Abdominal wall endometriosis

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Section: Abdominal imaging
Area of Interest: Abdominal wall
Procedure: Diagnostic procedure
Imaging Technique: Ultrasound
Imaging Technique: CT
Imaging Technique: MR
Special Focus: Tissue characterisation
Case Type: Clinical Cases
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Patient: 36 years, female

Clinical History:

A 36-year-old woman presented with a 5-month history of non-cyclical pain and a palpable mass located at the right lower abdomen. She had undergone caesarean section 5 years before. Clinical examination revealed a well-defined fixed mass in the right fossa.

Imaging Findings:

Ultrasound revealed a 15 x 13 x 7.5 mm ill-defined heterogeneous hypoechogenic mass superficial to the rectus abdominis muscle with peripheral vascularisation on colour Doppler US. Subsequent CT showed an ill-defined solid hypodense nodule in the subcutaneous tissue, enhancing after contrast administration.
On MRI a stellate lesion abutting the rectus abdominis muscle was seen. The mass was isointense to muscle on T1-weighted images and of high signal on T2-weighted images, and enhanced vividly after gadolinium administration. Histopathological examination of ultrasound-guided biopsy specimen showed a large fibrotic component. Therefore, the initial preferential diagnosis was desmoid tumour. After surgery, histopathological examination of the resection specimen, however, clearly showed endometrial tissue surrounded by fibrosis, in keeping with endometriosis. Immunohistochemistry confirmed the final diagnosis of abdominal wall endometriosis at a caesarean section scar.

Discussion:

Endometriosis consists of functional endometrial tissue found outside the uterine cavity. It occurs in up to 15% of fertile women [1]. In most cases it is located within the pelvis, especially the ovaries [1, 2]. Less often endometrial implants are found within the abdominal and pelvic wall, usually after surgical procedures, such as caesarean section or hysterectomy. In these scenarios, the lesion is located near the scar. In around 15% scar endometriosis is associated with pelvic endometriosis [3]. The pathogenesis of endometriosis is still unclear. Three theories have been proposed: (a) metastatic theory (spread of endometrial cells through retrograde menstruation, lymphovascular spread or intraoperative implantation), (b) metaplastic theory (metaplasia of abdominal wall cells into endometrial cells), and (c) induction theory (induction of undifferentiated mesenchyma to form endometrial tissue) [2, 4].
Clinically, there is pain and a palpable mass near the scar, which may aggravate during menstruation. [3, 4]. As clinical findings are often nonspecific, imaging is used to further evaluate the lesion. On ultrasound scar
endometriosis usually manifests as a predominantly hypoechoic mass with echogenic areas representing fibrosis. The pattern of echogenicity may vary along with the amount of haemorrhagic and fibrotic component. A peripheral hyperechoic rim may correspond to compressed subcutaneous tissue. Cystic changes are rare in scar endometriosis compared to pelvic endometriosis [3]. Colour Doppler US often reveals increased vascularity. CT shows a solid enhancing soft-tissue mass with irregular borders [1, 3]. MRI is the best technique for local staging and potential characterization. Although the signal intensity of the lesion may be nonspecific, signal intensities in keeping with different blood degradation products may allow to suggest a more specific diagnosis. Hyperintense components on (fat-suppressed) T1-WI and T2-WI are due to subacute haemorrhage (methaemoglobin), whereas hypointense areas on both pulse sequences may reflect old blood (haemosiderin). Blooming artefact may be seen on T2* images. The lesion may enhance after administration of gadolinium contrast [3, 5].

Differential diagnosis includes neoplastic and non-neoplastic lesions [1, 4]. The final diagnosis can only be made by histopathology confirming the presence of intralesional endometrial glands and stroma with fibrosis, hyperplasia and inflammation of surrounding soft tissues [3]. Aspiration or biopsy with small-calibre needle can be misleading due to the often fibrous nature mimicking desmoid. Therefore, larger surgical resection specimen are often necessary [1, 3]. There are two therapeutic options. Best results are obtained by wide surgical excision. Hormonal suppression therapy may lead to recurrence after cessation of the medication [3, 4].

**Differential Diagnosis List:** Abdominal wall endometriosis at caesarean section scar, • Neoplasms such as desmoids tumour, sarcoma, lymphoma and metastasis, • Non-neoplastic lesions such as suture granuloma, ventral hernia, haematoma and abscess.

**Final Diagnosis:** Abdominal wall endometriosis at caesarean section scar.

**References:**


Description: Axial ultrasound image. Ill-defined hypoechoic lesion within the subcutaneous tissue (arrow), abutting the right rectus abdominis muscle. Note some increased power Doppler signal at the periphery of the lesion. Origin: © Vanhoenacker F, AZ Sint-Maarten Mechelen-Duffel, Belgium
Figure 2

Description: CT confirms an ill-defined hypodense lesion (arrow), abutting the right rectus abdominis muscle. Origin: © Vanhoenacker F., AZ Sint-Maarten Mechelen-Duffel, Belgium
**Figure 3**

**a**

**Description:** Axial fat-suppressed T2-WI. The lesion is of high signal (arrow).

**Origin:** © Vanhoenacker F, AZ Sint-Maarten Mechelen-Duffel, Belgium

**b**

**Description:** Axial T1-WI. The lesion is iso-intense to muscle (arrow).

**Origin:** © Vanhoenacker F, AZ Sint-Maarten Mechelen-Duffel, Belgium
**Description:** Axial fat-suppressed T1-WI. The lesion is iso-intense to muscle (arrow). **Origin:** © Vanhoenacker F, AZ Sint-Maarten Mechelen-Duffel, Belgium

**Description:** Axial fat-suppressed T1-WI after administration of gadolinium contrast. There is marked enhancement of the lesion (arrow). **Origin:** © Vanhoenacker F, AZ Sint-Maarten Mechelen-Duffel, Belgium
Description: Sagittal fat-suppressed T1-WI after administration of gadolinium contrast. There is marked enhancement of the lesion (arrow). Notice the intimate relationship with the abdominal wall and surrounding stranding. Origin: © Vanhoenacker F, AZ Sint-Maarten Mechelen-Duffel, Belgium