

Scar Endometriosis: Clinical Features, Diagnosis, and Surgical Management – A Case Series

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ABSTRACT

Scar endometriosis is a rare form of extrapelvic endometriosis characterized by the presence of functional endometrial tissue within or adjacent to surgical scars, most commonly following cesarean section. Due to its variable clinical presentation, it is often misdiagnosed, leading to delayed management. We present a case series of five patients with scar endometriosis, highlighting diverse clinical scenarios including typical cyclical pain, atypical non-cyclical presentation, recurrence following prior excision, and involvement of uncommon sites such as episiotomy scars. Most patients presented with a painful mass at the scar site, with symptoms often correlating with the menstrual cycle, although deviations from the classical presentation were observed. Imaging modalities such as ultrasonography and magnetic resonance imaging played an important role in preoperative evaluation; however, definitive diagnosis was established through histopathological examination in all cases. All patients underwent surgical excision with adequate margins, resulting in complete symptom resolution and no significant recurrence during follow-up. This case series emphasizes the importance of maintaining a high index of suspicion for scar endometriosis in women presenting with scar-related symptoms, even in atypical cases, and highlights surgical excision as the definitive and effective treatment modality.

Keywords: Scar endometriosis; Abdominal wall endometriosis; Cesarean section; Surgical scar; Case series; Extrapelvic endometriosis; Cyclical pain; Episiotomy scar; Surgical excision; Recurrence

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Introduction

Scar endometriosis is a rare form of extrapelvic Endometriosis characterized by the presence of functional endometrial glands and stroma within or adjacent to surgical scars, most commonly following obstetric or gynecological procedures such as cesarean section. It is considered an iatrogenic condition resulting from the direct implantation of endometrial tissue into the wound during surgery, where it subsequently proliferates under hormonal influence [1].

The reported incidence of scar endometriosis following cesarean section ranges from approximately 0.03% to 0.4%, though the true prevalence may be underestimated due to misdiagnosis or delayed

recognition [2]. Patients typically present with a triad of cyclical pain, a palpable mass at or near the surgical scar, and symptoms that correlate with the menstrual cycle. However, atypical presentations are not uncommon, contributing to diagnostic challenges [3]. The pathogenesis is primarily explained by the implantation theory, although other mechanisms such as lymphatic or hematogenous dissemination have also been proposed. The condition may develop months to years after the initial surgery, further complicating timely diagnosis [2,3].

Diagnosis is largely clinical, supported by imaging modalities such as ultrasound, CT, or MRI, with histopathological confirmation remaining the gold standard. Fine-needle aspiration cytology (FNAC) may

aid in preoperative diagnosis but is not routinely required [1].

Surgical excision with adequate margins is the treatment of choice and is associated with low recurrence rates. Medical management has limited efficacy and is generally reserved for non-surgical candidates [3].

Case 1

A 28-year-old multiparous woman (P2L2) presented to the surgical outpatient department with complaints of progressively increasing pain and swelling over her lower abdominal scar for the past eight months. She had undergone a lower segment cesarean section three years prior, which was uneventful. The patient described the pain as localized, dull aching in nature, with intermittent exacerbations that coincided with her menstrual cycles. Over time, she noticed that the intensity of pain increased during menstruation and was associated with a sense of heaviness at the scar site. She also reported a gradually enlarging nodular swelling over the same region. There was no history of fever, discharge, weight loss, or trauma.

On physical examination, a well-healed Pfannenstiel scar was noted. Palpation revealed a firm, non-fluctuant, tender mass measuring approximately 3 × 2 cm located in the subcutaneous plane near the right lateral edge of the scar. The swelling was immobile and not reducible, with no cough impulse, thereby ruling out an incisional hernia clinically. The overlying skin appeared normal without discoloration or sinus formation.

Ultrasonographic evaluation demonstrated a hypoechoic lesion with internal echoes in the subcutaneous plane, raising suspicion for a soft tissue mass of uncertain etiology. Magnetic resonance imaging (MRI) further delineated a well-circumscribed lesion exhibiting heterogeneous signal intensity, suggestive of an endometriotic deposit. Based on the clinical history of cyclical pain and imaging findings, a provisional diagnosis of Endometriosis involving the scar was made.

The patient underwent wide local excision of the lesion with adequate margins under regional anesthesia. Intraoperatively, the lesion was found to be adherent to surrounding fibrous tissue but did not involve deeper fascial layers. Histopathological examination confirmed the presence of endometrial glands and stroma with areas of hemorrhage, establishing the diagnosis of scar endometriosis. The postoperative period was uneventful, and the patient remained asymptomatic with no recurrence at six-month follow-up.

Case 2

A 32-year-old woman presented with complaints of persistent lower abdominal pain and a palpable mass at the site of a previous cesarean section scar for nearly one year. The cesarean delivery had been performed five years earlier. Unlike typical presentations, the patient described her pain as continuous rather than cyclical, with only mild exacerbation during menstruation. Due to the atypical nature of symptoms, she had initially been treated elsewhere for suspected stitch granuloma with no symptomatic relief.

On examination, a 2 × 2 cm firm, irregular, mildly tender swelling was palpated in the left lateral aspect of the scar. The lesion appeared fixed to the underlying structures, and there were no signs of inflammation such as erythema or warmth. There was no associated lymphadenopathy.

Ultrasound imaging revealed a heterogeneous lesion with indistinct margins, prompting further evaluation. Fine-needle aspiration cytology (FNAC) was performed, which showed clusters of epithelial cells with stromal fragments and hemosiderin-laden macrophages, findings suggestive of endometriosis. MRI was subsequently done and demonstrated features consistent with a localized endometriotic lesion in the abdominal wall.

Given the persistence of symptoms and diagnostic findings, surgical excision was planned. The lesion was excised with clear margins, and intraoperative findings revealed dense fibrotic adhesions to adjacent tissues. Histopathological examination confirmed the diagnosis of scar endometriosis by demonstrating endometrial glands embedded within fibrous tissue along with evidence of cyclic hemorrhage.

The patient had complete resolution of symptoms following surgery. This case highlights the diagnostic challenge posed by atypical presentations of Endometriosis, especially when classical cyclical pain is absent.

Case 3

A 35-year-old female presented with complaints of a gradually enlarging swelling over her previous cesarean section scar for the past one year, accompanied by pain that intensified during menstruation. She had undergone a cesarean section seven years prior. The swelling had initially been small but progressively increased in size, raising concern for an incisional hernia.

On physical examination, a 4 × 3 cm firm, tender mass was palpated adjacent to the scar. The swelling was non-reducible and did not exhibit a cough impulse, making hernia less likely clinically, although it

remained a differential diagnosis. The overlying skin was normal, and there were no signs of infection.

Ultrasonography revealed a solid mass without any fascial defect, effectively excluding hernia. MRI demonstrated a well-defined lesion involving both subcutaneous tissue and underlying fascia, with signal characteristics suggestive of endometriosis. The cyclical nature of pain further supported the diagnosis of scar endometriosis.

Surgical management involved wide excision of the lesion along with involved fascial tissue. Due to the resultant defect in the abdominal wall, mesh repair was performed to restore structural integrity. Histopathological analysis confirmed the presence of endometrial glands and stroma with associated hemorrhagic areas, consistent with scar endometriosis. The patient had an uneventful recovery and remained symptom-free at one-year follow-up with no evidence of recurrence. This case underscores the importance of differentiating scar endometriosis from surgical conditions such as hernia, as misdiagnosis can delay appropriate management.

Case 4

A 30-year-old woman presented to the surgical outpatient department with complaints of recurrent pain and swelling at the site of her previous cesarean section scar for the past one year. Notably, she had undergone excision of a similar swelling at the same site two years earlier, which had been diagnosed as Endometriosis on histopathology. The patient reported that following the initial surgery, she remained asymptomatic for nearly a year; however, she subsequently developed a recurrence of pain associated with a gradually increasing nodular swelling. The pain was cyclical in nature, intensifying during menstruation and interfering with her daily activities. On examination, a firm, irregular, tender mass measuring approximately 2.5 × 2 cm was palpable along the previous surgical scar, with evidence of scar thickening and fibrosis. The swelling appeared fixed to the underlying structures, raising suspicion of deep tissue involvement. There was no erythema, discharge, or systemic signs of infection.

Ultrasonography revealed a heterogeneous lesion extending into the deeper layers, and MRI confirmed infiltration into the rectus sheath with irregular margins, suggestive of recurrent scar endometriosis. Given the history of prior excision and recurrence, a more aggressive surgical approach was planned. Wide local excision with removal of involved fascia and surrounding tissue was performed. Due to the resultant

defect in the abdominal wall, mesh reinforcement was required.

Histopathological examination once again confirmed the presence of endometrial glands and stroma with areas of fibrosis and hemorrhage, consistent with recurrent scar endometriosis. The postoperative course was uneventful, and the patient was advised regular follow-up. At one-year follow-up, there was no evidence of recurrence.

This case highlights the importance of adequate surgical margins during initial excision, as incomplete removal is a major risk factor for recurrence.

Case 5

A 26-year-old primiparous woman presented with complaints of a painful swelling at the site of a previous episiotomy scar for the past six months. She had a history of normal vaginal delivery two years prior, complicated by a mediolateral episiotomy. The patient reported localized pain at the perineal region, which was cyclical in nature and worsened during menstruation. She also described discomfort while sitting and during intercourse, significantly affecting her quality of life.

On local examination, a small, firm, tender nodular lesion measuring approximately 1.5 × 1 cm was palpated at the episiotomy scar site. The lesion was non-fluctuant and fixed to the surrounding soft tissue. There were no signs of infection such as redness, warmth, or discharge. Given the unusual location, initial differential diagnoses included granuloma, inclusion cyst, and chronic scar tissue.

Ultrasonography of the perineal region demonstrated a hypoechoic lesion with minimal vascularity. MRI further characterized the lesion, revealing a well-defined soft tissue mass with signal intensity changes suggestive of endometriotic tissue. Based on the clinical history of cyclical pain and imaging findings, a diagnosis of scar endometriosis at the episiotomy site was considered.

The patient underwent complete surgical excision of the lesion under regional anesthesia. Intraoperatively, the lesion was confined to the subcutaneous tissue without involvement of deeper structures. Histopathological analysis confirmed the diagnosis of endometriosis, demonstrating endometrial glands, stromal components, and hemosiderin-laden macrophages.

The postoperative period was uneventful, and the patient reported complete resolution of symptoms at follow-up. This case underscores the fact that scar endometriosis is not limited to cesarean scars and can

occur in other obstetric surgical sites such as episiotomy scars, often leading to diagnostic confusion due to its rarity.

Discussion

Scar endometriosis represents an uncommon but increasingly recognized manifestation of extrapelvic Endometriosis, most frequently associated with prior obstetric and gynecological surgical procedures, particularly cesarean section. The pathogenesis is most widely explained by the direct implantation theory, wherein viable endometrial cells are inoculated into the surgical wound during uterine incision and subsequently proliferate under hormonal influence [1]. This theory is strongly supported by the temporal relationship between surgery and symptom onset, as observed in all three cases presented, where symptoms developed several years following cesarean delivery [2].

The clinical presentation of scar endometriosis is often variable and may lead to diagnostic delays. The classical triad of cyclical pain, palpable mass, and history of prior surgery is considered highly suggestive; however, it is not universally present [3]. In our case series, while two patients exhibited typical cyclical pain correlating with menstruation, one patient presented with non-cyclical pain, highlighting the diagnostic challenge posed by atypical presentations. Such variability often leads to misdiagnosis, with conditions such as stitch granuloma, lipoma, abscess, or incisional hernia being considered initially [4]. This emphasizes the need for a high index of suspicion, especially in women of reproductive age presenting with scar-related symptoms.

Imaging plays a crucial role in the evaluation of suspected cases. Ultrasonography is typically the first-line modality due to its accessibility and cost-effectiveness; however, findings are often nonspecific [5]. Magnetic resonance imaging (MRI) provides superior soft tissue characterization and is particularly valuable in assessing lesion extent, involvement of deeper structures, and preoperative planning [6]. In our cases, MRI was instrumental in confirming the diagnosis and guiding surgical management. Fine-needle aspiration cytology (FNAC), although not routinely required, can provide supportive evidence by demonstrating endometrial glands, stromal cells, and hemosiderin-laden macrophages [7].

Definitive diagnosis is established through histopathological examination, which remains the gold standard [1]. The identification of both endometrial glands and stroma, along with hemorrhagic areas, confirms the diagnosis. All three cases in our series

were conclusively diagnosed following surgical excision and histopathological evaluation.

Surgical excision with clear margins is the treatment of choice and is associated with low recurrence rates [8]. Inadequate excision may lead to recurrence, emphasizing the importance of complete removal, including involved surrounding tissue. In cases where deeper structures such as fascia are involved, as seen in our third case, reconstructive procedures such as mesh repair may be necessary [9]. Medical management with hormonal therapy has limited effectiveness and is generally reserved for patients who are not surgical candidates [3].

Early recognition and prompt surgical intervention are essential to prevent complications and improve patient outcomes. Preventive strategies during cesarean section, such as thorough irrigation of the wound and avoidance of contamination with endometrial tissue, have been suggested to reduce the risk of implantation [2,10].

In conclusion, scar endometriosis, though rare, should be considered in the differential diagnosis of any painful mass arising in a surgical scar, particularly in women with a history of cesarean section. Awareness among clinicians, combined with appropriate use of imaging and timely surgical management, can significantly reduce morbidity and prevent diagnostic delays.

Conclusion

Scar endometriosis is a rare but important form of extrapelvic Endometriosis that should be suspected in women of reproductive age presenting with a painful mass at or near a previous surgical scar. Although cyclical pain is a key clinical feature, atypical presentations are common and may lead to delayed diagnosis or mismanagement. A high index of suspicion, supported by imaging modalities such as ultrasound and MRI, is essential for early detection, while histopathological examination remains the definitive method of diagnosis. Surgical excision with adequate margins is the treatment of choice and offers excellent outcomes with low recurrence when performed appropriately. The varied presentations observed in this case series, including recurrence and involvement of uncommon sites such as episiotomy scars, highlight the need for careful clinical evaluation and timely intervention to minimize morbidity and improve patient quality of life.

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