Surgical reconstruction of the abdominal wall after large abdominal wall endometrioma resection. A case report

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Case Report

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Background
Abdominal wall endometriosis (AWE) is a rare manifestation of endometriosis characterized by the infiltration of endometriotic tissue into the abdominal wall. We present a case report of a 37-year-old female patient with a history of three previous cesarean sections and an appendectomy who developed symptoms of intense abdominal pain and distension. Imaging studies revealed a large intercompartmental mass in the left anterior rectus muscle, and subsequent histopathological examination confirmed the presence of endometrial tissue. The patient underwent surgical resection of the mass, which required a complex abdominal wall repair using a mesh. The postoperative period was uneventful, and the patient experienced a significant improvement in symptoms and overall quality of life.
This case highlights the challenges posed by AWE and the importance of accurate diagnosis and appropriate management. Wide surgical resection, although the traditional approach, can be associated with additional operative trauma. In this case, a multidisciplinary treatment approach was employed, involving surgical resection and meticulous reconstruction of the abdominal wall. The successful outcome demonstrates the efficacy of this approach in relieving symptoms and improving patient well-being. Further research is needed to enhance our understanding of AWE and to optimize treatment strategies for this complex condition.

Keywords: Endometrioma, abdominal wall reconstruction.

Endometriosis is characterized by the presence of endometrial epithelial and stromal cells in non-uterine locations.[1] While endometriosis commonly occurs in pelvic locations such as the ovary and pelvic peritoneum, it can also manifest in extra-pelvic sites, including the gastrointestinal tract, urinary tract, respiratory system, and abdominal wall.[2] Abdominal wall endometriosis (AWE) encompasses the pathological phenomenon wherein endometriotic tissue infiltrates the different segments and depths of the abdominal wall.[3] This manifestation of endometriosis is considered as a rare and atypical occurrence. The incidence of AWE is reported to be around 0.3-3.5%, and its occurrence may increase as the rate of caesarean section deliveries rises.[4] Despite being a nonmalignant disease, AWE poses clinical challenges, causing symptoms such as abdominal wall masses, nodules at previous surgical scars, cyclic abdominal pain, and progressively intensifying menstrual cramps.[5] These symptoms significantly impact patients' quality of life, emphasizing the importance of precise diagnosis and appropriate management. Wide surgical resection has been the traditional approach for treating AWE. However, it is important to note that complete surgical resection in certain cases can result in additional operative trauma and potentially require complex abdominal wall repair, flap placement, or the use of mesh implantation.[6] Herein, we present a remarkable multidisciplinary treatment approach and provide a detailed description of the reconstruction of the myoaponeurotic components following the resection of a large intermuscular mass associated with AWE.

Case report

We present the case of a 37-year-old female patient with no significant hereditary or familial medical history. The patient has a history of three previous cesarean sections (in 2014, 2016, and 2019) and underwent an appendectomy in 2017. Additionally, she has been using an intrauterine device (IUD) since 2017. The patient reported the onset of her clinical symptoms two years prior, which were characterized by intense cramping pain in the left lower quadrant of the abdomen and abdominal distension. Non-steroidal anti-inflammatory drugs were prescribed, but there was no significant clinical improvement. Upon examination, a tender nodule was palpated in the left lower quadrant (Figure 2A). An

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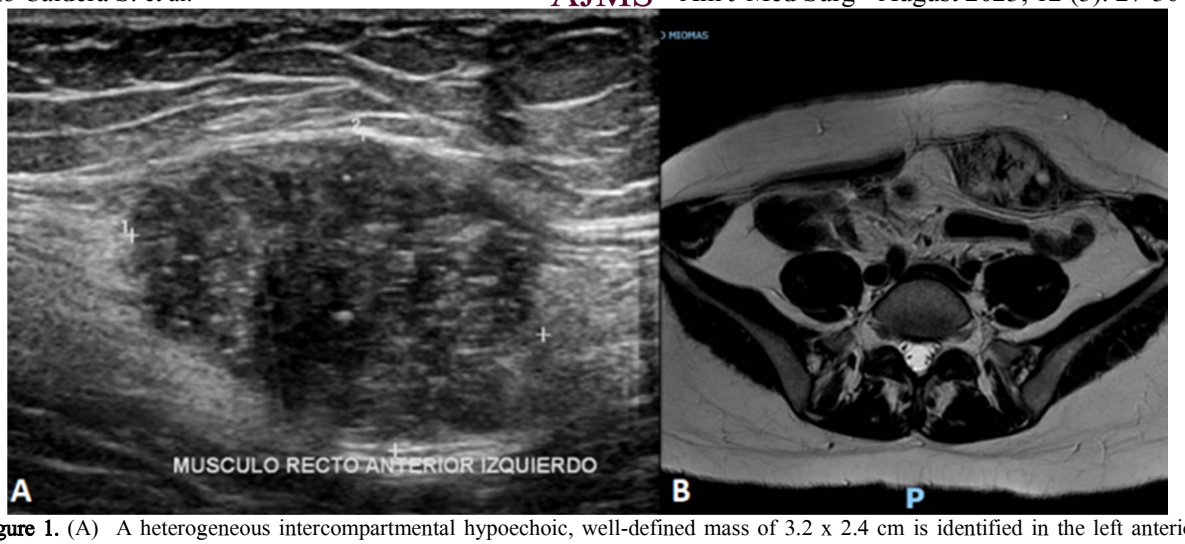

Figure 1. (A) A heterogeneous intercompartmental hypoechoic, well-defined mass of 3.2 x 2.4 cm is identified in the left anterior rectus muscle and surrounded by both aponeuroses. (B) An ovoid image with regular and defined lobulated borders is observed in left anterior rectus abdominis muscle, of 57.1 x 38.5 x 70 mm and extends towards the aponeurosis, located 15 mm from the skin.

abdominal ultrasound was performed, revealing an intercompartmental mass in the left anterior rectus muscle (Figure 1A). The possible differential diagnoses included intercompartmental liposarcoma, endometrial implant, or ectopic breast tissue. To obtain a definitive diagnosis, an ultrasound-guided percutaneous biopsy of the intercompartmental tumor within the left rectus anterior muscle was performed using an automatic Tru-Cut needle. Tissue material was obtained and sent for histopathological study, which confirmed the presence of endometrial tissue. Subsequently, a magnetic resonance imaging study was conducted, revealing a mass measuring 57.1 x 38.5 x 70 mm in the left rectus anterior muscle (Figure 1B). A scheduled surgery was performed without any incidents. Postoperative care included analgesia,

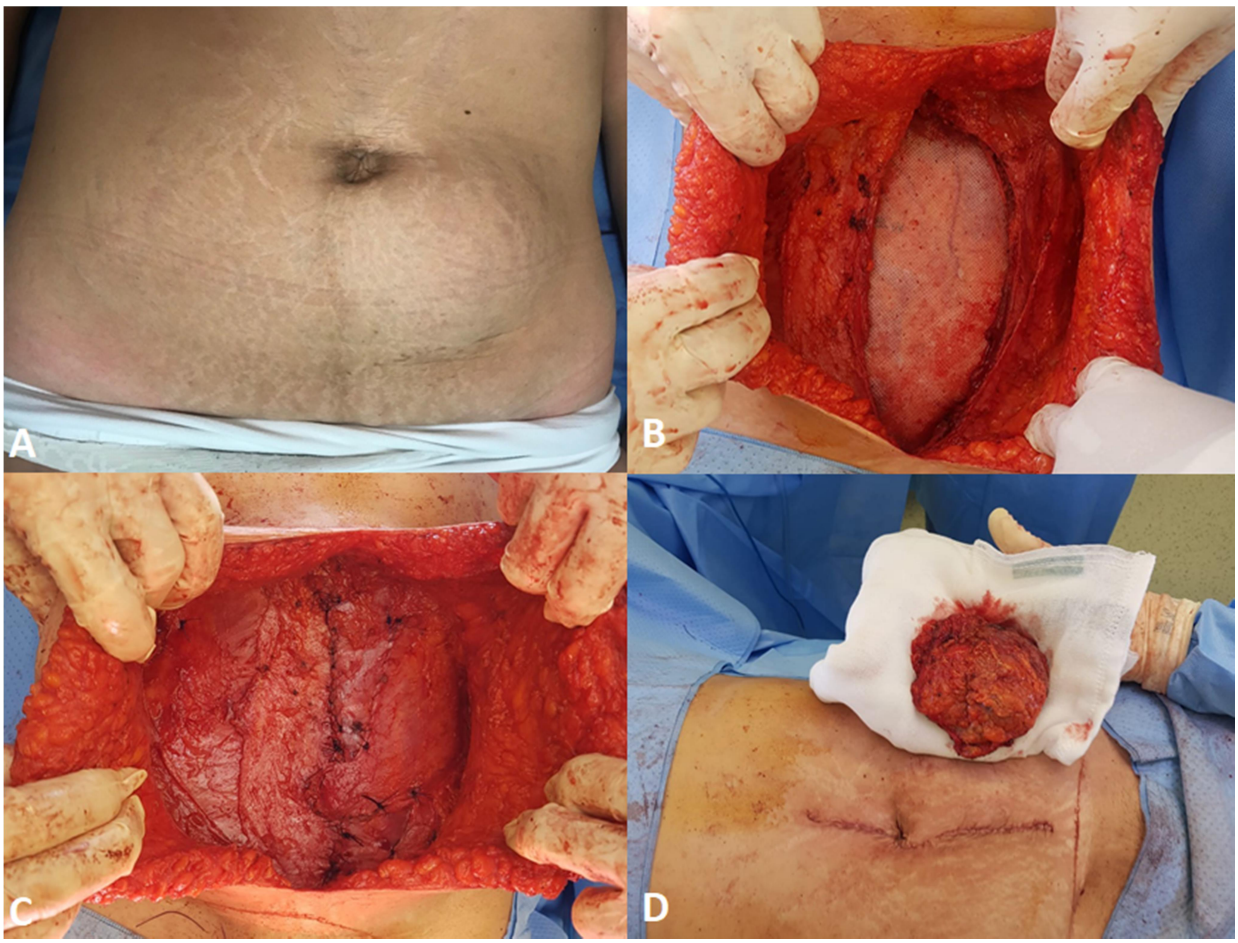

Figure 2. (A) A painful mass in between the Pfannenstiel scar and the belly button of 10 x 9 cm, immobile and does not extend into the deeper anatomical layers. (B) Defect of 8 x 15 cm covered with a polypropylene mesh. (C) Reconstruction of the myoaponeurotic components. (D) Surgical specimen extracted with wide margins and sutured skin.

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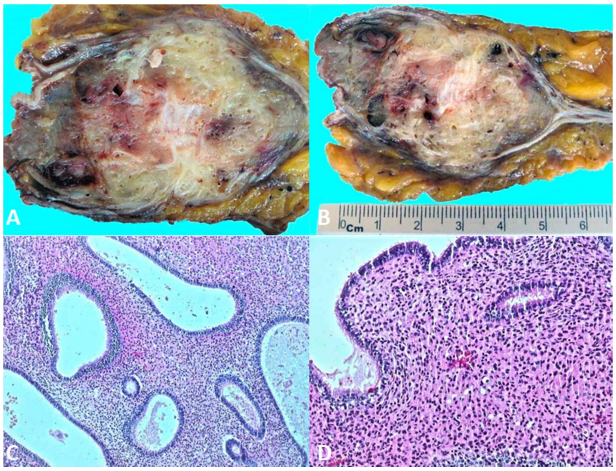

Figure 3. Macroscopic examination and histopathological findings of the AWE. (A) Surgical specimen measuring 10.5x9x5 cm, (B) a solid nodule measuring 5x3.2 cm, friable, well-demarcated, and pink in color. (C) Fibroconnective tissue that exhibits modification of its histoarchitecture due to the presence of tubular endometrial glands (H&E stain, 20x). (D) The surrounding stroma is extensive, irregular, and composed of endometrial-like fusocellular elements, included in striated muscle fibers (H&E stain 40x).

initiation of diet after 24 hours, monitoring of urine output, and observation of respiratory patterns, all of which proceeded without complications. The patient was discharged after three days, and the drainage was removed during an outpatient consultation on the seventh day following the surgery.

Surgical technique

A midline infraumbilical incision was made, followed by dissection of the subcutaneous tissue surrounding the tumor. Lateral margins were obtained, and intraperitoneal control of the tumor was achieved. The incision was initiated with macroscopically clear margins of 2 centimeters. The dissection proceeded through the anterior and posterior layers of the rectus sheath, involving the interfascial space containing the tumor. The surgical specimen was extracted. The residual anatomy was evaluated, revealing the absence of the supra- and infraumbilical myoaponeurotic segment, with a defect measuring 18 cm in length and x 8 cm in width. A polypropylene mesh with a layer of silicone anti-adhesive material for visceral contact was placed and fixed to the deep fascia at eight points (Figure 2B). The anterior component of the right rectus muscle was separated, exposing the ipsilateral external oblique muscle. The residual anterior component on the left side was also separated to medially retract the combination of the flat muscles to their junction with the right linea alba. The area of greatest tension was identified at the lower point, leading to an additional dissection of a fascial flap from the external oblique muscle for coverage of this defect (Figure 2C). An active drainage device, Drenovac, was inserted, and the skin was sutured using subdermal techniques.

Discussion

Endometriosis is a prevalent condition characterized by the presence of endometrial epithelial and stromal cells in extraneous locations outside the uterus.[2] It is well-established that endometriosis is associated with chronic pain and infertility, affecting approximately 10% of women during their reproductive years.[7] The dissemination of uterine cells into the abdominal wall layer leading to abdominal wall endometriosis is a very rare condition and diagnosis is usually delayed as the symptoms are unspecific. Due to its rareness, this kind of endometriosis is often misdiagnosed as a post incisional or ventral hernias, lipoma, or hematoma leading to a late diagnosis.[8] Other differential diagnosis could include granuloma, desmoid tumors, benignant or malignant tumors of other origin, metastasis.[2] As in our case, the patient had a 2-year history of cyclic pain for which she resorted to several doctors who just prescribed analgesics that never healed the pain. While various hypotheses have been proposed, such as lymphatic or hematogenous dissemination, metaplastic transformation, and local immune cell changes, the exact mechanisms leading to abdominal wall endometriosis remain under investigation.[9]

Endometriosis occurring in the rectus abdominis muscle is commonly associated with iatrogenic causes and closely linked to various abdominal surgeries, including cesarean section, hysterectomy, appendectomy, and laparoscopic procedures. With cesarean sections accounting for a significant proportion of reported cases (57% to 92%).[10] As in our case, the patient had a history of three cesarean sections and appendectomy, creating a major risk of developing AWE. Diagnosis of AWE typically occurs between the ages of 33.2 and 35 years, and the interval between previous surgery and AWE diagnosis can vary from a few months to several decades.[3] The clinical presentation of AWE often includes a triad of open gynecologic or abdominal surgery history, palpable abdominal mass, and cyclic pain correlating with the menstrual cycle.[9] Depending on the layer of the abdominal wall affected, patients may exhibit skin changes such as ecchymosis, hyperpigmentation, swelling, and bruising of the surgical scar.[2]

Diagnostic tools such as ultrasonography, computed tomography (CT), and magnetic resonance imaging (MRI) play a vital role in confirming the diagnosis and ruling out differential diagnoses. Ultrasonography is particularly valuable as an initial modality for evaluating painful abdominal wall

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masses, providing essential information about size, location, margins, and internal characteristics. Ultrasonographic findings typically reveal heterogeneous and hypoechoic masses with echogenic spots, while blurred margins may result from the surrounding inflammatory reaction.[9] In our case, the initial method for evaluating the mass was ultrasound and was confirmed with the MRI that gave better dimensions of the nodule and was useful for the preoperative approach.

In the management of AWE, a multimodal approach is often employed. Medical treatments, including oral contraceptives, gonadotropin-releasing hormone analogues, and aromatase inhibitors, can be combined with surgical excision to minimize recurrence. Non-steroidal anti-inflammatory drugs (NSAIDs) are recommended to alleviate pain associated with AWE and reduce inflammation surrounding the lesions, facilitating surgical excision.[11] Complete excision of the endometriotic nodule is considered the treatment of choice, with some authors advocating for margin-free excisions of 5 to 10 mm to decrease the risk of recurrence.[12] Our case report presents a unique scenario characterized by a large abdominal wall endometrioma necessitating a complex abdominal wall repair utilizing a mesh. Notably, this intervention resulted in a remarkable improvement in the patient's quality of life as the debilitating pain associated with the condition completely resolved. The successful management of such a challenging case highlights the efficacy of this surgical approach and its significant impact on alleviating symptoms and restoring the patient's well-being.

Conclusion

Abdominal wall endometriosis is a challenging condition that can cause significant pain and impair the quality of life for affected individuals. Accurate diagnosis and appropriate management, combining medical and surgical approaches, are crucial for effective treatment and minimizing the risk of recurrence. Given the increasing rate of cesarean sections worldwide, it is imperative for healthcare providers to be more aware of the existence of AWE and its potential complications. This awareness will facilitate early recognition, timely diagnosis, and appropriate intervention, ultimately improving patient outcomes. Further research is warranted to enhance our understanding of the pathogenesis, risk factors, and optimal management strategies for AWE.

Conflicts of interest

The authors declare that they have no conflicts of interest regarding the publication of this case report.

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