



Endometriosis

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What is endometriosis?

Endometriosis is a condition where endometrial tissue (lining of the uterus) grows outside of the uterus, often on the ovaries, fallopian tubes, or other pelvic tissues. This extra tissue results in inflammation and scar tissue forming in this pelvic region & sometimes elsewhere in the body.

- Ectopic tissue response to hormonal cycles resulting in the inflammation, scarring, pain

Cause: **Unknown**

Potential Causes:

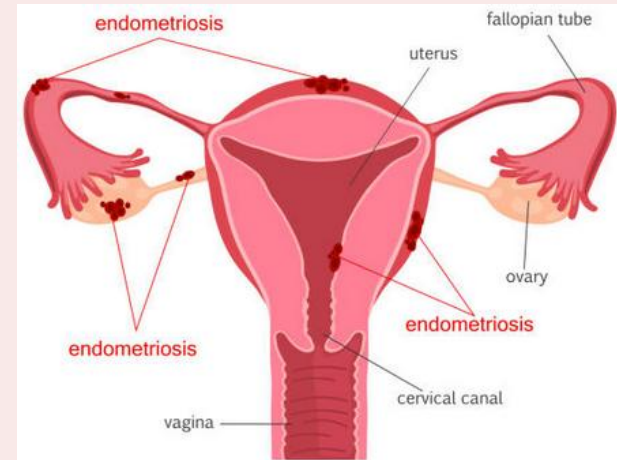
- Retrograde menstruation (blood flow back through the fallopian tubes)
- Transformed peritoneal cells
- Genetic Factors

Prevention: Not currently available.

Cure: Not available. Symptoms can be managed.

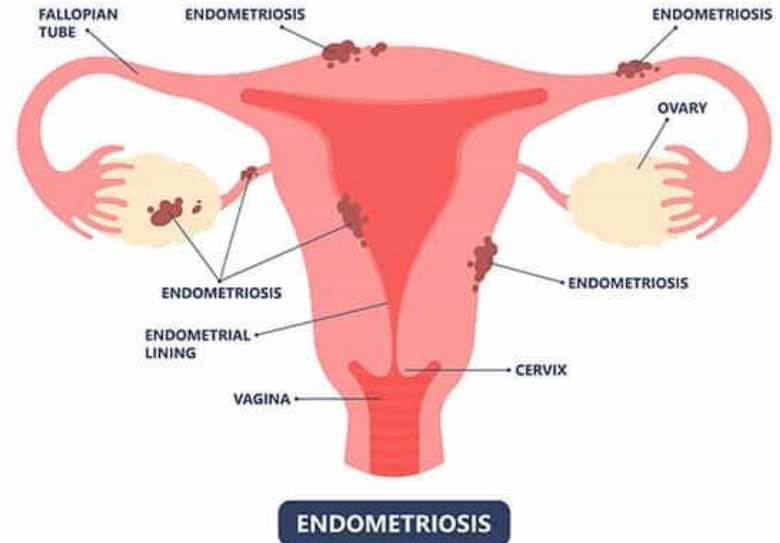
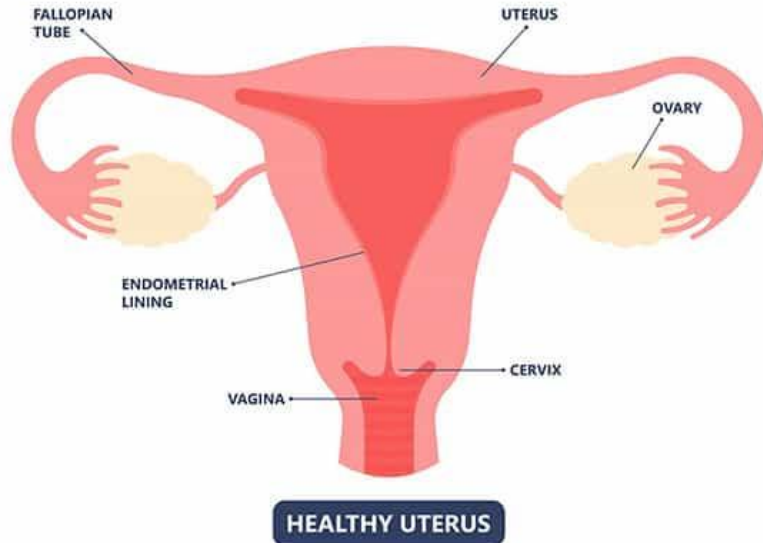
Prevalence

- ~10% of women of reproductive age worldwide
- Most common in women ages 30-35
- Often underdiagnosed; average delay to diagnosis is 7-10 years



Normal Reproductive Physiology

In a normal reproductive cycle, the uterus lining (**endometrium**) thickens, breaks down, and is shed during menstruation, in response to estrogen & progesterone levels. In endometriosis, **similar tissue grows outside the uterus**. This tissue also thickens, breaks down, and sheds with each cycle. However, since this tissue is trapped, it can cause pain, inflammation, and scarring.



Degrees of Endometriosis

- **Stage 1: Minimal** = small, superficial implants with minimal scarring
- **Stage 2: Mild** = more implants than stage I, that are slightly deeper with some filmy adhesions
- **Stage 3: Moderate** = many deep implants, small endometriomas on one or both ovaries; deep adhesions
- **Stage 4: Severe** = many deep implants, large endometriomas on one or both ovaries; very deep adhesions (potentially causing organs to stick together)

Grade I:
minimal
endometriosis



Grade III:
moderate
endometriosis



Grade II:
mild
endometriosis



Grade IV:
severe
endometriosis



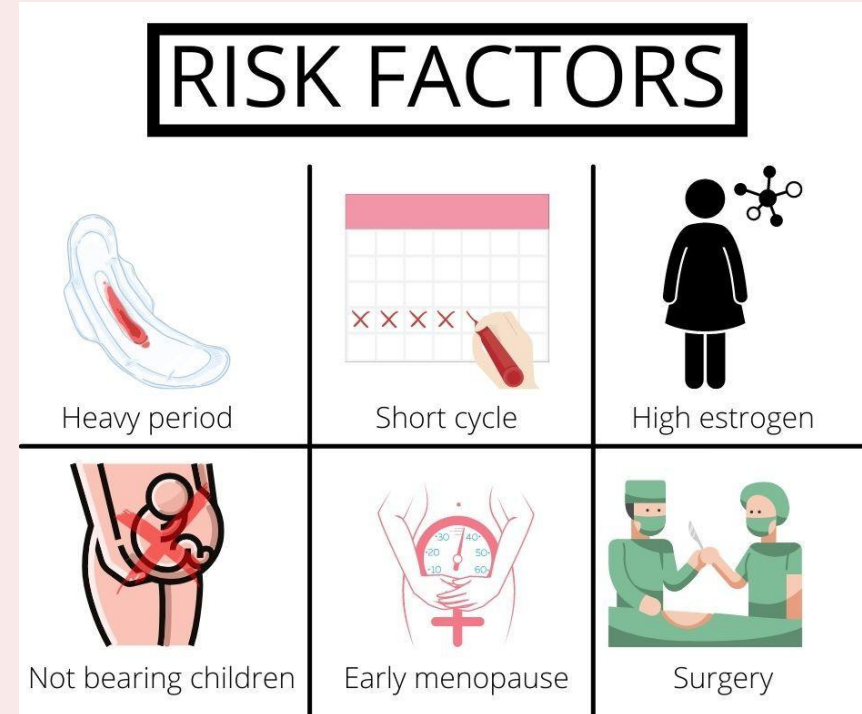
Pathophysiology & Risk Factors

Unclear Cause, but leading theories include:

- Retrograde menstruation
- Coelomic metaplasia
 - Coelomic metaplasia = transformation of cells lining the pelvic peritoneum (the coelomic epithelium) into endometrial-like cells
- Immune system dysfunction
- Genetic predisposition (family history)

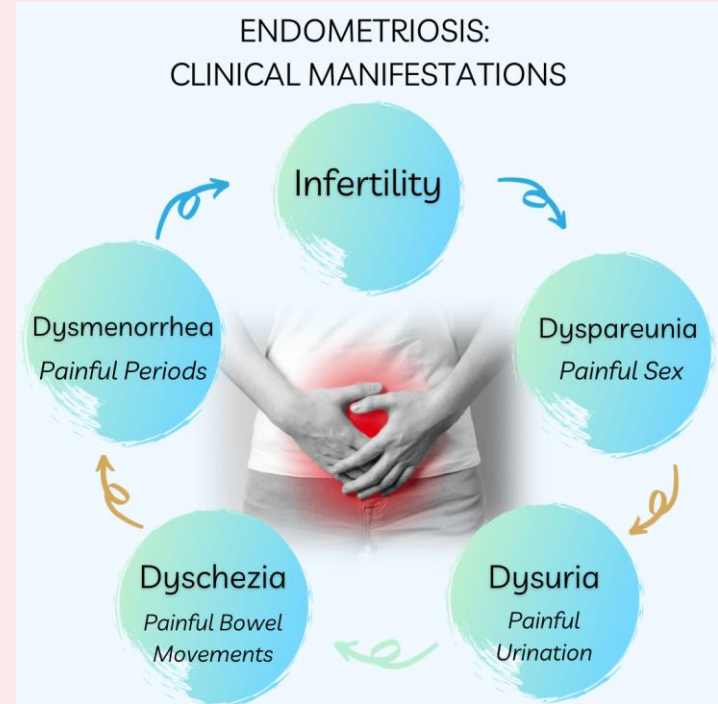
Risk Factors

- Early menarche, short cycles, nulliparity (never given birth to a live child)
- Low BMI
- High estrogen exposure



Clinical Presentation

- Pelvic pain (especially during menstruation)
- **Dysmenorrhea** (painful periods)
- **Dyspareunia** (Pain with intercourse)
- **Infertility**
 - 30-50% of patients
- Fatigue
- Gastrointestinal symptoms (bloating, diarrhea)
- Depression or anxiety



Diagnosis

Initial Clinical Suspicion:

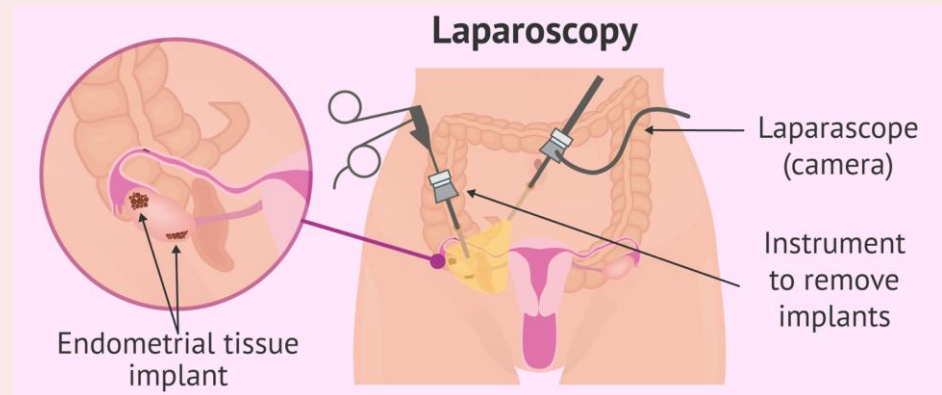
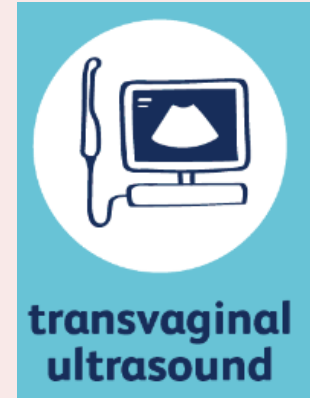
- Symptoms & Physical Examination (nodularity, fixed uterus)
 - **Fixed Uterus:** a condition where the uterus is immobile and cannot move freely within the pelvis, often due to adhesions or scar tissue. May lead to discomfort, especially during pelvic examination or menstruation.

Imaging:

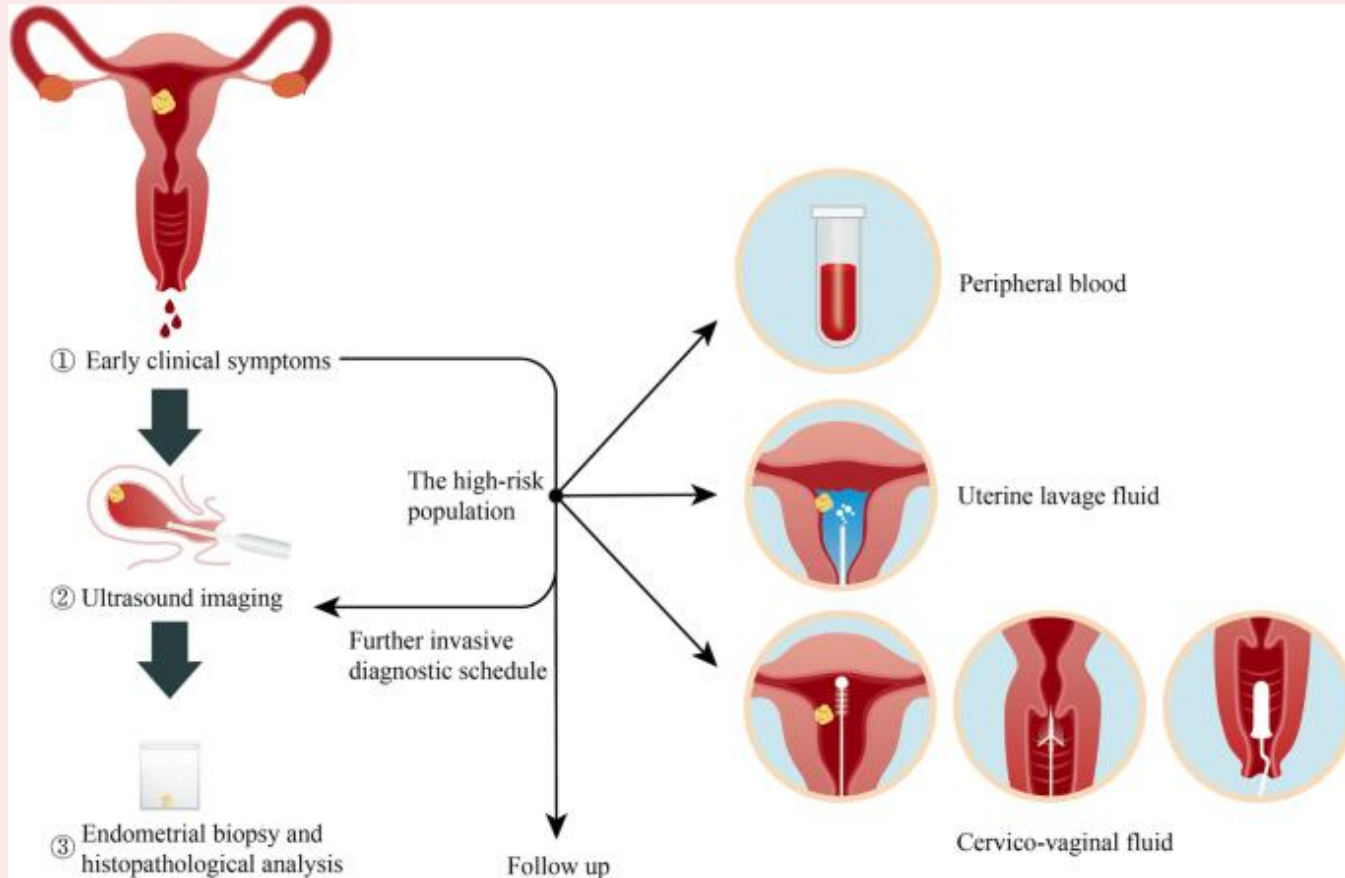
- Transverse Ultrasound
 - Good for ovarian endometriomas
- MRI
 - For deep infiltrating lesions

Definitive Diagnosis:

- Laparoscopy with biopsy (Gold Standard)
- Visual confirmation of lesions & staging



Diagnosis



Treatment



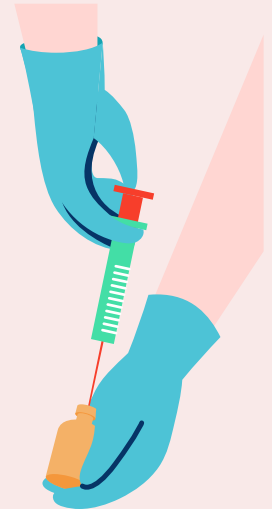
Medical Management

- **NSAIDs** (nonsteroidal anti-inflammatory drugs,) for pain
- **Hormonal Suppression**
 - Combined oral contraceptives (OCs)
 - Progestins
 - GnRH agonists/antagonists
 - Hormonal suppression works by reducing estrogen levels, which slows down or stops the growth of endometrial tissue, thus reducing the pain associated with endometriosis. By suppressing the menstrual cycle, hormonal treatments prevent the growth of new tissue and promote the shrinkage of existing endometrial tissue. (see image on next slide)

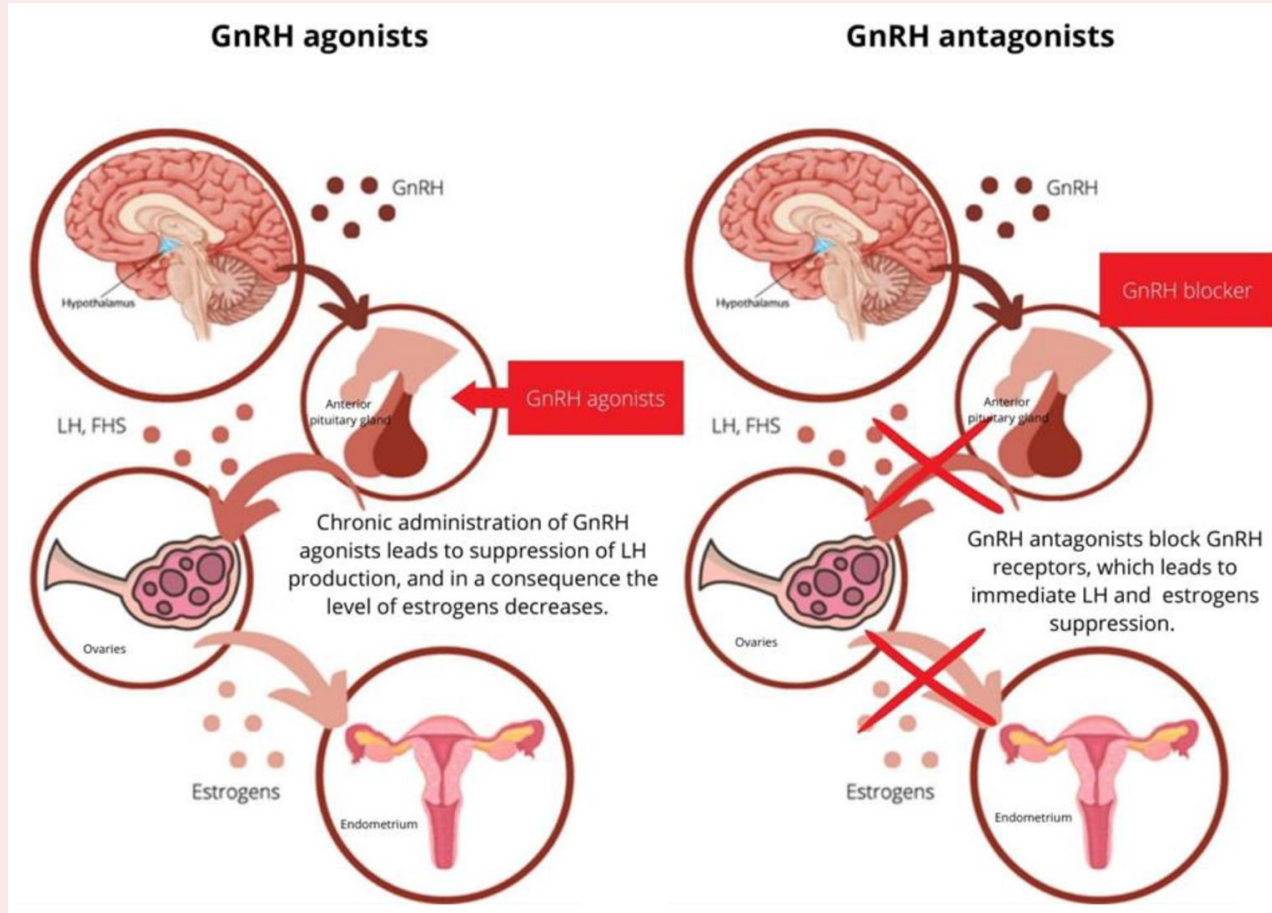


Surgical Management

- **Laparoscopic excision** or ablation of lesions
 - May improve pain and fertility
- **Hysterectomy** (only for severe cases after failed therapy)

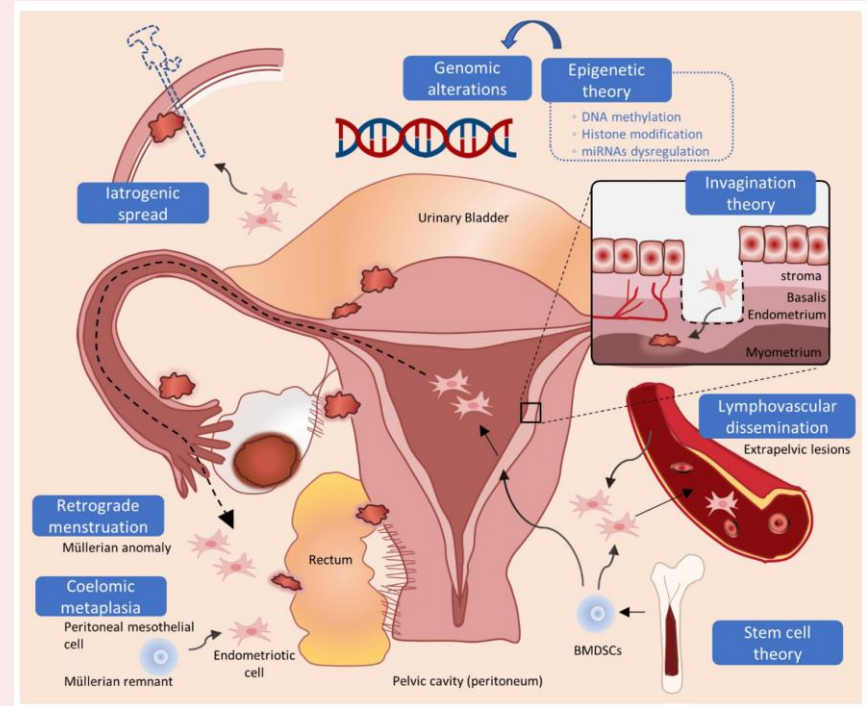


Treatment



Complications & Impact

- Chronic pain
- Reduced fertility
- Risk of endometriomas (ovarian cysts)
- Adhesions and organ damage
- Increased risk of cancers
 - (such as ovarian and thyroid)



Emerging Technology & Research

Non-Invasive Diagnostics

- Salivary & blood-based biomarkers (under study)
- MicroRNA panels, proteomics

Imaging Advances

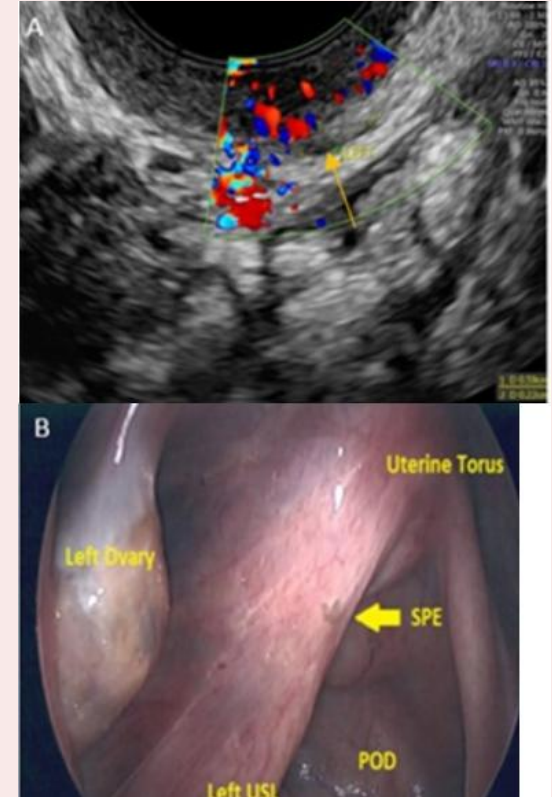
- Contrast-enhanced ultrasound

Targeted Therapies

- Selective progesterone receptor modulators (SPRMs)
- Immune modulators
- Anti-angiogenic agents

Endometriosis & Microbiome

- Exploring links between gut and reproductive tract microbiota and inflammation (under study)



Case Study

Patient: 29 year old Sally Banks goes to her gynecologist complaining of painful periods, pain after sex, and unable to get pregnant with her husband.

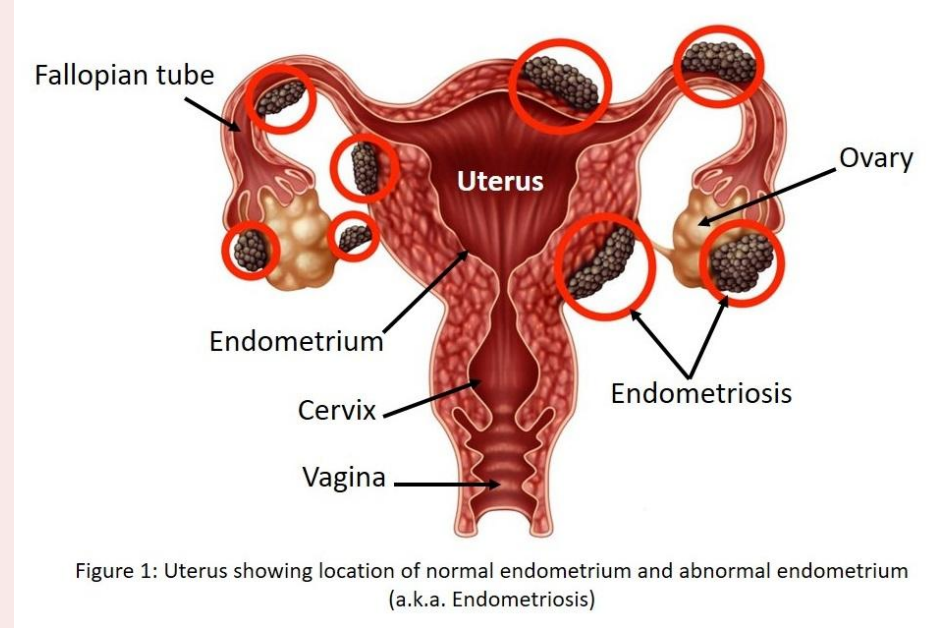
- Dysmenorrhea
- Dyspareunia
- Infertility

Physical Exam: Normal labs, transvaginal Ultrasound revealed ovarian cyst, laparoscopy confirmed Stage II endometriosis.

Treatment Plan: Start OCPs and NSAIDs for symptom control. Referred to reproductive counseling for infertility.

Conclusion

- Endometriosis is a complex disorder and has a significant impact on quality of life and reproductive health.
- Diagnosis is often delayed so clinical awareness is key.
- Current treatment focuses on pain management and fertility preservation.
- Promising new technologies may offer earlier diagnosis and targeted therapies in the near future.



Citations



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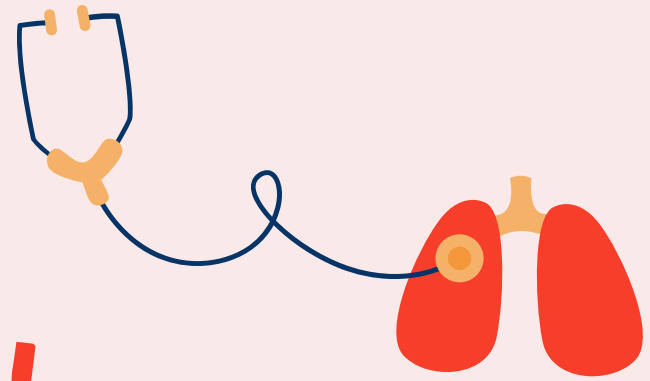
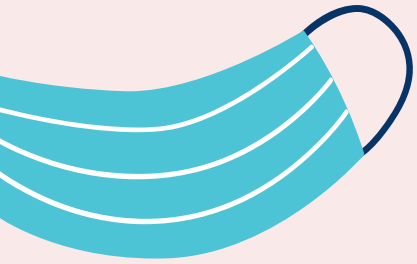
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Thank you!!

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