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Executive member **AOGD-2020-2021**
Chairperson, Breast and Cervical Cancer Awareness, Screening & Prevention Committee 2018-2020
President Delhi Gynae Forum- North 2016-2018
Chairperson, Reproductive Endocrinology Committee, AOGD - 2015- 2017
Chairperson, Adolescent Committee, AOGD - 2013- 2015

Awards: -

APJ Abdul Kalam Pinnacle Award 2025
Magnanimous Award of Excellence in Healthcare 2025
Vishisht Chikitsa Ratan Award Delhi 2024.
Star of Delhi ISAR -2023.
Swastha Ratan Award Delhi Medical Association 2022.
Women's Health Icon Award 2021.
Distinguished Medical luminary award: IMA Delhi 2021.
Women Achiever Award - IMA-DNZ 2019
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DIAGNOSIS OF ENDOMETRIOSIS

Endometriosis is a Chronic, Systemic Disease

Endometriosis is defined as the presence of endometrial tissue lesions outside the uterus, inducing chronic inflammation[1,2]

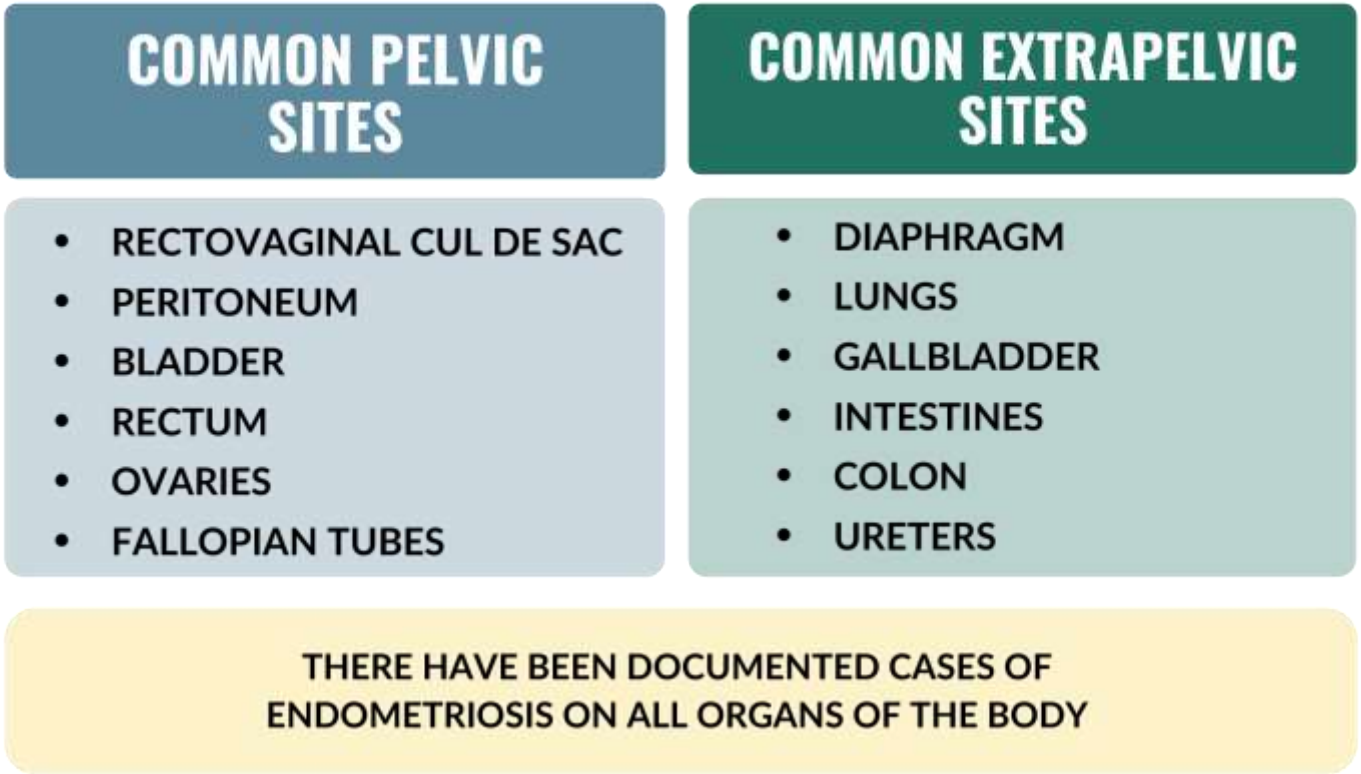
- Systemic inflammatory disease, dependent on estrogen.
- Associated with immune dysregulation.
- While the exact underlying cause is uncertain, it is likely to be multifactorial, including genetic factors with possible epigenetic influences.[3]
- Endometriosis is approached as a chronic, systemic, inflammatory, and heterogeneous disease that presents with symptoms of pelvic pain and/or infertility.

1. Sampson JA. *Am J Obstet Gynecol* 1927;14(4):422–469;
2. Kennedy S, *et al. Hum Reprod* 2005;20(10):2698–2704
3. Johnson NP, *et al. Hum Reprod* 2013;28(6):1552–1568;
4.Agarwal SK et al. Clinical diagnosis of endometriosis: a call to action. Am J Obstet Gynecol. 2019 Apr;220(4):354.e1-354.e12

Prevalence of Endometriosis

- Affects ~ 247 million women globally and ~ 42 million women in India.[1]
- Present in about 10% of women of reproductive age.
- In asymptomatic women, the prevalence of endometriosis ranges from 6-11%.[2]
- In infertile women the prevalence lies between 20-50% and in those with pelvic pain, it ranges from 40-50%.[2]

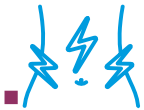
Common Locations of Endometriosis



Chapron C, Marcellin L, Borghese B, Santulli P. Rethinking mechanisms, diagnosis and management of endometriosis. Nat Rev Endocrinol 2019;15(11):666–682

An Overview Of The Symptoms Of Endometriosis

- The most common symptoms of endometriosis (as reported by patients) include:[1]



Chronic pelvic pain (57%)
Non-period-related pelvic pain lasting 6 months or longer

Dysmenorrhea (62%)
Period-related pain

Infertility (40%)
Difficulty in conceiving

Dyschezia (48%)
Cyclical painful bowel movements

Dyspareunia (55%)
Deep pain during, or after, sexual intercourse

Neuralgia (31%)
Referred pain (legs/back)

Endometriosis can be asymptomatic and may only be diagnosed during evaluation for infertility[1,2]

1 Dunselman GAJ, *et al. Hum Reprod* 2014;29(3):400–412; 2. Parasar P, *et al. Curr Obstet Gynecol Rep* 2017;6(1):34–41

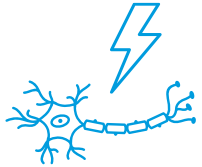
CHRONIC PELVIC PAIN IS ONE OF THE MOST FREQUENTLY REPORTED SYMPTOMS OF ENDOMETRIOSIS

- Chronic pelvic pain is defined as the presence of non-menstrual pain localized to the pelvis, lasting for six or more months[1,2]

- Endometriosis-associated chronic pain may be due to a combination of nociceptive, inflammatory, or neuropathic mechanisms, including:[3,4]

Production of growth factors/cytokines

Direct and indirect effects of active endometriotic implant bleeding



Irritation or direct invasion of pelvic floor nerves

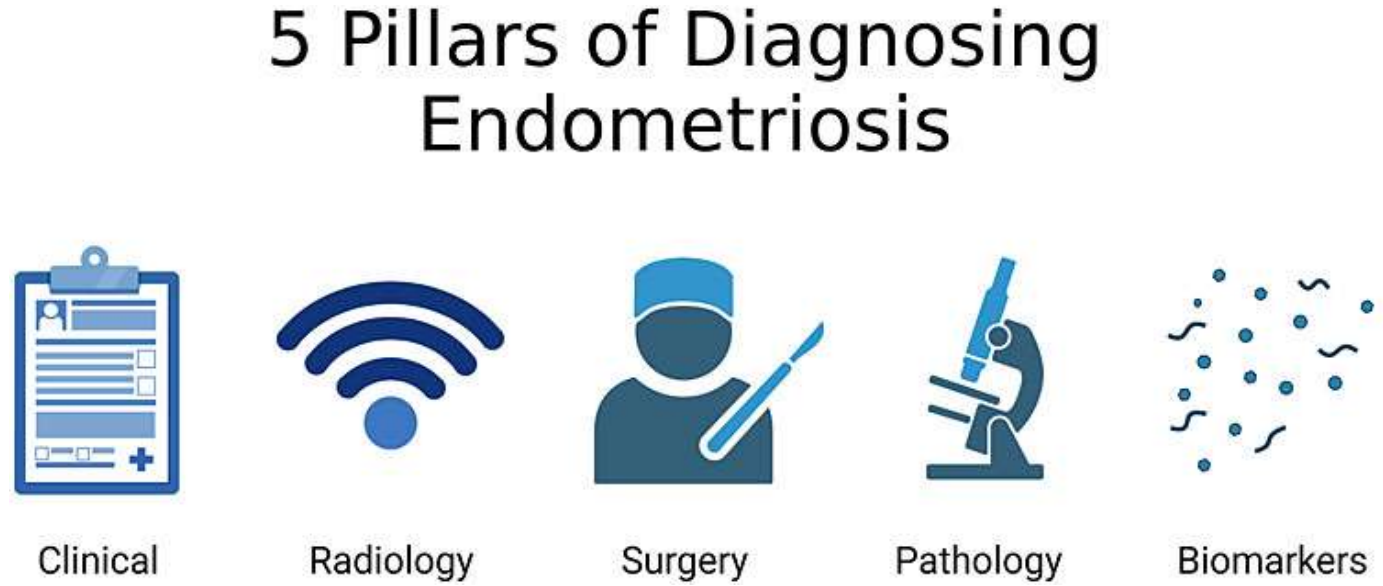
- The stage of endometriosis is not reflective of the degree of pain experienced by women with endometriosis[1,2]

1. Bloski T, *et al. Nurs Womens Health* 2008;12(5):382–395; 2. NICE. Endometriosis: Diagnosis and management. NICE guideline [NG73]. 6 September 2017. https://www.nice.org.uk/guidance/ng73. Accessed 7 May 2021; 3. Howard FM. *J Minim Invasive Gynecol* 2009;16(5):540–550; 4. ASRM. *Fertil Steril* 2014;101(4):927–935

DIAGNOSIS

DIAGNOSTIC DELAY IS A HALLMARK OF A DISEASE

DIAGNOSIS


5 Pillars of Diagnosing Endometriosis
Clinical
Radiology
Surgery
Pathology
Biomarkers

THERE IS A CONSIDERABLE DIAGNOSTIC DELAY IN ENDOMETRIOSIS

literature describes delays from symptom onset to diagnosis ranging from 4 to 11 years.

- Consequences of the delay in diagnosis are:

Failure of timely diagnosis and adequate endometriosis management may foster disease progression and adhesion formation that may compromise fertility and increase the risk of central sensitization and chronic pelvic pain.

Agarwal SK et al. Clinical diagnosis of endometriosis: a call to action. Am J Obstet Gynecol. 2019 Apr;220(4):354.e1-354.e12.

IMPORTANCE OF DIAGNOSIS IN PATIENTS WITH ENDOMETRIOSIS

- Women with endometriosis experience diminished quality of life, increased incidence of depression, adverse effects on intimate relationships, limitations on participation in daily activities, reduced social activity, loss of productivity and associated income, increased risk of chronic disease, and significant direct and indirect healthcare costs.
- Emerging data indicate that endometriosis is associated with greater risk of obstetric and neonatal complications.

Agarwal SK et al. Clinical diagnosis of endometriosis: a call to action. Am J Obstet Gynecol. 2019 Apr;220(4):354.e1-354.e12.

THE CHALLENGE OF DIAGNOSING ENDOMETRIOSIS

- There are no pathognomonic features or biomarkers necessary and sufficient to define endometriosis.
- Key symptoms that currently prompt surgical evaluation, such as pain and infertility, can have multiple causes.
- Endometriosis is typically defined by its histology and depending on location and depth, lesions are further described as superficial peritoneal lesions, ovarian endometrioma, or deep endometriosis.

Agarwal SK et al. Clinical diagnosis of endometriosis: a call to action. Am J Obstet Gynecol. 2019 Apr;220(4):354.e1-354.e12.

CLINICAL HYSTORY

- It is important that clinicians evaluate symptoms that merit suspicion in adolescents as seriously as in adults with a high index of suspicion.

Agarwal SK et al. Clinical diagnosis of endometriosis: a call to action. Am J Obstet Gynecol. 2019 Apr;220(4):354.e1-354.e12.

RISK FACTORS:

- 1. A First degree female relative (mother or sister) with
- endometriosis
- 2.Early menarche
- 3.Shorter than normal menstrual cycle (< 27 days)
- 4.Longer than normal menstruation (> 5 days)
- 5.Nulliparity
- 6.Low body mass index
- 7.Mullerian anomalies
- 8.Outflow obstructions, ervical stenosis, a transverse vaginal septum or an imperforate hymen
- 9.pre natal exposure to DES
- 10.dioxin and polychlorinated biphenyl exposure

Predictive Value of Signs/Symptoms and Clinical Findings for Diagnosing Endometriosis (1/2)

S. No.	Parameter	Sensitivity (%)	Specificity (%)
1	Severe dysmenorrhea	58	70
2	Chronic pelvic pain	25	89
3	Dyspareunia	16	96
4	Infertility	28	93
5	Oral pill as contraceptive	16	80

Agarwal SK et al. Clinical diagnosis of endometriosis: a call to action. Am J Obstet Gynecol. 2019 Apr;220(4):354.e1-354.e12.

Predictive Value of Signs/Symptoms and Clinical Findings for Diagnosing Endometriosis (2/2)

S. No.	Parameter	Odds Ratio
1	Menstrual pelvic pain/cramping	1.6
2	Non menstrual pelvic pain/cramping	4.1
3	Dyspareunia	3.1
4	Heavy menstrual bleeding	1.5
	Excessive or irregular bleeding	2.1
5	Passage of clots	1.8
	Irregular menstrual periods	1.5
	Constipation/bloating/diarrhoea	1.9
	Fatigue/weariness/anemia	2.2
	Infertility	3.6

Agarwal SK et al. Clinical diagnosis of endometriosis: a call to action. Am J Obstet Gynecol. 2019 Apr;220(4):354.e1-354.e12.

Menstrual Cycle Characteristics of Women with Endometriosis

- In a cross-sectional survey of approximately 50,000 women, several menstrual cycle characteristics were more prevalent among women with vs without diagnosed endometriosis including:

  - Heavy menstrual bleeding
  - Excessive/irregular bleeding
  - Passing clots
  - Irregular menstrual periods

- Premenstrual spotting also correlates with endometriosis in infertile women.[1,2]

Sanjay K. Agarwal, Charles Chapron, Linda C. Giudice, Marc R. Laufer, Nicholas Leyland, Stacey A. Missmer, Sukhbir S. Singh, Hugh S. Taylor,Clinical diagnosis of endometriosis: a call to action, American Journal of Obstetrics and Gynecology,Volume 220, Issue 4,2019,Pages 354.e1-354.e12,

DIAGNOSIS OF ENDOMETRIOSIS

Diagnosis of endometriosis		Level of evidence[1]	Chapter I
Signs and symptoms			
1	The GDG recommends that clinicians should consider the diagnosis of endometriosis in individuals presenting with the following cyclical and non-cyclical signs and symptoms: dysmenorrhea, deep dyspareunia, dysuria, dyschezia, painful rectal bleeding or haematuria, shoulder tip pain, catamenial pneumothorax, cyclical cough/haemoptysis/ chest pain, cyclical scar swelling and pain, fatigue, and infertility.		GPP
	Although currently no evidence exists that a symptom diary/questionnaire/app reduces the time to diagnosis or leads to earlier diagnosis, the GDG considers their potential benefit in complementing the traditional history taking process as it aids in objectifying pain and empowering women to demonstrate their symptoms.		GDG STATEMENT

ROLE OF PHYSICAL EXAMINATION IN DIAGNOSING ENDOMETRIOSIS

- Studies suggest that findings on physical examination can identify endometriosis with high accuracy of 86-99%, depending on anatomic location.
- By using defined criteria for a positive bimanual pelvic examination (palpable nodularity, stiffened and/ or thickened pelvic anatomy, especially the uterosacral ligaments, vagina, rectovaginal space, pouch of Douglas, adnexa, rectosigmoid, or posterior wall of the urinary bladder), diagnostic accuracy of physical examination is increased.
- A caveat to bimanual vaginal examination is it may not identify early stage, superficial disease.
- In women with suspected endometriosis, further diagnostic steps, including imaging, should be considered even if the clinical examination is normal.

Agarwal SK et al. Clinical diagnosis of endometriosis: a call to action. Am J Obstet Gynecol. 2019 Apr;220(4):354.e1-354.e12.

COMBINATION OF SYMPTOMS HAS HIGHER CORRELATION WITH DIAGNOSIS OF ENDOMETRIOSIS

- Ballard et al reported that the likelihood of endometriosis increased with the number of symptoms present, from an odds ratio of 5.0 with 1 symptom to 84.7 for 7 or more symptoms.
- Using data from a prospective, multinational study, Nnoaham et al created a model combining symptoms and patient history with ultrasound findings that predicted revised American Society for Reproductive Medicine (rASRM) stage III and IV endometriosis with good accuracy.
- The authors suggest that such screening tools could reduce “diagnostic delay, high investigation costs, and personal suffering associated with endometriosis.”

Agarwal SK et al. Clinical diagnosis of endometriosis: a call to action. Am J Obstet Gynecol. 2019 Apr;220(4):354.e1-354.e12.

ROLE OF IMAGING IN DIAGNOSING ENDOMETRIOSIS

- Ultrasound is particularly sensitive for detecting ovarian endometriomas and deep endometriosis.
- A Cochrane meta-analysis by Nisenblat V et al**. found that transvaginal ultrasound approaches the sensitivity and specificity needed to replace surgery for endometrioma detection**.
- The International Deep Endometriosis Analysis (IDEA) group consensus statement on systematic sonographic evaluation of the pelvis in women with suspected endometriosis provides standards for improved imaging.
- Expert-guided imaging, as outlined by the IDEA group, helps improve clinical assessment across endometriosis manifestations.

Agarwal SK et al. Clinical diagnosis of endometriosis: a call to action. Am J Obstet Gynecol. 2019 Apr;220(4):354.e1-354.e12.

ROLE OF IMAGING IN DIAGNOSING ENDOMETRIOSIS

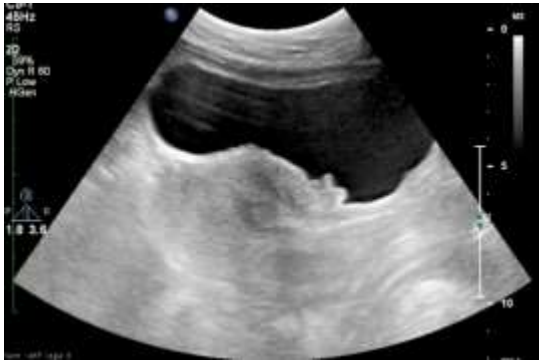
ROLE OF TVS

To diagnose ovarian endometrioma.

To diagnose rectal endometriosis

ROLE OF TAS

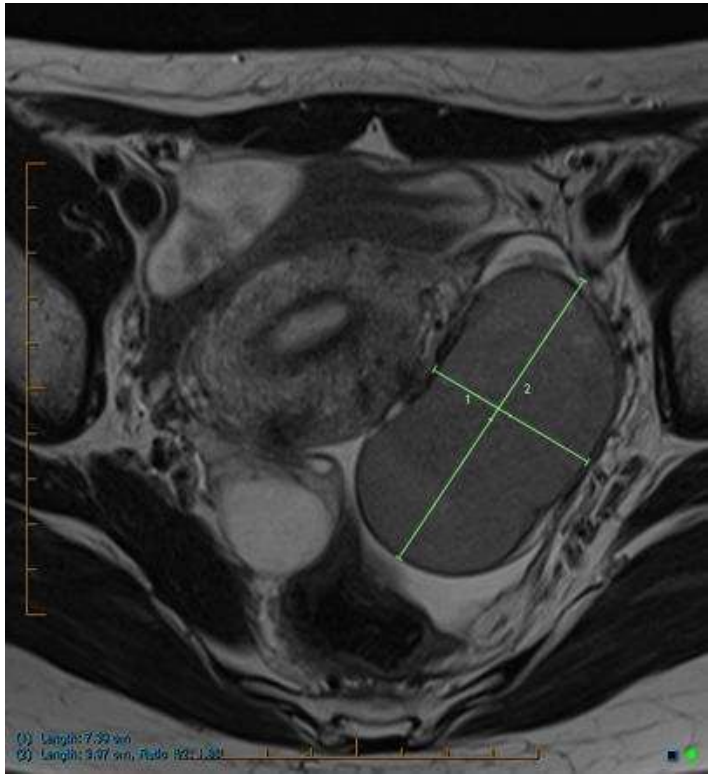
To see bladder involvement



Role of MRI

Good sensitivity and specificity for the diagnosis of deep endometriosis and endometrioma.

- No role in peritoneal endometriosis
- If suspicion of ureter/ bladder and bowel involvement is there based on history or physical examination, MRI can be done for decision for further management.
- Can detect rectovaginal endometriosis and obliteration of POD in more than 90% cases
- MRI may detect small lesions > 1cm.
- To distinguish endometrioma from dermoid.



IMAGING

	SPECIFICITY	SENSITIVITY
SUPERFICIAL ENDOMETRIOSIS		
TVS	95%	65%
MRI	72%	79%
OVARIAN ENDOMETRIOMA		
TVS	96%	93%
MRI	91%	95%
DEEP ENDOMETRIOSIS		
TVS	94%	79% (87% WITH 3D)
MRI	77%	94%

TVS showed good specificity but poor sensitivity
MRI showed both poor specificity and sensitivity

Both showed good sensitivity and specificity

TVS better specificity and MRI showed better sensitivity

5	Clinicians are recommended to use imaging (US or MRI) in the diagnostic work-up for endometriosis, but they need to be aware that a negative finding does not exclude endometriosis, particularly superficial peritoneal disease.	⊕⊕◯◯	Strong recommendation

DIAGNOSTIC LAPAROSCOPY IN ENDOMETRIOSIS

- Direct photographic and histologic proof of lesions is an important psychological factor for women suffering from the symptoms of an otherwise invisible disease.
- Bafort et al 2020 and Byrne et al 2018 state that the benefits of laparoscopic surgery need to be weighed up against its risks.

ESHRE 2022 Endometriosis gudielines

ROLE OF LAPAROSCOPY

6	In patients with negative imaging results or where empirical treatment was unsuccessful or inappropriate, the GDG recommends that clinicians consider offering laparoscopy for the diagnosis and treatment of suspected endometriosis.	GPP
7	The GDG recommends that laparoscopic identification of endometriotic lesions is confirmed by histology although negative histology does not entirely rule out the disease.	GPP

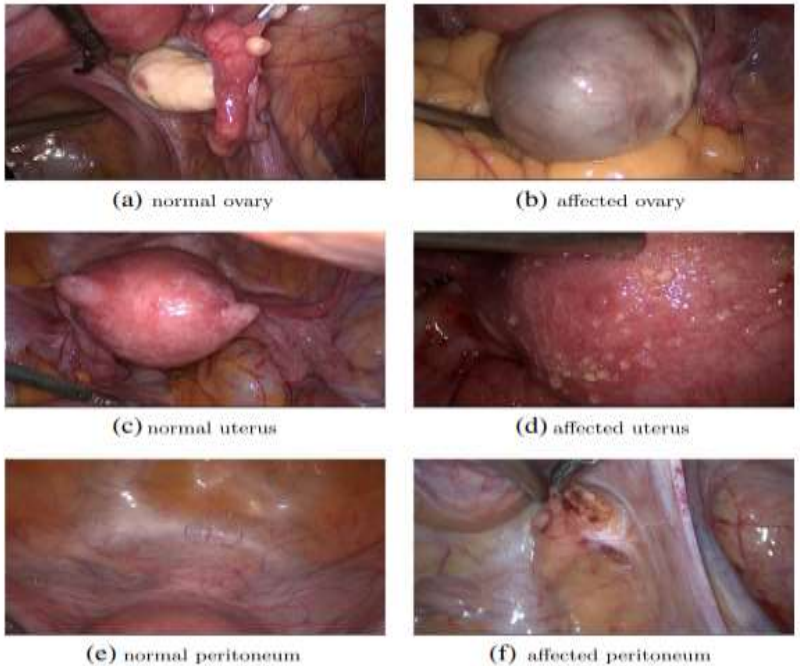
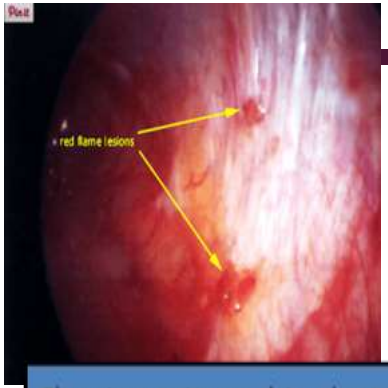
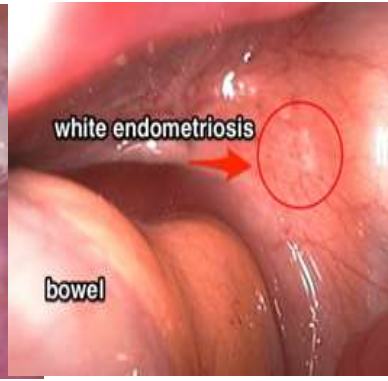


Fig. 1 Endometriosis examples – negative (left column) and positive (right column) examples at locations ovary, uterus and peritoneum



ENDOMETRIOTIC LESIONS



Classic peritoneal implant is **a blue-black "powder- burn"** lesion (containing hemosiderin deposits from entrapped blood) with varying amounts of surrounding fibrosis,

Typically observed on the ovaries and on peritoneal surfaces in the cul-de-sac, uterosacral ligaments, and ovarian fossa

These suggest a natural progression in the appearance of endometriotic lesions over time.

"Atypical," lesions **Red lesions** are highly vascular and proliferative and represent an early stage of disease.

Pigmented lesions in advanced disease.

Both are metabolically active and more commonly associated with symptoms.

White lesions are less vascular and active and less often symptomatic.

In patients with negative imaging results or where empirical treatment was unsuccessful or inappropriate, the GDG recommends that clinicians consider offering laparoscopy for the diagnosis and treatment of suspected endometriosis.	GPP
The GDG recommends that laparoscopic identification of endometriotic lesions is confirmed by histology although negative histology does not entirely rule out the disease.	GPP

EMPIRICAL TREATMENT OF ENDOMETRIOSIS AS PER ESHRE 2022 ENDOMETRIOSIS GUIDELINES

Both diagnostic laparoscopy and imaging combined with empirical treatment (hormonal contraceptives or progestogens) can be considered in women suspected of endometriosis. There is no evidence of superiority of either approach and pros and cons should be discussed with the patient.	GDG STATEMENT

ESHRE 2022 Endometriosis gudielines

ROLE OF BIOMARKERS:

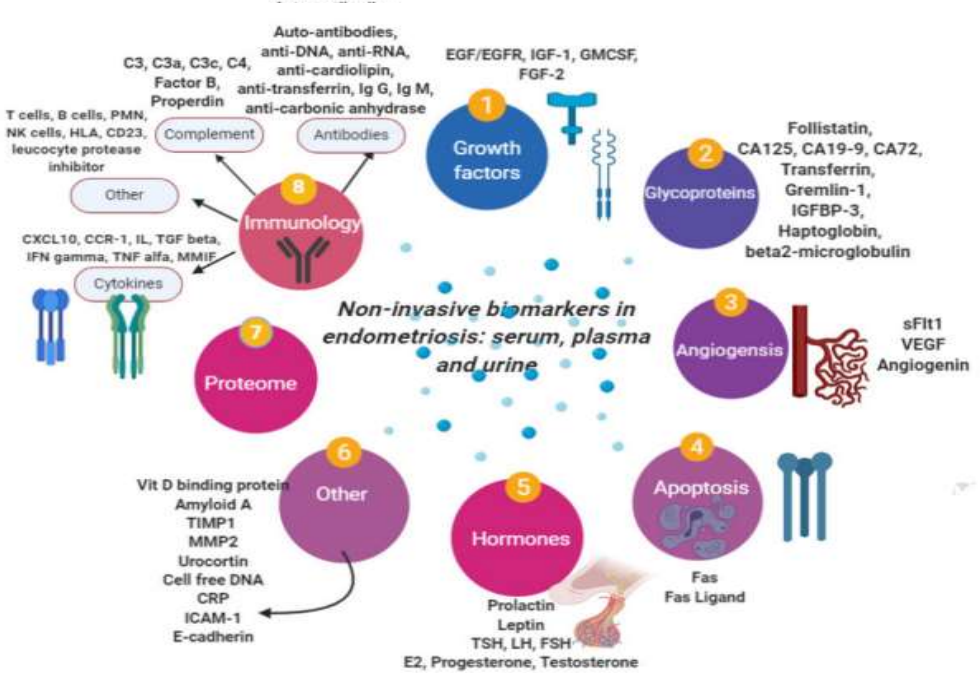


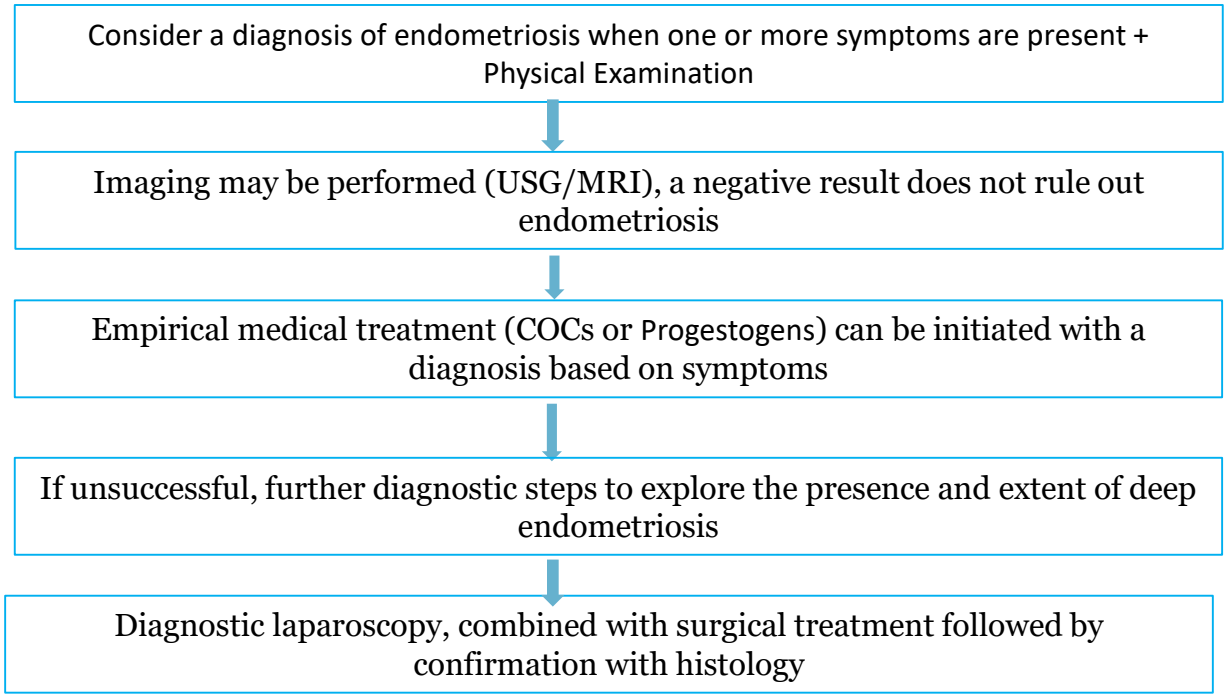
Figure 1. Putative noninvasive biomarkers for endometriosis [12].

IL-8
CA125
IL-6
sCD-163
FOLLISTATIN
CA 19-9
Mi RNA 196a , 135

4	Clinicians should not use measurement of biomarkers in endometrial tissue, blood, menstrual or uterine fluids to diagnose endometriosis.	⊕⊕⊕○	Strong recommendation

ALGORITHM FOR DIAGNOSING ENDOMETRIOSIS

ESHRE Algorithmic Approach for Diagnosis of Endometriosis



ESHRE 2022 Endometriosis guideline Development Group

ALGORITHM FOR A CLINICAL DIAGNOSIS OF ENDOMETRIOSIS (2/4)

Consistent with Endometriosis	Consider other diagnosis in addition to Endometriosis
Persistent and/or worsening cyclic or constant pelvic pain	Severe pain, amenorrhea, cramping without menstruation in an adolescent could indicate a reproductive tract anomaly
Dysmenorrhea	Concomitant symptoms: Severe non cyclic constipation and diarrhea suggests irritable bowel syndrome Painful voiding or flank pain could be due to urinary tract stones Urinary symptoms (hematuria, frequent urination) could indicate interstitial cystitis/painful bladder syndrome
Deep Dyspareunia	
Cyclic dyschezia	
Cyclic dysuria	
Cyclic catamenial symptoms in other systems (lungs, skin etc.)	

Agarwal SK et al. Clinical diagnosis of endometriosis: a call to action. Am J Obstet Gynecol. 2019 Apr;220(4):354.e1-354.e12.

ALGORITHM FOR A CLINICAL DIAGNOSIS OF ENDOMETRIOSIS (3/4)

Consistent with Endometriosis	Consider other diagnosis in addition to Endometriosis
Infertility	Absence of menses or other obstructive conditions in adolescence
Dysmenorrhea in adolescence, current chronic pelvic pain	History of pain directly associated with surgery (e.g. post-operative nerve entrapment or injury, bowel adhesions)
Previous laparoscopy with diagnosis	
Dysmenorrhea unresponsive to NSAIDs	
Positive family history	

Agarwal SK et al. Clinical diagnosis of endometriosis: a call to action. Am J Obstet Gynecol. 2019 Apr;220(4):354.e1-354.e12.

ALGORITHM FOR A CLINICAL DIAGNOSIS OF ENDOMETRIOSIS (4/4)

Modality	Consistent with Endometriosis	Consider other diagnosis in addition to Endometriosis
Physical examination	Nodules in cul de sac	Pelvic floor spasms
	Retroverted uterus	Severe allodynia along pelvic floor/vulva or elsewhere
	Mass consistent with endometriosis	Masses not consistent with endometriosis (e.g. fibroids)
	Obvious endometrioma seen on speculum or externally	
Imaging	Endometrioma on ultrasound	Adenomyosis and fibroids (may coexist with endometriosis)
	Presence of soft markers (sliding sign) Nodules and masses	

Agarwal SK et al. Clinical diagnosis of endometriosis: a call to action. Am J Obstet Gynecol. 2019 Apr;220(4):354.e1-354.e12.

Transvaginal ultrasound is recommended to be used in adolescents in whom it is appropriate, as it is effective in diagnosing ovarian endometriosis. If a transvaginal scan is not appropriate, MRI, transabdominal, transperineal, or transrectal scan may be considered.	⊕⊕◯◯	Strong recommendation
Serum biomarkers (e.g., CA-125) are not recommended for diagnosing or ruling out endometriosis in adolescents.	⊕⊕⊕◯	Strong recommendation
In adolescents with suspected endometriosis where imaging is negative and medical treatments (with NSAIDs and/or hormonal contraceptives) have not been successful, diagnostic laparoscopy may be considered.	⊕⊕◯◯	Weak recommendation
If a laparoscopy is performed, clinicians should consider taking biopsies to confirm the diagnosis histologically, although negative histology does not entirely rule out the disease.	⊕⊕◯◯	Strong recommendation

THANK YOU