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PARIETAL ENDOMETRIOSIS AFTER CESAREAN SECTION: A SERIE OF THREE CASES AND REVIEW OF THE LITERATURE

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ABSTRACT

Parietal endometriosis remains an uncommon diagnosis, with mechanisms of development that are still not fully elucidated. The most widespread hypothesis in its pathogenesis is the implantation of endometrial cells within musculoaponeurotic, cutaneous, or subcutaneous structures during operations, particularly hysterotomy. Parietal endometriosis follows typically gynecologic or obstetric surgery. Clinically, it typically presents as a discrete scar-related mass, tender at times, with a presentation that may change from one menstrual cycle to another — a presentation that can strongly lead to the diagnosis. Regardless of that, definite diagnosis is on histopathological examination, and surgical excision remains the gold standard of treatment. We report a series of three rare cases of parietal endometriosis arising in cesarean section scars, and on the basis of the case, we describe the hypothesized pathophysiological mechanisms, the classical clinical manifestations, the imaging role, the therapeutic options, and the clinical course, based on review of the literature.

KEYWORDS: Abdominal wall endometriosis, Surgical scar, Surgical excision, MRI, Histopathology, Quality of life.

INTRODUCTION

External endometriosis, defined as the ectopic implantation of endometrial tissue outside the uterine cavity, affects 8 to 15% of women of reproductive age.[1] The widely described extragenital locations include the lung, gallbladder, colon and small intestine, kidneys, rectovaginal septum, and abdominal wall involving the cutaneous, subcutaneous, or musculo-aponeurotic layers.[2]

Parietal endometriosis is part of the small proportion of endometriosis cases considered iatrogenic, with an unclear etiopathogenesis. The majority of cases are secondary to surgical intervention, particularly those involving a hysterotomy, with an estimated incidence ranging from 0.03% to 1% after cesarean section.[3]

While specific clinical signs are often absent, the suspicion of parietal endometriosis arises when a mass near a median or Pfannenstiel scar is accompanied by catamenial pain. Imaging modalities like ultrasound and MRI aid in characterizing parietal endometriotic nodules and assessing their extent. However, definitive diagnosis is established through surgical resection followed by histopathological examination. Surgical treatment involves extensive excision, sometimes including adjacent muscular and aponeurotic structures.[4]

MATERIALS AND METHODS

This is a retrospective descriptive case series of three patients treated for parietal endometriosis in the gynecology-obstetrics department of Tangier University Hospital between March 2021 and March 2025. Only histologically confirmed cases were included; incomplete files or cases without pathological confirmation were

excluded. Data collected included age, obstetric and surgical history, clinical features (pain, cyclic nature, parietal mass), imaging findings (ultrasound and MRI), treatment (surgical and/or medical), histopathology results, and patient outcomes (postoperative course, recurrence, follow-up). Management was mainly based on complete surgical excision, sometimes combined with adjuvant medical therapy and regular follow-up. Data analysis was descriptive, with qualitative comparison to the literature, and patient anonymity was respected.

- **CASE 1**

A 36-year-old patient (M.S), with a history of an emergency cesarean section performed 12 years ago without complications and a normal delivery 5 years ago, presented to our department with chronic localized pain at the cesarean scar which had been evolving over four years. This pain was associated with a mass at the same location, progressively increasing in size, without inflammatory signs, urinary or digestive symptoms. The patient reported increased pain at the time of menstruation. Physical examination revealed a well-healed Pfannenstiel scar and a nodule located at its left outer third. The nodule was firm, with irregular contours, fixed to the deeper anatomical planes, oblong, tender on palpation, measuring 5 cm in diameter, without signs of inflammation. The rest of the physical examination was unremarkable. Soft tissue ultrasound revealed a parietal nodule adjacent to the operative scar. It appears as heterogeneous, containing some cystic areas, measuring 44.3*14.9mm without spicules, suggesting primarily an endometriotic graft (Fig. 1). Moreover, no other ultrasound abnormalities were observed, particularly in the uterus, ovaries, douglas pouch, and uterosacral ligaments. Surgical excision of this nodule was performed under general anesthesia. Intraoperatively, it was identified as an endometriotic nodule on the parietal peritoneum and adjacent to the rectus abdominis muscle, approximately 5 cm in size. The excision of this nodule was complete, removing a small portion of the underlying aponeurosis. Surgical exploration did not reveal deep endometriosis. Histopathological examination confirmed the diagnosis of parietal endometriosis. Macroscopically, it appeared as a poorly defined, non-encapsulated nodule containing brownish microcysts on the cut surface, with chocolate-colored content, surrounded by adipose tissue (Fig. 2). Microscopically, the nodule consisted of proliferative endometrial tissue forming glands surrounded by a cytotrophoblastic chorion containing numerous macrophages and hemorrhagic infiltrates (Fig. 3). Postoperative recovery was uneventful and at the 3-month follow-up, there was a notable clinical improvement, with complete resolution of the scar pain.

- **CASE 2**

29-year-old married woman (J.A), pauciparous, with a history of two cesarean sections (double uterine scar) and no other relevant medical history. She presented with chronic pelvic pain of cyclic exacerbation evolving for six months, associated with minimal bleeding from the abdominal scar. Her general condition was preserved, with no additional symptoms. On clinical examination, bluish painful nodular lesions were observed over the cesarean scar. The uterus was anteverted–retroflexed, of normal size and regular contours, with preservation of the junctional zone and a fine, free endometrial cavity line. Pelvic MRI revealed an endometriotic implant of the anterior abdominal wall measuring 9.4 × 8.3 mm, extending over 47 mm, with low signal intensity on both T1- and T2-weighted sequences and no enhancement after gadolinium injection. The lesion was responsible for adhesion between the anterior uterine wall and the abdominal wall, with extension to the skin. The patient underwent surgical excision of the abdominal wall mass. Intraoperative exploration revealed multiple endometriotic nodules embedded within the abdominal wall and adherent to the aponeurosis. Two nodules of variable size were identified: the first, bluish in appearance, measured 3 cm on the right, while the second, located slightly to the left of the midline, measured 2 cm and appeared more fibrous. Careful dissection was carried out between the superior and inferior cleavage planes of the aponeurosis. Complete excision of the endometriotic nodules was achieved with meticulous dissection to free the lesions while preserving the muscular and neural structures. Resection was performed with macroscopically healthy margins. Histopathological examination confirmed the diagnosis of cutaneous scar endometriosis, a rare form of parietal endometriosis. At follow-up, the patient reported disappearance of scar bleeding and significant improvement in pelvic pain, with no evidence of local recurrence.

- **CASE 3**

A 35-year-old woman, gravida 2 para 1, with no significant medical history, was admitted for an elective cesarean section. She had a history of cesarean delivery ten years earlier and was asymptomatic while on oral contraceptives. During intraoperative exploration, a 1 cm supra-aponeurotic nodule was incidentally discovered. Complete excision of the nodule was performed prior to fetal extraction. Histopathological examination of the specimen confirmed the diagnosis of parietal endometriosis. This case represents an incidental finding of abdominal wall endometriosis in an otherwise asymptomatic patient. Postoperative recovery was smooth, with no complications observed, and the patient remained asymptomatic with no recurrence at follow-up.

RESULTS AND DISCUSSION

Parietal endometriosis, characterized by the presence of endometrial tissue in the abdominal wall above the peritoneum, from the skin to the parietal muscles, is indeed a rare and frequently underestimated condition.[5] Different locations have been described, including the rectus abdominis muscles, the umbilicus, cesarean section scars, hysterectomy scars, abdominopelvic surgery scars, the site of an amniocentesis needle, and

trocar sites from laparoscopy.[6] Its occurrence accounts for a small percentage, ranging from 0.03% to 3.5%, of cases of extragenital endometriosis.[7] It typically occurs on scars from gynecological or obstetrical surgeries, such as episiotomies, uterine procedures, or cesarean sections.[8] Its incidence after cesarean section varies in studies from 0.03 to 0.4%, with a reported occurrence of 2% following hysterectomy. However, notably, in 20% of cases, parietal endometriosis was not associated with a scar.[5] In fact, a history of cesarean section was found in 44.5% of cases in the series by Steck and Helwig[8] and in 74% of cases in the study by Durant et al.[9] Daye et al. report that it is a complication of Pfannenstiel-type scars.[10] Several etiopathogenic hypotheses have been suggested for post-surgical lesions, including the concept of in situ cellular grafting during the surgical access to musculo-aponeurotic spaces, particularly following an experimental endometriosis model obtained by invagination of the endometrium into a cesarean scar.[9] This theory gains more significance during cesarean sections due to the high volume of blood and potential contamination of endometrial cells during dissection, particularly if the procedure is performed prior to the onset of labor.[11] Some authors suggested also the reflux theory, which is supported by post-surgical anatomical modifications. Indeed, the uterus would adhere to the parietal peritoneum, and with each menstrual episode, blood refluxing through the tubes would follow the peritoneal folds and adhesions to impregnate the scars.[12] Another theory suggested dissemination through the bloodstream or lymphatic system in patients with deep pelvic endometriosis.[7]

The clinical presentation classically manifests as: a palpable mass near a scar, progressively increasing in volume; cyclic pain, which is an important indicative element but does not confirm the diagnosis.[1,2] The onset of symptoms varies greatly (2 months to 15 years after the surgical procedure), and it can occur very late after surgery, often leading to an incorrect diagnosis and inadequate surgery.[9] Other less common symptoms might also be evident, including localized darkening of the scar, dyspareunia and infertility.[13] In 37% of cases, the diagnosis is made through anatomical pathology.[1,2] Ultrasound plays a crucial role in diagnostic orientation. It often reveals a well-defined, tissue, hypoechoic mass, though the lesion can be cystic, solid, or mixed, with sizes ranging from 5 to 200 mm. Color Doppler often shows a highly hypervascularized mass with dilated afferent vessels.[9] The CT appearance of subcutaneous endometriosis is not characteristic. The scan may show thickening or a localized solid, cystic, or mixed mass in the abdominal wall muscles.[14] MRI could be more specific by detecting recent bleeding or hemosiderin residues from previous bleeds. Fine-needle aspiration biopsy can help diagnose or confirm the diagnosis before considering surgical treatment.[15] Surgery is regarded as the gold standard treatment, leading to diagnostic confirmation following histological examination. It involves a wide excision that should extend well beyond the lesion, typically at least 10 mm into healthy tissue. In cases of significant aponeurotic defect, the placement of a retromuscular mesh is recommended.[7] Recurrences are not uncommon, occurring in 10 to 15% of cases.[16] Medical treatment with combined oral contraceptives, Danazol, GnRH agonists, and progesterone has been evaluated, and while it improves symptoms, it does not cure the lesions, which quickly and systematically recur after treatment cessation.[17] However, they can be employed before surgery to decrease nodule size and after surgery to deter recurrence.[7] Minimally invasive percutaneous techniques in interventional radiology, such as sclerotherapy, cryoablation, radiofrequency ablation, and high-intensity focused ultrasound, are also potential options, although their effectiveness remains to be established.[18]

Our three cases illustrate the variable clinical spectrum. Case 1 presented with a large, tender nodule and chronic cyclic pain, typical of scar endometriosis. Case 2 involved multiple nodules with cutaneous involvement and minor scar bleeding, highlighting that even small lesions can produce noticeable symptoms. Case 3 was an incidental intraoperative finding in an asymptomatic patient, showing that parietal endometriosis can remain clinically silent for years. Imaging played a supportive role in diagnosis and surgical planning. Ultrasound was useful in Case 1, while MRI in Case 2 provided detailed information on size, depth, and adhesion to surrounding structures. Complete surgical excision with macroscopically clear margins remains the treatment of choice. Histopathology confirmed endometriotic glands and stroma in all cases. Postoperative outcomes were favorable in all patients, with resolution of pain and no recurrence at follow-up. These cases underscore the importance of considering PE in the differential diagnosis of chronic scar pain, bleeding, or palpable masses in women with a history of cesarean delivery, even in the absence of classic symptoms.

CONCLUSION

We draw practitioners' attention to the importance of considering parietal endometriosis in the differential diagnosis whenever a patient presents with a wall mass associated with cyclic pain, especially in the near or distant aftermath of gynecological surgery. In this context, awareness, appropriate imaging, and meticulous surgical excision are essential for optimal management and to reduce the risk of recurrence. Although no preventive measures have yet proven effective, current pathophysiological hypotheses highlight the importance of ensuring careful and rigorous closure of the hysterotomy during cesarean sections.

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FIGURES

Figure 1: Ultrasound image of the soft tissues showing a heterogeneous, non-spiculated tissue lesion containing a few cystic areas and measuring 41 × 16 mm.

Figure 2: Surgical specimen showing the macroscopic appearance of parietal endometriosis: a poorly defined whitish nodule measuring 4 cm in greatest dimension, containing cystic formations with chocolate-like content and surrounded by adipose tissue.

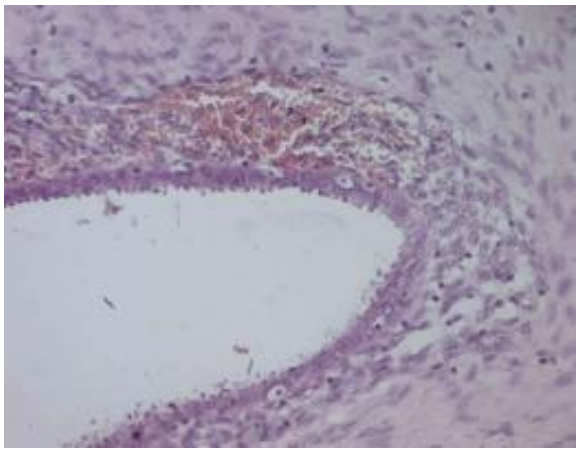

Figure 3: Microscopic appearance of parietal endometriosis (hematoxylin–eosin ×400): cuboidal or columnar proliferative-type epithelium surrounded by cytogenic stroma.

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