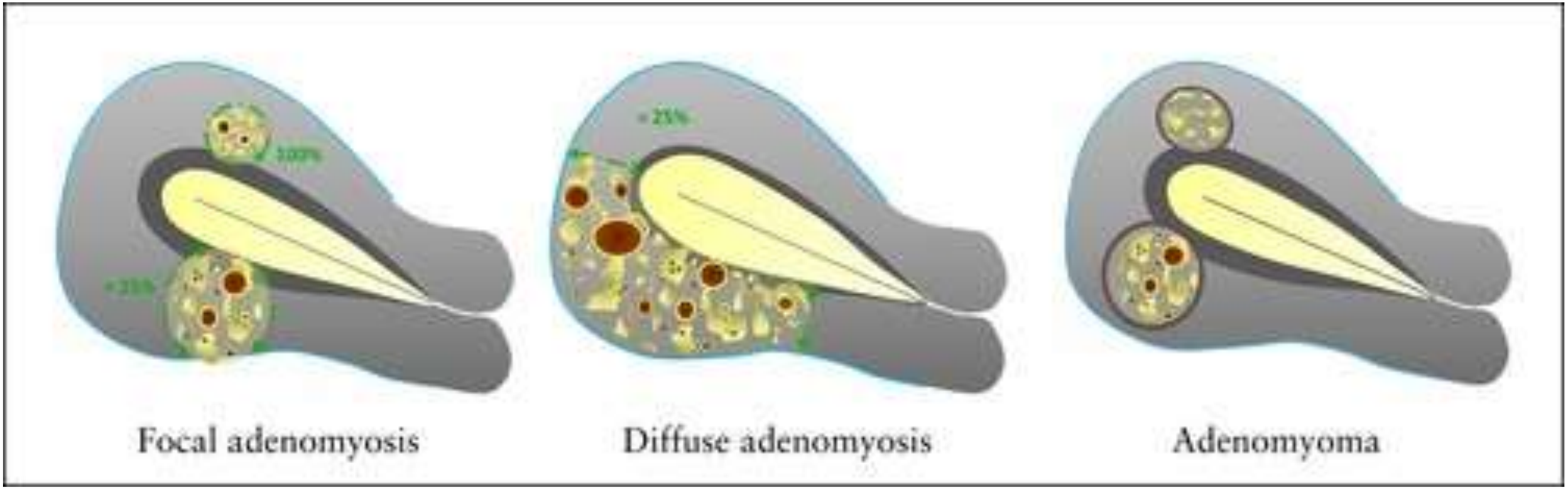
Based on **Distribution**:

1. **FOCAL ADENOMYOSIS:** more than 25% of the circumference of the lesion is surrounded by a healthy myometrium.

2. **DIFFUSE ADENOMYOSIS:** less than 25% of the lesion is surrounded by normal myometrium.

3. **MIXED TYPE ADENOMYOSIS**: If there is both diffuse and focal adenomyosis in different locations in the uterus.

4. **ADENOMYOMA**: When focal adenomyosis is demarcated distinctly and surrounded by hypertrophic myometrium.

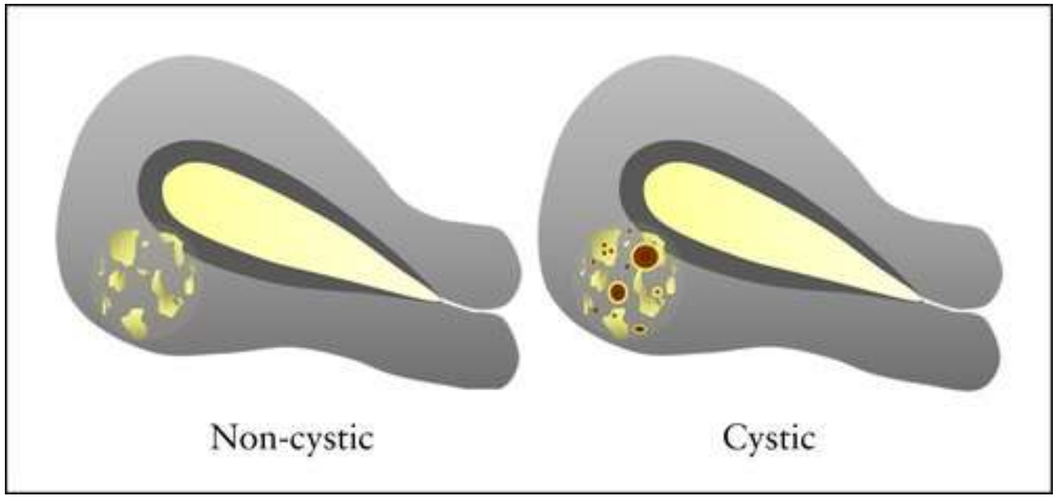

Focal adenomyosis
Diffuse adenomyosis
Adenomyoma

BASED ON **PATTERN**:

CYSTIC Vs NON-CYSTIC:

Adenomyosis is defined as **cystic,** in presence of myometrial cysts with largest diameter ***≥ 2 mm***.

- Cystic fluid is usually anechoic or of low-level echogenicity.
- cysts may be surrounded by an echogenic rim.



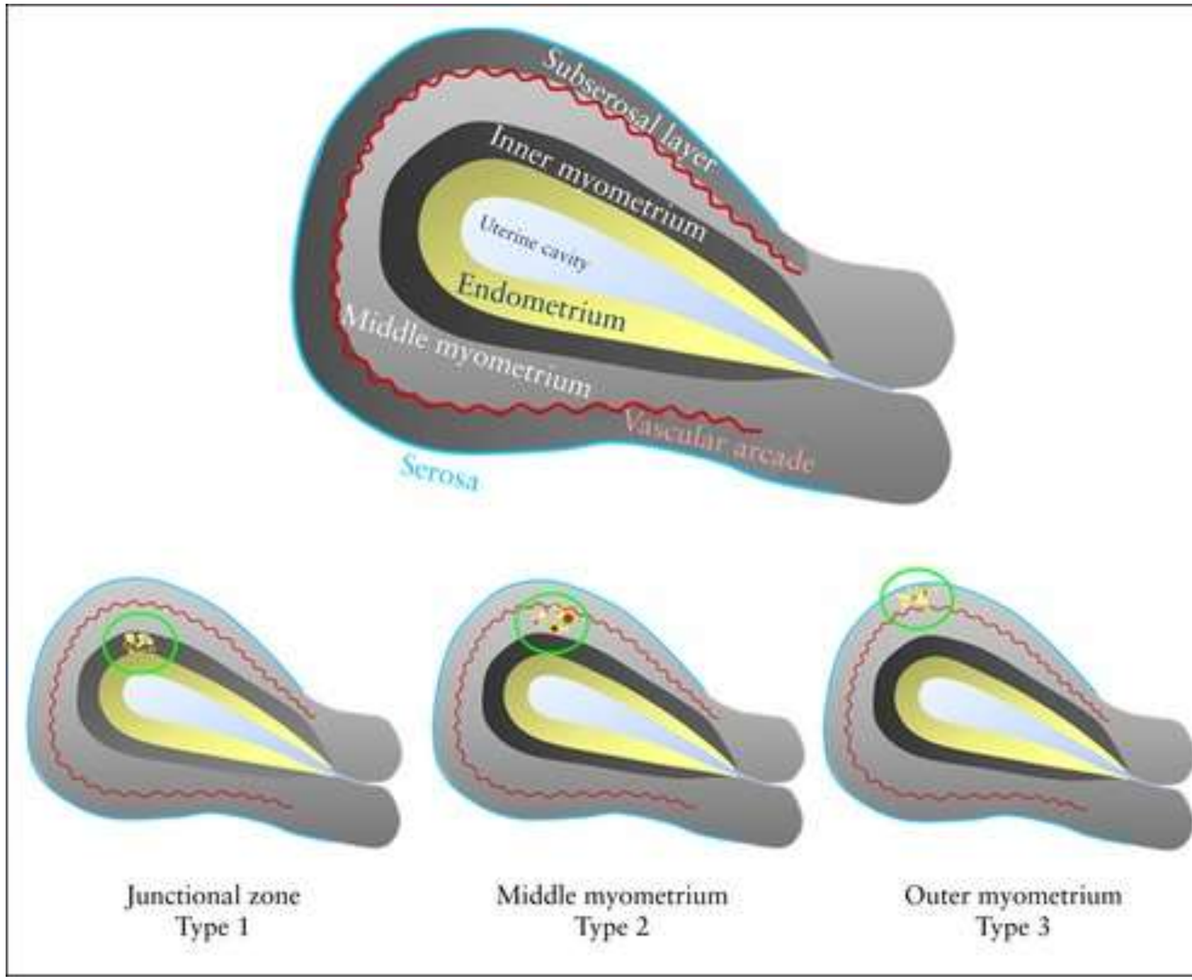
BASED ON **LOCATION**:

1. Junctional zone TYPE 1 :

Involves the junctional zone, the subendometrial myometrium.

2. : Middle myometrium TYPE 2: endometrial implants scattered throughout the myometrium & enlargement of the junctional zone .

3. Outer myometrium TYPE 3: without involvement of the junctional zone or serosa.



Based on **Extent**:

The proportion of the uterine corpus that is affected by adenomyosis, and classified as:

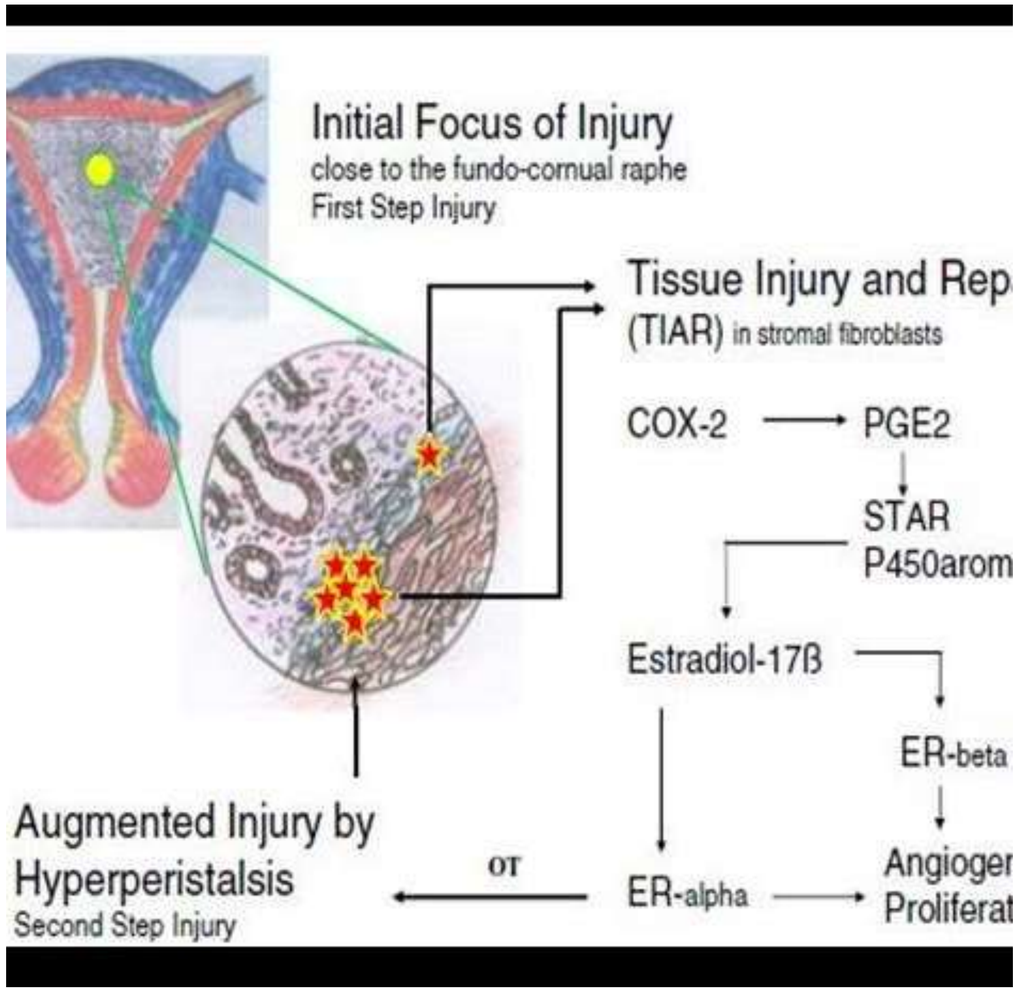
mild (< 25% affected)

moderate (25–50% affected)

severe (> 50% affected).

Current Theories

- **TIAR (** Tissue injury And Repair **)**
- **EMID (** Endometrial-myometrial Interface disruption**)**
- **KRAS** Mutation (PR resistance)



CLINICAL FEATURES

- Asymptomatic
- Chronic pelvic pain
- Dysmenorrhea
- Dyspaerunia
- AUB
- Infertility

DIAGNOSIS

- **Gold standard**: Histopathology of hysterectomy specimen.
- **1st line diagnostic tool :** 2D-TVS (89% sensitivity, 89% specificity)
- **2nd line** : MRI (78% Sensitivity, 93% specificity)

Revised Morphological Uterus Sonographic Assessment (MUSA) features of adenomyosis,2021: *To Standardize Diagnosis*

DIRECT CRITERIA

1. **MYOMETRIAL CYSTS** :

Rounded or oval cystic spaces of any size within the myometrium.

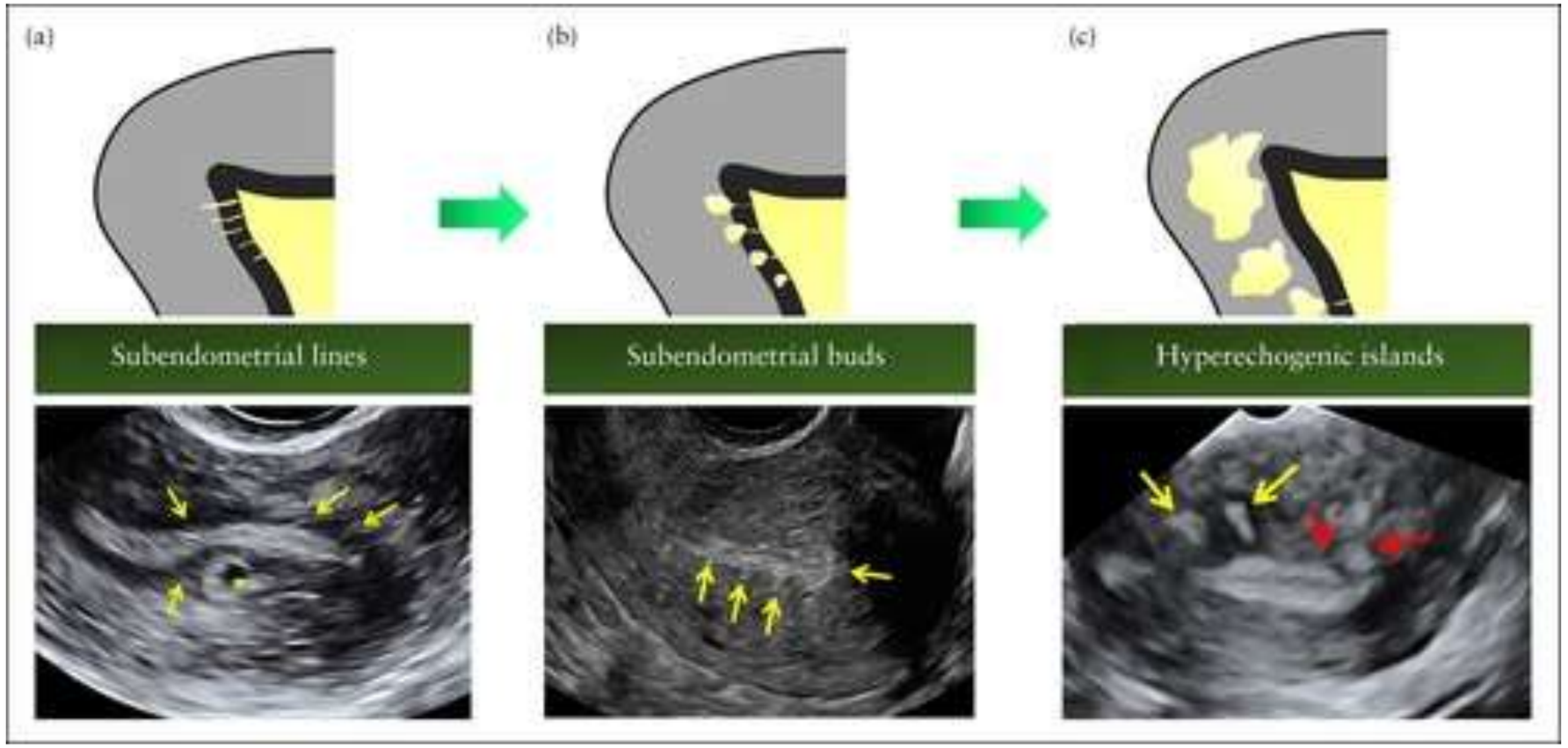
2. **HYPERECHOGENIC ISLANDS**:

Hyperechogenic areas within the myometrium that have no connection with the endometrium (no minimum distance, no minimum number). They may be regular, irregular or ill-defined.

3. **ECHOGENIC SUB-ENDOMETRIAL LINES & BUDS:**

Hyperechogenic subendometrial lines or buds may be observed disrupting the JZ. Hyperechogenic subendometrial lines are (almost) perpendicular to the endometrial cavity and are in continuum with the endometrium.

Myometrial Cysts



INDIRECT CRITERIA

1) GLOBULAR UTERUS :

When the myometrial serosa diverges from the cervix in at least two directions (anterior/posterior/lateral), instead of following a trajectory parallel to the endometrium, and measured diameters (length/width/depth) of the uterine corpus are approximately equal.

2) ASYMMETRICAL MYOMETRIAL THICKENING:

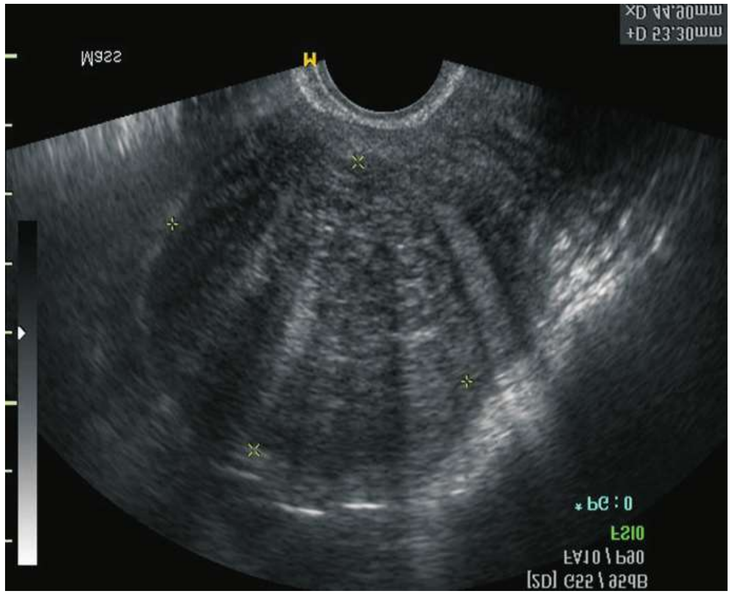
When the difference in thickness between the anterior and the posterior myometrial wall exceeds 5 mm, or when the ratio between the anterior and posterior wall thickness is well above 1 or well below 1.

3) **FAN SHAPED SHADOWING** :

Edge shadows lateral to the lesion might indicate the presence of a fibroid or fibrosis due to a CS scar rather than adenomyosis.
Presence of hypoechogenic stripes behind the myometrial lesion, sometimes alternating with linear hyperechogenic stripes (slight/moderate/strong).

Globular Uterus

Asymmetric wall thickening



Fan shaped shadowing

4) TRANS-LESIONAL VASCULARITY :

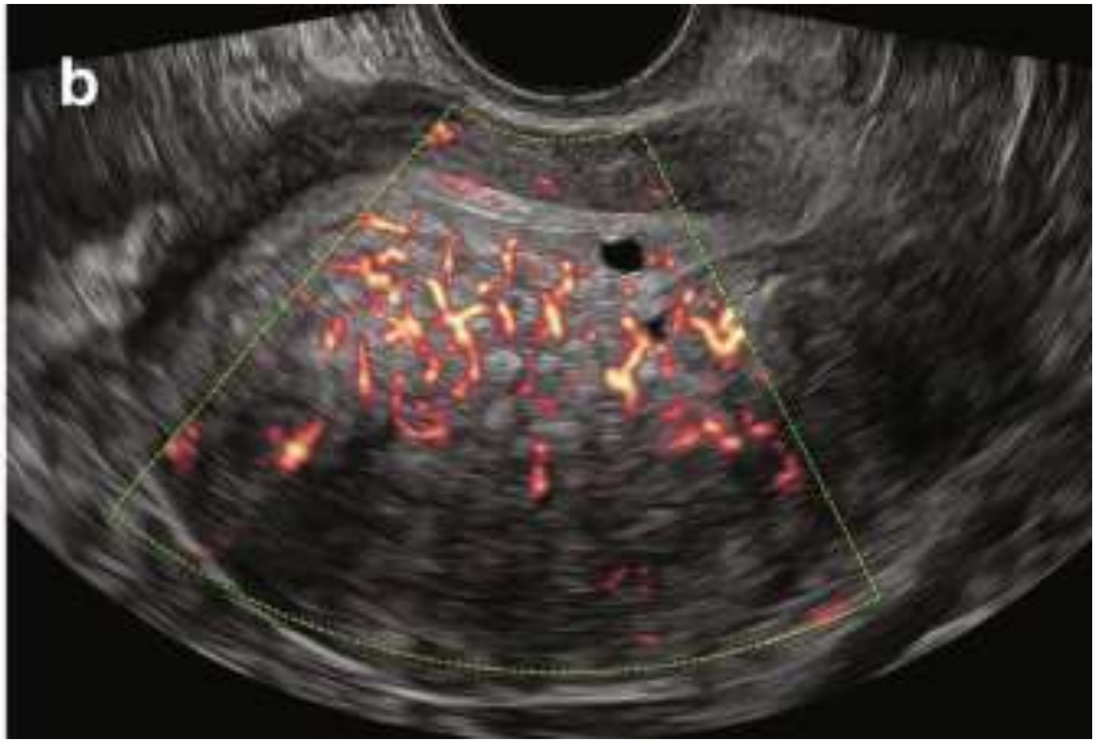
Presence of vessels perpendicular to the uterine cavity/serosa crossing the lesion.

5) **IRREGULAR JZ:**

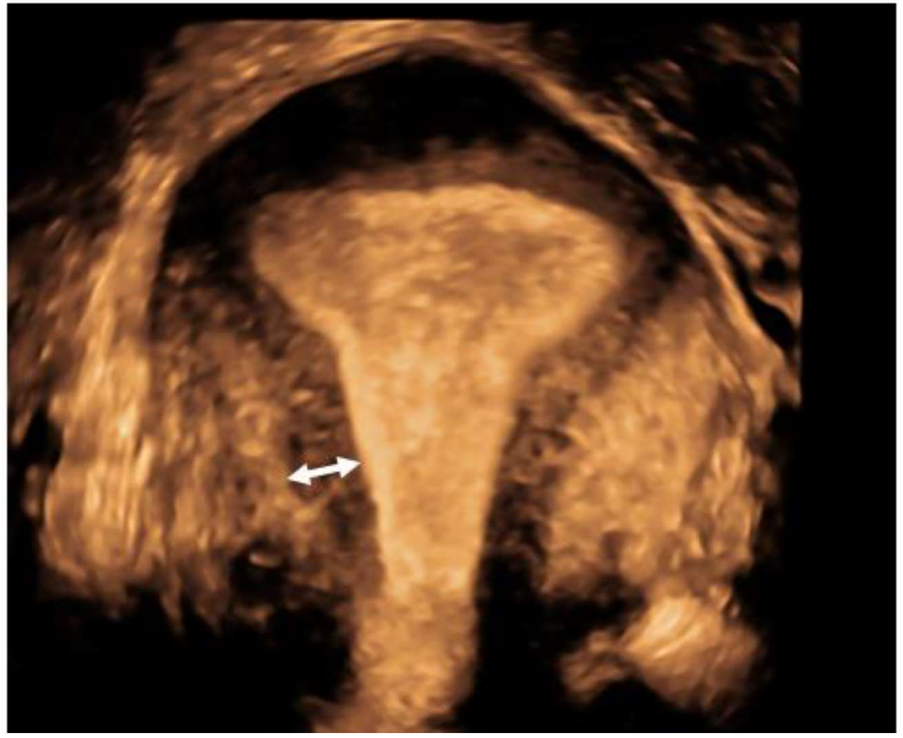
The JZ can be irregular because of cystic areas, hyperechogenic dots, buds and lines. Ultrasound measurement of JZ thickness has currently no role in clinical practice.

6) INTERRUPTED JZ:

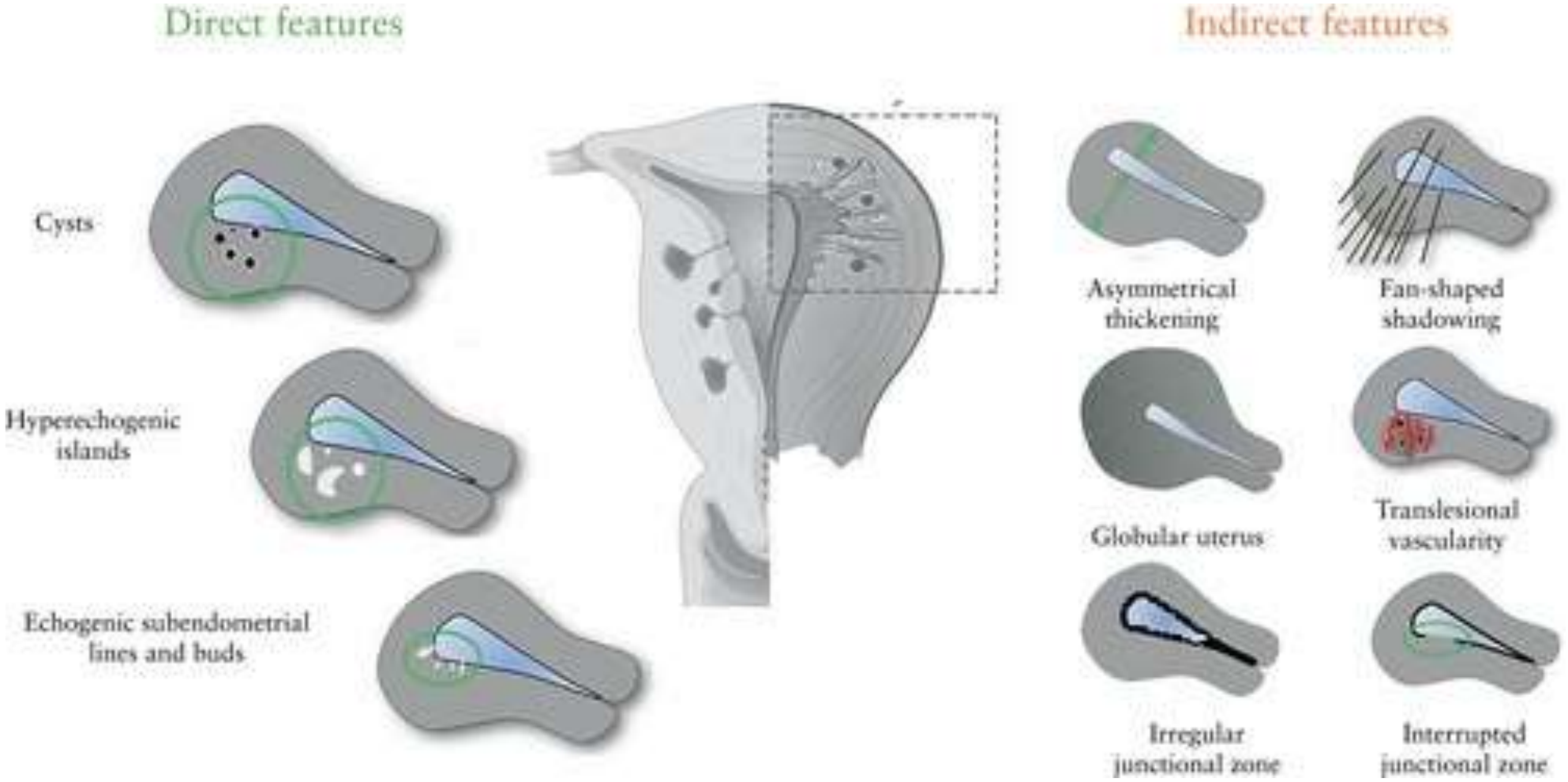
when a proportion of the JZ cannot be visualized on either 2D or 3D transvaginal ultrasound in any plane. An uninterrupted JZ means that the JZ is clearly seen in all planes on 2D or 3D ultrasound.



Trans-lesional vascularity



Irregular JZ in 3D


Direct features
Indirect features
Cysts
Hyperechogenic islands
Echogenic subendometrial lines and buds
Asymmetrical thickening
Fan-shaped shadowing
Globular uterus
Translesional vascularity
Irregular junctional zone
Interrupted junctional zone

Distinction between direct and indirect features

- **Direct features**

A. Diagnostic of Adenomyosis.
B. Rare signs.
C. Indicate presence of ectopic endometrial tissue in the myometrium.

- **Indirect features**:

D. Not diagnostic.
E. Common signs.
F. those that arise as secondary effects of the existence of endometrial tissue in the myometrium.

The consensus emphasizes employing 3D ultrasound to aid the identification of subtle features and better visualize the junctional zone. This is especially useful in cases with indirect features but no direct features, which makes the diagnosis uncertain.

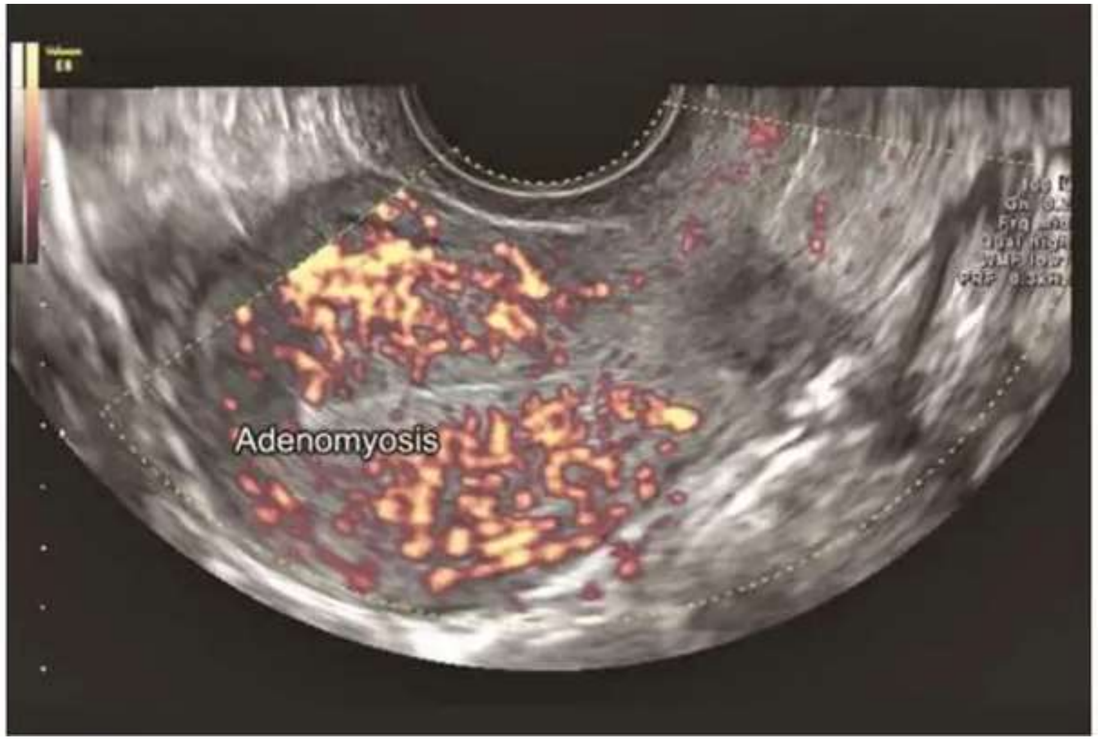
Ultrasonographic Characteristics of Adenomyosis	Ultrasound
Ultrasonographic features of adenomyosis	• Myometrial cyst * • Hyperechogenic islands * • Echogenic subendometrial lines and buds * • Globular uterus ** • Asymmetrical myometrial thickening ** • Fan-shaped shadowing ** • Translesional vascularity ** • Irregular JZ ** • Interrupted JZ **
Localization	• Anterior • Posterior • Lateral (right, left) • Fundal • Cervical
Type of adenomyosis	• Diffuse • Focal • Adenomyoma • Mix (diffuse and focal)
Myometrial infiltration	• External myometrium • Internal myometrium or junctional zone (JZ)
Grade	• Mild (<25% of myometrium) • Moderate (25–50% of myometrium) • Severe (> 50% of myometrium)

* Direct features; ** indirect features.

Comparison of US Findings of Focal Adenomyosis and Leiomyomas

Category	Adenomyosis	Leiomyoma
Borders	Indistinct	Distinct, usually round
Shadowing	Thin, parallel, vertical, and venetian blind shadows	Edge shadowing; dense shadows from calcification
Echotexture	Fine heterogeneity, with nodules and striations	Variable, often swirled
Echogenicity	Mildly increased	Usually hypoechoic, but variable
Calcification	None	Common; rim and chunky
Cysts	Tiny cysts and cystic striations	Usually solid; may have macrocystic degeneration
Vascularity	Increased flow, penetrating vessels	Qualitatively variable, typically circumferential
Endometrium	Normal thickness, indistinct borders	Normal thickness and borders but may be obscured or distorted
Location	Central, contiguous, or within the endometrium	Submucosal, intramural, or subserosal

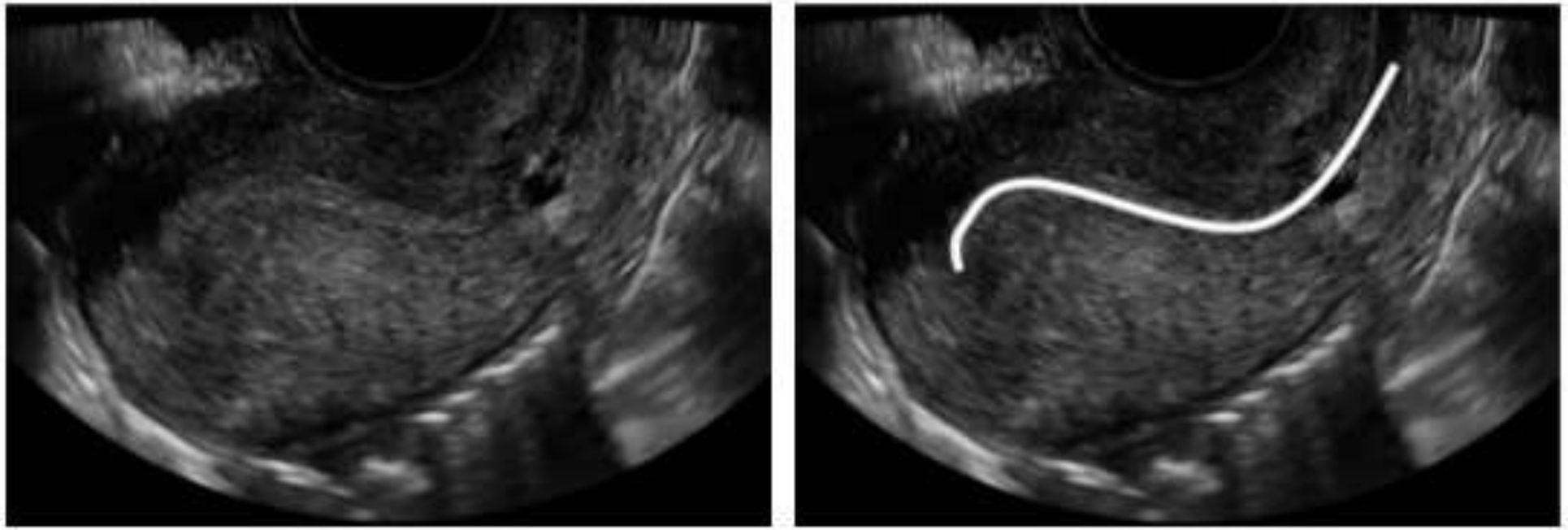
https://doi.org/10.1148/rg.201818008



Adenomyosis: Trans-lesional blood flow

Fibroid: Circumferential blood flow.

Question mark sign for diagnosing adenomyosis with ultrasound



Adenomyosis seen on posterior wall of uterus which is tilted backward with the cervix directed in a forward direction resulting in the classic "question mark" sign.

Typical sign of adenomyosis associated with posterior deep infiltrating endometriosis

MRI

- On T2-weighted imaging:
  uterine enlargement characterized by ill-defined, low-signal-intensity regions within the junctional zone is reflective of smooth muscle hyperplasia (**JZ >= 12** mm is diagnostic)

- T2 hyperintense myometrial cysts reflecting regions of ectopic endometrial tissue (can also have increased intrinsic T1 signal or increased susceptibility in hemorrhagic foci)

- Contrast enhancement is generally not reliable for assessment of vascularity as compared to color Doppler ultrasound

- It is important to obtain the MRI in the *late proliferative or secretory phase* (days 7 to 28) due to the decreased signal of normal myometrium during the early proliferative phase (days 1 to 6)

Focal Adenomyosis

Adenomyoma

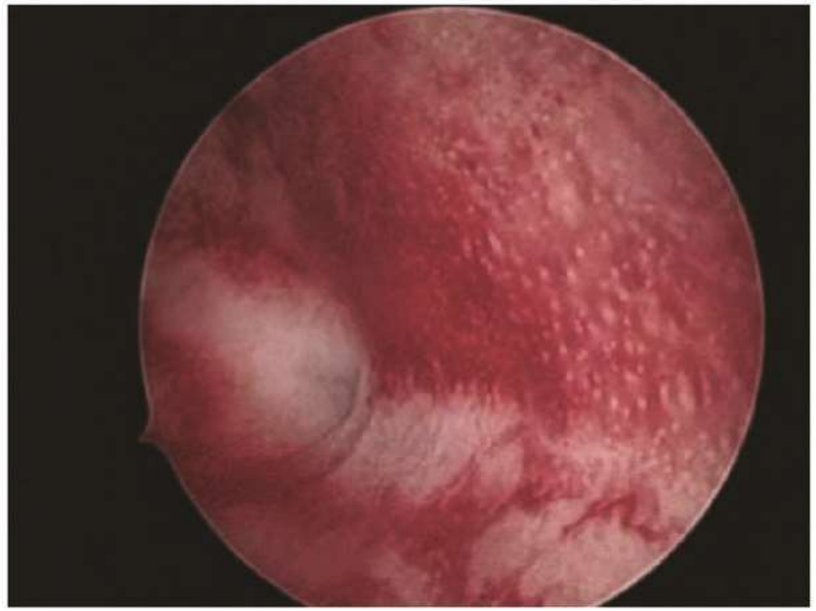
Diffuse Adenomyosis

HYSTEROSCOPY

-Hysteroscopy is a minimally invasive option for adenomyotic focal lesions close to the endometrium.

-It is possible to enucleate superficial focal adenomyomas or evacuate cystic hemorrhagic lesions less than 1.5 cm in diameter using mechanical instruments or bipolar electrodes.

- This treatment is feasible only when the lesions are recognizable by hysteroscopy, as they bulge into the endometrial cavity.

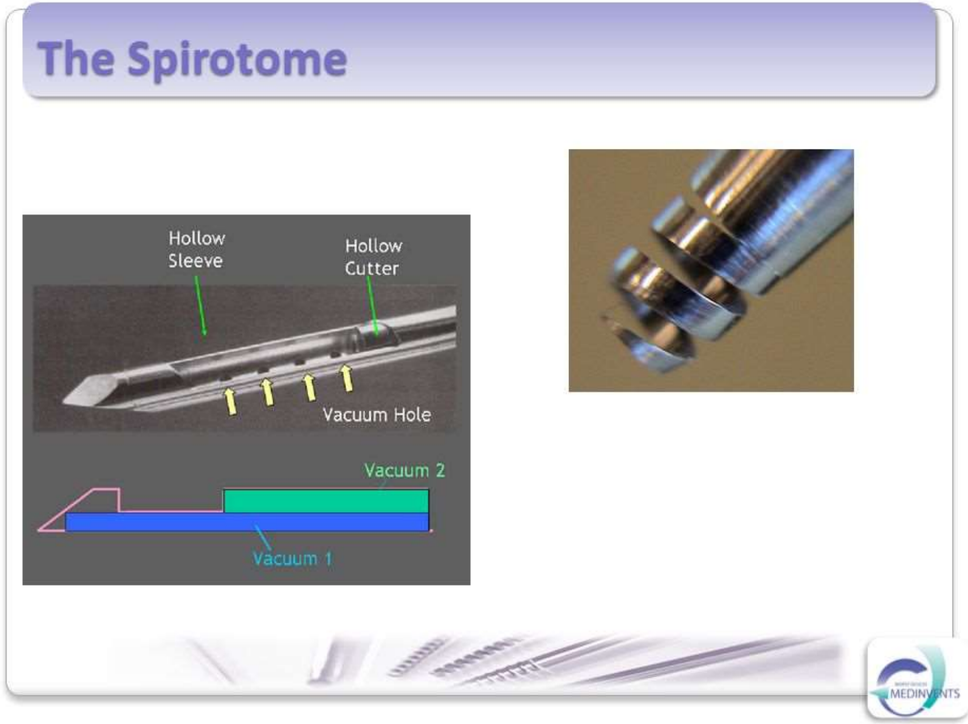


Hysteroscopy contd.

- Irregular endometrium with tiny openings seen on the endometrial surface.
- Pronounced hypervascularization. endometrial ***"strawberry"* pattern.**

- Appearance of fibrous, cystic intrauterine lesions (following 3–5 episodes of intramyometrial hemorrhage); and hemorrhagic cystic lesions assuming a dark blue or chocolate brown appearance

SPIROTOME



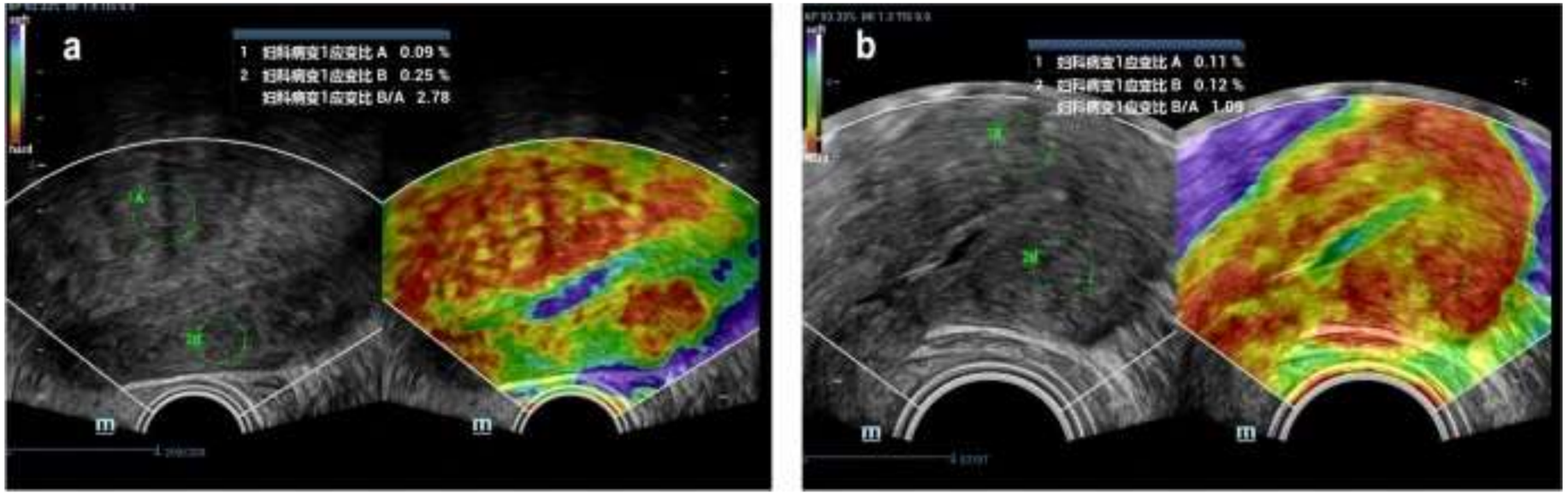
- For deeper cystic lesions localised in the intramural portion.

- Under ultrasound guidance, this device creates a channel and provides hysteroscopic access to the cystic structure, allowing for treatment by resection or bipolar coagulation.

ELASTOGRAPHY

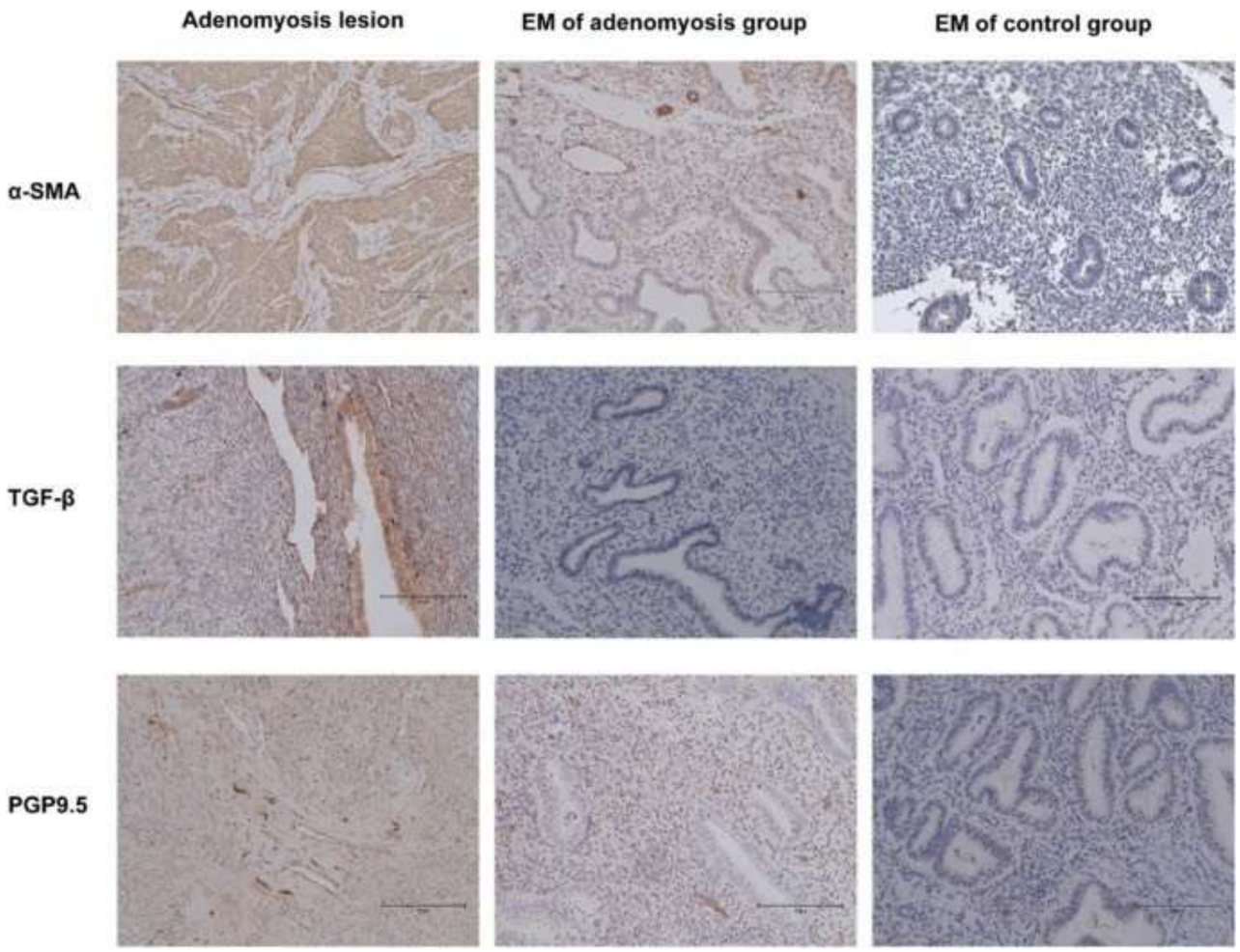
- Used to access extent of tissue fibrosis,adenomyosis in uterus & other organs.
- stiffness of adenomyotic lesions, which is positively correlated with the severity of dysmenorrhea
- Red- soft area
- Blue- harder area

Elastosonographic image of adenomyosis and normal myometrium.



a elastosonographic image of adenomyosis; **b** elastosonographic image of normal myometrium. The adenomyotic lesion is mainly red-coded and stiffer than the adjacent normal myometrium with indefinite boundary.

IMMUNOCYTO-CHEMISTRY



Increased expression of marker
lesions of Adenomyosis:

Alfa- SMA

TGF-Beta

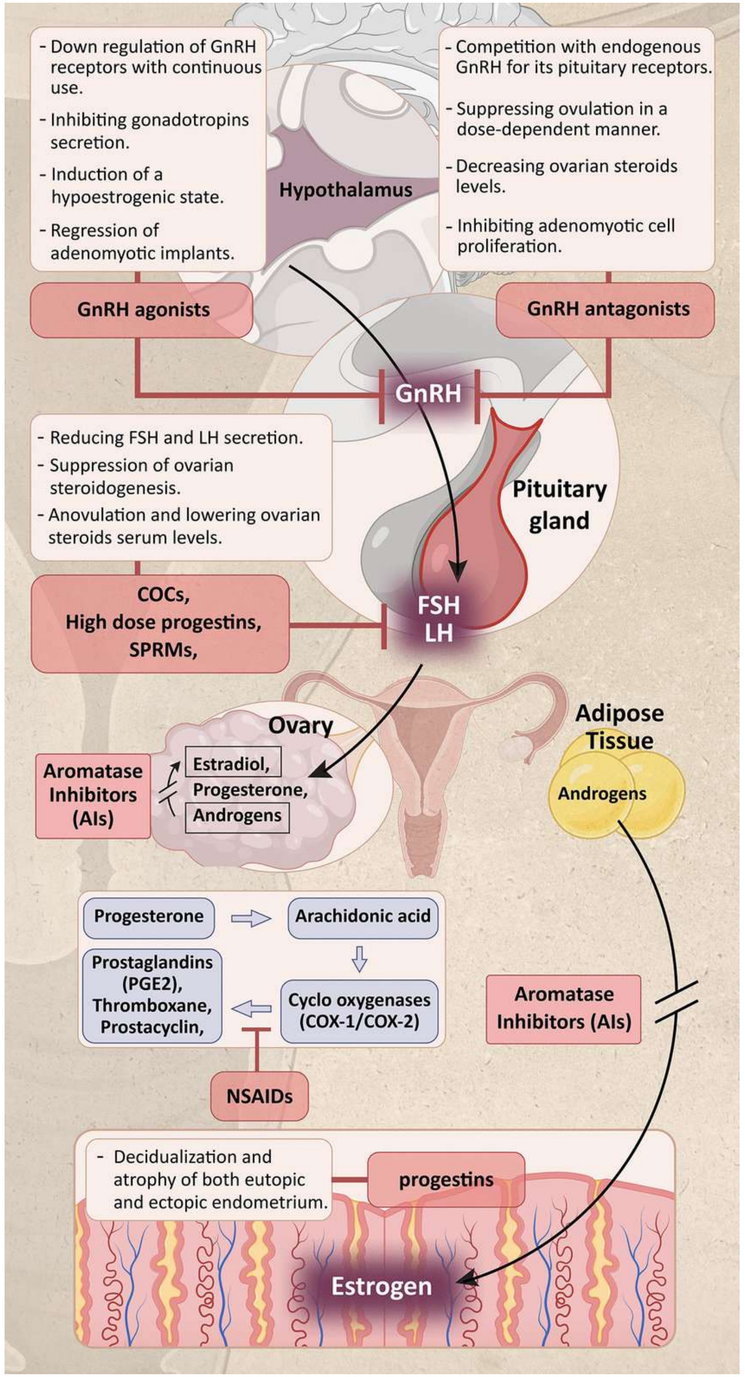
PGP 9.5.

Associations

- Fibroid
- Endometriosis
- Endometrial hyperplasia
- Endometrial Polyp
- Endometrial Carcinoma

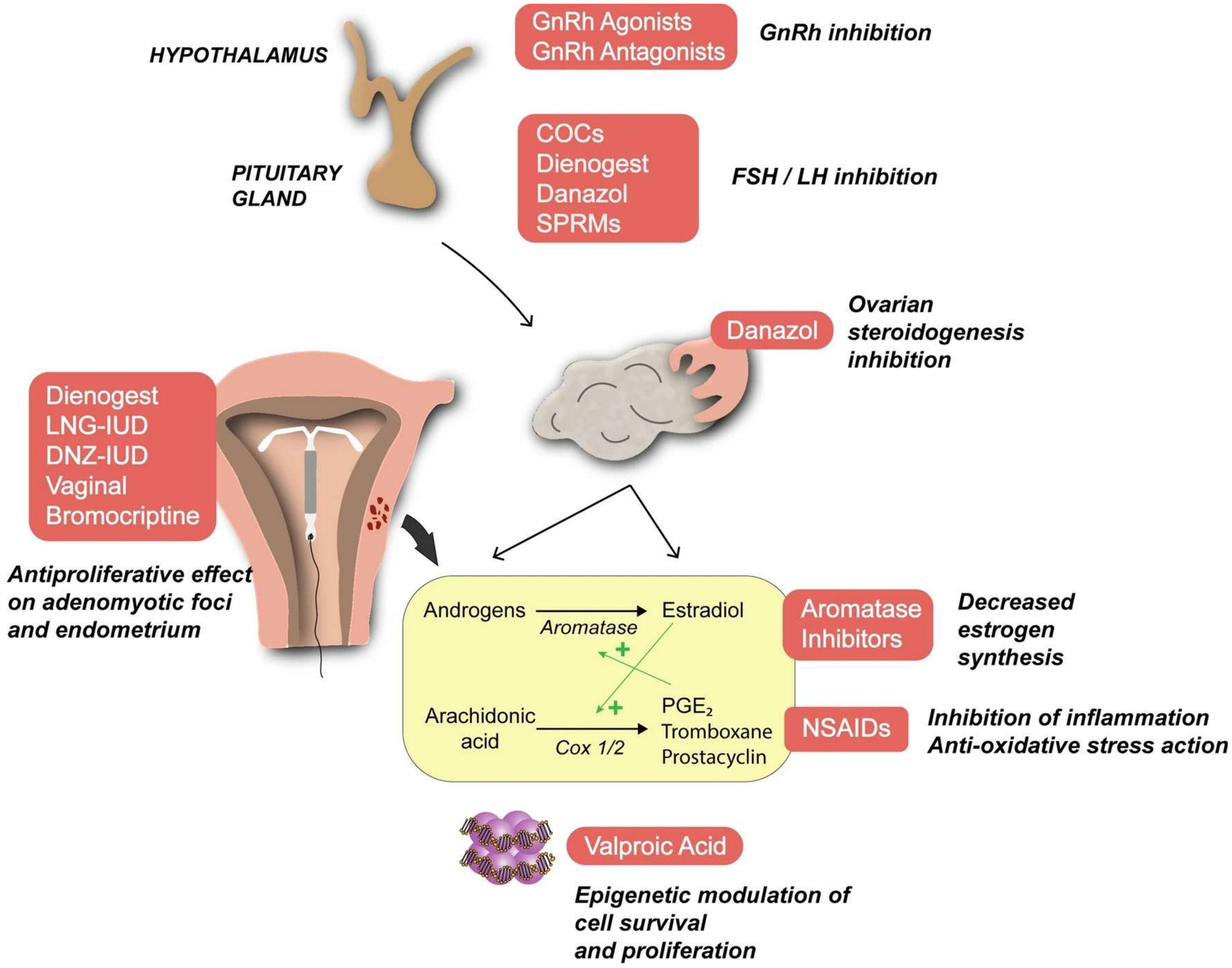
MEDICAL TREATMENT

- **Non-Hormonal :** NSAIDS
- **Hormonal** : 1st line drugs: OC pills, Dinogest, LNG-IUS, Danazol.
- 2nd line : GnRH Analogues, GnRH Antagonist, Aromatase inhibitor, Bromocriptine, valproic acid.


- Down regulation of GnRH receptors with continuous use.
- Inhibiting gonadotropins secretion.
- Induction of a hypoestrogenic state.
- Regression of adenomyotic implants.
Hypothalamus
- Competition with endogenous GnRH for its pituitary receptors.
- Suppressing ovulation in a dose-dependent manner.
- Decreasing ovarian steroids levels.
- Inhibiting adenomyotic cell proliferation.
GnRH agonists
GnRH antagonists
GnRH
- Reducing FSH and LH secretion.
- Suppression of ovarian steroidogenesis.
- Anovulation and lowering ovarian steroids serum levels.
Pituitary gland
COCs,
High dose progestins,
SPRMs,
FSH
LH
Ovary
Aromatase Inhibitors (AIs)
Estradiol,
Progesterone,
Androgens
Adipose Tissue
Androgens
Progesterone
Arachidonic acid
Prostaglandins (PGE2), Thromboxane, Prostacyclin,
Cyclo oxygenases (COX-1/COX-2)
Aromatase Inhibitors (AIs)
NSAIDs
- Decidualization and atrophy of both eutopic and ectopic endometrium.
progestins
Estrogen

NSAIDS

- Blocks the activity of the enzyme cyclooxygenase (COX), thereby inhibiting the production of prostaglandins, thromboxanes, and other molecules involved in the inflammatory cascade.
- Alleviate the symptoms of dysmenorrhea, pelvic pain, and AUB.


HYPOTHALAMUS
PITUITARY GLAND
GnRh Agonists
GnRh Antagonists
GnRh inhibition
COCs
Dienogest
Danazol
SPRMs
FSH / LH inhibition
Danazol
Ovarian steroidogenesis inhibition
Dienogest
LNG-IUD
DNZ-IUD
Vaginal
Bromocriptine
Antiproliferative effect on adenomyotic foci and endometrium
Androgens
Aromatase
Estradiol
Aromatase Inhibitors
Decreased estrogen synthesis
Arachidonic acid
Cox 1/2
PGE2
Tromboxane
Prostacyclin
NSAIDs
Inhibition of inflammation
Anti-oxidative stress action
Valproic Acid
Epigenetic modulation of cell survival and proliferation

Dinogest

- Fourth-generation progestin derived from 19-nortestosterone that binds to PR with high affinity.
- When taken continuously, DNG inhibits systemic gonadotropin secretion.
- Additional antiproliferative and local anti-inflammatory effects on endometrial tissue.
- In terms of the duration of uterine bleeding, DNG was found to be superior to LNG-IUS.
- Dose: 2mg OD*3 months

LNG-IUS

- Releases LNG directly to the endometrium, thereby reducing systemic exposure to this progestin.
- Mirena implantation reportedly down-regulates the expression of nerve growth factor and nerve growth factor receptor (p75 and TrkA receptors) in the endometrium and myometrium, thus reducing pain.[1]
- Long-lasting effect, cost-effective.
- It has modulatory action on altered endometrial factors. The local action of LNG, by down-regulating estrogen receptors, induces decidualization and atrophy of the ectopic endometrium, preventing further estrogenic stimulation.
- Could be a promising alternative therapy to hysterectomy for women with adenomyosis;
- Decrease in uterine volume with LNG-IUS was not as rapid as expected, as it began to decrease 2 years after insertion

Danazol

- Danazol is an isoxazole derivative of the synthetic steroid ethisterone. It possesses direct effects on cell proliferation by inducing cell apoptosis
- Serious side effects, especially when administered orally,
- Vaginally administered danazol was an effective medical treatment for these patients, due to the lack of systemic adverse effects.

COMBINED OC PILL

- Work by inducing a pseudo gestational state, leading to decidualization and subsequent atrophy of the endometrium and adenomyotic lesions. This results in amenorrhea, reduced menstrual volume, and relief from dysmenorrhea, providing benefits to patients with adenomyosis.
- COCs were found to be less effective than LNG-IUS and dinogest.

GnRH Analogues Contd.

- commonly used include leuprorelin acetate, goserelin acetate, and triptorelin.
- The typical dosage of leuprorelin acetate is 3.75 mg at 4-week intervals for a total of four to six cycles.
- Significant reduction in uterine volume and adenomyotic focus after 12 weeks.

GnRH Analogues

- ***Mechanism of action:***
- Continuous administration of GnRH-as initially causes a flare-up effect but subsequently suppresses FSH and LH secretion, leading to the blockade of sex steroid production by the ovaries.
- Decreased expression of cyt450 in adenomyotic lesions.
- Improves follicular quality.
- Upregulates HOXa10,HOXa11,Lif, Integrin beta 3,thus improving endometrial receptivity.

ADORFEM®
(Gynec & Pro-Fertility Division)
Love & Adore Feminine

GnRH Antagonists

- By blocking the GnRH receptors in the pituitary gland, resulting in the immediate suppression of reproductive function by inhibiting the secretion of FSH and LH by the adenohypophysis.
- Ellagolix 300mg BD for maximum 6 months.
- Regimen of 200 mg of linzagolix once daily for 12 weeks, followed by 100 mg for another 12 weeks.

Aromatase Inhibitor

by inhibiting estrogen production, disrupting the hormonal milieu that promotes disease progression
Letrozole 2.5 mg 0D *3 months

Minimally invasive Procedures

HIFU

- Under guidance of MR or US imaging.

- Ultrasound energy absorbed by the tissues is then converted to heat, causing **coagulative necrosis** . The resultant heat causes heat-induced cellular collapse due to the loss of a subset of proteins of vital functions.
- It also has cavitation effect and radiation force contributing to the ablative effect of HIFU.
- Can be considered as an **alternative uterus-sparing option** for women with symptomatic adenomyosis patients.

- Disadvantages: - Abortion rates were high.

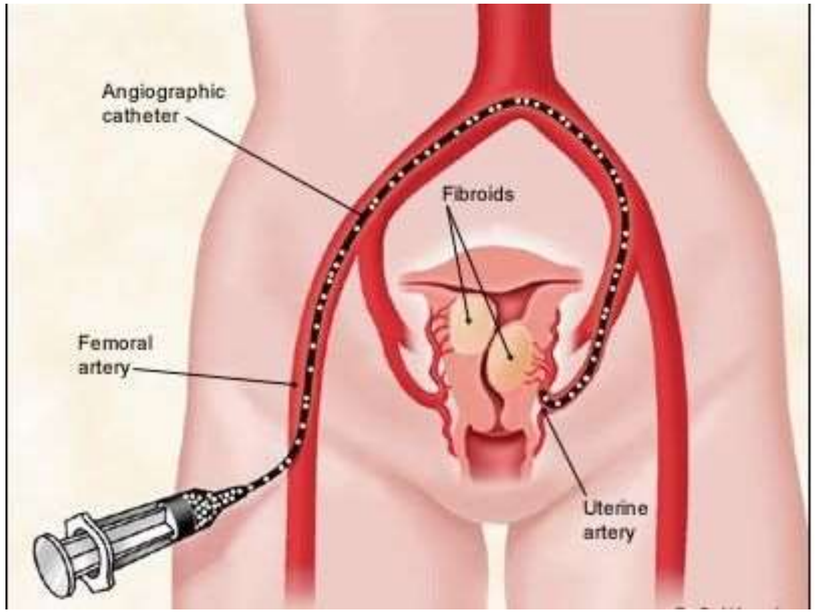
- - As increases uterine distensibility, higher chances of uterine rupture.

- - not suitable for diffuse endometriosis.

Radiofrequency Ablation

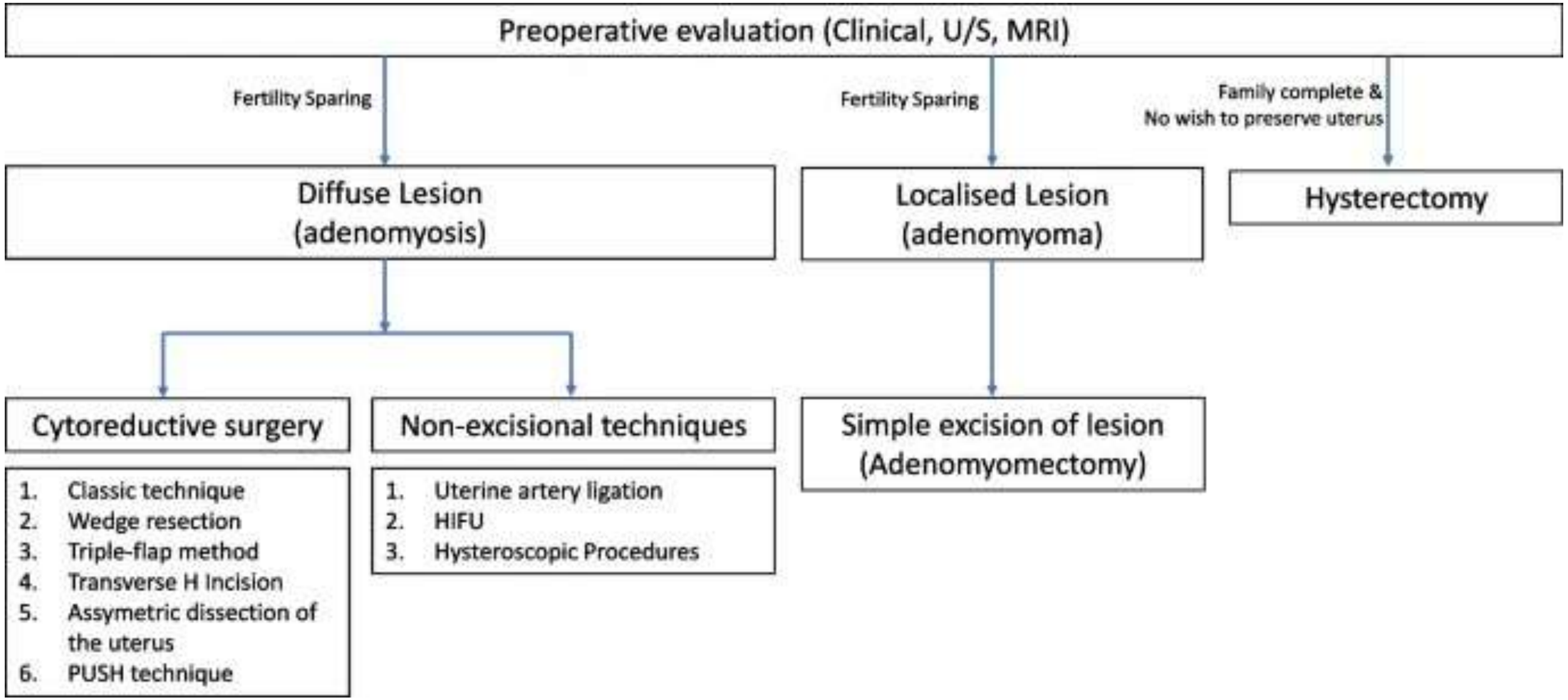
- Uses heat generated by radiofrequency waves to destroy adenomyotic tissue.
- less invasive technique, particularly when the disease is limited to the inner lining of the uterus.
- This procedure involves destroying the lining of the uterus using heat, cold, or radiofrequency energy.
- Generally not recommended for women who wish to maintain their fertility.
- Approaches: Transvaginal, Transcervical, Laparoscopic.

Uterine Artery Embolization



- Blocks blood flow to areas affected by adenomyosis and shrinks the adenomyotic tissue.
- It is a suitable option for women seeking to avoid more invasive surgeries without prioritizing fertility preservation.

Surgical Classification



CLASSIC TECHNIQUE

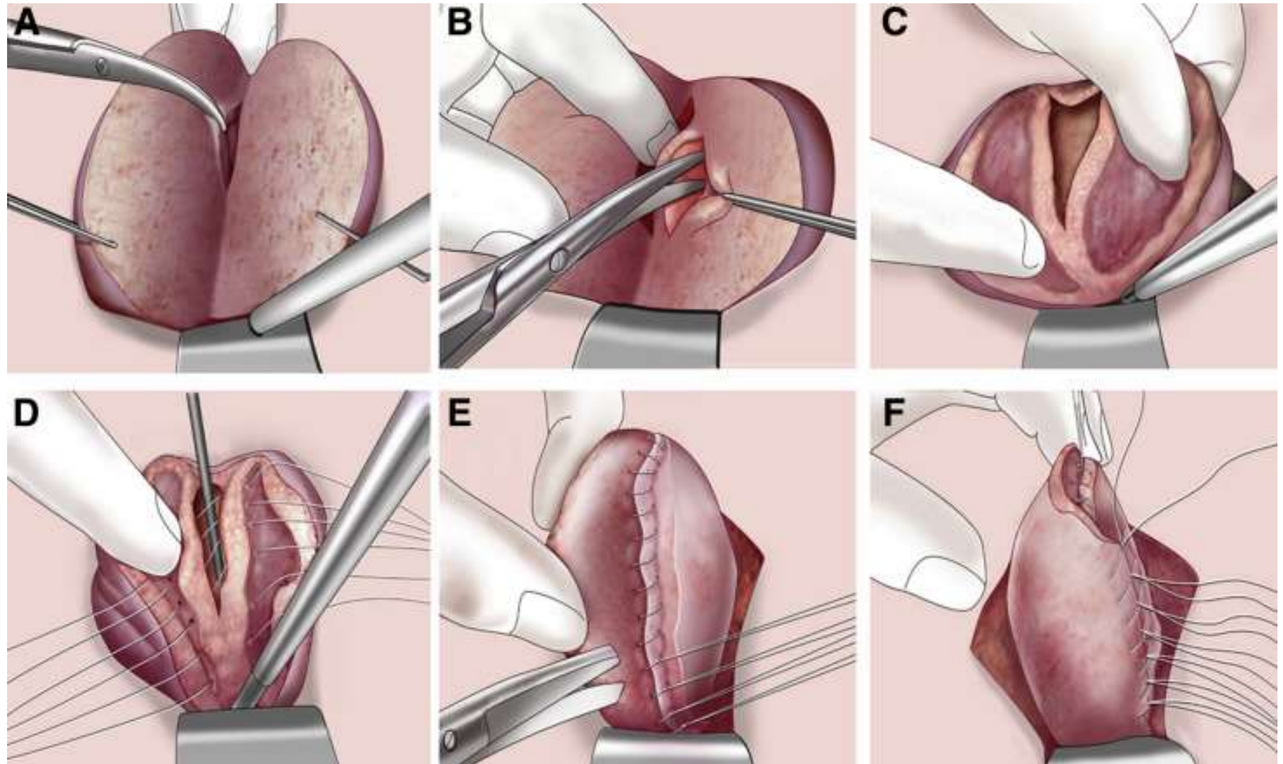
- (open, laparoscopic, or robotic) involves the recognition of the lesion’s location and borders by inspection, palpation, or intraoperative ultrasound when possible.
- A longitudinal incision at the uterine wall along the adenomyotic region is performed, and the surgeon applies sharp and blunt dissection of the lesion with scissors, graspers, or diathermy in a fashion like fibroid.
- The seromuscular uterine wall is sutured in two or three layers with absorbable sutures. The endometrial cavity is similarly closed with sutures. Alternatively, during laparoscopy mainly, the uterine wall can be reconstructed either with U-shape suturing, with the use of overlapping flaps, or using the triple-flap method

WEDGE RESECTION

- Applied in diffuse lesions located mainly in a localized area of the uterus (i.e., adenomyosis restricted only in the anterior or only in the posterior uterine wall).
- A typical cone-like resection involving the seromuscular uterine layer and the endouterine adenomyotic lesion as far as adenomyosis reaches is performed.
- The operation is completed with an anatomical approximation of the uterine wounds as described in the classic technique of partial adenomyomectomy

OSADA Technique

- Laparoscopic lysis of adhesions & excision of comorbid endometriosis.
- Pfannenstiel incision & exteriorization of the uterus.
- Prophylactic medical & surgical methods for hemostasis (vascular clamp on utero ovarian ligament, tourniquet around uterine isthmus, myometrial vasopressin injection).
- Bisection of uterus, endometrial cavity identification, making 1 cm margin.
- Excision of Adenomyosis.
- Reconstruction of uterus using triple flap method.
- Repercussion of uterus
- Abdominal wall closure.

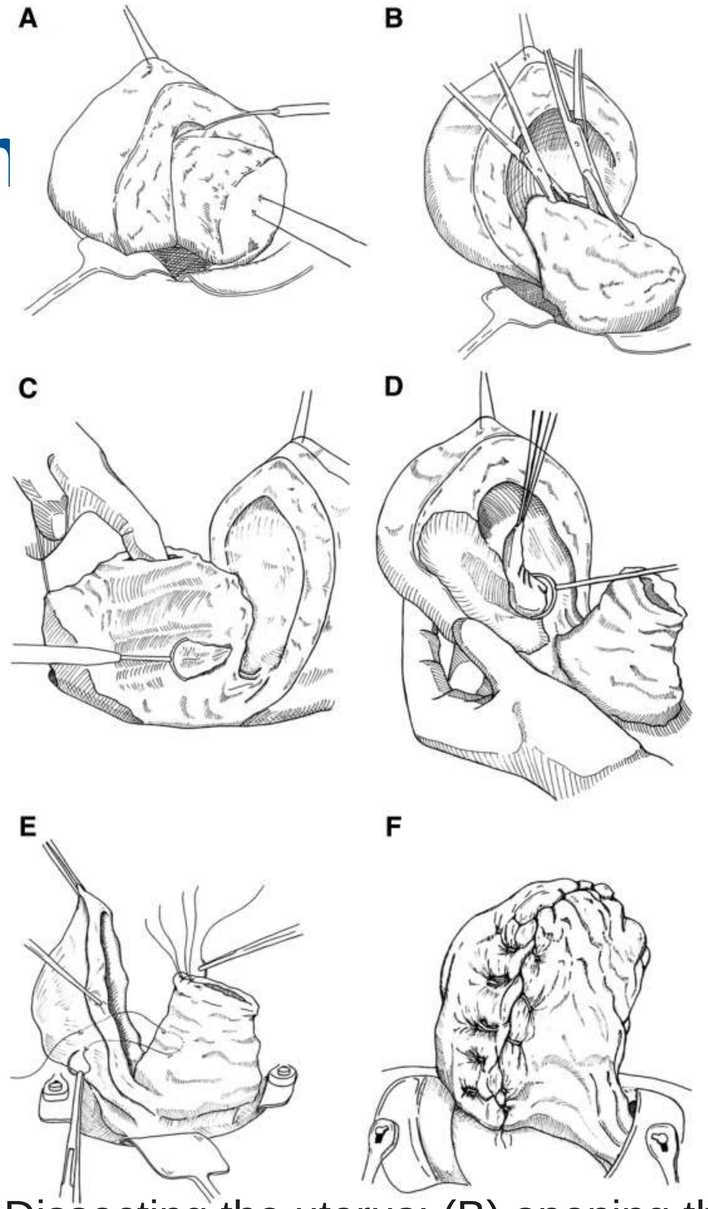


Transverse H incision technique

- Laparotomic modification for diffuse adenomyosis, mainly for adenomyosis of the anterior uterine wall.
- A vertical incision perpendicularly to the midline is initially made on the uterine wall, and two transverse secondary incisions are applied perpendicularly to the first incision along the upper and the lower parts of the uterus.
- The adenomyotic tissue underneath the two flaps is removed with the use of scissors or diathermy until a healthy myometrium, preserving the integrity of the endometrial cavity assessed with chromopertubation during surgery. The closure of the uterine wall is performed in multiple layers.

Asymmetric dissection

- A laparotomy technique, where the uterus is dissected longitudinally with a surgical electric knife in an asymmetrical fashion to divide the inside from the outside, preserving both the uterine cavity and bilateral uterine arteries.
- The myometrium should be dissected diagonally, as if hollowing out the uterine cavity, and with a transverse incision, the uterine cavity is opened, the index finger is inserted into the cavity.
- Adenomyotic lesions are removed using a loop electrode to a thickness of 5 mm of the inner myometrium. Similarly, adenomyosis is excised to a thickness of 5 mm of the serosal myometrium. The endometrial cavity is then closed, and the uterine flaps are reconstructed in layers (muscle and serosa).



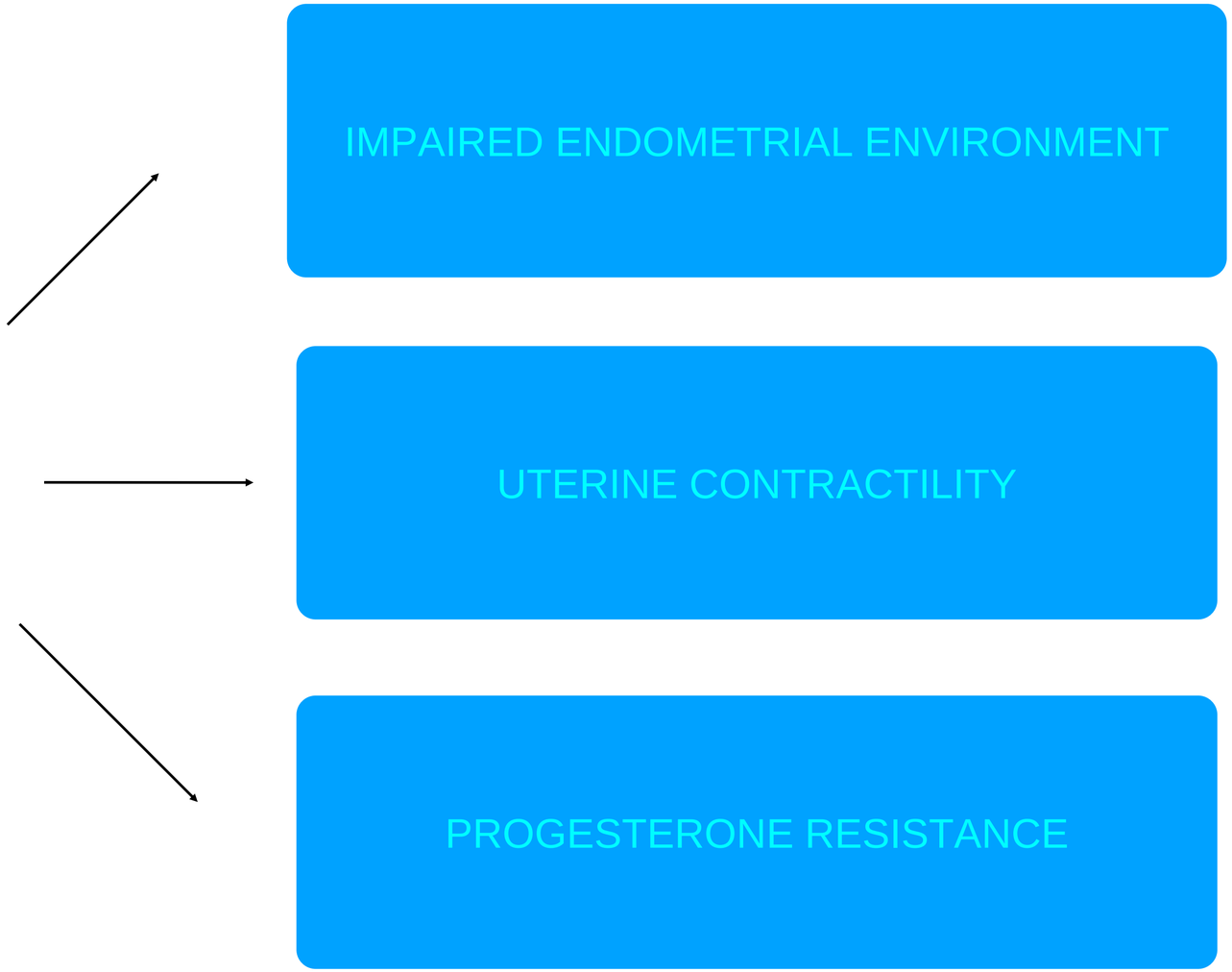
(A) Dissecting the uterus; (B) opening the uterine cavity; (C) excising the inner side lesion; (D) excising the outer side lesion; (E) suturing the lesion; and (F) rejoining the uterus.

Protection of uterine structure for healing (PUSH)

- This operation involves a full-layer mattress-type vertically penetrating suture aiming to assist the surgical overlapping of residual uterine muscle flaps .
- An initial midline incision along the uterus is performed reaching the uterine cavity.
- Full excision of adnomyotic tissues is performed, and the uterus (left–right/anterior–posterior walls) is left with 2 submucosal inner-muscle flaps (left–right) and 2 subserosal outer-muscle flaps (left–right).
- The reconstruction of the uterus takes place anatomically by overlapping the flaps on each side and fixing them with vertical mattress-type penetrative sutures paying care not to remove any part of the outer flaps disregarding the size and their cond

ART in Adenomyosis

- **Specific Challenges** :

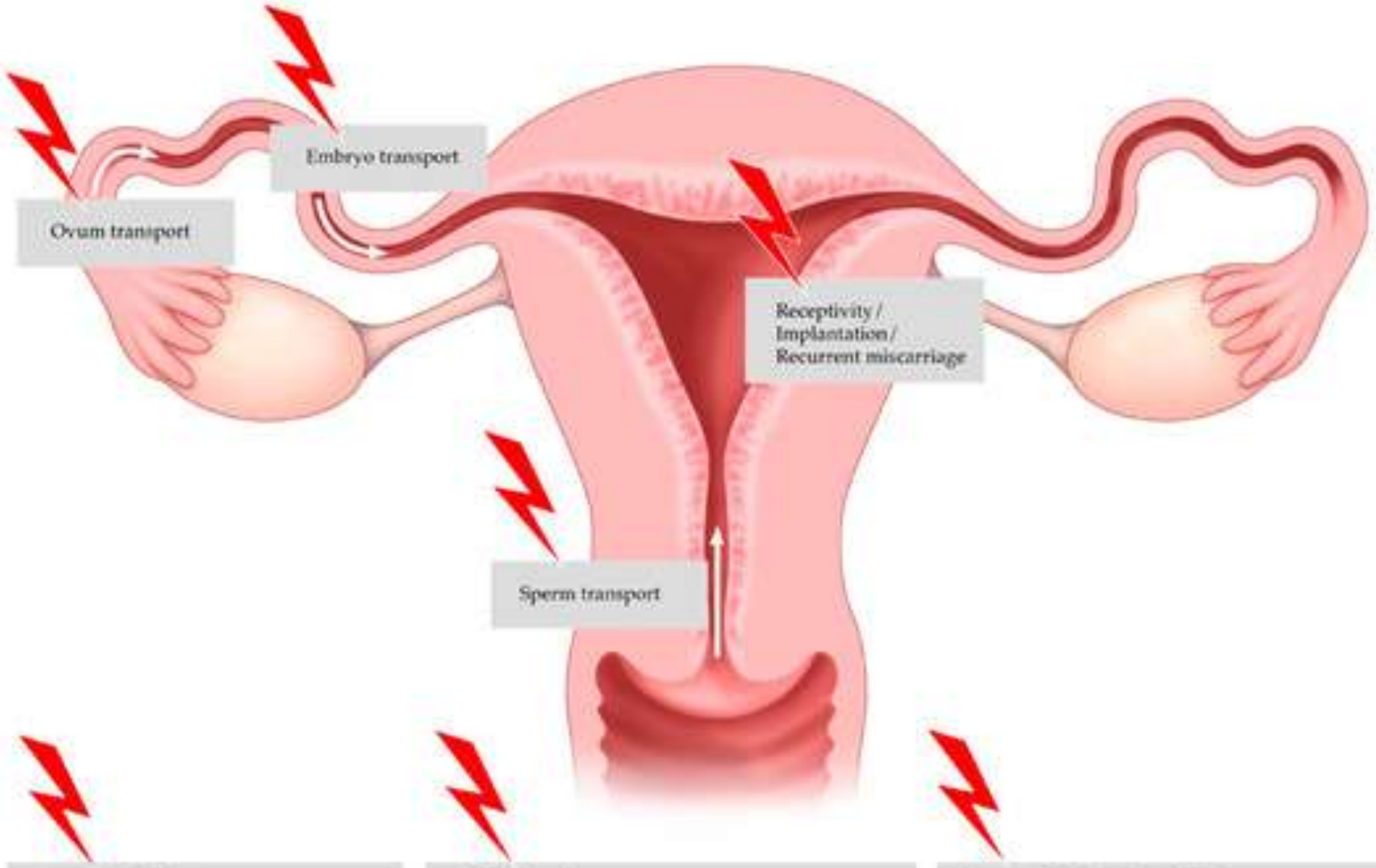


Mechanisms of Infertility:

- *Aberrant uterine contractility I*mpairing rapid and sustained directed sperm transport.
- *Hyperestrogenic endometrial environment* by local conversion of androgens to estrogens.
- *Altered expressions of cytokines and growth factors* : HIF-1α ,IL-6, IL-8, IL-10, IL-8 receptors CXCR1 and CXCR2, MMP2 and MMP9, and VEGF seem to be increased, leukemia inhibiting factor (LIF), LIF receptor α, and IL-11 tend to decrease.

- *Endometrial stroma vascularization* increased in the secretory phase, negatively affecting endometrial receptivity and implantation.

- *Immune factors* :High density of macrophages (embryo toxic), lack of adhesion molecules like HOX-10, affecting implantation.



Anatomical level
- Enlarged uterus
- Distorted anatomy
- Intramural adenomyoma
  -> Distortion of the uterine cavity
  -> Abnormal utero-tubal transport

Cellular level
- Cellular und nuclear hypertrophy
- Abnormal shape of nuclei and mitochondria
- Abundant myelin bodies
  -> Distortion of Ca^{2+} circulation
  -> Irregular muscle contractions
  -> Dysfunctional uterine hyperperistalsis

Increased thickness in the JZ
- Disrupted architecture of the myometriums in the JZ through endometrial glands and stroma
  -> Hyperplastic myometrial tissue
  -> Increased intrauterine pressure
  -> Dysfunctional uterine hyperperistalsis

Management Overview

Suppress uterine inflammation

Modify ART timing (Freeze it All)

Freeze All Strategy

- Avoid transfer in active inflammation.
- Transfer in hormonally controlled cycle.
- Improved clinical pregnancy rates (upto 30%)
- *Turkgeldi E et al.,Fertil Steril.2020;113(5):964-972*

Key:

⟶

- Early diagnosis with imaging ⟶ Medical Suppression(GnRH/Dinogest). Freeze-all strategy ⟶ Optimise Endometrial preparation ⟶ Surgery if persistent failure.

- (*ESHRE guidelines 2023)*

TRANSFER PREPARATION

- Estrogen+progesterone for endometrial priming.
- Add Aspirin or LMWH if indicated.
- Mock embryo transfer is useful for accessing the length of the uterus and any distortion in cavity, if any.
- Single embryo (preferably euploid) transfer is preferred.
- *Smith G et al., Fertil Steril.2023;120(4)712-720*

Embryo Transfer-When & How

- Transfer after >=2 months of supprression.
- Extended luteal support (10-12 wks).
- Aspirin/LMWH in selected cases.
- *Park CW et al.,J Assist Reprod Genet.2021;38:321-329*

Surgical Management

- For focal Adenomyosis or failed ART cycles
- Adenomyomectomy (lap/open)
- Wait 6-12 months before transfer.
- *Donnez J et al., RBM Online.2021;43(1):1-10*

Comparative Outcomes

- **No suppression :** LBR 18%
- **GnRH:** LBR 35%
- **Dinogest** : LBR 33%
- **Surgery** : LBR 38%
- *Meta-analyis (2020-2024) summary data*

- **GnRH Agonist use prior to ART**: improved embryo implantation, clinical pregnancy rates. Uterine volume reduction from 180 to 86 cm3 approx.
- **Letrozole** : By inhibiting aromatase, decrease estrogen synthesis & helps reduce uterine volume. (2.5 mg/day)
- **2 stages IVF:** In 1st: ovarian stimulation followed by egg retrieval followed by fertilisation & embryo freezing → GnRH suppression for 3 months.

In 2nd: frozen embryo transfer in the first cycle induced by HRT. (Before re-growth of the adenomyotic lesions.)

- Long acting GnRH Agonist not preferred in poor ovarian reserve patients, as it may cause excessive HPO axis suppression.

- GnRH antagonist used, as this protocol is of shorter duration.

THANK YOU