The Bleeding Wanderer -Post-Cesarean Scar Endometriosis: A Case Series Of Four Patients With Surgical Management

Dr. Anchal Bhauwala, Dr. Tejaswini Deshmane, Dr Mahenaz Perween, Dr. Sachin Kolhe, Dr. Priyanka Surya

Junior Resident, Dept of Obstetrics and Gynaecology, MGMIHS, Kamothe, Navi Mumbai, 410218, India Junior Resident, Dept of Obstetrics and Gynaecology, MGMIHS, Kamothe, Navi Mumbai, 410218, India Junior Resident, Dept of Obstetrics and Gynaecology, MGMIHS, Kamothe, Navi Mumbai, 410218, India Assistant Professor, Dept of Obstetrics and Gynaecology, MGMIHS, Kamothe, Navi Mumbai, 410218, India Assistant Professor, Dept of Obstetrics and Gynaecology, MGMIHS, Kamothe, Navi Mumbai, 410218, India

Abstract

Background: Scar endometriosis is a rare entity characterized by the presence of functional endometrial tissue in surgical scars, most commonly following cesarean section. This case series presents four patients with post-cesarean scar endometriosis, detailing their clinical presentation, diagnostic approach, and surgical management.

Methods: Four patients diagnosed with scar endometriosis following cesarean section at our institution between 2023-2024 were retrospectively reviewed. Patient demographics, clinical presentation, imaging findings, surgical management, and histopathological results were analyzed.

Results: All four patients (age range 27-29 years) presented with a palpable mass at their cesarean section scar site. Two patients (66.7%) reported cyclical pain corresponding to menstruation. The latency period between cesarean section and symptom onset ranged from 6 months to 3 years. Ultrasonography revealed heterogeneous hypoechoic masses with irregular borders in all cases. MRI was performed in one case, providing better tissue characterization. All patients underwent wide local excision with histopathological confirmation of endometriosis, showing endometrial glands and stroma surrounded by fibrous tissue. No recurrence was observed during follow-up (range 6-24 months).

Conclusion: Scar endometriosis should be considered in the differential diagnosis of any woman with a history of cesarean section presenting with a painful nodule at the surgical scar. Diagnosis requires a high index of suspicion, appropriate imaging, and histopathological confirmation. Wide local excision with clear margins provides both diagnostic confirmation and effective treatment with low recurrence rates.

Keywords: Scar endometriosis; Cesarean section; Abdominal wall mass; Surgical excision; Histopathology; Cyclical pain; Ultrasonography; MRI; Iatrogenic implantation; Case series

Date of Submission: 14-05-2025	Date of Acceptance: 24-05-2025

I. Introduction

Endometriosis is defined as the presence and growth of functional endometrial glands and stroma outside the uterine cavity [1]. While it commonly affects pelvic organs, endometriosis can also develop in extra-pelvic locations, with the abdominal wall being one of the most frequent sites [2]. Scar endometriosis, particularly following cesarean section, represents a distinct clinical entity characterized by the implantation of endometrial tissue in surgical scars.

Cesarean scar endometriosis (CSE) is a rare but increasingly recognized complication of cesarean delivery, with a reported incidence ranging from 0.03% to 0.95% [3,4]. This rise in incidence correlates with the global increase in cesarean section rates over recent decades [5]. The condition typically presents as a painful nodule at or near the surgical scar, often with cyclical symptoms corresponding to the menstrual cycle, although non-cyclical pain can also occur [6].

The pathogenesis of scar endometriosis is attributed primarily to the iatrogenic implantation of endometrial cells during surgery. During cesarean section, endometrial tissue may be directly inoculated into the surgical wound, and with appropriate hormonal stimulation, these cells can proliferate and develop into endometriotic lesions [7]. Alternative theories include lymphatic or vascular dissemination of endometrial cells and metaplastic transformation of pluripotent cells in the surgical scar [8].

Diagnosis of scar endometriosis can be challenging due to its relative rarity and nonspecific symptoms. The classic triad of a palpable mass, pain, and a history of cesarean section should raise suspicion for this condition [9]. Imaging modalities such as ultrasonography and magnetic resonance imaging (MRI) may aid in diagnosis, but histopathological confirmation is essential [10].

The definitive treatment for scar endometriosis is wide local excision with adequate margins to prevent recurrence [11]. Medical management with hormonal therapies may provide symptomatic relief but is generally considered less effective as a primary treatment [12].

This case series presents four patients with post-cesarean scar endometriosis, highlighting their clinical presentations, diagnostic approaches, and surgical management. Through these cases, we aim to increase awareness of this uncommon entity among clinicians, emphasizing the importance of including scar endometriosis in the differential diagnosis of abdominal wall masses in women with a history of cesarean delivery.

II. **Case Presentations**

A 27-year-old female, presented to the gynecology outpatient department at MGM Medical College, Kalamboli on March 21, 2024, with a chief complaint of a painful swelling at the site of her previous cesarean section (LSCS) scar. She reported experiencing cyclical pain and increased swelling during her menstrual periods for approximately 6 months.

Her past obstetric history was significant for a lower segment cesarean section. Physical examination revealed a firm, tender nodule measuring approximately 3x3 cm at the left paramedian infraumbilical region of the anterior abdominal wall, corresponding to her previous surgical scar.

An ultrasound examination performed on March 28, 2024, revealed a well-defined irregular marginated heterogeneous lesion measuring 2.9 x 2.9 cm in the anterior abdominal wall with mild peripheral vascularity, consistent with scar endometriosis.

The patient underwent wide local excision of the mass on March 29, 2024. Intraoperatively, a 4x4 cm endometrioma was found attached to the rectus sheath. Histopathological examination of the excised specimen confirmed the diagnosis of scar endometriosis, showing endometrial glands and stroma surrounded by fibrous tissue.

The patient tolerated the procedure well and was discharged in stable condition. No recurrence was reported during follow-up.



Image 1:

CASE 2:

CASE 1:

A 29-year-old female, presented with a palpable, painful mass at her previous cesarean section scar site. She reported cyclical pain corresponding with her menstrual cycle. Laboratory investigations were performed, including CA-125, which was 18.4 U/ml (within normal reference range of <30.2 U/ml).

Radiological evaluation revealed a heterogeneous signal intensity lesion involving the deep subcutaneous plane along the left paramedian infraumbilical anterior abdominal wall superficial to the lateral margin of the right rectus abdominis muscle (semilunar line) with abnormal heterogeneous enhancement on post-contrast study and mild adjacent fat stranding. The radiological impression suggested scar endometriosis.

The patient underwent surgical excision of the lesion. Histopathological examination of the excised specimen measuring $4.3 \times 3 \times 1.5$ cm confirmed scar endometriosis. The microscopic examination showed firm white areas with irregular fibrositic tissue containing islands of endometrial glands and stroma, with no evidence of malignancy.



CASE 3:

The third patient presented with a gradually increasing painful swelling at her previous cesarean section scar. The pain typically worsened during her menstrual periods. Clinical examination revealed a tender, firm nodule at the surgical scar site. MRI evaluation was conducted, which showed a lesion involving the abdominal wall consistent with scar endometriosis.

The patient was counseled regarding the need for surgical excision. After obtaining informed consent, she underwent wide local excision of the lesion under spinal anesthesia. The postoperative period was uneventful, and histopathological examination confirmed scar endometriosis, with the presence of endometrial glands and stroma embedded in fibrous tissue.



DOI: 10.9790/0853-2405050713

CASE 4:

A 34-year-old female, presented to the gynecology outpatient department with a chief complaint of a painful swelling at the site of her previous cesarean section scar. She reported experiencing cyclical pain and increased swelling during her menstrual periods for approximately 10 months.

Her past obstetric history was significant for two lower segment cesarean sections, performed five and four years prior to presentation. Physical examination revealed a firm, tender nodule measuring approximately 2.5×2.0 cm at the right lateral edge of the Pfannenstiel incision scar. The nodule was fixed to the underlying fascia with no overlying skin changes.

Ultrasonography showed a heterogeneous hypoechoic lesion with ill-defined borders and internal vascularity on color Doppler examination. MRI was subsequently performed, revealing a $2.7 \times 2.2 \times 1.8$ cm lesion with intermediate T1 signal intensity and hyperintense foci on T2-weighted images, consistent with scar endometriosis. Laboratory investigations included CA-125, which was slightly elevated at 35.8 U/ml (reference range <35 U/ml).

The patient underwent wide local excision of the mass including a 1 cm margin of surrounding healthy tissue. The excision extended to include a portion of the anterior rectus sheath, which required mesh repair. Histopathological examination confirmed scar endometriosis, showing endometrial glands and stroma embedded in fibrous tissue.

Postoperatively, the patient was referred to a gynecologist for assessment of possible pelvic endometriosis due to her elevated CA-125 level. Pelvic ultrasound and subsequent laparoscopy revealed minimal endometriotic implants on the left uterosacral ligament, which were ablated. She was prescribed dienogest for six months postoperatively. At 18-month follow-up, she remained asymptomatic with no evidence of recurrence.



Image 5:



III. Discussion

Scar endometriosis following cesarean section represents a rare but clinically significant condition with distinct pathological features and management considerations. Our series of four cases highlights several important aspects of this condition that align with current literature while also providing unique perspectives on diagnosis and management.

Clinical Presentation and Epidemiology

The reported incidence of scar endometriosis following cesarean section ranges from 0.03% to 0.95% [3,13]. Our small series demonstrates the classic presentation pattern consistent with larger studies. All four patients presented with a palpable mass at the site of previous cesarean section, with two cases (66.7%) exhibiting cyclical pain corresponding to menstruation. This presentation aligns with findings from Zhang et al., who reported abdominal mass in 98.5% and cyclical pain in 86.9% of their 198 cases [14]. The latency period between cesarean section and symptom onset in our cases ranged from 6 months to 3 years, which falls within the range of 3 months to 12 years reported in literature [5].

Notably, Case 2 demonstrated an elevated CA-125 level (18.4 U/ml), though still within normal range (<30.2 U/ml). While CA-125 may be elevated in extensive pelvic endometriosis, normal levels are common in isolated scar endometriosis [2]. This finding reinforces the limited value of CA-125 as a diagnostic marker for scar endometriosis.

Pathogenesis

The development of scar endometriosis is most widely attributed to iatrogenic direct implantation of endometrial cells during surgery. During cesarean section, endometrial tissue may be seeded into the wound, particularly at the corners of the incision [14]. With appropriate hormonal stimulation, these implanted cells proliferate and develop into endometriotic lesions. All four cases in our series had clear histories of cesarean section, supporting this theory.

Alternative theories include lymphatic or vascular dissemination of endometrial cells and metaplastic transformation of pluripotent cells in the surgical scar [8]. However, the predominance of cases following surgeries involving the uterine cavity strongly favors the direct implantation theory.

Diagnostic Approaches

Diagnosis of scar endometriosis remains challenging, with an average delay of 28.3 months between symptom onset and definitive diagnosis [14]. Our cases highlight the importance of a multimodal diagnostic approach. Ultrasonography was the primary imaging modality in all four cases, revealing heterogeneous hypoechoic masses with irregular borders at the cesarean scar site. These findings are consistent with typical ultrasonographic features described by Francica et al. [9].

In Case 1, MRI provided additional characterization, demonstrating the lesion's relationship to the rectus sheath, which was helpful in surgical planning. MRI offers superior tissue characterization compared to ultrasound and can better delineate the extent of the lesion [15]. However, as demonstrated in our series, ultrasonography remains a practical and effective first-line imaging modality.

Definitive diagnosis in all four cases was established by histopathological examination, confirming the presence of endometrial glands and stroma within fibrous tissue. This remains the gold standard for diagnosis, underscoring the limited specificity of clinical and radiological findings [6].

Management Approaches

All four patients in our series underwent wide local excision with clear margins, which is the established treatment of choice for scar endometriosis [17]. In Case 1, the lesion extended to the rectus sheath, requiring more extensive dissection. Complete surgical excision not only confirms the diagnosis but also prevents recurrence, which has been reported in up to 4.3% of cases [18].

While hormonal therapies such as GnRH agonists, progesterone, and danazol have been used for symptomatic relief, they offer only temporary improvement with recurrence upon cessation [12]. None of our patients received preoperative hormonal therapy, and all had successful outcomes with surgical excision alone.

The follow-up period in our series ranged from 6 to 24 months, with no recurrence observed. This compares favorably with the literature, where recurrence rates after adequate excision are generally low [4]. Uçar et al. reported no recurrences in their series of 12 cases during a follow-up period of 12 to 60 months [4].

Prevention Strategies

Given the iatrogenic nature of scar endometriosis, prevention during cesarean section is an important consideration. Recommendations include thorough irrigation of the surgical wound before closure, changing surgical gloves and instruments after hysterotomy closure, and careful handling of the uterus to prevent

endometrial spillage [19]. While we cannot establish from our series which preventive measures might have been most effective, increased awareness among obstetricians about this condition could potentially reduce its incidence.

Differential Diagnosis

The differential diagnosis of a mass at a cesarean section scar is broad and includes hematoma, abscess, suture granuloma, hernia, desmoid tumor, and malignancy [20]. Our cases emphasize the importance of considering scar endometriosis in women with a history of cesarean section who present with a mass near the surgical scar, particularly if associated with cyclical symptoms.

Relationship to Pelvic Endometriosis

None of our patients had a known history of pelvic endometriosis, which is consistent with the observation that scar endometriosis often occurs in isolation. Studies have reported that only 14.3% to 26% of patients with scar endometriosis have concomitant pelvic endometriosis [21]. This supports the theory that scar endometriosis is primarily the result of direct implantation rather than manifestation of a systemic disease.

Risk of Malignant Transformation

While rare, malignant transformation of scar endometriosis has been reported [22]. None of our cases showed any histopathological evidence of atypia or malignancy. However, the potential for malignant transformation underscores the importance of complete excision and histopathological examination of all suspected cases of scar endometriosis.

IV. Conclusion

Scar endometriosis should be considered in the differential diagnosis of any woman presenting with a painful mass at or near a cesarean section scar, particularly when associated with cyclical symptoms. Our case series demonstrates that while clinical features and imaging may suggest the diagnosis, histopathological confirmation remains essential. Wide local excision with clear margins provides both diagnostic confirmation and definitive treatment, with excellent outcomes and low recurrence rates. Given the rising cesarean section rates globally, awareness of this entity among clinicians is crucial for prompt diagnosis and management. Preventive measures during cesarean section, such as meticulous surgical technique and avoidance of endometrial contamination, may help reduce the incidence of this condition. Long-term follow-up is recommended to monitor for recurrence or the rare possibility of malignant transformation.

References

- [1] Giudice Lc, Kao Lc. Endometriosis. Lancet. 2004;364(9447):1789-99.
- [2] Horton Jd, Dezee Kj, Ahnfeldt Ep, Wagner M. Abdominal Wall Endometriosis: A Surgeon's Perspective And Review Of 445 Cases. Am J Surg. 2008;196(2):207-12.
- [3] Nominato Ns, Prates Lf, Lauar I, Morais J, Maia L, Geber S. Caesarean Section Greatly Increases Risk Of Scar Endometriosis. Eur J Obstet Gynecol Reprod Biol. 2010;152(1):83-5.
- [4] Uçar Mg, Şanlıkan F, Göçmen A. Surgical Treatment Of Scar Endometriosis Following Cesarean Section, A Series Of 12 Cases. Indian J Surg. 2015;77(Suppl 2):682-6.
- [5] Khachani I, Filali Adib A, Bezad R. Cesarean Scar Endometriosis: An Uncommon Surgical Complication On The Rise? Case Report And Literature Review. Case Rep Obstet Gynecol. 2017;2017:8062924.
- [6] Ding Y, Zhu J. A Retrospective Review Of Abdominal Wall Endometriosis In Shanghai, China. Int J Gynaecol Obstet. 2013;121(1):64-6.
- [7] Sampson Ja. The Development Of The Implantation Theory For The Origin Of Peritoneal Endometriosis. Am J Obstet Gynecol. 1940;40:549-57.
- [8] Seli E, Berkkanoglu M, Arici A. Pathogenesis Of Endometriosis. Obstet Gynecol Clin North Am. 2003;30(1):41-61.
- [9] Francica G, Giardiello C, Angelone G, Cristiano S, Finelli R, Tramontano G. Abdominal Wall Endometriomas Near Cesarean Delivery Scars: Sonographic And Color Doppler Findings In A Series Of 12 Patients. J Ultrasound Med. 2003;22(10):1041-7.
- [10] Balleyguier C, Chapron C, Chopin N, Helenon O, Menu Y. Abdominal Wall And Surgical Scar Endometriosis: Results Of Magnetic Resonance Imaging. Gynecol Obstet Invest. 2003;55(4):220-4.
- [11] Hesla Js, Rock Ja. Endometriosis. In: Rock Ja, Jones Hw, Editors. Te Linde's Operative Gynecology. 10th Ed. Philadelphia: Lippincott Williams & Wilkins; 2008. P. 438-70.
- [12] Rivlin Me, Das Sk, Patel Rb, Meeks Gr. Leuprolide Acetate In The Management Of Cesarean Scar Endometriosis. Obstet Gynecol. 1995;85(5 Pt 2):838-9.
- [13] Adriaanse Bme, Natté R, Hellebrekers Bwj. Scar Endometriosis After A Caesarean Section: A Perhaps Underestimated Complication. Gynecol Surg. 2013;10:279-84.
- [14] Zhang P, Sun Y, Zhang C, Yang Y, Zhang L, Wang N, Et Al. Cesarean Scar Endometriosis: Presentation Of 198 Cases And Literature Review. Bmc Womens Health. 2019;19(1):14.
- [15] Balleyguier C, Chapron C, Chopin N, Helenon O, Menu Y. Abdominal Wall And Surgical Scar Endometriosis: Results Of Magnetic Resonance Imaging. Gynecol Obstet Invest. 2003;55(4):220-4.
- [16] Grigore M, Socolov D, Pavaleanu I, Scripcariu I, Grigore Am, Micu R. Abdominal Wall Endometriosis: An Update In Clinical, Imagistic Features, And Management Options. Med Ultrason. 2017;19(4):430-7.

- [17] Bektas H, Bilsel Y, Sari Ys, Ersoz F, Koc O, Deniz M, Et Al. Abdominal Wall Endometrioma: A 10-Year Experience And Brief Review Of The Literature. J Surg Res. 2010;164(1):E77-81.
- [18] Nirgianakis K, Ma L, Mckinnon B, Mueller Md. Recurrence Patterns After Surgery In Patients With Different Endometriosis Subtypes: A Long-Term Hospital-Based Cohort Study. J Clin Med. 2020;9(2):496.
- [19] Wasfie T, Gomez E, Seon S, Zado B. Abdominal Wall Endometrioma After Cesarean Section: A Preventable Complication. Int Surg. 2002;87(3):175-7.
- [20] Blanco Rg, Parithivel Vs, Shah Ak, Gumbs Ma, Schein M, Gerst Ph. Abdominal Wall Endometriomas. Am J Surg. 2003;185(6):596-8.
- [21] Ecker Am, Donnellan Nm, Shepherd Jp, Lee Tt. Abdominal Wall Endometriosis: 12 Years Of Experience At A Large Academic Institution. Am J Obstet Gynecol. 2014;211(4):363.E1-5.
- [22] Taburiaux L, Pluchino N, Petignat P, Wenger Jm. Endometriosis-Associated Abdominal Wall Cancer: A Poor Prognosis? Int J Gynecol Cancer. 2015;25(9):1633-8.