

Diagnostic Laparoscopy in the Future: Negative Aspects

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ABSTRACT

Endometriosis affects a woman's quality of life significantly in around 80% of cases of sterility and severe pelvic pain. Adolescent patients experience disproportionately long delays in receiving a diagnosis for this illness, which is very frequently diagnosed an average of 6 years later. Invasive procedures are used as the primary diagnostic, and access to specialist treatment is restricted, which contributes to this in some measure. While essential for the diagnosis and management of endometriosis, laparoscopy has been shown to be less cost-effective than empiric traditional therapy and to place more emphasis on the patient and the overall clinical course. We learn more about the complexity of this condition as new research becomes available. The effectiveness of laparoscopy has been proven to vary, with high rates of recurrence and varied symptom relief over time. Laparoscopy is more advantageous for advanced disease and deep infiltrating endometriosis. Studies have also shown a slight correlation between the amount of discomfort felt by patients and the stage and location of lesions. This article examines future prospects and alternatives while also evaluating present endometriosis care guidelines and the appropriateness of diagnostic laparoscopy.

Keywords: Endometriosis, Laparoscopy, Surgical management.

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BACKGROUND

Endometriosis, which affects 10% of women of reproductive age, is present in 90% of women who have persistent pelvic pain and infertility.¹ It is described as the existence of tissue that resembles the endometrium outside of the uterus. Retrograde menstruation is the most common cause of this illness, however, it is unclear exactly how endometriotic lesions develop and remain. Endometriosis is classified into four phases by the American Society for Reproductive Medicine (ASRM) based on the location, depth, and pattern of lesions and adhesions (minimal, mild, moderate, and severe). Deep infiltrating endometriosis refers to lesions that penetrate more than 5 mm below the peritoneal surface. Although rectovaginal lesions make up the bulk of these disorders, deep infiltrating endometriosis can also affect the colon, bladder, and ureters.²

Presently Used Diagnostic Techniques and Treatment

Experts believe that early detection is essential since endometriosis may have major implications on individuals' well-being and fertility. Unfortunately, it takes a typical seven years for a diagnosis to be made, which can be detrimental to the early treatment of endometriosis to reduce discomfort and the pressure on psychological and emotional wellness.³ Due to challenges with the diagnosis and the requirement for surgical treatment, there has been a delay. Despite the lack of information on the evolution of endometriosis and how it impacts endometriotic lesions, medical therapy is thought to avoid unpleasant stimulation from inflammatory menses while also inhibiting estrogen receptors in endometriotic tissue and disease progression. Although there are several reasons why a person could experience pelvic discomfort, diagnostic laparoscopy is rarely employed as the main technique for diagnosis. Imaging as well as other diagnostic techniques, like the history and physical exam, can be used to find many of these. Given the multitude of reasons for pelvic discomfort, a more complete assessment should always be performed to eliminate the possibility of other factors. Current endometriosis diagnostic techniques include clinical assessment, imaging findings, and

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confirming diagnosis via laparoscopic surgery in conjunction with or without biopsies of lesions. Endometriosis patients frequently experience dysmenorrhea and dyspareunia in addition to pelvic pain. Additional symptoms, such as gastrointestinal problems in people with bowel endometriosis and urinary symptoms in those with bladder implants, vary depending on where the lesions are located. Physical examination might reveal adnexal lumps, nodularity inside the posterior fornix, and rigidity of the uterus. Endometriomas, rectovaginal nodules, and bladder nodules have all been identified and diagnosed with the help of imaging modalities like magnetic resonance imaging (MRI) and ultrasound. The majority of organizations support the use of progestins as an empiric treatment for endometriosis, combined hormonal contraceptives, gonadotropin-releasing hormone (GnRH) agonists with or without add-back therapy, non-steroidal anti-inflammatory drugs (NSAIDs), and gonadotropin-releasing hormone (GnRH) agonists.⁴ With the advent of laparoscopic surgery in the 1970s for the diagnosis and treatment of endometriosis, research on the correlations between symptoms and lesions as well as the propensity for surgical excision and ablation to be successful has increased.

DISADVANTAGES OF LAPAROSCOPY FOR DIAGNOSIS

Focuses on Lesions that Can Be Seen

Its biggest flaw may be that endometriosis is not treated as a complex chronic inflammatory disorder but rather is diagnosed by laparoscopy by focusing on apparent lesions as the source of symptoms. Patients may have persistent pain even after having all endometriotic illnesses removed because pelvic discomfort might have an inflammatory and neuropathic origin with a central sensitization of the nerve system component.⁵ Individuals with pelvic discomfort had increased prefrontal cortical connections and anterior insula glutamatergic neurotransmission.⁵ During diagnostic laparoscopy, all endometriotic lesions are seen as components of the same disease, including microscopic, superficial, deep infiltrating, ovarian, and uterine endometriosis. With the excision of all these diverse lesion types, however, the effectiveness in relieving pain and preventing recurrence varies greatly, with 30% of patients reporting persistent pelvic pain that is resistant to surgery and 50% reporting recurring symptoms within 5 years of therapy.⁵ There are several categorization systems for endometriosis, however, they are rarely used in claim statistics and electronic medical records. The ASRM classification is the most used approach, although it still isn't a reliable predictor of discomfort, dyspareunia, or infertility. This shows that the symptoms that doctors are seeking to treat are not correctly correlated with the visibility of lesions during laparoscopy. Moreover, there is no evidence in favor of a stage-by-stage development of the illness. Although studies have not discovered a statistically significant correlation between the place and stage of lesions and that amount of pain, there may be a relation between both the degree of invasion and the pain a patient experiences. Pelvic discomfort has continuously been associated with deep infiltrating endometriosis (DIE) lesions, and it has been demonstrated that symptomatology and lesion location are correlated.⁶ Another finding that limits the connection between lesions and symptoms is the fact that many individuals in large studies of patients undergoing reoperation for chronic pain seemed to have no visible lesions. One study found that after surgical laparoscopy, individuals between the ages of 19 and 29 experienced high pain recurrence rates of up to 60%, with some of these patients showing no endometriotic lesions after subsequent surgery.⁶ Age at the time of the initial surgery was the sole indicator of the necessity for a second procedure.¹ Lesions advanced in 29% of patients who underwent repeat procedures, regressed in 42% of patients, or remained the same in 29% of patients, demonstrating that the apparent signs of illness do not always advance.⁶ Finding and then completely excising endometriotic lesions is one of the objectives of diagnostic laparoscopy. The variety of apparent lesions, which might be clear, yellow, red, brown, blue, or black, with or without fibrosis or scarring, may lead to missing lesions.¹ Lesions develop microscopic vascularization and innervation that cannot be seen using a laparoscope. While stage III and stage IV sickness can lead to morphological deformation and the elimination of pelvic gaps, deep infiltrating lesions like those in the rectovaginal septum, retro rectal space, or within the deep pelvic muscles and sciatic nerves may go unnoticed. Adenomyosis could also go unnoticed. These diseases may not always be easily visible from an intraperitoneal perspective.² The gold standard for diagnosing endometriosis is still laparoscopy with histologic confirmation of lesions, however, it is neither totally diagnostic nor fully curative.

Longer Diagnostic Time

As neither imaging nor serum markers have been able to diagnose every ailment, the need for surgical intervention for diagnosis results in protracted delays. The latest American College of Obstetricians and Gynecologists (ACOG) practice recommendation on endometriosis therapy suggests utilizing oral contraceptives, non-steroidal anti-inflammatory drugs, and a 3-month course of a GnRH agonist before thinking about diagnostic surgery. Surgery is only contemplated when symptoms are severe enough to justify a laparoscopy's risks in terms of the patient's quality of life. The majority of patients state that their symptoms begin around menarche, and it often takes women seven years and several medical visits before endometriosis is identified. Teens experience longer diagnostic delays than infertile patients do.⁷ The delay is also caused by referral patterns and a dearth of subspecialists. Of the 35,000 ACOG fellows in practice, only around 400 have completed the Training in Minimally Invasive Gynecologic Surgery, a field that specializes in difficult surgery for benign uterine and adnexal issues. Many patients travel great distances to reach surgical facilities that provide extensive endometriosis therapy, and not all of these doctors specialize in treating endometriosis.

Surgery and Anesthetic Risks

Even though there is a modest chance of problems from a diagnostic laparoscopy often less than 1% the person is still at risk for complications from surgery and anesthesia. Bleeding, infection, damage to the nearby organs (such as the colon, bladder, ureters, and vasculature), and conversion to laparotomy are only a few examples of complications. More than half of injuries start with the initial entrance. Given the high incidence of pain and recurrent symptoms after surgery, it makes sense that doctors and patients would want to delay treatment to reduce these risks when the benefit is limited.

Cost-effectiveness

According to Zondervan et al., the estimated cost of endometriosis in the US in 2008 was \$3,000 per afflicted woman.⁸ However, this estimate excludes societal expenses like missed earnings and decreased productivity owing to symptoms. Given that patients without the need for a diagnosis continue to look for explanations for their symptoms, the delay in diagnosis brought on by obstacles to surgery is probably a significant component of that expense. The expenses of empirical medical therapy were discovered to be cheaper than a laparoscopic operation, making laparoscopy itself not especially cost-effective as a diagnostic tool.¹ Due to earlier diagnosis and more targeted treatment options, endometriosis imaging or prediction algorithms may result in lower costs.³

Comparable Effectiveness of Pharmacological and Surgical Treatment

The pain brought on by endometriosis may be successfully managed by a number of medicines, including hormonal therapies, analgesics, GnRH analogs, and medicines for sympathetic activation, according to research. Patients with endometriosis and dysmenorrhea were shown to experience much less discomfort when taking continuous oral contraceptives.¹ In two randomized controlled studies using laparoscopic surgery for the pain management associated with endometriosis, surgery was shown to be beneficial in symptom relief for four months for 53 and 82 percent of the treatment groups. Comparing this

to the expectant management group's (24.6 and 34%) results, it was noticeably better.¹ Nonetheless, patients with stage 1 or little illness made up the majority of those who did not recover well from surgical treatment. Patients with grade I disease reported the least improvement after surgery at both long- and short-term follow-ups.¹ Despite the fact that some patients have significant short-term improvement after surgery, revision surgery rates at 3, 6, and 8 years were 27, 51, and 61%, correspondingly, and a large number of patients had no visible lesions on revision surgery.¹ Consequently, surgery by itself cannot be regarded as a cure for endometriosis-related pain, especially in cases with lesser illness.

Lack of Progress in Fertility

Although several theories have been put out regarding how endometriosis results in infertility and subfertility, they are all still up for debate.⁵ In relatively mild forms of endometriosis, lower egg and embryo quality, altered cell-mediated activity, altered ovulatory disorder, reduced implantation, altered peritoneal function, and systemic inflammation may all play a role in infertility. In endometriosis stage I and II, laparoscopic excision of endometrium implantation has been associated with a marginally higher live birth rate. About 39 asymptomatic individuals with fertility problems would need surgery for one additional pregnancy, according to the outcomes from three randomized controlled trials.⁵ The egg's ability to travel through the tube may be compromised by endometriosis in stages III and IV, which can distort the anatomy. Those with severe endometriosis who underwent surgery and were observed for a maximum of 2 years had increased conception rates.⁵ Moreover, individuals with endometriomas larger than 4 cm who had cystectomy had better reproductive results than those who received simply cyst draining. In most cases, imaging can detect advanced-stage endometriosis, including endometriomas, thus a diagnostic laparoscopy is not necessary to make this determination. At the time of diagnosis via imaging, goal-setting, and risk-strategizing may take place, and any therapeutic surgery might be best planned with regard to reproductive requirements. Despite the fact that endometriosis and infertility are linked, in vitro fertilization most likely increases cycle fecundity than any surgical procedure. Contradictory observational data, particularly in asymptomatic patients with undetermined fertility, do not clearly establish a discernible benefit of surgery in combination with assisted reproductive technology. Diagnostic laparoscopy is not only recommended by the ASRM to increase the likelihood of pregnancy.⁵

ALTERNATIVES AND UPCOMING RULES

Predictive Techniques

Predictive algorithms are being tested to enhance less intrusive methods of diagnosis and more accurately identify endometriosis. Another prediction model that includes a questionnaire to look into women's prior medical, maternal, and family history as well as the degree and recurrence of pelvic pain with or without ultrasound findings was shown to be accurate in predicting stages III and IV disease. This algorithm did not do as well in predicting diseases at every stage.¹ If these models are further tested and put to use, there may be a chance to reduce the number of needless surgeries, especially if operating just on patients with advanced illness would have a larger symptomatology benefit.

Imaging Improvements

Diagnostic capabilities may rise when imaging criteria are improved, but operator experience has limitations. Transvaginal ultrasonography (TVS) findings include site-specific pain, fixed ovaries, a negative "slide sign" and considerable nodular findings in the anterior and posterior region may all be signs of endometriosis. Several techniques have been shown to be effective for diagnosing site-specific diseases, such as colorectal colonoscopy and colorectal fluid contrasting TVS (>92% sensitivity and specificity), and bladder site discomfort led to TVS 97.4 percentage sensitivity and specificity).³ Although recent studies show that TVS and MRI are equally effective for diagnosing DIE, advancements in MRI technology, recognition of specific MR-acquisition techniques, and recognition of imaging characteristics suspected of endometriosis may help with diagnosis. Fusion imaging, which permits the simultaneous examination of MRI and ultrasound images of various anatomic landmarks, may enhance diagnostic abilities, although further study is necessary. A unified diagnosis throughout clinics and hospital systems requires improved training for radiologists and sonographers.

Therapy Using a Multidisciplinary Approach

The lives of the patients who are impacted by endometriosis are significantly affected. Self-worth, sexual health, emotional stability, and functional ability are all mutable. Inadequate opioid and anxiolytic treatment of a chronic pain condition might also result in addiction. Considering the complexity of this ailment, it is believed that a multidisciplinary approach to therapy, involving gynecologists, psychotherapists, psychiatrists, pain experts, and sexologists, is essential. Although there is little information evaluating the advantages of multidisciplinary therapy for endometriosis, major medical facilities have begun putting these strategies into practice in light of the achievements seen with other chronic pain diseases, such as lower back discomfort. Better pain management might be made possible by an earlier detection that does not require surgery, prevent chronic pain syndromes, and lead to a population that is healthier and more productive.

CONCLUSION

The most common symptom of minimal to moderate endometriosis has been varied symptomatology, with deep infiltrating endometriosis most typically being linked with pelvic discomfort. It has been proven that questionnaires based on symptoms may accurately predict advanced sickness and DIE lesions. These clinical indications in combination with ultrasonography and MRI findings can help with the clinical diagnosis of severe infiltrating endometriosis, that's more likely to react to surgical therapy. Initial drug treatment has been shown to be both more affordable and equally effective as diagnostic laparoscopy. Focusing on the entire clinical presentation rather than simply the endometriotic lesion allows us to emphasize the value of multidisciplinary care, make early diagnosis and therapy more accessible, and cut back on unneeded costs and risks associated with surgical procedures.

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