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Endometriosis of the Abdominal Wall: Case Review and Literature Insights

H. Tahiri[1*], O. Tounsi[1], I. Azzahiri[1], R. Bouroumane[1], A. Diani[1], M. Benzalim[1], S. Alj[1]

[1]Radiology Department, IBN TOFAIL Hospital, Mohammed VI University Hospital, Marrakech

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***Corresponding author:** H. Tahiri
Radiology Department, IBN TOFAIL Hospital, Mohammed VI University Hospital, Marrakech

Abstract **Case Report**

Background: Abdominal wall endometriosis (AWE) is an uncommon extrapelvic manifestation of endometriosis, most frequently occurring in surgical scars after cesarean section. It usually presents as a painful subcutaneous nodule with cyclic exacerbation. ***Case presentation:*** We report the case of a 34-year-old woman presenting with a painful nodule at a cesarean section scar. Clinical examination revealed a firm, tender mass. Ultrasound showed a heterogeneous hypoechoic lesion with peripheral vascularity. CT imaging confirmed a heterogeneous soft-tissue mass within the anterior abdominal wall at the cesarean scar, with mild peripheral enhancement. The patient underwent wide local excision with mesh repair. Histopathology confirmed abdominal wall endometriosis. ***Conclusion:*** AWE should be suspected in women with painful scar-related nodules. Imaging defines lesion extent, histology provides confirmation, and complete excision remains the treatment of choice.

Keywords: Abdominal wall endometriosis; Cesarean section; Scar endometriosis; Ultrasound; Computed tomography; Radiology.

INTRODUCTION

Endometriosis is defined as the presence of functional endometrial glands and stroma outside the uterine cavity. It affects approximately 10–15% of women of reproductive age [1]. While pelvic localizations are most common, extrapelvic sites remain rare. Abdominal wall endometriosis (AWE) accounts for 0.03–3.5% of cases, most often arising in cesarean section scars [2,3].

The most widely accepted theory of pathogenesis is iatrogenic implantation, in which endometrial cells are seeded into the surgical wound during uterine surgery and proliferate under hormonal stimulation [4]. Other mechanisms, including lymphatic or hematogenous spread and metaplasia of multipotent mesenchymal cells, have also been proposed [5].

Given the nonspecific nature of clinical presentation, imaging plays a central role in the diagnosis and surgical planning of AWE.

CASE PRESENTATION

A 34-year-old woman with two prior cesarean sections presented with a 3-year history of cyclical pain and swelling over her Pfannenstiel scar. Clinical examination revealed a firm, tender, 3 cm nodule adjacent to the scar.

Ultrasound revealed a heterogeneous hypoechoic nodule with peripheral vascularity, located in the anterior abdominal wall at the cesarean section scar (Figure 1).

CT scan confirmed a heterogeneous soft-tissue mass in the rectus abdominis muscle at the level of the cesarean scar, with mild peripheral enhancement after contrast injection (Figure 2).

The patient underwent wide surgical excision including the lesion and part of the rectus sheath, followed by mesh repair.

Histopathology confirmed the presence of endometrial glands and stroma within fibroadipose tissue, consistent with abdominal wall endometriosis.

Figure 1: Ultrasound of the abdominal wall shows a nodular heterogenous lesion fairly well-defined

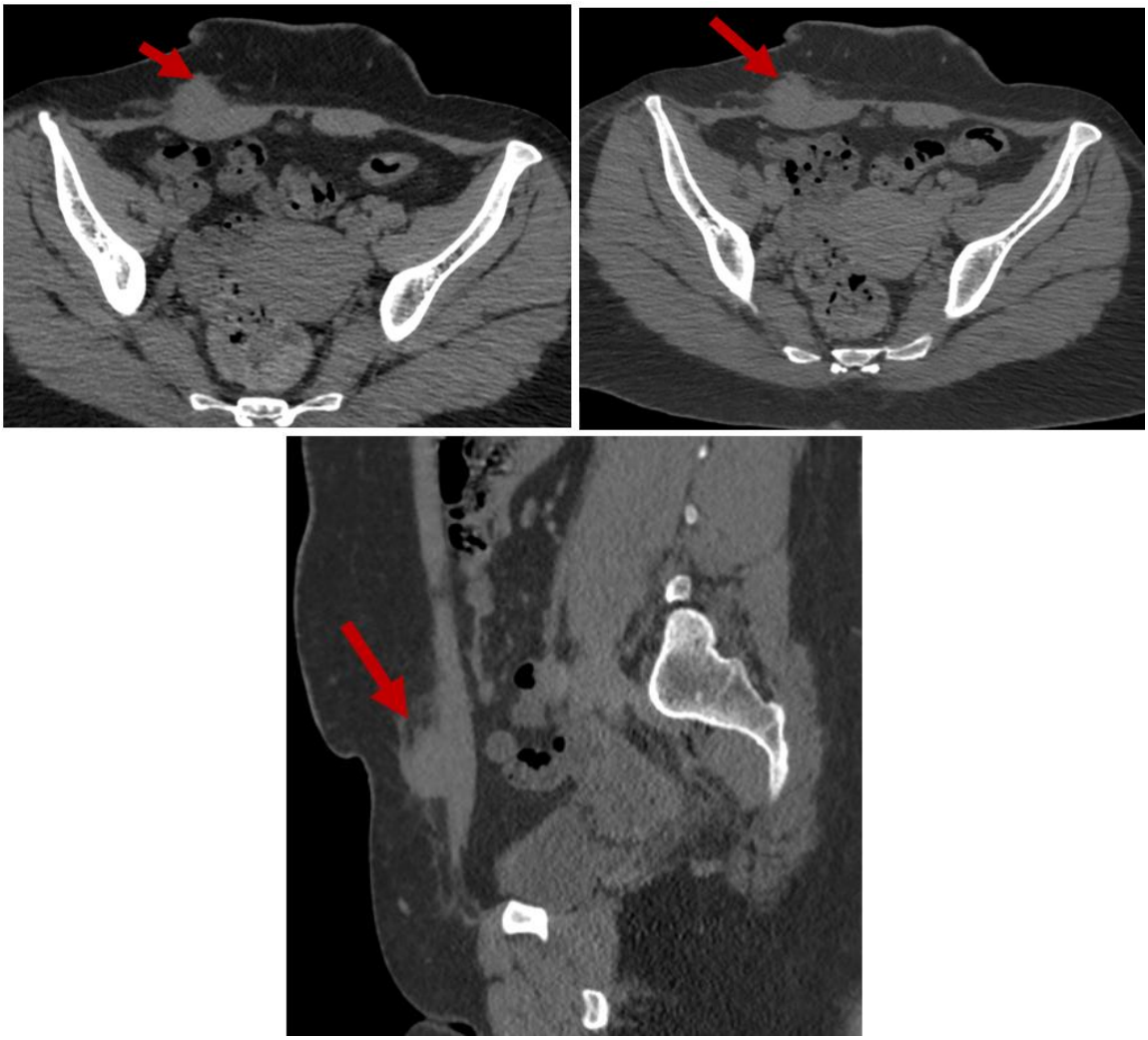

Figure 2: Axial and sagittal with and without contrast CT scan. Heterogeneous soft-tissue mass with mild peripheral enhancement at the level of the cesarean section scar

DISCUSSION

Abdominal wall endometriosis is rare but increasingly recognized, particularly with the rise in cesarean deliveries. Its incidence has been reported between 0.03–1% of cesarean sections [2,6] and up to 3.5% in histological studies [7]. The mean interval between surgery and symptom onset is usually 2–7 years, though it can vary widely [8]. Risk factors include multiple cesarean sections, inadequate peritoneal lavage, early resumption of menstruation after surgery, and the use of absorbable sutures that may entrap endometrial tissue [7,9].

Clinically, AWE presents most often as a painful, palpable nodule near a surgical scar, with pain that typically worsens during menstruation. In Khamechian's series of 30 patients, pain was present in 90%, a mass in 96%, and cyclic exacerbation in 86% [2]. Because these findings are not specific, imaging is essential for diagnosis.

Ultrasound is usually the first-line modality. The classic features include a heterogeneous hypoechoic lesion, sometimes with cystic or hemorrhagic areas, and peripheral or intralesional vascularity on Doppler. This examination is valuable for initial detection and is highly suggestive when associated with cyclic pain in a scar-related nodule [9].

Computed tomography provides a more global assessment of the abdominal wall and is particularly useful when the lesion extends deeply or when there is diagnostic uncertainty. On CT, AWE appears as a well-defined, heterogeneous soft-tissue mass with mild to moderate contrast enhancement, usually peripheral. CT also helps evaluate infiltration of the rectus sheath and differentiate AWE from other entities such as incisional hernia, suture granuloma, abscess, lipoma, or desmoid tumor [10,11].

MRI can be helpful in selected cases, offering superior tissue characterization and aiding surgical planning, but it is not always necessary, especially when ultrasound and CT findings are typical.

Treatment of choice remains wide surgical excision with negative margins. If the fascia or muscle is involved, mesh repair may be required. Recurrence rates are generally low when resection is complete, but may reach 9% after incomplete excision [12,14]. New minimally invasive techniques such as radiofrequency ablation, cryoablation, microwave therapy, high-intensity focused ultrasound, and ethanol sclerotherapy have been reported with promising results, although long-term evidence is still lacking [15].

Prognosis is favorable in most cases. Malignant transformation is extremely rare but has been described, most often as clear cell carcinoma, representing fewer than 1% of cases [16]. This underscores the importance of early diagnosis and appropriate management.

CONCLUSION

Abdominal wall endometriosis is an uncommon but clinically significant condition, most often occurring in cesarean section scars. It should be suspected in women presenting with painful scar nodules, particularly when symptoms are cyclical. Clinical suspicion alone is insufficient, and imaging plays a central role in establishing the diagnosis and guiding management.

Ultrasound is usually the initial and most accessible tool, allowing detection of a heterogeneous hypoechoic lesion with vascularity. CT further contributes by accurately mapping the size, density, and depth of extension, especially regarding the rectus sheath, which is crucial for surgical planning. Histopathological examination provides definitive confirmation.

Wide surgical excision with free margins remains the gold standard treatment, as incomplete resection is the main cause of recurrence. From a radiological perspective, awareness of the imaging spectrum of AWE is essential for timely diagnosis, to prevent misinterpretation, and to optimize multidisciplinary management.

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