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Cyclical Bleeding from an Abdominal Wall Scar: A Clinical Case of Scar Endometriosis

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ABSTRACT

Scar endometriosis is a rare type of extra pelvic endometriosis characterized by functional endometrial tissue in surgical wounds, often occurring after obstetric or gynecological surgeries. It typically presents as a painful lump near the surgical scar, with symptoms worsening during menstruation. We report a case of a 28-year-old multiparous woman who experienced cyclical pain and bleeding at the site of a previous tubal ligation for two years. Clinical examination showed a tender, nodular swelling with active bleeding during menses. Imaging revealed a vascular lesion near the rectus muscle, confirming scar endometriosis. A wide surgical excision was performed, and histopathology confirmed endometrial tissue in the scar. The patient's recovery was smooth, with no recurrence noted. This case underscores the need to recognize cyclical symptoms at surgical scars as important indicators of scar endometriosis, highlighting the significance of prompt diagnosis and treatment to prevent complications.

Keywords: Endometriosis, Cicatrix, Abdominal wall, Gynecologic surgical procedures, Menstruation-associated disorders

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1. Introduction

Endometriosis is characterized by the existence of functional endometrial glands and stroma located outside the uterine cavity, commonly presenting as chronic pelvic pain or infertility in women of childbearing age **(1)**. While endometriosis primarily affects pelvic organs (such as ovaries, peritoneum, and uterosacral ligaments), ectopic endometrial tissue can also develop in areas outside the pelvis, including the abdominal wall, surgical scars, gastrointestinal tract, or thoracic cavity **(2)**. Scar endometriosis refers to the implantation of endometrial tissue in or near a surgical scar, most frequently occurring after obstetric or gynecologic procedures **(1)**. This condition is quite uncommon, as abdominal wall endometriomas make up less than 1% of all endometriosis cases. The occurrence of scar endometriosis after cesarean delivery ranges from 0.03% to 0.8% in women undergoing a previous Cesarean section **(2)**.

The development of scar endometriosis is due to the iatrogenic transplantation of endometrial cells during surgical intervention. Viable endometrial cells from the uterus might be introduced into the incision (for instance, during uterine incision closure in a Cesarean section or other uterine surgeries) where these cells could implant and eventually grow under hormonal influences **(3)**. Over time, these implants can develop their own blood supply and may experience cyclical bleeding, resulting in the formation of a localized endometrioma within the scar tissue. The risk factors include any surgical procedures that compromise the uterine cavity or fallopian tubes while endometrial tissue is present. Cesarean sections are the most frequently seen precursor, although cases have been documented after procedures like hysterotomy for termination, myomectomy, tubal ligation, and even episiotomies **(3,4)**. A delay of several years between the initial surgery and the onset of symptoms is common, with an average interval of around 3 to 5 years in various studies **(1,4)**.

In clinical practice, scar endometriosis typically manifests as a palpable subcutaneous nodule located at or near a scar, often accompanied by localized pain that worsens during menstruation **(3)**. Patients may observe a cyclical increase in size or tenderness of the mass at regular intervals. In rare cases, when the endometriotic tissue invades the dermis or epidermis, there can be actual bleeding or menstrual-like discharge from the scar, illustrating the “menstruating scar” effect **(5)**. Since there are various symptoms, which can resemble more common surgical conditions (such as incisional hernias, stitch granulomas, abscesses, or tumors), diagnosis frequently suffers delays or is overlooked **(5)**. Here, we report a case of scar endometriosis in a young woman who had a tubal ligation scar and experienced cyclical bleeding from the surface of the scar.

2. Case Presentation

A 28-year-old female (gravida 3, para 2) visited the gynecology clinic with a two-year history of recurring pain and bleeding from lower abdominal scar during menstrual cycles. She reported experiencing sharp pain at surgical scar site for the first 2-3 days of each period, along with spotting blood from the scar itself. The menstrual cycles were regular (30-35 days apart, lasting 3 days) with a normal volume and minimal dysmenorrhea apart from the localized pain at the scar. She had two previous full-term normal vaginal births. In 2018, the patient had a first-trimester surgical evacuation due to missed miscarriage, combined with a bilateral tubal ligation via a mini-laparotomy approach. The scar from that surgery was approximately a 5 cm Pfannenstiel-Kerr incision located just above the pubic symphysis. The onset of cyclic scar pain began roughly a year after that surgical procedure and progressively intensified, while blood staining at the scar synchronized with menstrual cycles appeared around a year later. She did not report any other significant medical or surgical history.

Upon examination, the patient had stable vital signs. Abdominal inspection showed a well-healed transverse suprapubic scar. At the center of this scar was a nodular swelling approximately 3×3 cm in size, with a slight bluish-brown discoloration of the overlying skin. A trace of blood was observed oozing from a pinpoint area in the scar during the second day of her menstruation (Figure 1). Palpation revealed a firm, tender nodule fixed to the abdominal wall at the scar site; no herniation was present, and the remaining abdomen was soft and non-tender. The pelvic examination was normal, showing a typical sized anteverted uterus without any adnexal masses or tenderness.

Ultrasonography of the abdominal wall revealed an ill-defined, irregular heterogeneously hypoechoic lesion about 3 cm in size located in the subcutaneous tissue of the abdominal wall, adjacent to the rectus muscle, with internal vascularity noted on Doppler imaging (indicative of an endometriotic implant) (Figure 2). MRI of the abdomen and pelvis was performed for improved anatomical visualization that showed a well-defined solid mass measuring 4.4×3.5×2.7 cm in the subcutaneous area of the right lower abdominal wall (at the site of the tubectomy scar). The lesion appeared isointense on T1-weighted images and hypointense on T2-weighted images, with no signs of deeper extension beyond the anterior rectus sheath or into the peritoneal cavity (Figure 3). These imaging characteristics were compatible with a subcutaneous endometriosis (endometrioma) localized to the abdominal wall. The MRI findings, along with the lesion's location, strongly suggested scar endometriosis.

Considering the patient's history and the clinical and radiological results, scar endometriosis was diagnosed. It was decided to proceed with surgical intervention. The patient underwent wide local excision of the abdominal wall endometriotic mass under regional anesthesia. A curved incision was made around the existing scar, encompassing the entire palpable nodule along with a margin of healthy tissue. During the surgery, a 4×4 cm firm mass was dissected from the surrounding subcutaneous tissues and excised en bloc down to the level of the rectus sheath. The lesion was tightly adherent to the rectus fascia, necessitating the removal of a portion of the sheath without fragmentation to ensure clear margins. Following excision, the cut surface of the mass showed areas of fibrosis containing "chocolate-colored" fluid and old blood debris, including a few bluish punctate spots within the tissue- a gross morphology consistent with an endometriotic tumor (Figure 4). The abdominal wall defect was repaired with interrupted 1-0 polypropylene (Prolene) sutures to close the fascial layer, and the skin was sutured with nylon. The postoperative course was uneventful, and the patient made a good recovery.

Histopathological analysis of the excised tissue confirmed the diagnosis. On gross examination, the specimen was a fibro fatty nodule exhibiting cystic degeneration filled with old blood. Microscopic examination using hematoxylin and eosin staining revealed endometrial glandular epithelium organizing into glands and cystic structures, surrounded by endometrial stromal cells embedded within fibro collagenous scar tissue and adjacent muscle. Evidence of hemorrhage and a sinus tract extending to the skin surface, with surrounding granulation tissue, correlated with the clinically observed bleeding sinus (Figure 5). These findings established the diagnosis of endometriosis in the scar. The patient was discharged on postoperative day 2 with stable vital signs and a clean surgical wound. She received instructions for routine postoperative care, including daily dressing changes, suture inspection, and medications such as oral analgesics and antibiotics (Amoxicillin-clavulanic acid 625 mg twice daily for 5 days). Activity restrictions included avoiding heavy lifting and strenuous abdominal exercises for 4-6 weeks, with suture removal on day 7. A clinical review was scheduled for 1 and 3 months postoperatively. Since the lesion was entirely excised and the patient wanted to preserve fertility, no hormonal therapy was started. She was informed about signs of recurrence and instructed to report any pain, swelling, or bleeding from the scar.



Figure 1. **Clinical image- Abdominal scar examination**

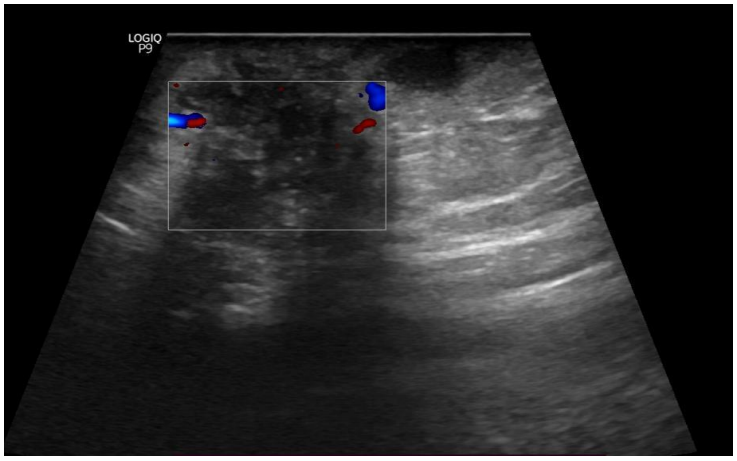


Figure 2. **Ultrasound image showing a heterogeneously hypoechoic, ill-defined lesion in the subcutaneous plane, with internal vascularity (color Doppler). The lesion is located at the site of the surgical scar and abuts the rectus abdominis muscle**

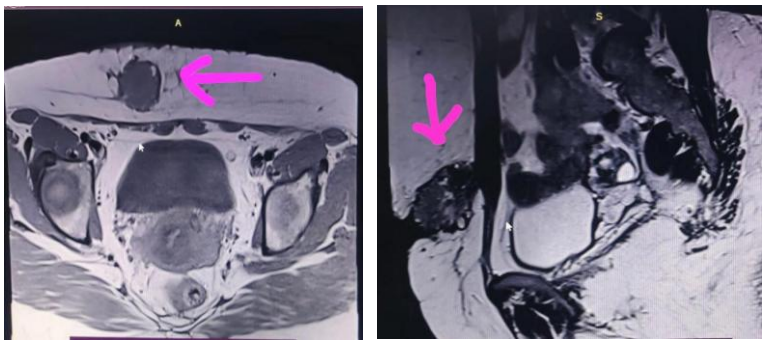


Figure 3. **Pelvic MRI showing an anterior abdominal wall lesion (pink arrows) at the site of the prior Pfannenstiel incision. On T1-Weighted (T1W) images (top left), the lesion appears isointense; On T2-weighted (T2W) images (top right), the lesion appears hypointense characteristic of endometriotic tissue with fibrotic and hemorrhagic components. No extension into the peritoneal cavity or underlying muscle was noted.**

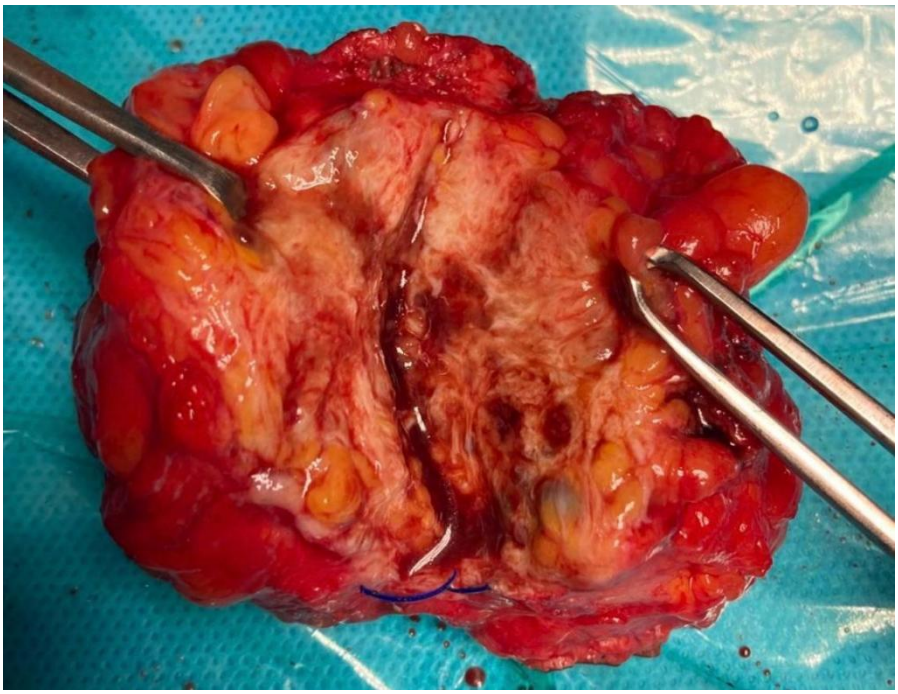


Figure 4. Intraoperative Image- Excised Abdominal Wall Endometriotic Mass. The cut surface reveals fibrotic areas interspersed with brownish, chocolate-colored hemorrhagic fluid and cystic spaces- characteristic of endometriotic tissue.

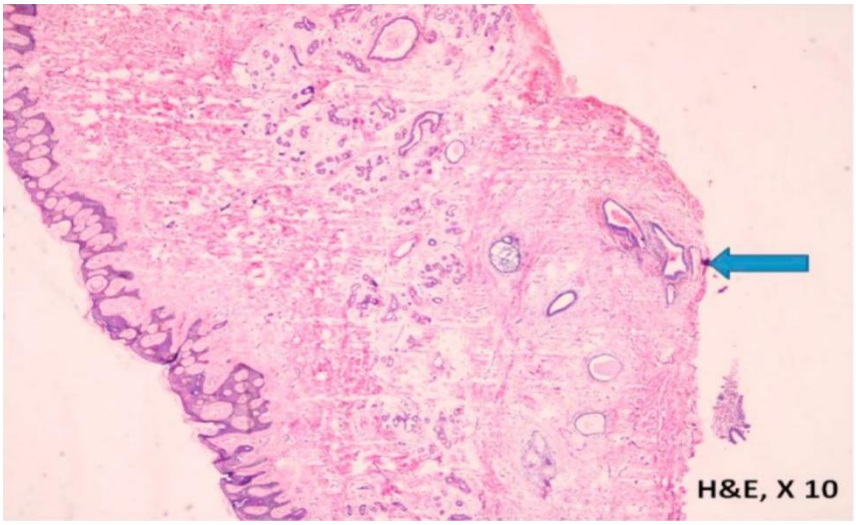


Figure 5. Histopathological examination of the excised scar nodule reveals endometrial glands (indicated by the arrow) surrounded by endometrial stroma and a sinus tract along with granulation tissue development underneath.

3. Discussion

Scar endometriosis is a rare complication of obstetric or gynecologic surgery, with the most frequently affected area being Cesarean section scars **(6)**. The estimated incidence of endometriosis in a cesarean scar range from 0.2% to 0.8%, although some extensive reviews suggest a broader range of approximately 0.03% to 0.45% **(1,6)**. This condition often remains undiagnosed due to its infrequency and ability to imitate other post-surgical lesions. In the present case, the patient's history of undergoing tubal ligation (mini laparotomy) likely triggered the introduction of endometrial tissue into the abdominal wall. Although cesarean delivery is the typical risk factor, there have also been instances of scar endometriosis following procedures like abdominal tubal sterilization, hysterotomy for abortion, myomectomy, or even laparoscopy, essentially any surgical procedure that could implant endometrial cells into a wound. Not every surgical contamination results in endometriosis, indicating that other factors (such as individual susceptibility or immune and hormonal influences) are involved in whether implanted cells will grow. Some evidence suggests a genetic tendency towards

developing endometriosis at ectopic sites, but the prevailing theory for the pathogenesis of scar endometriosis is direct implantation during surgery combined with subsequent hormonal stimulation of the implants **(7,8)**. Classic theories pertaining to the pathogenesis of pelvic endometriosis such as Sampson's retrograde menstruation and coelomic metaplasia are less applicable to scar endometriosis, except in cases where endometrial tissue may access a scar through tubal reflux (as was previously hypothesized regarding endometriosis following tubal ligation). In our patient, it appears that endometrial tissue from the uterine cavity or fallopian tubes was unintentionally deposited into the abdominal wall incision during the tubal ligation, remaining dormant until factors such as estrogen-progesterone cycles encouraged its growth.

Patients with scar endometriosis usually present with a palpable mass at or close to the scar and pain often corresponding with menstrual cycle. A review of 198 cases of cesarean scar endometriosis indicated that approximately 87% of patients experienced cyclical pain associated with menstruation, while a smaller percentage reported continuous or non-cyclical pain **(5)**. The duration from the initial surgery to the onset of symptoms can vary widely, averaging about 2 to 5 years **(3)**. Interestingly, our patient experienced the symptoms relatively sooner (within 1 to 2 years), possibly due to the smaller incision and the closer proximity of endometrial tissue to the skin surface in a tubectomy scar. Visible bleeding from the scar, as observed in our patient, is uncommon but has been documented when endometriotic lesions involve the epidermis. This striking symptom can aid in the diagnosis, as scar endometriosis is more frequently mistaken with other conditions. The differential diagnosis for an abdominal wall mass in a woman with prior pelvic surgery includes incisional hernia, surgical site hematoma or abscess, suture granuloma, desmoid tumor, lipoma, or metastatic tumor implant **(9)**. Recognizing the cyclical nature of the symptoms is crucial for differentiating scar endometriosis from other conditions. In the present case, the occurrence of menstrual bleeding from the scar was a clear indicator suggesting endometriosis and helped prevent confusion in diagnosis.

The assessment of suspected scar endometriosis requires an integration of patient history and examination with imaging studies and tissue analysis. Ultrasound serves as a valuable initial imaging technique: a scar endometrioma usually presents as a solid or mixed solid-cystic mass that appears hypoechoic compared to fat and may include internal echogenic spots or fluid-filled areas resulting from bleeding **(10)**. Doppler ultrasound frequently reveals internal blood flow. In our patient, a heterogeneous vascular mass within the subcutaneous layer was observed in the ultrasound, which, considering the clinical context, was consistent with an endometriotic lesion. MRI can be particularly advantageous for detailing the extent of the lesion and any nearby structure involvement. On MRI, lesions of scar endometriosis typically exhibit signal patterns akin to hemorrhagic tissue- they can be isointense or slightly hyperintense on T1-weighted images, with regions of hyperintensity if there is acute bleeding present and are generally hypointense on T2-weighted images due to dense fibrosis and hemosiderin accumulation **(3)**. In our patient, MRI confirmed that the endometriotic mass was restricted to the abdominal wall and there was no infiltration into the peritoneal cavity, which was significant for surgical planning.

While imaging outcomes can strongly indicate the diagnosis, histopathology provides ultimate confirmation. A preoperative core needle biopsy or Fine-Needle Aspiration Cytology (FNAC) can reveal endometrial cells within the mass, though this is not always requisite if the clinical picture is evident, and some surgeons choose to avoid needle biopsy due to worries about potential tissue seeding along the tract. When conducted, FNAC has demonstrated high sensitivity (close to 100% in certain studies) for detecting scar endometriosis, showcasing clusters of endometrial glandular cells, stromal cells, and hemosiderin-loaded macrophages in cytological preparations **(11)**. In one investigation, all cases of scar endometriosis undergoing FNAC were accurately identified cytologically **(12)**. In the current case, due to the clear clinical cyclical bleeding and the correlation with imaging, we advanced directly to excisional surgery without FNAC. Definitive histological analysis of the excised tissue showed the presence of endometrial glands and stroma, which is diagnostic for endometriosis. Histology typically reveals surrounding inflammation, fibrosis, and pigment-laden macrophages resulting from recurrent bleeding **(3)**. It is crucial that both endometrial glands and stroma are found in the sample to affirm the diagnosis; otherwise, the findings could indicate other conditions (for instance, isolated endosalpingiosis or a stromal nodule).

Surgery is the main treatment for scar endometriosis. The optimal approach is wide local excision of the lesion with clear margins, which offers the best chance of resolution. Medical treatment (like hormonal suppression via oral contraceptives, progestins, danazol, or GnRH analogues) has limited effectiveness in scar endometriosis- it may temporarily alleviate symptoms but generally does not eliminate the lesion **(12)**. In our patient, surgical removal of the lesion was successful, as documented cases. A margin of at least 1 cm of healthy tissue surrounding the lesion is often advised to ensure complete excision. If the endometrioma affects the fascia or muscles, those parts should be surgically removed; large defects might require mesh repair or tissue flap reconstruction in certain scenarios. In this case, the mass was excised completely along with part of the rectus sheath, and the defect was small enough to be primarily closed. After thorough excision, the recurrence of scar endometriosis

is extremely uncommon. Research has indicated a low rate of recurrence when wide excision with clear margins is accomplished **(1)**. On the other hand, incomplete resection or spillage of endometrial tissue during the operation can cause either persistence or recurrence of the disease. Postoperative adjunct therapy is not typically necessary, but some healthcare providers choose to initiate hormonal suppression (like a course of GnRH agonists or ongoing oral contraceptives) after surgery to reduce the risk of microscopic foci returning, particularly if the resection margins were narrow **(12)**. In our patient, due to the clear margins and her wish for future pregnancies, no medical suppression was administered, and she remained symptom-free. A developing non-surgical approach for treating abdominal wall endometriosis in specific cases is High-Intensity Focused Ultrasound (HIFU) ablation, which can thermally eliminate the ectopic tissue without causing an incision **(9)**. Nevertheless, surgical intervention remains the definitive and most effective treatment for accessible lesions.

4. Conclusion

This case report emphasizes that the combination of cyclical pain, a nodular mass located in or near a scar, and a correlation with menstrual cycles strongly indicates scar endometriosis. An accurate diagnosis requires a thorough medical history and physical examination, along with appropriate imaging and confirmation through histopathology. The definitive solution involves the surgical removal of the lesion with clear margins, which not only relieves symptoms but also prevents recurrence.

5. Declarations

Acknowledgments

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Ethical Considerations

Informed written consent was obtained from the patient for the publication of this case report and any accompanying images. Ethical approval was not required for this single-patient case report as per institutional guidelines, as no experimental intervention was involved.

Authors' Contributions

Bhavya Giddaluru contributed to the conceptualization, clinical management, manuscript drafting, and image documentation. Karthiga Prabhu performed clinical supervision, surgical intervention, and manuscript revision.

Conflict of Interest

The authors declare no conflict of interest regarding the publication of this case report.

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