Live and let *DIE*: a closer look at deep infiltrating endometriosis

Endometriosis has long been a challenging diagnosis; its evaluation, treatment, and prognosis have evolved with improvement in medical management and surgical techniques. This common, benign disorder may affect up to 50% of women with infertility or pelvic pain. In addition, specific types of endometriosis may have varying presentations and implications. For example, in the case of deep endometriosis, operative management may be difficult because of infiltrative lesions that can involve pelvic structures such as the ureters, bowel, or bladder. Adenomyosis externa, a subset of deep endometriosis that develops largely beneath the peritoneum, may be particularly complicated because of its retroperitoneal expansion. In this issue of *Fertility and Sterility*, Alboni et al. (1) present a surgical video in the article entitled "Surgical treatment of deep endometriosis with adenomyosis externa: a challenging case in an infertile woman" that describes a patient who received diagnosis and treatment for adenomyosis externa.

Deep endometriosis is a heterogeneous disorder, which is reflected in diverse presentations. Classically, patients present with pain around menstruation, with dyspareunia and dysmenorrhea among the most common symptoms reported. Symptoms such as dysuria and dyschezia suggest site-specific lesions. In the case presented by Alboni et al. (1), the patient presented with both infertility and pain. Initial evaluation includes an examination, and findings may indicate anatomic abnormalities such as the pararectal mass identified in the patient presented. Imaging with transvaginal ultrasound is useful in identifying endometriomas, although it may not be sufficient to evaluate rectal or bladder lesions. For these lesions, magnetic resonance imaging may be especially useful (2). Accordingly, the patient in the case report was found to have a bladder nodule and pararectal cyst on image studies. This stepwise approach in diagnostic evaluation is an important aspect of preoperative planning.

Endometriosis has a known affiliation with infertility and subfertility in women. Although a direct causal relationship has not yet been established, endometriosis is more prevalent in women with infertility and the treatment of endometriosis has improved fertility outcomes. The effect of deep infiltrating endometriosis (DIE) on fertility specifically has never been proven because intraperitoneal and retroperitoneal lesions often coexist. However, available data would suggest that it also plays a contributory role. Spontaneous pregnancy rates are higher in women with endometriosis without bowel involvement compared with those with bowel involvement (3). Additionally, patients with endometriosis undergoing in vitro fertilization (IVF) experience lower fertilization, implantation, and pregnancy rates, an effect that appears to worsen with the severity of disease. In 1 meta-analysis, women with severe endometriosis were demonstrated to have significantly lower pregnancy rates and implantation rates, fewer oocytes at retrieval, and a lower peak estradiol concentration compared with women with mild endometriosis (4). DIE is thought to affect fertility primarily through the disruption of normal anatomy, although other mechanisms are also likely to be involved.

Treatment of endometriosis-associated infertility primarily involves 3 modalities: medical, surgical, and artificial reproductive technology (ART). The advantages of surgery in severe disease include restoration of normal pelvic anatomy and removal of implants or endometriomas, which could in turn decrease inflammation. Although evidence supports surgical treatment of mild-to-moderate disease for fertility, such evidence is less robust for the treatment of advanced stage endometriosis. There are no randomized controlled trials studying the effects of surgery vs. expectant management on fecundity in those with DIE. However, a few systematic reviews have attempted to address this question (3). In posterior DIE without bowel involvement, overall postoperative pregnancy rates have been reported at 34%–84.5%, although no direct comparison between surgical and expectant management has been performed. One recent review of the surgical management of DIE with bowel involvement demonstrated a spontaneous pregnancy rate of 28.6% and an overall pregnancy rate of 46.0% compared with a pregnancy rate of 29% after ART alone (4). These results are similar to a controlled nonrandomized study where no differences in spontaneous pregnancy rate were noted with or without colorectal resection in women with bowel DIE (40% vs. 30%, respectively). However, a higher pregnancy rate after ART was observed in women who underwent colorectal resection (38% vs. 8%). No data on pregnancy rate in women with isolated bladder endometriosis and ureteral endometriosis are available. Thus, it is difficult to draw conclusions whether the resection of bladder and ureteral endometriosis alone improved the fertility outcomes (4).

The role of operative laparoscopy before IVF is controversial because there are no randomized controlled studies. Additionally, the findings from retrospective studies are mixed. In some studies, no improvements in pregnancy rate or live birth rate have been reported, whereas others seem to suggest improvement in pregnancy rate, especially in the case of DIE involving bowel (4). Moreover, current data suggest that IVF alone might be more advantageous than laparoscopy in women with DIE. Additionally, in patients with stage III/IV endometriosis who have undergone previous surgery, pregnancy rates after IVF were significantly higher than after a repeat laparoscopic surgery. Thus, the recommendation for those seeking pregnancy has been to proceed with IVF rather than repeat surgical resection (5).

Here, Alboni et al. (1) present and demonstrate a method for laparoscopic resection of DIE. Surgical management of DIE continues to be an appropriate treatment modality in symptomatic women and has been shown to be associated with improvement in pain and quality of life. In asymptomatic women, it is unclear if the surgical management of DIE offers improved advantage over ART for fertility. Moreover, increased risk of operative complications associated with surgical management compared with ART must be considered when contemplating surgical treatment. With increasing access and success of ART, the true benefit of surgical resection

of DIE for fertility indications alone warrants further investigation.

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REFERENCES

1. Alboni CA, Mattos LC, Botticelli L, Malmusi S, Facchinetti F, Pecchi A. Surgical treatment of deep endometriosis with adenomyosis externa: a challenging case in an infertile woman. Fertil Steril 2021;115:1084–6.
2. Guerriero S, Saba L, Pascual MA, Ajossa S, Rodriguez I, Mais V, et al. Transvaginal ultrasound vs magnetic resonance imaging for diagnosing deep infiltrating endometriosis: systematic review and meta-analysis. Ultrasound Obstet Gynecol 2018;51:586–95.
3. Angioni S, Cela V, Sedda F, Stochino Loi E, Cofelice V, Pontis A, et al. Focusing on surgery results in infertile patients with deep endometriosis. Gynecol Endocrinol 2015;31:595–8.
4. Barnhart K, Dunsmoor-Su R, Coutifaris C. Effect of endometriosis on in vitro fertilization. Fertil Steril 2002;77:1148–55.
5. Evans MB, Decherney AH. Fertility and endometriosis. Clin Obstet Gynecol 2017;60:497–502.