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Case report

An alternative laparoscopic entry site in a case of recurrent stage IV pelvic endometriosis

Running title: Stage four endometriosis

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Abstract: Stage IV pelvic endometriosis poses significant surgical challenges. When umbilical access is deemed high-risk, alternative non-umbilical laparoscopic entry points may be considered. Currently, there is no consensus on the safest or most ideal alternative non-umbilical access site. We report a case of Stage IV pelvic endometriosis accompanied by severe pelvic pain, in which a novel right-sided, alternative non-umbilical laparoscopic entry was successfully employed. This approach was selected due to the presence of retro-umbilical adhesions, a large left-sided ovarian endometrioma, a tubo-ovarian mass, and left-sided hydrosalpinx. The surgical technique and postoperative recovery are detailed, demonstrating favorable outcomes. In selected cases of Stage IV pelvic endometriosis, particularly those with left-sided adnexal pathology, the right-sided "Darwish point" may offer a relatively safe and effective non-umbilical alternative for laparoscopic access. Further studies are needed to validate its safety and efficacy before this entry site can be widely recommended.

Keywords: endometriosis; laparoscopy; left; Darwish; entry; case report; pelvic colon

1. Introduction

The umbilicus is typically the preferred and most successful entry point for gynecologic laparoscopic procedures. However, in cases of umbilical scarring from repeated surgeries, this approach may pose increased risks of vascular and intestinal injuries. Complication rates from umbilical entry range from 0.69% to 6.22%, with major complications occurring in about 2.84% of cases [1]. According to the American Association of Gynecologic Laparoscopists (AAGL) classification [2], Stage IV pelvic endometriosis is often associated with extensive pelvic adhesions. On the left side, it may cause upward displacement of the sigmoid colon. Despite the possible risks, there is no consensus on the safest alternative entry site in such patients. For cases of advanced left-sided pathology, a right-sided access theoretically offers a safer alternative. This report presents what appears to be the first case in the English literature in which a right-sided, non-umbilical laparoscopic entry site, termed the Darwish point [3], was utilized in a patient with Stage IV endometriosis and a large left-sided adnexal mass.

2. Case presentation

A 35-year-old woman (para 1) presented with a 13-year history of worsening chronic pelvic pain (CPP), dysmenorrhea, back pain, abdominal discomfort, and secondary infertility. Her BMI was 28 kg/m^2. Her history included multiple failed intracytoplasmic sperm injection (ICSI) cycles and a prior laparoscopic procedure for endometriosis performed via umbilical entry, after which she received a six-month course of dienogest 2 mg daily (Visanne, Bayer Australia Ltd). Operative notes from a previous surgery reported dense retro-umbilical and small bowel adhesions. A recent hysterosalpingography (HSG) showed a blocked left fallopian tube with hydrosalpinx and severe pelvic adhesions. She was referred for evaluation of a suspected left ovarian endometrioma.

Ultrasonography confirmed a large left ovarian endometrioma measuring 62 × 53 mm, seen as an avascular unilocular cyst with homogeneous “ground-glass” echoes (Figure 1A). The ovary was notably displaced upward, outside its typical pelvic location. Upper abdominal ultrasonography was unremarkable. The patient was counselled regarding a second-look laparoscopy to excise the endometrioma, lyse adhesions, treat the hydrosalpinx, and ablate any endometriotic lesions. Possible left salpingectomy was discussed and included in the consent. Following Institutional Review Board (IRB) approval (IRB No. PAT0255960) and insurance clearance, the patient was preoperatively assessed by anesthesia and scheduled for surgery.

3. Operative details

Under general anesthesia, the patient was placed in a dorsal lithotomy position. A uterine manipulator with a dye injection side channel was inserted to aid proper exposure, uterine manipulation, and allow for chromopertubation testing. Abdominal examination under anesthesia revealed no hepatomegaly, kidney enlargement, or palpable abdominal masses.

A Veress needle was introduced at a non-umbilical, right-sided location, termed the Darwish point as previously described [3], defined as the intersection of a transverse line at the level of the umbilicus and a vertical line about 2.5 cm medial to the right anterior superior iliac spine (Figure 1B). Due to the right lateral position of the Darwish point, gastric deflation was not required.

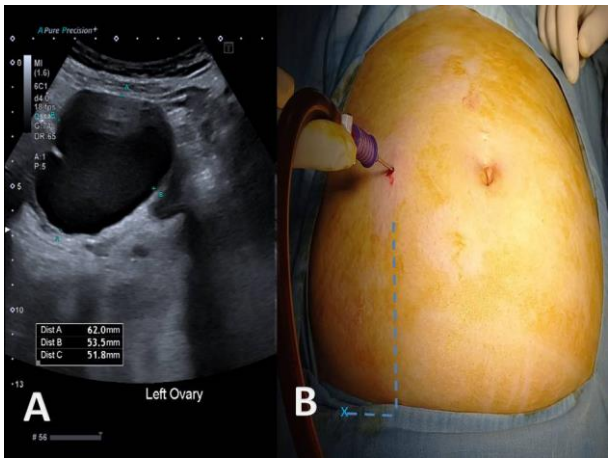

Figure 1. A. Ultrasonographic image showing a left ovarian endometrioma. B. Surface anatomy demonstrating the Darwish point.

Pneumoperitoneum was successfully achieved. The patient was placed in the Trendelenburg position, and a 5 mm trocar was inserted through the Darwish point [3]. Under direct vision, two accessory trocars were placed: one intra-umbilical and the other at the Jain point (a mirror image of the Darwish point, [4]).

Initial laparoscopy revealed retro-umbilical omental adhesions and extensive pelvic disease consistent with AAGL Stage IV endometriosis [2]. Importantly, the primary access site (Darwish point) avoided critical structures, including the ascending colon.

A complex left tubo-ovarian mass was observed, consisting of a 6 cm ovarian endometrioma, a distended, tortuous fallopian tube, and dense adhesions obliterating the pouch of Douglas (Figure 2A). The sigmoid colon was adherent to the left pelvic wall and displaced superiorly.

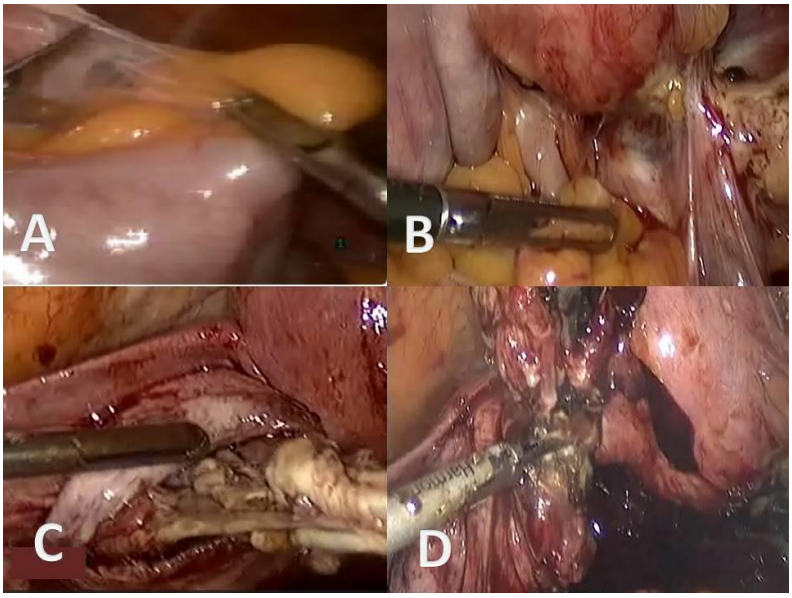

Figure 2. Surgical details. A. Dissection of pathological sigmoid adhesions from the lateral pelvic wall. B. Extensive adhesions involving the pouch of Douglas. C. Left ovarian cystectomy. D. Left salpingectomy performed using a Harmonic scalpel.

Sharp dissection of the omental and pelvic colonic adhesions was performed, allowing exposure of the pelvic structures (Figure 2B). The endometrioma was excised (Figure 2C). The left hydrosalpinx was dissected and found to be pathologic, distended, and vascular. A salpingectomy was performed using a harmonic scalpel (Figure 2D).

Further steps included adhesiolysis of the pouch of Douglas, ablation of superficial implants, and excision of deep endometriotic lesions. Hemostasis was achieved, and an adhesion barrier sheet and drain were placed prior to closure.

Postoperatively, the patient was observed overnight at her request and discharged the next day in good condition. Histopathology confirmed tubal endometriosis (Figure 3). She was prescribed a three-month course of dienogest, with marked symptomatic improvement and no recurrence. Follow-up visits over three months confirmed marked pain relief, with no recurrence of pelvic lesions on transvaginal ultrasonography. She later consented to publication of her case and was referred to an IVF unit for further fertility treatment.

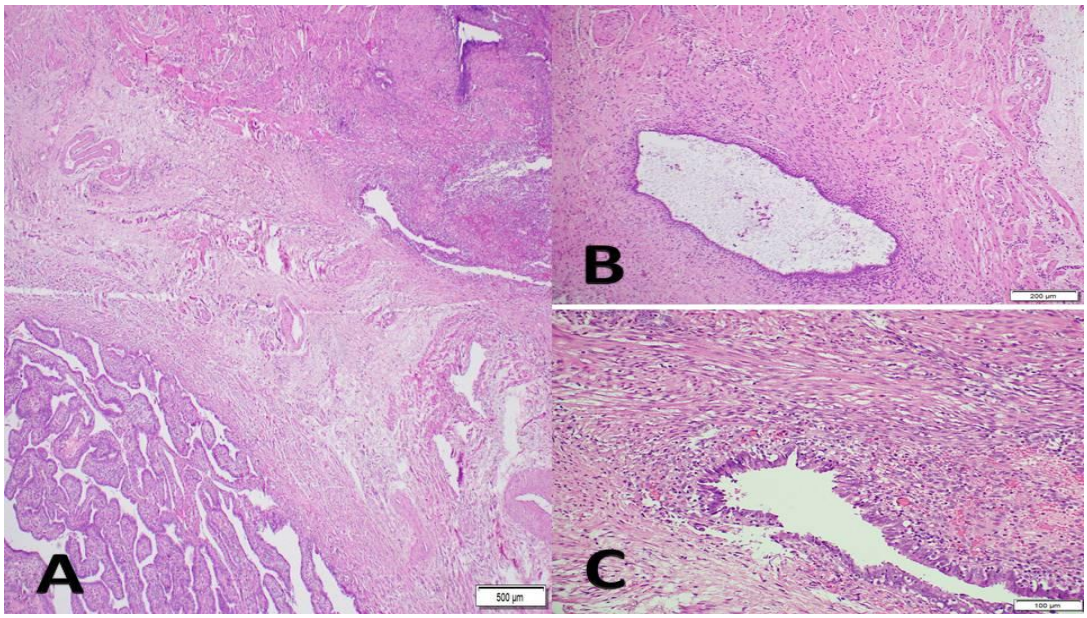

Figure 3. Histopathologic examination of fallopian tube endometriosis (Hematoxylin and Eosin staining). A. Low magnification (×4). B and C. Higher magnification views (×20).

4. Discussion

The AAGL classification of endometriosis [2] is based on intraoperative findings and was used here for its clinical relevance. Managing Stage IV disease laparoscopically is challenging and carries a risk of complications, which cannot be reliably predicted by patient characteristics, imaging, or disease stage [5].

This patient's prior surgery and documented adhesions at the umbilicus played a critical role in preoperative decision-making. Literature [6] supports that patients with previous umbilical laparoscopy often develop periumbilical adhesions. Intraoperative findings confirmed omental adhesions in this region. The open (Hasson) technique, while primarily used to minimize intestinal injury by allowing direct peritoneal entry, may still carry a risk of injury in the presence of dense

adhesions directly beneath the peritoneum. Given the patient's history of prior laparoscopy and documented retro-umbilical adhesions and the increased risk of intestinal injuries on repeated laparoscopic surgery, we opted for an alternative primary entry site to avoid potential injury complications. Likewise, the Palmer point was avoided as it is a left-sided entry site, and the main patient's problem was left-sided lesions and left-sided colonic adhesions. Moreover, it requires gastric deflation. Regular laparoscopic instruments (33 cm) may not be suitable for pelvic access via the Palmar point. Moreover, a right-sided primary entry point was chosen not only for safety, to avoid the left-sided adhesions, but also for ergonomic advantage. This approach allowed the instruments to be positioned opposite the left-sided lesions, providing a direct and unobstructed view and facilitating dissection of the sigmoid colon away from the pelvic sidewall. This strategic placement optimized the surgical approach for the specific unilateral left-sided advanced disease.

HSG findings of left hydrosalpinx were suggestive of endometriosis-related tubal damage, and transvaginal ultrasound (TVS) confirmed the endometrioma. While TVS has a high sensitivity (up to 99%) for detecting tubal endometriosis, its specificity is low (12%), which may lead to overdiagnosis [7].

Given the combination of Stage IV endometriosis, an endometrioma, and hydrosalpinx, salpingectomy was justifiable both for pain relief and fertility preservation. Literature shows that hydrosalpinx and tubal endometriosis negatively affect fertility and IVF outcomes [8]. Removal of the diseased fallopian tube may not only enhance both spontaneous and assisted conception rates but also alleviate CPP. Left-sided access points like the Jain point were excluded due to the risk of sigmoid colon injury and the requirement for gastric decompression. Anatomical distortion of the sigmoid colon [9,10] is commonly seen in cases of Stage IV endometriosis. Clinical features such as CPP, seen in this case, often predict the presence of sigmoid adhesions [11].

This case represents the first reported use of the previously described Darwish point as a primary access site in managing Stage IV endometriosis with left-sided adnexal disease. The decision was made preoperatively due to imaging evidence of anatomical distortion and prior surgery. The Darwish point provided a safe, effective, and anatomically favorable approach. With appropriate patient selection based on clinical examination, unremarkable upper abdominal ultrasonography, and examination under anesthesia, the Darwish point may minimize the risk of injury to vital organs, such as the liver and ascending colon. Moreover, it avoids anterior abdominal wall vasculature injuries, particularly the epigastric vessels, as it is located away from their course. Fortunately, the patient had no history of abdominal mesh placement, which is a known risk factor for complications with all laparoscopic entry techniques. In such cases, upper abdominal entry sites, particularly Palmer's point, are recommended [12]. The Darwish point can be used as a primary access site, not only for umbilical disease [13] or retro-umbilical adhesions [14] but also as a proactive strategy in response to distorted left pelvic anatomy. It was located safely away from major vascular structures and allowed for easy access to the pelvis without compromising visualization or manipulations. Its lateral yet relatively central position ensures access to both upper and lower abdominal regions, as supported by prior studies [15]. However, it is crucial to acknowledge that this approach is not a one-size-fits-all solution. Significant anatomical variations exist, such as a non-retroperitoneal right colon, which can be found in 20–30% of individuals and may flop into the midline. This anatomical possibility must be considered and, if suspected on preoperative assessment and imaging or examination under anesthesia, would preclude the use of this specific entry site. The choice of any laparoscopic entry point, including the one described here, must be tailored to the individual patient's anatomy and history.

5. Conclusions

Selection of the laparoscopic entry site should be personalized, especially in patients with prior surgery or pelvic anatomical distortion. The Darwish point represents a promising alternative to umbilical or left-sided entry in patients with suspected adhesions or distorted anatomy, particularly in Stage IV endometriosis with large left-sided adnexal masses.

This case supports the Darwish point as a low-risk, effective entry site, with particular utility in recurrent endometriosis surgery. Further research and additional case series are necessary to validate these findings and determine broader clinical application.

Author contributions

Atef M Darwish: Concept and design of study and acquisition of data. Amany S Omer: analysis and interpretation of data. Atef M Darwish, Dina A Darwish: Drafting the article or revising it critically for important intellectual content. Atef M Darwish, Dina A Darwish, Amany S Omer: Final approval of the version to be published

Use of AI tools declaration

The authors declare they have not used Artificial Intelligence (AI) tools in the creation of this article.

Data availability statement

The data supporting the findings of this case report are available within the article. Additional clinical details are not publicly available in order to protect patient privacy and confidentiality. Further inquiries can be directed to the corresponding author.

Ethical approval of the research and informed consent

Institutional Review Board (IRB) approval (IRB No. PAT0255960). A written consent to do the procedure and to publish the case was given by the patient.

Conflict of interest

The authors declare no conflict of interest.

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