

Endometrioma developed in abdominal wall scar post Caesarean section: Imaging features with special emphasis on MR imaging

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Abstract:

Caesarean section scar endometrioma is a rare extrapelvic endometriosis that poses a diagnostic difficulty, often confused with other surgical conditions, such as incisional haematoma, granuloma, abscess and tumours. Even though ultrasound and CT scans are diagnostic of scar endometriosis, MR imaging yields more information regarding the characteristics and extent of the lesion as it is important for the surgical excision to prevent recurrence. We present a case of scar endometrioma with special emphasis on MR imaging.

Introduction:

Endometriosis is a functional ectopic endometrial tissue found in women of childbearing age. It may be pelvic or extrapelvic in location. The abdominal wall caesarean section scar is an uncommon site of extrapelvic endometriosis. We discuss imaging features of a case of caesarean scar endometrioma involving the left rectus sheath, with underlying rectus abdominis muscle free from infiltration.

Case report:

A 36-year-old female who underwent caesarean section 10 years ago, presented with five months' history of cyclical onset of pain and swelling. The findings were corresponding to her menstrual cycle in the region of the caesarean section anterior abdominal wall scar. On physical examination, there was redness and tenderness in the region of the scar, with no sign of palpable mass or changes of keloid.

Ultrasound study revealed a small 2.1 x 2.0 cm sized, irregular hypoechoic mass lesion in the left lower abdominal wall at the site of the operative scar with evidence of hyperechoic rim. Blood flow within the lesion was noted on colour Doppler examination. A large simple cyst was seen in the right ovary. The left ovary and uterus were normal.

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CT scan of the abdomen and pelvis with intravenous contrast administration demonstrated an irregular enhancing nodular lesion in the subcutaneous tissues of the anterior abdominal wall at the caesarean section scar. This mass measured 2.1 x 2.9 x 2.5 cm in size. No cystic areas or calcifications were seen. The fat plane between the mass and left rectus sheath layer was obliterated in the upper half region, representing its definite sign of infiltration. The involvement of the underlying rectus abdominis muscle layer could not be assessed with certainty due to the close proximity of both layers. However, there was no evidence of intra-abdominal extension (Fig1).

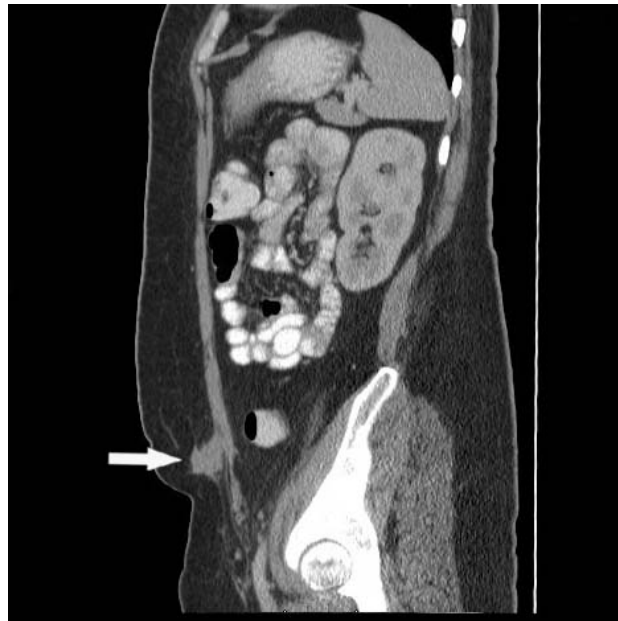


Fig 1: Post contrast CT scan of abdomen – sagittal reconstruction showing irregular, enhancing nodular soft tissue density mass in the subcutaneous fat plane near the caesarean scar. Underlying rectus sheath showed signs of infiltration (arrow). But the involvement of the underneath rectus abdominis muscle could not be demonstrated clearly.

MR imaging of the lower abdomen was further carried out for better evaluation of the anterior abdominal wall lesion. On MR imaging, an irregular enhancing soft tissue mass of similar size to that of the CT scan was shown near the abdominal caesarean section scar lesion.



Fig 2: Axial T1 weighted MR image of the abdomen shows hypointense irregular soft tissue mass with distinct spiculated margins in the subcutaneous fat plane abutting the left rectus sheath (arrow). Multiple small subtle scattered hyperintensities within the hypointense mass lesion represent haemorrhagic foci - a feature of endometrial tissue.

MR imaging showed distinct spiculated margins of the subcutaneous soft tissue nodular mass, appearing hypointense on T1 and T2 weighted images. Multiple small subtle hyperintensities were noted within this hypointense lesion on T1-weighted images represent haemorrhagic foci (Fig. 2).

The post contrast fat-suppressed T1-weighted images revealed intense nodular soft tissue mass enhancement with distinct spiculated margins within the subcutaneous fat plane along with focal linear enhancement of the underlying left abdominal rectus sheath layer representing its definite sign of infiltration. However, the adjacent rectus abdominis muscle did not reveal any abnormal enhancement and was free from infiltration (Fig. 3).

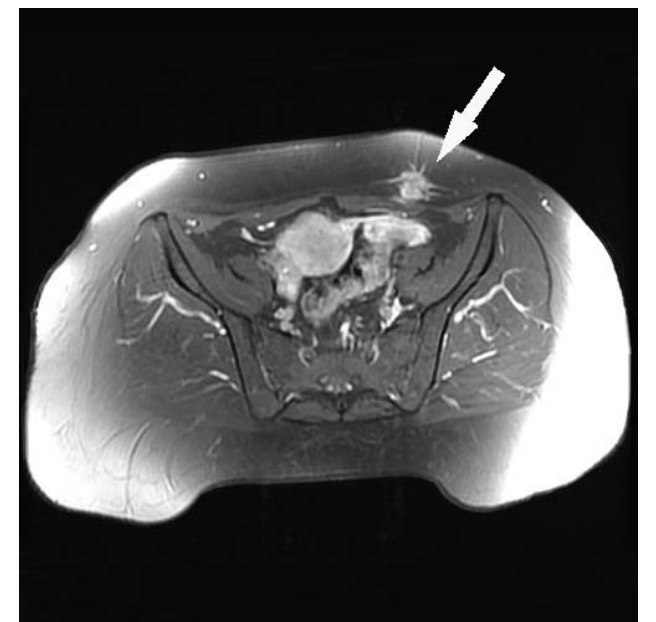


Fig 3: Axial T1 weighted post contrast fat suppressed MR image shows nodular enhancement of the subcutaneous mass of endometrial tissue associated with linear enhancement of the underlying left rectus sheath, representing sign of infiltration (arrow). The underlying rectus abdominis muscle was free from infiltration.

Fine needle aspiration cytology confirmed the presence of endometrial tissue and haemorrhage. Wide surgical excision was performed with the removal of the involved anterior rectus sheath, preserving the underlying rectus muscle.

Discussion:

Endometriosis is defined as the presence and proliferation of endometrial tissue outside the uterine cavity. Reports indicate that endometriosis may be present between 0.08 % of the caesarean section scars¹. The time interval between operation and presentation has varied from three months to 10 years in different series.

The etiology of abdominal wall endometrioma is thought to be a result of



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transportation of endometrial tissue during surgical procedures and subsequently stimulated by estrogen to produce endometriomas.

The simultaneous occurrence of pelvic endometriosis with scar endometriosis is infrequent. Only 26.6 % of cases have associated pelvic endometriosis 2. Our patient also did not have associated pelvic endometriosis.

Imaging appearances of the scar endometrioma depends on the phase of the menstrual cycle, the proportions of stromal and glandular elements, the amount of bleeding and the degree of surrounding inflammatory and fibrotic response. Masses may appear mostly solid or cystic, or may show a mixed appearance of both solid and cystic elements.

Ultrasound features are the inhomogeneous hypoechoic solid lesion with scattered hyperechoic internal echoes, irregular infiltrating margins and a hyperechoic rim of variable width and continuity. The peripheral hyperechoic rim represents an inflammatory reaction.

On colour Doppler study, the majority of the cases showed a single vascular pedicle entering the mass at the periphery. Some cases demonstrate intralesional vascularity. In a minority of cases there may not be any detectable vascularity on colour Doppler examination 3,4. CT scan with IV contrast characteristics of scar endometrioma is of inhomogeneously enhancing soft tissue density mass lesion. The irregular margins infiltrating the surrounding fat will be seen 5, 6, 7. CT has no pathognomonic findings of endometrioma and it is less useful in distinguishing the endometrial tissue from the surrounding structures as compared to MR imaging 7.

MR imaging, due to its superior soft tissue resolution and multi-planar capability is more effective in lesion characterization and in delineating the extent of the adjacent tissue involvement. The sensitivity and specificity of MRI in diagnosing endometriomas are very high, being 90-92% and 91-98%, respectively 8. MRI proved extremely helpful in confirming the presence of blood products within the lesion 9. Furthermore, MRI with intravenous gadolinium was very useful for presurgical mapping of the scar endometriosis by accurately defining the infiltration of the adjacent abdominal wall muscles and subcutaneous tissues 9, 10. Contrast-enhanced dynamic MR imaging (DMI) in the diagnosis of nodular abdominal endometriosis has been reported to be useful 11. This is due to the fact that the endometriosis is an ectopic endometrial tissue having similar vascularity as that of normal endometrial tissue.

Treatment of choice is wide excision of the lesion. In our case, the same pattern was followed by the removal of the mass with involved anterior rectus sheath, however the underneath rectus abdominis muscle layer was preserved.

Sometimes surgery may require mesh placement. Medical treatment with the use of progestogens, oral contraceptive pills and recently a gonadotrophin agonist will only improve the symptoms and cause no significant change in the lesion size 12.

Conclusion:

Suspicion of scar endometrioma can be made with ultrasound and CT scan. MR imaging is more sensitive and highly specific in accurately characterising the morphology and demonstrating the extent of involvement of the adjacent structures. MR provides useful information for surgical planning in order to achieve complete removal of the lesion and reduce risk of recurrence.

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