

Case Series

Incidence, diagnosis and management of abdominal wall endometriomas: a retrospective study and literature review

Catherine Kilada^{1*}, Nikodem Banko², Martine A. Louis¹, Nageswara Mandava¹

¹Department of Surgery, Flushing Hospital Medical Center, Queens, New York, United States of America

²Ross University School of Medicine, Bridgetown, St. Michael, Barbados

Received: 11 March 2026

Accepted: 13 April 2026

*Correspondence:

Dr. Catherine Kilada,

E-mail: ckilada@jhmc.org

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Abdominal wall endometriosis (AWE) is a rare extra pelvic manifestation of endometriosis, most commonly associated with prior cesarean section, and is frequently misdiagnosed due to nonspecific clinical features. This retrospective case study describes the presentation, diagnostic evaluation, and surgical outcomes of patients with abdominal wall and umbilical endometriosis at a single institution. Ten patients with pathologically confirmed endometriosis following surgical excision were identified. Eight cases involved the abdominal wall and two involved the umbilicus. All patients with abdominal wall lesions had a history of cesarean delivery, while neither patient with umbilical endometriosis had prior abdominal surgery. The most common presenting features were localized abdominal wall pain and a palpable mass, often with cyclical exacerbation. Magnetic resonance imaging and computed tomography were employed selectively for lesion characterization and operative planning. All patients underwent surgical excision with clear margins, resulting in significant postoperative symptom improvement and no immediate complications. Abdominal wall endometriosis should be considered in the differential diagnosis of abdominal wall masses, particularly in patients with a history of cesarean section and cyclical pain. Surgical excision remains the definitive treatment and is associated with excellent clinical outcomes.

Keywords: Abdominal wall endometriosis, Cesarean scar endometriosis, Endometrioma, Abdominal wall mass, Surgical excision, Case study

INTRODUCTION

Endometriosis is a chronic gynecologic condition defined histologically by the presence of endometrial glands and stroma outside the uterine cavity. Common sites include the ovaries, pelvic peritoneum, and fallopian tubes; however, ectopic endometrial tissue may also be identified in extrapelvic locations. Abdominal wall endometriosis (AWE) is a rare extrapelvic manifestation in which endometrial tissue is found within the layers of the abdominal wall. The reported incidence of abdominal wall endometriosis ranges from approximately 0.03% to 3.5%, reflecting substantial heterogeneity in diagnostic criteria and case ascertainment.¹The most frequently described subtype is cesarean scar endometriosis (CSE),

where ectopic endometrial tissue implants within or adjacent to a prior surgical scar following cesarean delivery.¹⁻⁴ Several pathogenetic mechanisms have been proposed. The implantation theory suggests iatrogenic seeding of endometrial cells into the abdominal wall during uterine incision and closure.² More recent genetic–epigenetic models propose that intracellular alterations affecting aromatase activity and estrogen production may contribute to lesion persistence and growth.¹ Cesarean scar endometriosis accounts for an estimated 0.03%–0.45% of all cesarean deliveries, but up to 80%–85% of reported AWE cases occur in patients with a history of caesarean section.^{2,4,5} True prevalence is likely underestimated, as definitive diagnosis typically requires surgical excision with histopathologic confirmation, and

many patients experience prolonged diagnostic delays. For endometriosis overall, the interval between symptom onset and diagnosis has been reported to range from 3 to 10 years, which likely contributes to under-recognition of abdominal wall disease.^{5,6}

Although AWE is most often associated with prior abdominal surgery, spontaneous cases without surgical history have been reported, most commonly involving the umbilicus and groin in 58% and 36% of cases, respectively.^{3,4,6} We present an observational study of patients with abdominal wall endometriosis treated at a community hospital serving a diverse population.

CASE SERIES

We conducted a retrospective chart review of patients presenting with abdominal wall endometriosis (AWE) at a community hospital from October 2016 to October 2025. The inclusion criteria consisted of pathologically confirmed endometriosis following surgical excision. Using the EPIC software, data collection included demographics, clinical parameters, imaging, and management.

A total of 10 patients with a mean age of 38 years were found to have AWE: 2 cases specifically located at the umbilicus (UE) and 8 cases in different locations on the abdominal wall, with an average of 1 case per year. All patients with abdominal wall lesions had a documented history of cesarean section, while neither patient with umbilical endometriosis had prior abdominal surgery, so they were considered to have primary endometrioma. In terms of BMI distribution, 40% of patients had a BMI of 25-29.9, 30% (BMI 18.5-24.9), 20% (BMI 30-34.9), and 10% (BMI>35).

There was no statistical difference in the parity of patients, as 40% of patients had 3 or more children and 20% were nulliparus. Palpable masses with localized pain were identified in 80% of patients. 60% of patients had a mass size ranging from 4 to 5.9 cm. None of the patients had a known prior history of endometriosis. CT was performed in 30%, magnetic resonance imaging (MRI) in 20%, mostly for larger lesions and unclear margins. 100% of the patients underwent surgical wide local excision with clear margins. Definitive diagnosis was established by histopathologic examination of excised specimens showing the presence of endometrial glands and stroma within fibrous or adipose tissue of the abdominal wall.

DISCUSSION

Abdominal wall endometriosis (AWE) is a rare extrapelvic manifestation in which endometrial tissue is found within the layers of the abdominal wall. The reported incidence of abdominal wall endometriosis ranges from approximately 0.03% to 3.5%, reflecting substantial heterogeneity in diagnostic criteria and case

ascertainment. The most frequently described subtype is cesarean scar endometriosis (CSE), where ectopic endometrial tissue implants within or adjacent to a prior surgical scar following cesarean delivery.¹⁻⁴

Large retrospective cohorts and narrative reviews report that approximately 80%–85% of AWE cases occur in patients with a history of abdominal surgery, with lesions typically developing adjacent to surgical scars.^{1,2,5} The proposed pathogenetic mechanisms include iatrogenic implantation of endometrial cells during surgery, followed by genetic and epigenetic modulation that enables ectopic tissue survival and proliferation.¹ This study supports previously reported associations between abdominal wall endometriosis and prior cesarean delivery as all the patients with abdominal wall lesions had a prior history of cesarean delivery, further reinforcing this association.

A notable and clinically important feature of AWE is the prolonged latency between the cesarean section and symptom onset. Reported intervals range from 3 years to more than a decade, which significantly contributes to delayed diagnosis and treatment.⁶⁻⁹ In our study, the latency period was between 4 and 11 years. This delay is compounded by the nonspecific nature of symptoms and limited awareness of extrapelvic endometriosis among non-gynecologic clinicians. As a result, patients are frequently misdiagnosed with hernias, suture granulomas, lipomas, abscesses, dermatologic conditions, or foreign body reactions before the correct diagnosis is established.^{10,11}

Clinically, AWE most often presents as a palpable abdominal wall mass associated with pain that may worsen cyclically with menses, a feature reported in approximately 70%–90% of cases.^{2,4,7} However, non-cyclical pain, swelling, or bleeding is also common and may obscure the diagnosis.⁹⁻¹² The majority of our patients reported pain exacerbation during menses, consistent with hormonally responsive ectopic endometrial tissue. Occasionally, non-cyclic pain was also reported. In patients with prior cesarean delivery, tenderness or mass formation near the surgical scar raised clinical suspicion for AWE. Umbilical endometriosis, which accounted for two cases in this study, represents a rare subset of extrapelvic disease and is more frequently spontaneous, occurring in patients without prior abdominal surgery.³⁻⁸ These lesions pose particular diagnostic challenges due to variable presentation and are often mistaken for benign umbilical conditions such as granulomas, omphaloliths, and keloids. Some are even mistaken for a primary or metastatic malignancy.^{10,11,13} Cutaneous manifestations can occur such as discoloration or cyclical bruising overlying the lesion, but they were not prominent features in our study. Imaging plays a crucial role in the evaluation of suspected AWE, primarily to narrow the differential diagnosis and guide surgical planning. Ultrasound is typically the first-line modality and demonstrates the high sensitivity—

exceeding 95% in large series—when clinical suspicion is present.⁷⁻¹⁴ Sonographic findings are variable and may include solid, cystic, or mixed echogenic masses with irregular margins and internal vascularity on Doppler imaging.^{14,15} Computed tomography (CT) is not routinely the primary modality for diagnosing abdominal wall endometriomas but may incidentally detect lesions during evaluation of abdominal pain or palpable masses. On CT, AWE typically appears as a solid or mixed-density mass within the abdominal wall, often associated with the rectus muscle or surgical scar, with variable enhancement after contrast administration.

CT can be particularly useful in assessing lesion extent, involvement of adjacent structures, and excluding alternative intra-abdominal pathology.^{14,15} MRI provides superior soft-tissue contrast and more accurately delineates lesion size, depth, and involvement of fascia or muscle, making it particularly valuable for preoperative planning in larger or infiltrative lesions.⁴⁻¹⁴ Typical MRI findings include solid masses with variable signal intensity on T1- and T2-weighted sequences, often enhanced on fat-suppressed images.⁴ Despite advances in imaging, no modality is pathognomonic, and umbilical endometriosis has been reported to mimic malignancy on advanced imaging, including 18F-FDG PET/CT, underscoring the limitations of radiologic assessment alone.¹⁶

Definitive diagnosis therefore relies on histopathologic confirmation. Histology does not reliably distinguish reversible from irreversible disease, and while microscopic lesions may occasionally regress, symptomatic lesions generally progress and warrant excision. CT and MRI are helpful for anatomic localization and surgical planning. Fine-needle aspiration is not routinely performed, given its limited diagnostic yield and the need for definitive surgical excision.⁴⁻¹⁴

Surgical management with wide local excision remains the treatment of choice, with reported symptom resolution rates exceeding 90% in most series.^{2,7,12} Recurrence rates are relatively low, typically reported between 4% and 11%, and are strongly associated with incomplete excision or inadequate margins.^{4,5} Some authors advocate excision with at least a 1 cm margin of healthy tissue to minimize recurrence.⁴ In our study, the majority of patients experienced an uncomplicated postoperative course and significant symptom relief. There was no recurrence.

Although medical therapy and minimally invasive techniques such as high-intensity focused ultrasound have demonstrated short-term symptom improvement, these approaches lack robust long-term outcome data and are generally reserved for selected patients.⁴ Hormonal therapy may provide temporary symptom relief but are generally considered adjunctive rather than definitive.¹²

Malignant transformation of endometriosis is rare—estimated at approximately 1%—most commonly resulting in clear cell or endometrioid carcinoma.^{7,15,17} Approximately thirty cases of clear cell carcinoma arising from AWE have been reported worldwide in the literature. It is a highly aggressive tumor that tends to metastasize and recur. There is no specific treatment protocol but platinum based chemotherapy following cytoreductive surgery has been successful. Clinician must have a high index of suspicion in patients with history of long-standing endometriosis and prior abdominal surgery presenting with an abdominal mass.¹⁶⁻¹⁷ The risk of malignancy, although small, combined with the high frequency of diagnostic delay and misdiagnosis, underscores the importance of pursuing timely surgical excision.

Limitations

Limitations of this study include the small sample size, retrospective design, and reliance on surgically confirmed cases, which may underestimate the true prevalence of AWE. Follow-up duration may be insufficient to capture late recurrences.

CONCLUSION

Abdominal wall endometriosis is an uncommon but clinically significant entity that should be included in the differential diagnosis of abdominal wall masses, particularly in patients with a history of cesarean section. Early recognition based on clinical presentation and imaging can facilitate timely surgical management, reduce diagnostic delay, and improve patient outcomes. Surgical excision with adequate margins remains the definitive treatment and offers excellent symptom relief with low recurrence rates.

ACKNOWLEDGEMENTS

The authors would like to sincerely thank the Department of Surgery at Flushing Hospital Medical Center.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: Not required

REFERENCES

1. Koninckx PR, Ussia A, Adamyan L, Wattiez A, Gomel V, Martin DC. Pathogenesis of endometriosis: the genetic–epigenetic theory. *Fertil Steril.* 2021;116(2):327-40.
2. Zhang J, Liu X. Clinicopathological features of abdominal wall endometriosis: a retrospective analysis of 151 cases. *Clin Exp Obstet Gynecol.* 2016;43(3):379-83.
3. Yang F, Zhang L, Liu Y, Zhou X, Wang H, Chen Y, et al. Spontaneous abdominal wall endometriosis

- without previous surgery: a case series and literature review. *BMC Womens Health.* 2023;23(1):112.
4. Farland LV, Shah DK, Kvaskoff M, Missmer SA, Gaskins AJ, Zondervan KT, et al. Epidemiology of endometriosis. *Obstet Gynecol Clin North Am.* 2019;46(3):355-68.
 5. Foley KG, Smart PJ, Hart AR. Abdominal wall endometriosis: imaging features and management. *Radiographics.* 2022;42(2):451-69.
 6. Farland LV, Shah DK, Kvaskoff M, Missmer SA, Gaskins AJ, Zondervan KT, et al. Epidemiology of endometriosis. *Obstet Gynecol Clin North Am.* 2019;46(3):355-68.
 7. Carsote M, Terzea D, Valea A, Gheorghisan-Galateanu AA. Abdominal wall endometriosis (a narrative review). *Int J Med Sci.* 2020;17(4):536-42.
 8. Benedetto C, Cacoza D, De Sousa Costa D, Ferrero S, Leone Roberti Maggiore U, Vercellini P, et al. Abdominal wall endometriosis: report of 83 cases. *Int J Gynaecol Obstet.* 2022;159(2):530-6.
 9. Stefanou SK, Tepelenis K, Stefanou CK, Karataglis D, Christodoulou E, Papachristos D, et al. Abdominal wall endometriosis: a case report. *J Surg Case Rep.* 2021;2021(4):rjab055.
 10. Kumar RR. Spontaneous abdominal wall endometrioma: a case report. *Int J Surg Case Rep.* 2021;78:180-3.
 11. Jouini W, Litaïem N, Zaimi Y, Boussofara L, Sriha B, Zermani R, et al. Omphalolith: an underdiagnosed entity. *Clin Case Rep.* 2022;10(10):e6443.
 12. Pedersen KD, Seyer-Hansen M, Egekvist AG. Extrapelvic endometriosis is a difficult diagnosis. *Ugeskr Laeger.* 2022;184(20):V11210861.
 13. Pirson L, Absil G, Giet G, Lecuit C, De Toeuf M, Closon MC, et al. Villar's nodule. *Rev Med Liege.* 2023;78(8):420-2.
 14. Kim YH, Wegehaupt AK, Wingo MT. A woman with recurrent umbilical bleeding: a case report. *J Med Case Rep.* 2022;16(1):444.
 15. Youssef AT. The ultrasound of subcutaneous extrapelvic endometriosis. *J Ultrason.* 2020;20(82):e176-80.
 16. Porter J, Eisdorfer J, Yi C, Nguyen C. Multifocal abdominal endometriosis: a case report. *J Surg Case Rep.* 2020;2020(6):rjaa120.
 17. Deng Y, Xie H, He L, Ding Z, Zhang W. Umbilical endometriosis mimicking malignancy on 18F-FDG PET/CT. *Clin Nucl Med.* 2023;48(1):56-7.
 18. Bahall V, De Barry L, Rampersad A. Clear cell carcinoma arising from abdominal wall endometriosis: a report of two cases and literature review. *World J Oncol.* 2022;20(1):86.

Cite this article as: Kilada C, Banko N, Louis MA, Mandava N. Incidence, diagnosis and management of abdominal wall endometriomas: a retrospective study and literature review. *Int Surg J* 2026;13:793-6.