Section: Obstetrics and Gynaecology

Case Series

SCAR ENDOMETRIOSIS: A CASE SERIES HIGHLIGHTING RECURRENCE, MYOMETRIAL INFILTRATION AND ASSOCIATION WITH UTERINE ANOMALY

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ABSTRACT

Background: Scar endometriosis is an uncommon form of extra-pelvic endometriosis that typically arises in surgical scars, most often following cesarean delivery. It can present with variable clinical features, ranging from small subcutaneous nodules to deep infiltrating disease with extensive abdominal wall involvement. Recurrent disease and associations with Müllerian anomalies are infrequently reported. The objective is to present a case series of six women with scar endometriosis highlighting diverse clinical presentations, management strategies and unique associations.

Materials and Methods: Six patients with histologically confirmed scar endometriosis were evaluated. Clinical presentation, imaging, operative findings, management, and outcomes were analyzed.

Results: Among the six patients, three developed recurrence after previous surgical excision—one required mesh repair for a large recurrent lesion, another received progesterone therapy without symptom relief and subsequently underwent re-excision, while the third was managed with repeat wide excision. One patient with uterine didelphys had deep infiltration of scar endometriosis into the myometrium of the right horn, representing a rare association. Another patient had extensive rectus sheath involvement necessitating wide excision with mesh repair. One patient presented with a localized lesion that was successfully managed with wide excision.

Conclusion: Scar endometriosis may present with varied clinical patterns, including recurrence, deep myometrial invasion, extensive abdominal wall involvement, and rare associations with uterine anomalies. While wide surgical excision remains the mainstay of treatment, recurrence and complex presentations highlight the need for careful surgical planning and long-term follow-up.

Keywords: Endometriosis; Cesarean Section; Abdominal Wall; Recurrence; Uterine Anomalies; Surgical Mesh

INTRODUCTION

Endometriosis is defined as the presence of functional endometrial glands and stroma outside the uterine cavity, commonly involving pelvic organs such as the ovaries, fallopian tubes and peritoneum.[1] However, it can also occur in extrapelvic locations, including the gastrointestinal tract, urinary system, lungs, and even the skin.[2] One such uncommon manifestation is scar endometriosis, which refers to the implantation and growth of endometrial tissue within a surgical scar, most commonly following obstetric and gynecological surgeries such as cesarean section, episiotomy, hysterectomy, or laparoscopic procedures.[3,4]

Scar endometriosis is considered a form of iatrogenic endometriosis, with the leading hypothesis being direct mechanical transplantation of viable

endometrial cells into the surgical wound during uterine incisions or procedures.[5] These cells then implant and proliferate under the influence of estrogen, leading to the development of a painful, hormonally responsive mass.[3,6] Although the reported incidence following cesarean section ranges from 0.03% to 0.4%, the actual prevalence may be underestimated due to misdiagnosis or lack of awareness.[7]

Clinically, patients typically present with a palpable mass near the surgical scar, associated with cyclical pain or swelling, often correlating with menstruation.[4] However, in many cases, the symptoms are nonspecific, and the differential diagnosis includes suture granuloma, incisional hernia, desmoid tumor, lipoma, or even neoplasms, which may delay appropriate diagnosis. 3,5 High clinical suspicion, especially in women with previous pelvic surgeries and cyclical symptoms, is essential for timely recognition.[6]

Imaging modalities such as ultrasound, MRI or CT may aid in the diagnosis, although histopathological examination remains the gold standard for confirmation.[4] Surgical excision with clear margins is the definitive treatment, offering both diagnostic confirmation and symptomatic relief.[7] Inadequate excision can lead to recurrence, emphasizing the need for awareness and proper surgical planning.[3,6]

This case series presents a spectrum of patients with scar endometriosis, outlining their clinical features, diagnostic approach, management strategies, and outcomes. Through this series, we aim to highlight the importance of early recognition, appropriate imaging, and surgical intervention in managing this rare but significant condition.

Case series

This is a retrospective case series conducted at Malla Reddy Medical College for Women, Malla Reddy Narayana Multispeciality Hospital over a period of 1 year, from January 2024 to December 2024. Institutional Ethical Committee approval was obtained prior to data collection. Informed consent for publication was taken from all patients, with assurance that their identities would remain anonymized and confidentiality strictly maintained.

Case 1

A 32-year-old woman, P2L2, with a history of two previous lower segment cesarean sections (10 and 8 years ago), presented with a 5-month history of pain and a palpable lump at the left end of her cesarean scar. Previously one year after her second LSCS, she had developed cyclical scar pain that worsened during menstruation and was initially treated symptomatically at a local clinic with analgesics. Six months later, she noted a lump at the scar site, and an ultrasound at that time diagnosed scar endometriosis. She underwent surgical excision, and histopathology confirmed the diagnosis. Seven years later now, she reported similar symptoms at the same site, again characterized by cyclical pain exacerbated during menstruation. She had no history of fever, discharge, weight loss, or any bowel or urinary symptoms. There was no family history of endometriosis. Her menstrual cycles remained regular. On examination, a 5×5 cm hard, tender, immobile nodule was palpated on the left side of the previous Pfannenstiel scar, with no signs of overlying skin changes or discharge. There was no associated inguinal lymphadenopathy. Ultrasound revealed a well-defined lobulated hypoechoic lesion with mild internal vascularity in the subcutaneous plane. MRI of the abdomen and pelvis showed a T1 hyperintense, T2 hypointense lesion involving the skin, subcutaneous tissue, and rectus abdominis muscle, consistent with scar endometriosis. There was no evidence of pelvic endometriosis or other abdominal wall deposits. She underwent complete wide excision of the lesion with margins, and mesh repair of the lower anterior abdominal wall defect due to involvement of the rectus sheath and muscle. Intraoperatively, a 5×5 cm scar endometrioma involving the skin, subcutaneous tissue, rectus sheath, and rectus abdominis muscle was excised en bloc. The specimen was sent for histopathological examination. Histopathology confirmed external (cutaneous and muscular) endometriosis, showing endometrial glands and stroma with surrounding hemorrhage and fibrosis. Postoperatively, the patient had an uneventful recovery and reported significant relief of symptoms. She was advised long-term follow-up and hormonal suppression was not initiated as she was asymptomatic and had complete excision. At 6-month follow-up, there was no evidence of recurrence, and no further intervention was required.

Case 2

A 37-year-old woman, P2L2, with a history of two previous lower segment cesarean sections (LSCS) performed 16 and 14 years ago, presented with complaints of dysmenorrhea and localized pain at the cesarean scar site for the past two years. The pain was cyclical, worsening during menstruation, and associated with a small, gradually increasing swelling at the scar site. Her menstrual cycles were regular, with average flow and duration, and there was no history of intermenstrual bleeding, menorrhagia, or foul-smelling discharge. She denied any bowel or urinary complaints, weight loss, fever, or constitutional symptoms. There was no history suggestive of hernia or wound dehiscence. She had a similar episode two years and five months ago with pain and swelling over the cesarean scar, for which she underwent evaluation. A diagnosis of scar endometriosis was made based on clinical findings and imaging, and she underwent surgical excision of the lesion. Histopathological examination (HPE) confirmed scar endometriosis. She had temporary symptom relief, but three months postoperatively, she again developed similar complaints of cyclical pain and swelling at the scar site, which progressively worsened over the next two years. On examination, she was hemodynamically stable. Abdominal examination revealed a 3.5 ×3 cm tender, firm swelling palpable at the midline of the previous Pfannenstiel scar with no signs of inflammation,

discharge, or sinus formation. There was no cough impulse, and the swelling was fixed to the underlying tissue but not to the overlying skin. Per speculum and bimanual pelvic examination findings were normal. Ultrasound of the anterior abdominal wall showed a well-defined hypoechoic lesion in the subcutaneous plane overlying the cesarean scar, measuring 35×31×25 mm, with no obvious internal vascularity. The uterus and adnexa were unremarkable. A provisional diagnosis of recurrent scar endometriosis was made. The patient initially opted for conservative management and was administered two doses of injection depot medroxyprogesterone acetate (DMPA). However, due to persistence of pain and minimal response to hormonal therapy, she was planned for repeat surgical excision. Preoperative findings included a tender, firm swelling of 4×3 cm at the midline of the scar. Under regional anesthesia, surgical exploration and excision were performed. Intraoperatively, three separate endometriotic nodules were identified involving skin and subcutaneous plane and excised completely — the largest measuring approximately 3×3 cm, and the other two measuring 1×2 cm each. There was no involvement of deeper structures such as the rectus sheath or peritoneum. Histopathology once again confirmed the diagnosis of scar endometriosis. The postoperative period was uneventful, and the patient was discharged on the 7th postoperative day with advice for regular follow-up and consideration of hormonal suppression to reduce the risk of recurrence.

Case 3

A 30-year-old woman, P2L2, with a history of two previous lower segment cesarean sections (performed 11 and 6 years ago), presented with a 3-year history of triple dysmenorrhea. One year after her second LSCS, she developed cyclical pain at the cesarean scar site, which progressively worsened with each menstrual cycle. Initially, she was treated symptomatically with analgesics at a local clinic. She denied any history of fever, abnormal vaginal discharge, urinary or bowel complaints, or weight loss. There was no history of dyspareunia or subfertility. Her menstrual cycles were regular, with moderate flow and normal duration. She had no personal or family history of endometriosis and no significant medical comorbidities. On general physical examination, she was afebrile and hemodynamically stable. Abdominal examination revealed a firm, tender area measuring approximately 3× 3 cm over the LSCS scar, located just lateral to the midline on the right side. Per speculum examination revealed two cervices: the right cervix was well-developed and healthy, while the left cervix was also healthy and flushed with the vaginal vault. A vertical vaginal septum was noted. Per vaginal examination confirmed the presence of the septum and two cervices. The uterus could not be adequately assessed due to the patient's thick abdominal wall and tenderness on palpation. Pelvic ultrasound revealed a uterine didelphys and a hypoechoic lesion measuring approximately 3 ×2 cm in the anterior abdominal wall in the region of the rectus muscle. No adnexal mass or free fluid was noted. MRI pelvis was performed for further evaluation, which confirmed the presence of uterine didelphys and a soft tissue lesion in the anterior abdominal wall at the level of the previous cesarean scar, appearing hyperintense on T2-weighted images and hypointense on T1, suggestive of endometriotic tissue. The lesion extended posteriorly and was seen infiltrating the rectus muscle and reaching up to the anterior myometrium of the right uterine horn. Additionally, features of adenomyosis were noted in the right uterine horn. Based on the clinical and radiological findings, a provisional diagnosis of scar endometriosis with uterine didelphys was made. The patient underwent laparoscopic adhesiolysis followed by mini-laparotomy for complete excision of the endometriotic lesion. Intraoperatively, dense adhesions were found between the right uterine horn and the bladder, bowel, and anterior abdominal wall. The right horn was noted to be adherent and distorted. The scar endometriosis was identified extending from the rectus muscle at the level of the previous LSCS scar to the anterior myometrium of the right uterine horn. These adhesions were carefully released, and the entire tract of endometriotic tissue was excised in continuity. The anterior wall of the right uterine horn, which had been infiltrated by endometriosis, was surgically repaired after excision of the involved tissue. The left uterine horn and tube appeared normal. A right salpingectomy was performed due to dense adhesions and distorted anatomy. Intraoperative findings were consistent with uterine didelphys. The excised specimen was sent for histopathological examination, which confirmed scar endometriosis. Microscopy revealed fibrocollagenous tissue admixed with endometrial glands and stroma. The glands were lined by cuboidal to columnar epithelium, and the stroma showed hemosiderin-laden macrophages, consistent with endometriosis. Postoperatively, the patient recovered well and reported significant relief of symptoms. She was started on hormonal suppression therapy with a GnRH agonist for 3 months to reduce the risk of recurrence. She was advised regular clinical follow-up every 3–6 months. At her 6-month follow-up visit, she remained asymptomatic, and clinical as well as ultrasonographic evaluation showed no evidence of recurrence. No further intervention was required.

Case 4

29-year-old woman, P2L2A1, presented with complaints of pain at the site of her previous lower abdominal scar for the past four months. The pain was cyclical in nature, increasing during her menstrual periods. She also noticed a swelling at the same site for the last three months, which had gradually increased in size. She had a history of two previous lower segment cesarean sections and one hysterotomy. Her menstrual cycles were regular in timing, duration, and flow, and she reported dysmenorrhea. There were no associated complaints

such as fever, weight loss, gastrointestinal or urinary disturbances. Bladder and bowel habits were normal. She was not on any long-term medications and had no known drug allergies. On general physical examination, she was afebrile and hemodynamically stable with no significant findings on systemic examination. Abdominal examination revealed a healed Pfannenstiel scar. A firm, non-mobile, mildly tender mass measuring approximately 4 × 2 cm was palpable beneath the scar on the left side, adherent to the underlying tissue planes. There were no signs of local inflammation or discharge. Per speculum and pelvic examination were unremarkable. Ultrasound of the abdomen revealed a well-defined, heterogeneous hypoechoic lesion measuring 4.2 × 2.1 cm in the anterior abdominal wall, involving the left rectus sheath and rectus muscle, suggestive of scar endometriosis. Routine blood investigations, including complete blood count were within normal limits. The patient was taken up for surgical exploration. Intraoperatively, a 4 × 3 cm mass of endometriotic tissue was identified involving the left rectus muscle and rectus sheath. The lesion was completely excised with adequate margins, and a mesh repair was performed to close the defect in the rectus sheath. The postoperative period was uneventful. Histopathological examination of the excised specimen confirmed the diagnosis of endometriosis, showing endometrial glands and stroma embedded within fibromuscular tissue. The postoperative period was uneventful, and the patient was discharged on the 7th postoperative day. At follow-up, there was no evidence of recurrence, and no further intervention was required.

Case 5

A 40-year-old woman, P1L1, with a history of one lower segment cesarean section (LSCS) done 9 years ago, presented with complaints of triple dysmenorrhea since 5 months. She also reported swelling and pain localized to the left side of her previous LSCS scar, aggravated during menstruation, and gradually increasing in intensity. There was no history of bladder or bowel disturbances, abnormal vaginal discharge, fever, weight loss, or similar swellings elsewhere. Her menstrual cycles were regular with normal flow and duration. She had no significant past medical illnesses, no history of tuberculosis, and no family history of endometriosis or malignancy. She was not on any hormonal therapy. On general examination, the patient was afebrile, vitals stable, with no pallor, icterus, lymphadenopathy, or edema. Systemic examination was unremarkable. Local abdominal examination revealed a Pfannenstiel scar with a palpable, firm-to-hard, mildly tender swelling measuring approximately 2 × 3 cm over the left lateral aspect of the scar. The margins were not well-defined, and the swelling appeared fixed to underlying muscle. Overlying skin was normal in color and texture, with no ulceration or discharge. Cough impulse was negative. Per speculum and per vaginal examination were normal. Ultrasound of the abdominal wall revealed an ill-defined irregular lesion of size 2.8 × 2.7 cm with mild internal vascularity within the left rectus muscle at the LSCS scar site. A similar lesion measuring 3.1 × 2.2 cm was seen in the subcutaneous plane involving the rectus sheath. Both lesions were suggestive of scar endometriosis. Baseline laboratory investigations were within normal limits. The patient was planned for surgical excision under regional anesthesia. Intraoperatively, two distinct lesions were identified: one in the subcutaneous plane and rectus sheath measuring 3.0× 2 cm, and another deep-seated lesion of size 2.5 × 3 cm within the rectus muscle. Complete wide excision of both lesions with clear margins was performed, followed by repair of the rectus sheath. Adequate hemostasis was achieved, and the wound was closed in layers. The postoperative period was uneventful. She was discharged on postoperative day 6 in stable condition. Histopathological examination confirmed the diagnosis of endometriosis. The patient was advised on the possibility of recurrence and was started on oral progesterone therapy for 6 months to suppress residual microscopic disease. At follow-up, she was symptom-free with a well-healed scar.

Case 6

A 38-year-old P1L1 woman, with a previous normal vaginal delivery and history of tubal recanalization 6 years ago, presented with pain at the left side of her lower abdominal scar for the past 15 days, which was aggravated during menstruation. She also reported progressive dysmenorrhea for the last 3 months, while her menstrual cycles remained regular with normal flow and duration. There was no history of intermenstrual bleeding, abnormal vaginal discharge, bowel or bladder disturbances, weight loss, fever, or other systemic symptoms. She had undergone excision of scar endometriosis 2 years earlier with complete symptom relief until the recent onset of pain. There was no history of hormonal therapy use after the previous surgery. On general examination, she was afebrile, with stable vital signs and a BMI within normal range. Abdominal examination revealed a well-healed Pfannenstiel scar. On the left lateral aspect of the scar, a firm, well-defined, tender mass measuring approximately 2 × 3 cm was palpable, fixed to the underlying muscle, with no overlying skin changes, redness, or sinus formation. No other masses were palpable, and there was no hepatosplenomegaly. Pelvic examination was unremarkable, with no adnexal masses or tenderness. Ultrasonography of the abdomen and pelvis demonstrated a well-defined hypoechoic lesion measuring 22 × 25 mm involving the rectus sheath and rectus abdominis muscle on the left side, with preserved peritoneal integrity. No pelvic endometriotic lesions were identified. Baseline hematological and biochemical investigations, including complete blood count, liver and renal function tests, and coagulation profile, were within normal limits. A provisional diagnosis of recurrent scar endometriosis was made, and surgical excision was planned. Under spinal anesthesia, an elliptical

incision was made around the palpable mass, and dissection was carried down to the rectus sheath. Intraoperatively, a 3 × 2 cm dark brown, firm mass involving the rectus sheath and a portion of the rectus muscle was identified and excised en bloc with a margin of healthy tissue to ensure complete clearance. The defect in the rectus sheath was repaired primarily, and the wound was closed in layers. The postoperative period was uneventful, and the patient was mobilized early, tolerating oral intake well. She was discharged on postoperative day 6 with advice for scar care and follow-up. Histopathological examination confirmed the diagnosis of scar endometrioma. On 6 months follow-up the patient was symptom-free and there was no recurrence of scar endometriosis.

DISCUSSION

Scar endometriosis has a heterogeneous clinical expression — ranging from small subcutaneous nodules easily treated with local excision to deeply infiltrating lesions involving the rectus sheath/muscle, lesions requiring abdominal-wall reconstruction with mesh, recurrent disease after prior excision, and rare cases with myometrial or uterine-scar invasion.[8-10] In our series of six cases, the variability of presentation highlights the diverse spectrum of scar endometriosis. We encountered one straightforward case of localized scar endometrioma presenting with cyclical pain and a palpable subcutaneous mass, three patients with recurrence following previous surgical excision—of which one required mesh repair for a large recurrent lesion, another had failed medical management with progesterone injections before undergoing re-excision, and the third was managed with repeat wide excision. Additionally, one patient demonstrated extensive rectus sheath and muscle involvement requiring wide excision with mesh repair, and another had the rare association of uterine didelphys with deep myometrial infiltration of scar endometriosis into the right uterine horn. These patterns are concordant with large case series and reviews showing that although many lesions are small and superficial, a meaningful minority invade the rectus sheath or muscle and occasionally extend to deeper structures, and that recurrence after incomplete excision is a recognized problem.[11-14]

The ESHRE guideline emphasises that while endometriosis is principally a pelvic disease, extrapelvic manifestations including scar endometriosis occur and should be managed according to lesion location, symptom burden and patient priorities (diagnosis relies on clinical assessment supported by imaging and histology when feasible).[8] Similarly, ACOG and RCOG resources note that extrapelvic implants may be found in scars and underline the role of imaging to define extent prior to definitive management.[9,10]

Imaging is central to preoperative planning: high-resolution ultrasound detects most superficial lesions and is a first-line modality, while MRI is particularly valuable for defining depth, rectus/muscle involvement and planning wider excision or reconstruction. Several imaging studies and pictorial reviews report high sensitivity for sonography and superior delineation of deep or multifocal disease with MRI.[15,16] MRI guided our preoperative planning in cases with suspected deep or muscular extension; this approach is supported by published reports that MRI reliably delineates lesion depth and involvement of the rectus sheath and muscle, which influences the need for en bloc resection and the potential requirement for mesh repair or reconstructive measures.[12-14] Wide local excision with clear margins remains the mainstay of therapy for abdominal-wall/surgical-scar endometriosis and is associated with low but non-zero recurrence rates; reported cumulative recurrence after excision varies by series but commonly lies in the single-digit to low-teens percent range at medium-term follow-up, with factors such as incomplete excision, larger incision length and certain operative techniques implicated as risk factors for recurrence.[11,13] In keeping with these data, the recurrent cases in our series likely reflects either microscopic residual disease or unfavourable local factors and underscores the need for wide resection and histological confirmation.[12]

Medical therapy (combined hormonal suppression, progestins including depot medroxyprogesterone/provera, or GnRH agonists) may provide symptomatic relief and be considered when surgery is contraindicated or declined; however, for localized abdominal-wall disease medical therapy is generally palliative and frequently results in persistence or recurrence of the mass because it does not remove the implant nidus.[8,13] In our patient who received a progesterone injection, failure of conservative management mirrors published experience where depot progestins occasionally reduce pain but do not reliably resolve the lesion or prevent recurrence after cessation of therapy.[17] For large defects created by en bloc resection of deeply infiltrating lesions, primary closure may be impossible and prosthetic mesh reconstruction has been described and applied successfully to restore abdominal wall integrity — a strategy we used in the case with extensive rectus involvement and that is supported by case reports/series addressing large abdominal wall endometriosis resections.[12-14]

Finally, rare presentations with uterine-scar or deep myometrial involvement sometimes reported in association with Müllerian anomalies (e.g., didelphys, rudimentary horn) are described in isolated case reports and small case series; these reports emphasise the need for careful pelvic evaluation (imaging and, where indicated, laparoscopy) to exclude concurrent pelvic endometriosis and to plan a combined approach when uterine wall resection or reconstruction is

required.[17,18] Our didelphys case with deep myometrial infiltration illustrates this rare but documented behaviour and supports individualized surgical planning and fertility counselling when reconstruction or myometrial excision is contemplated.

CONCLUSION

In summary, the six cases presented here exemplify the variable clinical behaviour of scar endometriosis — from small, easily excised lesions to recurrent disease, failed medical therapy, deep myometrial invasion in the setting of uterine anomaly, and extensive rectus involvement necessitating mesh repair. Contemporary guidelines (ESHRE, ACOG, RCOG) and recent series support a diagnostic pathway using clinical assessment plus targeted imaging and endorse wide surgical excision as definitive therapy for localized abdominal-wall disease, with medical therapy playing a secondary or bridging role. 8- 10 Recurrence is uncommon but important; meticulous excision with appropriate reconstruction when needed and histological confirmation remain the principles to minimize recurrence and restore function.[11,13]

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