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Endometriosis is a Chronic Disease in which Pain and Symptoms are Individual

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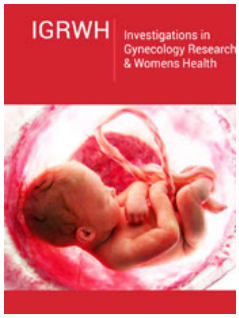
ISSN: 2577-2015



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Submission: May 05, 2026
Published: June 09, 2026

Volume 6 - Issue 1

How to cite this article: Siniša Franjić*. Endometriosis is a Chronic Disease in which Pain and Symptoms are Individual. Invest Gynecol Res Women's Health. 6(1). IGRWH. 000630. 2026.
DOI: 10.31031/IGRWH.2026.06.000630

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Abstract

Endometriosis is a persistent condition where tissue that resembles the uterine lining develops outside the uterus, primarily affecting the ovaries, fallopian tubes, and pelvic region. This leads to inflammation, scarring, and adhesions, resulting in intense pain, ongoing pelvic discomfort, reproductive issues, and problems related to digestion and urination. The experience of pain and related symptoms can differ significantly among individuals, including menstrual cramps, pain during sexual activity, blood in stool or urine during menstruation, as well as fatigue and bloating. A conclusive diagnosis generally necessitates the use of laparoscopy.

Keywords: Endometriosis; Woman; Uterus; Pain; Health

Introduction

Endometriosis is a long-lasting gynecological issue characterized by chronic pelvic pain and issues with fertility, affecting around 6 to 10 percent of females during their reproductive years [1]. This condition is defined by the presence of endometrial tissue outside the uterus, which can invade various body parts and structures. Although its underlying mechanisms remain under research, it likely involves a mix of factors such as retrograde menstruation, immune system issues, and coelomic metaplasia, among others. Diagnosing endometriosis can be challenging due to the variability of symptoms among patients. The presence of endometrial implants initiates an inflammatory reaction, leading to pain, adhesions, painful intercourse, and difficulties in conceiving. The symptoms are often influenced by where the endometrial implants are located.

Deep Infiltrating Endometriosis (DIE) refers to a type of endometriosis where endometrial tissue penetrates over 5mm beneath the peritoneum. The lesions can vary from tiny nodules to larger masses that may alter the shape and functionality of the affected organ. In severe instances, DIE can result in adhesions, scarring, and retroperitoneal fibrosis, which can negatively affect organ function.

Endometriosis is a chronic condition defined by the occurrence of endometrial tissue (both glands and stroma) outside the uterine cavity [2]. Usually, this tissue is found within the pelvis, including the rear of the uterus, the ovaries, the broad ligament, the uterosacral ligaments, and the fallopian tubes. In the ovaries, endometriosis often manifests as a cystic formation called an endometrioma. In rare cases, this condition has been discovered in distant locations such as the breast, lungs, and brain. A history of painful menstruation and painful intercourse is typically observed in cases of endometriosis, and ultrasound examinations often reveal bilateral endometriomas, also known as "chocolate cysts," which are a complication associated with this condition [3]. Endometriosis is a prevalent issue where active endometrial glands and stroma develop outside the uterine cavity. Endometriomas

form as ectopic endometrial tissue in the ovary generates blood that accumulates into a cyst surrounded by a capsule with each menstrual cycle. Although endometriosis is non-cancerous, it can still result in considerable physical and psychological distress due to its clinical manifestations:

A. Pelvic discomfort

B. Painful menstruation

C. Pain during intercourse

D. Infertility

Pelvic Pain

Several conditions affecting the lower abdomen and pelvic area can cause pain and discomfort; however, only a small number of patients seek attention solely for persistent pain [4]. Individuals with chronic cervicitis frequently present with vaginal discharge, and it is less common for them to arrive with only pelvic pain and painful intercourse. Conditions like ovarian cysts and uterine fibroids are known to cause chronic pain but are often found during routine vaginal examinations or are associated with abnormal uterine bleeding or acute lower abdominal pain. The cyclical deep pelvic discomfort associated with dysmenorrhea and midcycle ovulatory pain, known as mittelschmerz, is typically straightforward to identify. A worsening condition of dysmenorrhea can indicate the possibility of endometriosis, which is a prevalent underlying factor for chronic pelvic discomfort.

Pain emanating from the hips, sacroiliac region, and lower back is generally distinguished from visceral pain. Musculoskeletal pain is significantly affected by body position and movement. Hip issues are indicated when there is a concentration of pain in the front of the hip, with pain radiating to the knee and worsening when walking occurs. Muscle spasms in the pelvis, such as those involving the iliopsoas and obturator internus due to pelvic inflammatory disease, are more likely to mimic hip pain than the reverse situation. Additionally, lower back pain from musculoskeletal disorders is usually easy to separate from pelvic pain causes. Buttock claudication that results from aortoiliac artery blockage is often easily identified. However, differentiating ischaemic limb pain from sciatica caused by spinal stenosis can prove to be more challenging.

Similar to the causes of acute abdominal and pelvic pain, the typical causes of chronic pain can be divided into two primary categories:

a) Younger females experiencing concurrent menstrual and gynecological issues

b) Older individuals exhibiting changes in bowel habits, where bowel disease is likely to be the diagnosis.

Risks

Someone who has never given birth, those with an early onset of menstruation, prolonged menstrual periods, and müllerian anomalies exhibit a higher likelihood of being diagnosed with endometriosis [2]. Females who have first-degree relatives, such as mothers or sisters, suffering from endometriosis face a 7% possibility of developing the condition, in contrast to only a 1% likelihood for women without such relatives. There is also a noted correlation between endometriosis and heightened incidences of specific autoimmune inflammatory diseases (like lupus and thyroiditis) and certain epithelial ovarian cancer types (including clear cell, endometrioid, and low-grade serous). For reasons that are not fully understood, endometriosis appears to be diagnosed less frequently in Black and Hispanic women.

Symptoms

The clinical manifestation of endometriosis can vary widely. Some women experience no symptoms at all, and the condition may be discovered incidentally during surgical procedures or imaging done for different reasons [5]. It can also manifest as chronic pelvic pain or issues with fertility. In women who exhibit symptoms, endometriosis may present as persistent abdominopelvic discomfort, ovulation pain, difficult bowel movements, painful urination, and/or menstrual cramps. Dysmenorrhea linked to endometriosis is typically described as dull or cramping pelvic pain that usually starts 1 to 2 days prior to menstruation, continues during menstrual bleeding, and may last several days thereafter. Chronic abdominopelvic pain can be characterized as dull, throbbing, sharp, or burning sensations. Adnexal masses, such as endometriomas associated with endometriosis, can lead to pelvic pain or a feeling of pressure. Furthermore, other symptoms of endometriosis may include issues related to bowel and bladder function, abnormal uterine bleeding, discomfort in the lower back, or persistent fatigue.

These symptoms may arise independently or together. An increased presence of symptoms has been linked to a higher chance of having endometriosis. A cohort analysis involving more than 600 women diagnosed with endometriosis recognized a visceral syndrome characterized by seven symptoms tied to the condition. This syndrome encompassed abdominal discomfort unrelated to menstruation, painful urination, discomfort during bowel movements, constipation or diarrhea, irregular bleeding, nausea or vomiting, and fatigue or lack of energy. Compared to women without the condition, those with endometriosis were more inclined to report experiencing five to seven symptoms (20% versus 2%).

The European Society of Human Reproduction and Embryology (ESHRE) advises diagnosing endometriosis when there are gynecological signs like painful menstruation, chronic pelvic pain not linked to the menstrual cycle, pain during intercourse, infertility, and non-gynecological cyclic symptoms such as painful bowel movements, painful urination, blood in urine, rectal bleeding, shoulder pain, and exhaustion in women of reproductive age. Women diagnosed with endometriosis might also experience issues with fertility. A higher occurrence of endometriosis has been observed in women facing subfertility (up to 50%) compared to those with confirmed fertility (5–10%), and there's a noted decline in monthly conception rates in women with endometriosis (2–10%) in contrast to fertile couples (15–20%).

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Endometriosis affects fertility by inducing a local inflammatory response, leading to resistance to progesterone, hindering the release of eggs, and constraining the transport of sperm and embryos. Beyond the local inflammatory response, this condition may lead to reduced receptiveness of the endometrium, create physical blockages, and modify sexual performance. The defining characteristic of endometriosis is cyclic pelvic discomfort that starts prior to menstruation, intensifies one to two days before menstruation, and diminishes at the start of menstruation or shortly thereafter [2]. Women suffering from chronic endometriosis and adolescents with the condition might not display this typical pain pattern. Additional symptoms associated with endometriosis include painful menstruation, painful intercourse, abnormal bleeding, bladder and bowel issues, in addition to fertility challenges. Endometriosis is among the prevalent diagnoses in the assessment of couples struggling with infertility.

Symptoms associated with endometriosis differ based on the specific anatomical regions involved. More than 75% of women with symptomatic endometriosis will experience pelvic pain and/or painful menstruation. Painful menstruation typically starts in the teenage years, intensifies with age, and can develop into persistent pelvic pain. Painful intercourse is generally related to deep penetration, which can exacerbate endometrial lesions located in the cul-de-sac or on the uterosacral ligaments. Endometriosis is also a significant factor contributing to infertility. While the precise mechanism remains unclear, moderate to severe endometriosis can create thick adhesions that distort the pelvic structure, disrupt tubal movement, hinder egg release, and result in blocked fallopian tubes.

Examination

Findings during examination may reveal tenderness or a pelvic mass, as well as potentially palpable nodules in the rectovaginal septum and a retroverted uterus that is fixed due to adhesions, often referred to as a "frozen pelvis" [3]. Transvaginal ultrasound indicators such as ovarian cysts displaying "ground-glass" echoes can help confirm a diagnosis of endometriosis. Other identifiable traits suggesting moderate to severe endometriosis during ultrasound might include distinct solid endometriotic nodules located within the rectovaginal space or on the uterosacral ligaments. However, superficial endometriosis may not be visible on ultrasound scans and could only be identified through laparoscopy.

Diagnosis

When the initial clinical assessment and evaluation align with endometriosis, it is common for practitioners to prefer medical therapy over surgical options as a safer management strategy [2]. Nonetheless, the only method for a conclusive diagnosis of endometriosis is through direct observation via laparoscopy or laparotomy. In cases where surgery is performed, the appearance of endometrial implants can greatly differ in size, texture, and looks. These may manifest as red vesicular lesions, dark brown to black powder-burn lesions, white fibrous plaques, or peritoneal defects known as Allen-Masters windows. Surrounding tissues may show reactive fibrosis, which can cause severe adhesions, particularly in deep infiltrating endometriosis. The ovaries can also form large cystic structures filled with thick, dark, aged blood and debris, commonly referred to as endometriomas or chocolate cysts. A peritoneal biopsy is advised for a histological confirmation of endometriosis.

There is a lack of comprehensive studies on the disease's progression and the prediction of clinical results [6]. The outlook for reproductive capabilities in cases of early to moderately progressed endometriosis appears positive with conservative management. Hysterectomy along with bilateral salpingo-oophorectomy is often seen as a 'definitive' option for treating endometriosis connected to persistent pelvic discomfort, adnexal masses, or multiple previous ineffective conservative surgeries. However, symptoms may reemerge even after hysterectomy and oophorectomy.

Treatment

The option chosen for treating individuals with endometriosis is influenced by the disease's scope and location, the intensity of symptoms, and the individual's aspirations for future fertility [2]. The treatment should be approached with the understanding that endometriosis is a long-term condition that may necessitate ongoing management and several interventions. Expectant treatment might be suitable for those experiencing minimal or no symptoms. For other patients, both medical and surgical treatments are viable. In severe or chronic cases of endometriosis, a comprehensive approach that includes medical care, surgical intervention, involvement of pain management centers, and mental health support may offer the most thorough care. The medical approach to endometriosis focuses on the suppression and reduction of endometrial tissue. Although these medical treatments can be highly effective, they serve as temporary measures instead of permanent solutions. Symptoms and endometrial implants frequently return once treatment has been stopped. Medical management does not significantly assist those trying to conceive and can postpone attempts at pregnancy. Conversely, surgical treatment has been demonstrated to enhance conception rates.

Current approaches for addressing endometriosis involve the use of Nonsteroidal Anti-Inflammatory Medications (NSAIDs), estrogen–progestin contraceptives taken cyclically or continuously (such as pills, patches, and rings), and menstrual suppression through progestins (which can be oral, injectable, or intrauterine). These therapeutic options create a condition resembling "pseudopregnancy" by inhibiting ovulation and menstruation, as well as promoting decidualization of the endometrial implants, thus reducing the cyclic pelvic discomfort and menstrual pain. Such treatments are most suitable for individuals who are not actively trying to become pregnant.

Surgical intervention remains the primary strategy for managing endometriosis, often involving the ablation or excision of endometriotic lesions through laparoscopic methods [3]. In these cases, bilateral endometriotic cysts necessitate removal either through cystectomy or by draining them. Pre-surgical treatment

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with GnRHa (gonadotrophin-releasing hormone analogs) can be beneficial in decreasing the size of endometriomas and reducing disease activity prior to surgery. The surgical approach is expected to alleviate dyspareunia and dysmenorrhea, particularly in the short term, and may enhance fertility in cases of more advanced disease. Nevertheless, research indicates a possible reduction in ovarian reserve post-surgery for ovarian endometriomas; thus, surgery should only proceed after a thorough assessment of potential advantages and hazards.

Surgery

In numerous aspects, the surgical management of endometriosis, whether performed through an 'open' or 'closed' method, presents greater challenges than those encountered in most gynecological cancers [7]. Surgical planes may be obscured due to the sclerotic and invasive characteristics of endometriosis. However, it can be argued that Minimally Invasive Surgical techniques (MAS) hold significant value in this domain, as they help reduce postoperative adhesions. Considering that many individuals seek surgical intervention to improve their chances of conception, the importance of this benefit is considerable. Therefore, despite the technical challenges faced by the surgeon, the advantages for the patient necessitate the use of such methodologies in treating endometriosis. In cases where severe endometriosis is suspected, patients should not only prepare for bowel management prior to surgery but also undergo cystoscopy and proctosigmoidoscopy to thoroughly assess the lower urinary and gastrointestinal systems.

Performing ablation or resection of superficial peritoneal endometriosis is relatively uncomplicated and can be done with various monopolar or bipolar surgical instruments that are widely accessible. The preferred method among the editors in this context is the use of the Argon Beam Coagulator (ABC). Since the current penetrates to a depth of about 1mm, the risk of damaging adjacent organs is minimal. Additionally, the concurrent introduction of argon gas often aids in the dissection and excision of the affected tissues by elevating them away from underlying structures. The management of the obliterated posterior cul-de-sac and the retroperitoneal extent of the condition presents significantly more challenges, as well as scarring in the region of the uterosacral ligaments, which can lead to ureteral constriction or even total blockage.

Fundamental techniques should not be disregarded in haste to tackle serious pelvic conditions when they arise, to avoid overlooking issues in other areas. This principle is especially relevant when dealing with endometriosis and the necessity to investigate the whole abdominal cavity. There are often extensions into the gastrointestinal system beyond the pelvic area, notably affecting the appendix, and the disease may occasionally present even as far as the subdiaphragmatic peritoneum. It is essential to manage not only the pelvic disease but also any issues located in these other areas. Lesions affecting the diaphragm's peritoneum can be treated with the ABC method, while the appendix and/or small intestine can be removed utilizing Endo - GIAs (Ethicon Endosurgery Inc.). A crucial part of dealing with the obliterated cul-de-sac and potential ureter issues is to access and expand the retroperitoneal spaces. Setting the ABC at 80 watts and using a gas flow rate of 2-3 liters per minute, an incision is made in the peritoneum over the psoas muscle running from slightly above the pelvic brim to the round ligament. By deploying either the ABC or a battery-operated Stryker irrigator through the midline suprapubic port, the pararectal and paravesical spaces can be enhanced by moving these instruments laterally rather than in line with the iliac vessels. This maneuver will facilitate quick recognition of the ureter, and in the event of ovarian removal, the associated gonadal blood vessels can be secured using either endoscopic staples or the chosen energy device. Employing hydrodissection in this region proves beneficial as the rapidly injected fluid effectively disassociates the ureter from the medial leaf of the peritoneum as the uterosacral ligament where the highest degree of fibrosis is typically found. Irrigators that operate at low flow rates lack the necessary force to detach the ureter from the uterosacral ligaments when these are secondarily affected by endometriosis. Following the lateral mobilization of the ureter, the ABC can be used on the side of the uterosacral ligaments, executing the transection in a lateral to medial manner. This step is crucial since the most severe lesions in the posterior cul-de-sac are generally located at the midline, where involvement of the rectum is most prevalent. Upon reaching the midline, position the irrigator just next to the rectum and between the hypogastric vessels, advancing it towards the back to facilitate the creation of the retro-rectal space with water. Although this may appear unnecessary, this action will lift the rectum out of the sacral recess and into the surgical field. At this point, a rectal dilator can be inserted through the anus and a Gyne Tube (Paragon Imex Co.) can be placed into the vagina. With the positioning of these two instruments, the ABC can be employed to further incise the peritoneal reflection at the midline. If there are nodules present, the irrigator can be introduced deep to the posterior attachment point. The affected section of the rectum has now been completely isolated around its circumference, and even if further ablation or sharp dissection leads to a breach into the rectum, the extent of tissue that needs to be excised will be reduced, generally resulting in the removal of a small part of the anterior rectal wall. This can subsequently be secured using an Endostitch apparatus (Covidien Inc.) with either a continuous or interrupted closure utilizing 0 Vicryl.

Conclusion

Endometriosis refers to a medical condition marked by the abnormal presence and proliferation of endometrial tissue outside of the uterine endometrium and myometrium. The occurrence of endometrial tissue within the myometrium is termed adenomyosis. This ectopic endometrial tissue shares the same histological characteristics as the endometrial lining found in the uterus. Normally, the uterine endometrium is shed during the menstrual cycle and expelled from the body. In cases of endometriosis, the ectopic tissue undergoes hormonal fluctuations similarly to normal endometrium. The shed cells and blood typically do not exit the body effectively, leading to various issues such as internal bleeding, inflammation, discomfort, scarring, or other symptoms. The primary

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and most prevalent symptom associated with endometriosis is pelvic pain. The intensity of pain often correlates with the severity of the disease; however, some women may experience little to no pain despite significant progression and spread of the condition. Conversely, pain can also be severe despite a minimal presence of endometriosis.

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