

Incisional Scar Endometriosis: A Case Series from a Tertiary Hospital in Odisha, India

Sanghamitra Dash^{1*}, Haris Chandra Mishra², Sambedana Panigrahi³, Sanjay Swain³, Sashibhusan Dash⁴

¹Senior Gynaecologist cum Joint Director, Department of Obstetrics and Gynaecology, Life Institute of Gastroenterology and Gynecology, Cuttack, Odisha, India

²Senior Gastroenterologist and Herpetologist cum Joint Director, PGIMER and Capital Hospital, Bhubaneswar, Odisha, India

³Assistant Professor, Department of Obstetrics and Gynaecology, DRIEMS Institute of Health Sciences & Hospital, Tangi, Cuttack, Odisha, India

⁴Scientist C, Pandit Raghunath Murmu Medical College and Hospital, Baripada, Odisha, India

***Address for Correspondence:** Dr. Sanghamitra Dash, Life Institute of Gastroenterology and Gynecology, Cuttack, Odisha, India

E-mail: thelifeclinicobg@gmail.com & **ORCID ID:** <https://orcid.org/0009-0006-8989-8719>

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ABSTRACT

Background: Endometriosis affects 5–10% of reproductive-aged women, with incisional scar endometriosis (ISE) being a rare extra-pelvic subtype, usually after Cesarean sections due to iatrogenic implantation. Rising Cesarean rates have led to more ISE cases, yet diagnosis remains challenging due to mimicking symptoms. This study presents a case series from a tertiary hospital in Odisha, India.

Methods: A retrospective review was conducted of seven women (aged 23–43 years) who presented between 2015 and 2024 with abdominal wall masses and cyclical symptoms related to prior uterine surgery. All underwent clinical evaluation, imaging (USG and MRI where indicated), and fine-needle aspiration cytology (FNAC). Surgical excision was performed in each case, with histopathological confirmation.

Results: All patients presented 2–7 years after prior surgery with a palpable scar mass and cyclical symptoms such as pain, bleeding, or discharge. Clinical features and mass sizes varied. FNAC was diagnostic in one case but inconclusive in another. USG findings were non-specific, whereas MRI provided a definitive preoperative diagnosis in two cases. Histopathology confirmed ISE in all cases. Wide local excision was curative in each patient, with one receiving preoperative leuprolide. Postoperative recovery was uneventful, and prognosis after complete excision is excellent, with recurrence rates reported between 4.3% and 15%.

Conclusion: Scar endometriosis should be suspected in women with a surgical history presenting with cyclical scar symptoms. While FNAC and USG may be inconclusive, MRI offers superior diagnostic clarity, and histopathology remains the gold standard. Wide excision is the treatment of choice with low recurrence risk.

Key-words: Endometriosis, Abdominal wall, Surgical scars, Case series, Diagnosis

INTRODUCTION

Endometriosis is a prevalent gynecological disorder characterized by the presence of functional endometrial glands and stroma outside the uterine cavity.^[1]

This ectopic tissue responds cyclically to hormonal fluctuations, leading to proliferation, shedding, bleeding, chronic inflammation, fibrosis, and pain.^[2] Affecting an estimated 5-10% of reproductive-aged women^[3], it most commonly involves pelvic organs but can manifest in nearly any organ system, including extra pelvic sites, with the abdominal wall being the most frequent.^[4,5] Incisional scar endometriosis, a rare subtype, involves ectopic endometrial tissue within surgical scars, predominantly following Cesarean sections.^[6] Its pathogenesis is primarily attributed to iatrogenic direct

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implantation of viable endometrial cells during surgery. [7] While other theories like lymphatic/hematogenous dissemination and metaplastic transformation exist, direct implantation remains the most accepted explanation. [7] The incidence of abdominal wall endometriosis after C/S ranges from 0.03% to 1.08%. [5] The escalating global rates of Cesarean deliveries directly contribute to the increasing incidence of scar endometriosis, necessitating heightened awareness across various healthcare professionals, including general surgeons, family physicians, and radiologists, as symptoms often mimic more common surgical conditions, leading to potential misdiagnosis and delayed treatment [5,8,9].

We presented a series of seven cases of incisional scar endometriosis from a single tertiary care center in Odisha, India. The study aimed to delineate the clinical presentation, diagnostic approaches, and histopathological findings in this cohort, assessed the complexities associated with its diagnosis, and provide a thorough review of contemporary literature. Ultimately, this report endeavored to advance the knowledge base regarding this rare condition and promoted a heightened awareness among clinicians, particularly in regions where it may be frequently overlooked.

CASE PRESENTATION

Case 1: A 32-year-old female presented with cyclical bleeding and a mass, seven years after her second prior surgery. Clinical examination revealed a 3x3 cm, firm, indurated, and discolored mass. Diagnostic findings from FNAC were inconclusive; while an ultrasound (USG) showed a heterogeneous, hypoechoic area, a histopathology section of the excised nodule confirmed the diagnosis of scar endometriosis. The clinical management involved wide local excision of the lesion with a 1 cm margin.

Case 2: A 43-year-old female, three years after her third prior surgery, presented with pain and a mass. Clinically, a 2x2 cm tender, nodular, and immobile mass was found. A linear, hypoechoic nodule was observed on USG. A histopathology section of the excised nodule confirmed the diagnosis of scar endometriosis. The clinical management involved wide local excision of the lesion with a 1 cm margin.

Case 3: A 36-year-old female, four years after her second surgery, reported cyclical mass enlargement. A 3x3 cm, irregular, soft, and tender mass was found during clinical examination. A USG identified a hypoechoic mass with cystic changes, which was confirmed by MRI. The patient underwent wide local excision of the lesion with a 1 cm margin.

Case 4: A 35-year-old female presented with cyclical pain, a mass, and bleeding, two years after her first surgery. The clinical findings showed a 4x4 cm, indurated, soft, and discolored mass. An FNAC revealed endometrial glands, and both a USG and MRI confirmed the findings. The patient underwent wide local excision of the lesion with a 1 cm margin.

Case 5: A 31-year-old female, four years after her first surgery, presented with a painful mass and cyclical oozing. A 3x5x6 cm nodule was found clinically. She was treated with Leuprolide, though no specific diagnostic findings were mentioned. The clinical management involved wide local excision of the lesion with a 1 cm margin.

Case 6: A 23-year-old female, two years after her first surgery, presented with cyclical swelling, pain, and discharge. A 3x4x5 cm mass was found on clinical examination. No specific diagnostic findings were reported. The clinical management involved wide local excision of the lesion with a 1 cm margin.

Case 7: A 34-year-old female presented with a tender mass and cyclical pain, and oozing, 6.5 years after her first surgery. Clinical examination revealed a 5x4x3 cm mass. No specific diagnostic findings were provided. The clinical management involved wide local excision of the lesion with a 1 cm margin.

Based on this case series, significant findings regarding scar endometriosis include a diverse patient age range (23-43 years) and a variable latency period (2-7 years) from prior surgery to symptom onset. A defining characteristic across most cases was the cyclical nature of symptoms, such as pain, bleeding, discharge, or mass enlargement, directly correlating with the menstrual cycle. While all patients presented with a palpable mass at the scar site, their clinical features and sizes varied considerably. USG provided initial but often non-specific

imaging insights, whereas Magnetic Resonance Imaging (MRI) consistently offered definitive diagnostic others. Crucially, histopathology consistently served as the gold standard for definitive diagnosis after surgical excision. Surgical excision was the primary treatment in all cases, with generally uneventful postoperative recoveries, and in one instance, medical management

confirmation when utilized. FNAC showed varied utility, being inconclusive in some cases but diagnostic in with leuprolide was used preoperatively. These observations highlight the importance of maintaining a high index of suspicion for scar endometriosis in any female presenting with cyclical symptoms at a surgical scar, especially with a history of Cesarean section.

Table 1: Summary of Clinical and Diagnostic Features of Scar Endometriosis Cases (n=7)

Case No.	Age (Years)	Time since Last Surgery (Years)	Prior Surgeries	Primary Symptoms	Clinical Findings (Mass Size)	Diagnostic Findings (Imaging/ FNAC)
1	32	7	2	Cyclical bleeding, mass	3x3 cm, firm, indurated, discolored	FNAC inconclusive, USG heterogeneous hypoechoic
2	43	3	3	Pain, mass	2x2 cm, tender, nodular, immobile	USG linear hypoechoic nodule
3	36	4	2	Cyclical mass enlargement	3x3 cm, irregular, soft, tender	USG hypoechoic mass with cystic changes, MRI confirmed
4	35	2	1	Cyclical pain, mass, bleeding	4x4 cm, indurated, soft, discolored	FNAC showed endometrial glands, USG hypoechoic, MRI confirmed
5	31	4	1	Painful mass, cyclical oozing	3x5x6 cm nodule	Ultrasound showed hypoechoic nodule
6	23	2	1	Cyclical swelling, pain, discharge	3x4x5 cm mass	Ultrasound showed hypoechoic lesion
7	34	6.5	1	Tender mass, cyclical pain, oozing	5x4x3 cm mass	Ultrasound shows hypoechoic nodule

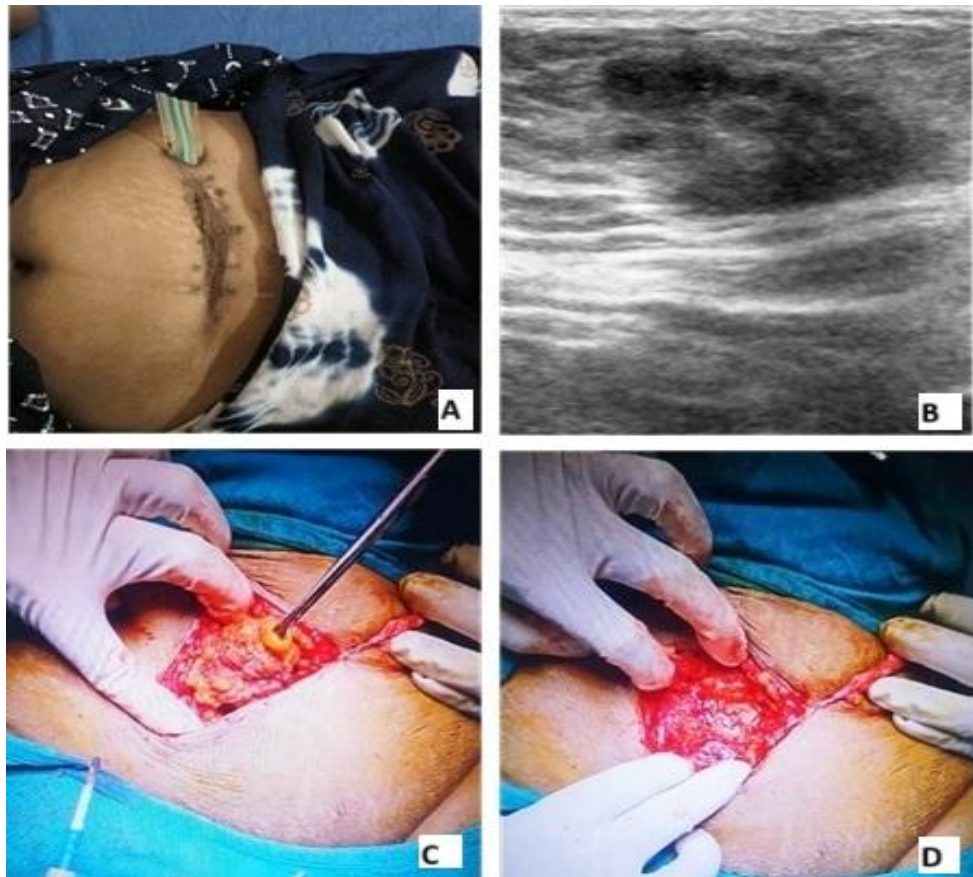


Fig. 1: (A) Scar endometriosis is the presence of endometrial tissue (glands and stroma) within a surgical scar; (B); USG of scar endometriosis typically shows a heterogeneous, solid mass that's darker than surrounding tissue (hypoechoic) with irregular, ill-defined borders; (C); The surrounding tissue, which is consistent with the surgical excision of a scar endometriosis nodule; (D); The image depicts an intraoperative view of an abdominal surgical procedure. In the center, there is a reddish-brown, irregular, and fibrous mass that is being dissected

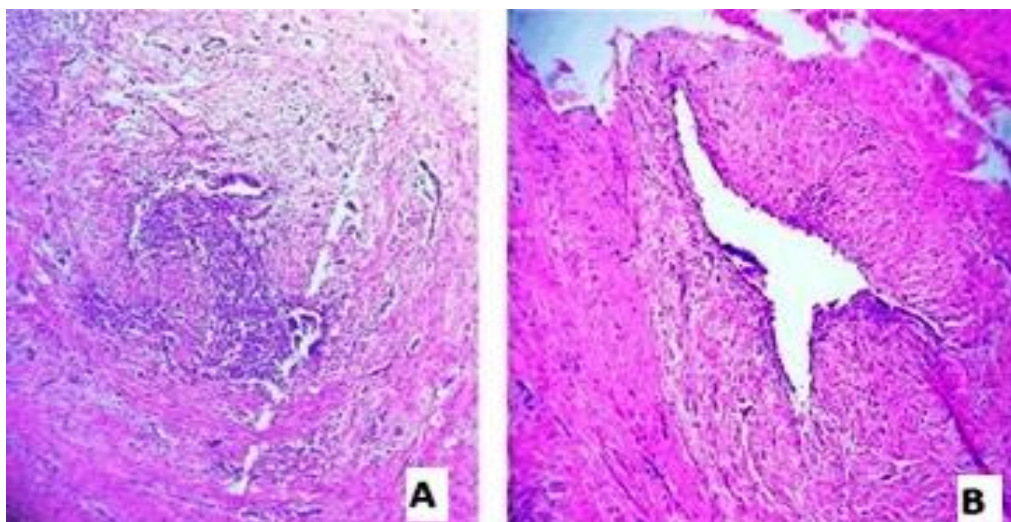


Fig. 2 (A): Histopathology at 40x magnification with H&E staining shows a nodule of disorganized endometrial stroma and glands within fibrous tissue, surrounded by a dense inflammatory infiltrate of lymphocytes and plasma cells. This is consistent with a benign, heterotopic growth of endometriosis.

(B): The provided tissue section (40x, H&E) shows a dilated, irregular glandular structure lined by endometrial cells and surrounded by endometrial stromal cells. This gland is found within dense fibrous tissue, indicating a scar. The presence of endometrial glands and stroma within this scar tissue is diagnostic for scar endometriosis.

DISCUSSION

The clinical findings of the seven patients in this case series strongly align with established descriptions of incisional scar endometriosis found in the medical literature. All individuals were within the reproductive age range (23 to 43 years), a demographic commonly affected by endometriosis.^[1] The consistent presence of the clinical triad—a palpable mass at the incision site, frequently accompanied by cyclical pain, and sometimes bleeding—was a defining feature.^[7] This cyclical symptomatology is a crucial diagnostic indicator, directly reflecting the ectopic endometrial tissue's hormonal responsiveness throughout the menstrual cycle.

A significant observation in our series was the varied latency period from the last surgery to symptom onset, which ranged from 2 to 7 years. This is consistent with previous reviews reporting a wide interval of 1 to 9 years post-surgery.^[9] This remarkable consistency in the extended latent period suggests a predictable biological progression, indicating that implanted endometrial cells require significant time to develop into a symptomatic mass.^[9, 10] This extended time lag is a primary factor contributing to diagnostic delays, as patients and clinicians often fail to associate current symptoms with a surgical event that occurred years earlier. Consequently, maintaining a high index of suspicion is vital when evaluating any painful abdominal mass in a woman with a history of prior obstetric or gynecological surgery. Specifically, in our tertiary care setting in Odisha, a significant proportion of these cases were referred late, often after initial misdiagnosis (e.g., as an abdominal wall hernia), contributing to an average diagnostic delay consistent with the reported 2–7 year range.

The cases underscore the substantial diagnostic challenges associated with scar endometriosis, as its presentation frequently mimics more common abdominal wall pathologies, including incisional hernias, suture granulomas, or even desmoid tumors, which explains why the correct preoperative diagnosis rate is only 20–50% in general practice.^[8,9]

Initially, readily available modalities such as USG and FNAC displayed variable and often non-specific findings in our series, leading to diagnostic ambiguity. USG showed inconsistent characteristics across cases, and FNAC, while identifying endometrial glands and stroma in Case 4, was inconclusive in Case 1. While limited in providing a definitive diagnosis, it is crucial to recognize

their practical role in the initial evaluation^[1,10]. As readily available and cost-effective tools, USG remains the recommended initial screening modality to localize the mass. Furthermore, FNAC retains utility in highly suspicious cases, offering a rapid, bedside method that can help rule out alternative, potentially malignant abdominal wall tumors before proceeding to definitive surgery.

In contrast, MRI provided definitive preoperative diagnoses in both instances it was utilized (Cases 3 and 4). While this represents a small sample size, the high diagnostic confidence and precise lesion delineation observed strongly support the consensus that MRI's superior multiplanar capabilities and tissue characterization are crucial for preoperative planning.^[7,11] Therefore, although a larger series is required to confirm MRI's definitive predictive value in our population, clinicians must understand that a negative or inconclusive result from either FNAC or USG should not preclude the use of advanced imaging, such as MRI, when clinical suspicion for incisional scar endometriosis remains high. Despite the utility of advanced imaging, histopathological examination remains the gold standard for definitive diagnosis, consistently confirming scar endometriosis in all seven cases through the microscopic identification of endometrial glands and stroma.^[8,12]

Given the increasing global rates of Cesarean sections, scar endometriosis is evolving into a growing clinical concern. Although medical management offers symptomatic relief, wide surgical excision with adequate margins remains the definitive and curative treatment, a procedure performed successfully in all patients in this series. This curative approach resulted in high rates of symptom relief and minimized recurrence risk. Preoperative hormonal therapy, such as the leuprolide used in Case 5, can serve as a valuable adjunct to reduce lesion size and potentially improve surgical outcomes.^[13] Following complete surgical excision, the prognosis for isolated scar endometriosis is excellent, with reported recurrence rates being low, typically ranging from 4.3% to 15%.^[8] This outcome is substantially more favorable compared to general pelvic endometriosis, which can have a recurrence rate as high as 20–40% within five years of conservative surgery.^[14] This distinction in prognosis holds particularly when coexisting pelvic endometriosis is absent or ruled out, as was the case

with thorough preoperative evaluation and surgical inspection in all seven patients in this series. Factors that increase the risk of recurrence for scar endometriosis include incomplete excision, a large lesion size (greater than 3 cm), and the coexistence of pelvic endometriosis, which must be vigilantly ruled out during workup. ^[13] Additionally, the use of postoperative hormonal suppression therapy, such as oral contraceptives or GnRH agonists, has been shown to effectively reduce symptom recurrence and prolong the time until it might recur. ^[13] Effective management necessitates a multidisciplinary approach, combining astute clinical evaluation with appropriate imaging and expert surgical technique to ensure complete lesion removal and prevent recurrence.

CONCLUSIONS

This case series establishes clinical history as the essential diagnostic tool for incisional scar endometriosis, crucial for overcoming significant diagnostic delays. Clinicians must recognize that a negative result from initial screening tests (FNAC or USG) should not preclude the use of advanced imaging when clinical suspicion remains high. Magnetic Resonance Imaging (MRI) offers superior capability for confident preoperative diagnosis and precise surgical planning. Ultimately, timely recognition, guided by astute clinical judgment and the strategic use of MRI, ensures successful management via wide surgical excision, the definitive curative treatment.

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CONTRIBUTION OF AUTHORS

Research concept- Sanghamitra Dash, Sambedana Panigrahi, Sanjay Swain

Research design- Sanghamitra Dash, Sambedana Panigrahi, Sanjay Swain

Supervision- Sanghamitra Dash

Materials- Sanghamitra Dash, Sambedana Panigrahi

Data collection- Sanghamitra Dash, Sambedana Panigrahi, Sanjay Swain

Data analysis and interpretation- Sanghamitra Dash,

Sambedana Panigrahi

Literature search- Haris Chandra Mishra, Sashibhusan Dash

Writing article- Haris Chandra Mishra, Sashibhusan Dash

Critical review- Sanghamitra Dash

Article editing- Haris Chandra Mishra, Sashibhusan Dash

Final approval- Sanghamitra Dash, Sambedana Panigrahi, Sanjay Swain, Haris Chandra Mishra, Sashibhusan Dash

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