DOI: 10.7860/JCDR/2026/82036.22390

Case Report

Pathology Section

Decidualised Caesarean Scar Endometriosis in a Gravid Woman: A Case Report

M SAFIN[1], S REVATHY[2], J THANKA[3]

ABSTRACT

Endometriosis is a pathological condition characterised by the presence of extrauterine endometrial tissue that responds to hormonal variations. Globally, endometriosis affects approximately 89 million females, accounting for a 5-10% prevalence of the disease. Cutaneous endometriosis over abdominal surgical sites accounts for less than 1% of all cases, of which 0.03-0.45% occur following a lower segment caesarean section. Only a few cases of hormonal decidualisation of scar endometriosis during pregnancy have been reported. A 27-year-old G2P1L1 pregnant woman presented with pain and tenderness over a previous Lower Segment Caesarean Section (LSCS) scar, occurring intermittently over three years. Clinicoradiological evaluation suggested scar endometriosis, which was subsequently confirmed histopathologically as decidualised scar endometriosis. The most widely accepted theory is that direct inoculation of endometrial tissue during surgical procedures is the major predisposing factor for scar endometriosis, particularly in cases involving hysterectomy at a young age or procedures performed for abortion. Scar endometriosis is an infrequent yet challenging condition following obstetric and gynaecological surgeries, including caesarean section. Therefore, this condition must be considered as a differential diagnosis in patients presenting with pain or a mass over a previous LSCS scar.

Keywords: Decidualised scar endometriosis, Extrauterine endometrial tissue, Lower segment caesarean section

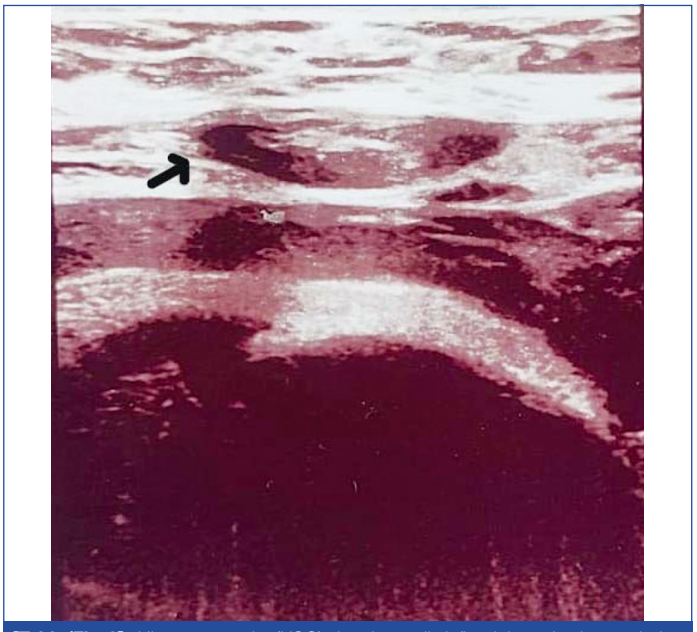
CASE REPORT

A 27-year-old G2P1L1, Rh-negative pregnant woman with a previous LSCS presented with pain, tenderness, and swelling over the old LSCS scar for about three years [Table/Fig-1] shows timeline of events. Radiological evaluation revealed a well-defined, irregular, hypoechoic to heteroechoic lesion measuring 1.9×0.6 cm in the intramuscular plane on the left para-midline aspect at the previous caesarean scar site [Table/Fig-2]. Based on clinical and radiological examination, differential diagnoses of endometriosis, haematoma, or an inflammatory lesion were considered.

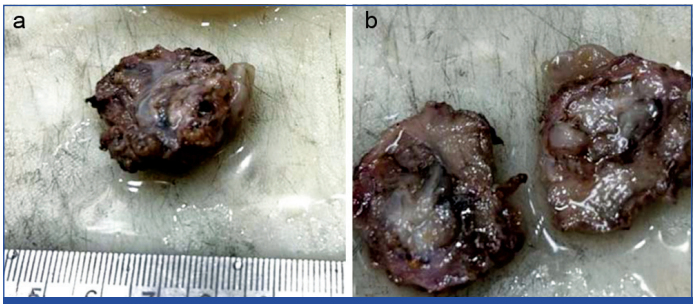
August 2021	First child birth - LSCS (Indication - multiple nuchal cords)
Early 2022 to entire 2023	Premenstrual cyclic pain and intermittent tenderness over the scar site. The patient had not noticed any swelling over the LSCS scar. The patient sought no regular medical consultation and took pain medications only during episodes of intense pain, as the discomfort was otherwise tolerable.
April 2024	The patient's second pregnancy was confirmed. The patient also noticed swelling over the LSCS scar, in addition to her previous similar complaints. On Ultrasonography (USG), a well-defined, irregular, hypoechoic to heteroechoic lesion 1.9×0.6 cm involving intramuscular plane in left para-midline aspect at old caesarean scar site noted. The patient was advised excision of the swelling; however, as she was pregnant, the procedure was deferred until delivery, and she was managed with pain medication in the meantime.
December 2024	Second child birth - LSCS (Indication - Previous LSCS). Also, excision of the swelling over the LSCS scar was done and sent for histopathology examination.
Follow-up till June 2025	A follow-up at six months after delivery of her second child showed the patient to be healthy, with no recurrence of swelling or similar complaints.

[Table/Fig-1]: Timeline of events in detail of present case report.

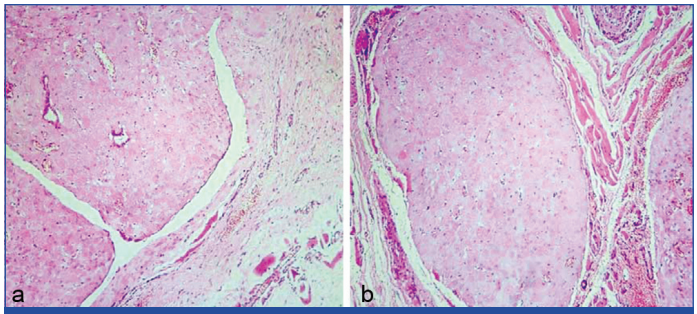
An elective repeat LSCS was performed along with wide local excision of the lesion. The tissue was excised and sent for histopathological examination. Grossly, a single grey-white to grey-brown soft tissue mass measuring 2.5×2.5×1 cm was received [Table/Fig-3a]. The cut surface showed grey-white to grey-brown areas [Table/Fig-3b]. Microscopic examination revealed dense fibrous scar tissue with sheets and lobules of extensively decidualised endometrial stroma, along with foci of atrophic endometrial glands surrounded by skeletal muscle bundles [Table/Fig-4a,b].



[Table/Fig-2]: Ultrasonography (USG) showing well-defined, irregular, hypoechoic to heteroechoic lesion (arrow head) 1.9×0.6 cm involving intramuscular plane in left para-midline aspect at old caesarean scar site.

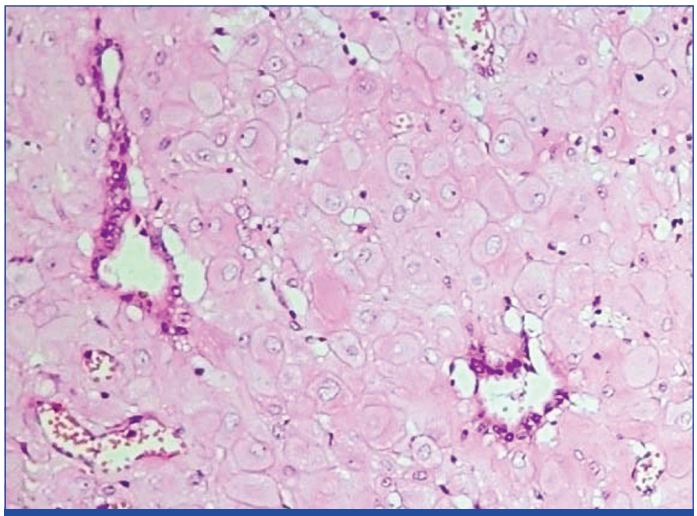


[Table/Fig-3]: a) Shows a single grey white to grey brown soft-tissue mass measuring 2.5x2.5x1 cm; b) Cut surface showed grey white to grey brown areas.

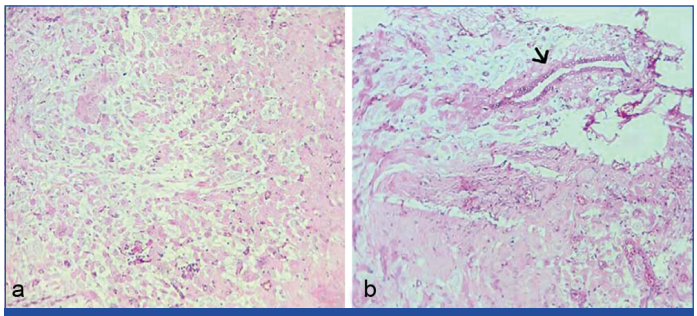


[Table/Fig-4]: a) Microscopy shows fibrous scar (right-side) and decidualised endometrial stroma (left side) with atrophic endometrial glands (H &E, 100x); b) Microscopy shows decidualised stroma surrounded by skeletal muscle bundles (H &E, 100x).

The decidual cells were large and epithelioid, with bland vesicular nuclei, prominent nucleoli, and pale eosinophilic cytoplasm. The atrophic glands were lined by cuboidal to low columnar epithelium with minimal cytoplasm [Table/Fig-5]. Some areas showed oedematous decidualised stroma containing occasional endometrial glands [Table/Fig-6a,b]. Based on the clinical history, radiological findings, and histopathology, a diagnosis of decidualised scar endometriosis was established.



[Table/Fig-5]: Microscopy shows large, epithelioid shaped decidual cells having bland vesicular nuclei, prominent nucleoli and pale eosinophilic cytoplasm. The atrophic glands are lined by cuboidal to low columnar epithelium with minimal cytoplasm (H&E,400x).



[Table/Fig-6]: a) Microscopy shows oedematous decidua (H &E, 100x); b) Microscopy shows an endometrial gland within the oedematous decidua (H &E, 100x).

DISCUSSION

Endometriosis is a pathological condition characterised by the presence of extrauterine endometrial tissue that responds to hormonal variations [1]. Globally, it affects approximately 89 million females and has a prevalence of 5-10% [2]. Common pelvic locations include the adnexa, posterior rectovaginal pouch, uterine ligaments, pelvic peritoneum, and intestine. Distant endometriosis may occur in the skin, intestine, renal system, and, very rarely, in the central nervous system or thoracic cavity [3].

Cutaneous endometriosis over abdominal surgical sites accounts for less than 1% of all cases, of which 0.03-0.45% occur after LSCS [3,4]. Meyer reported the first case of scar endometriosis in 1903 [5]. Stromal decidual reaction in endometriosis may occur under the influence of elevated progesterone levels, either resulting from pregnancy or the use of exogenous progesterone. Pellegrini AE et al., were the first to describe such changes in endometriosis [6].

Endometriosis can have a latent period as long as 23 years, presenting with worsening symptoms in perimenopausal age groups. Due to loss of the pituitary-hypothalamic axis, there is unopposed oestrogen stimulation in older age, which may lead to malignant transformation in menopausal women [3].

Scar endometriosis is primarily associated with prior abdominal surgeries, including obstetric and gynaecological procedures such as caesarean section (most commonly LSCS) and hysterectomy at a younger age. Endometriosis may also develop in previous surgical scars, including those from laparoscopy, episiotomies, or tubal sterilisation. An analysis of 30 years of data on incisional endometriosis following caesarean sections revealed a prevalence rate of 0.08% for scar endometriosis. The prevalence of scar endometriosis is rising due to the increased number of C-sections and laparoscopies in recent times, with a reported incidence of 1.96% following caesarean section [7]. Among reported cases of scar endometriosis, only a few studies have documented that the endometrial stroma can undergo decidual changes under endogenous or exogenous hormonal influence, particularly progesterone [6]. Horton JD et al., examined 445 cases of abdominal wall endometriosis, reporting occurrences in caesarean section scars (57%), hysterectomy scars (11%), and other surgical scars (12%), while the remaining 20% of cases occurred outside scars in areas such as the umbilicus and groin [8]. De Oliveira MAP et al., studied the positive correlation between scar endometriosis and heavy menstrual bleeding and alcohol consumption, whereas high parity appeared to offer protection against the condition [9].

The exact cause of scar endometriosis is not fully understood, though several theories have been proposed. Endometrial tissue may migrate through the fallopian tubes and implant at ectopic sites. The direct implantation theory is the most widely accepted, suggesting that most cases result from direct deposition of endometriotic tissue at the suture site during surgery. The coelomic metaplasia theory proposes that metaplasia of subcoelomic pluripotent mesenchymal cells lining the pelvic peritoneum leads to scar endometriosis [1,5]. Lymphatic or haematogenous spread to the incision site has also been suggested [3].

Decidualisation of the endometrial stroma in scar endometriosis is thought to result from progesterone stimulation originating from subserosal stromal cells. Two theories have been proposed by Zaytsev P and Taxy J: first, coelomic metaplasia, in which the decidual tissue regresses after hormonal withdrawal; second, new decidual cell formation, in which pregnancy-related progesterone causes marked stromal decidualisation of endometriotic foci [10].

Endometrial implants typically present as nodules that are deep-seated or located beneath the skin, often invading fascia and muscle. During menstruation, infiltration of blood into the tissue causes cyclical pain, tenderness, and localised discoloration. Superficial nodules may show cyclic discolouration, bleeding, and ulceration [4].

If a correct preoperative diagnosis is not made, scar endometriosis may be mistaken for other surgical conditions such as haematoma, neuroma, hernia, stitch granuloma, abscess, lipoma, scar tissue, neoplastic tissue, or metastatic carcinoma, often resulting in referral to a general surgeon. Frequently, endometriosis is not suspected until histopathological examination is performed. An accurate preoperative diagnosis is achieved in only 20%-50% of cases [3,4].

Imaging modalities include Ultrasonography (USG), Computed Tomography (CT), and Magnetic Resonance Imaging (MRI), with USG being the most commonly preferred due to its cost-effectiveness and safety [3]. On USG, scar endometriosis typically

appears as a solid, vascular, hypoechoic, and heterogeneous lesion with internal echoes. CT and MRI are useful for assessing the lesion's involvement with subcutaneous tissue and muscle [4]. MRI has high sensitivity (90%-92%) and specificity (91%-98%) for delineating deep-seated scar endometriosis preoperatively. Fine-Needle Aspiration Cytology (FNAC) may aid diagnosis but carries the risk of reimplanting endometriotic tissue [7]. In cytology, the presence of any two of the following—endometrial glands, endometrial stroma, or haemosiderin-laden macrophages—is considered diagnostic. The morphology of the glands and stroma may vary depending on the phase of the menstrual cycle [5].

In histopathology, scar endometriosis shows the presence of endometrial glands and stroma, with or without haemosiderin-laden macrophages [3]. Clinically and pathologically, deciduosis must be distinguished from decidualised scar endometriosis. Decidualised scar endometriosis often presents with menstrual cycle-related symptoms and demonstrates microscopic features such as diffuse lesion distribution with decidualised endometrial stroma, endometrial glands, and may also show stromal oedema, old and new haemorrhages, pseudoxanthoma cells, fibrosis with gland atrophy, and even the Arias-Stella reaction. In contrast, pregnancy-related ectopic decidua (deciduosis) in a caesarean scar lacks endometrial tissue [10].

Reports have shown cases of squamous, tubal, and mucinous metaplasia in scar endometriosis, along with very rare instances of malignant transformation [5]. Gunal A et al., demonstrated a case of decidualised scar endometriosis with areas of myxoid change in the stroma in a 24-year-old pregnant female. In the presence of myxoid change, it is necessary to rule out metastatic signet ring cell carcinoma, pseudomyxoma peritonei, myxoma, or myxoid liposarcoma through evaluation with immunohistochemical markers [11].

Management involves both surgical removal and hormonal suppression. Attempts have been made using oral contraceptives, progestational, and androgenic agents. Hormonal therapy is considered partially effective, whereas surgical excision of the scar is regarded as the definitive approach. The treatment of choice is wide local excision with a minimum 1 cm margin, ensuring that no endometrial tissue remains at the resection margins. To prevent implantation of endometrial tissue in the anterior abdominal wall, it is important to thoroughly wash the wound with saline before closure and to change gloves. Repairing the peritoneum during a C-section is also recommended to reduce the risk of this rare condition [4]. Although a few studies have reported recurrence or malignant transformation of scar endometriosis, such events remain rare [1,4].

CONCLUSION(S)

Scar endometriosis is a debilitating condition following obstetric and gynaecological procedures, including caesarean section. Therefore, it should be considered in the differential diagnosis of patients presenting with pain or a mass over a previous LSCS scar, to avoid overlooking this uncommon condition. In present case, based on clinical history, radiological findings, and histopathology, the diagnosis was established as decidualised scar endometriosis. Correlation of clinical, radiological, and histopathological findings is essential for a definitive diagnosis, particularly when stromal decidual transformation is present, as it can mimic certain malignancies. Scar endometriosis remains a little-known condition; increased awareness among the general public and healthcare providers is crucial. Accurate diagnosis and prompt treatment prevent complications and provide patients with disease-free survival.

REFERENCES

[1] Sharmila V, Kamathan V, Shankaralingappa A. Abdominal scar endometriosis: A case report and review of literature. Indian J Pathol Microbiol. 2023;66(4):871-73. Available from: http://dx.doi.org/10.4103/ijpm.ijpm_460_22.

[2] Danielpour PJ, Layke JC, Durie N, Glickman LT. Scar endometriosis - A rare cause for a painful scar: A case report and review of the literature, Can J plast Surg. 2010;8(1):19-20. Available from: http://dx.doi.org/10.1177/229255031001800110.

[3] Uzunçakmak C, Gilda AG, Ö zçam H, Dinç K. Scar endometriosis: A case report of this uncommon entity and review of the literature. Case Rep Obstet Gynecol. 2013;1:386783. Available from: http://dx.doi.org/10.1155/2013/386783.

[4] Poudel D, Acharya K, Dahal S, Adhikari A. A case of scar endometriosis in cesarean scar: A rare case report. Int J Surg Case Rep. 2023;102:107852. Available from: http://dx.doi.org/10.1016/j.ijscr.2022.107852.

[5] Pathan ZA, Dinesh U, Rao R. Scar endometriosis. J Cytol. 2010;27(3):106-08. Available from: http://dx.doi.org/10.4103/0970-9371.71877.

[6] Kavari A, Samizadeh B, Maghbool M. Pregnancy-related decidualization in post-cesarean section scar endometriosis: A case report. Int J Surg Case Rep [Internet]. 2024;124(110274):110274. Available from: http://dx.doi.org/10.1016/j.ijscr.2024.110274.

[7] Purbadi S, Purwoto G, Winarto H, Nuryanto KH, Scovani L, Sotarduga GE. Case report: Caesarean scar endometriosis- A rare entity. Int J Surg Case Rep. 2021:85:106204. Available from: http://dx.doi.org/10.1016/j.ijscr.2021.106204.

[8] 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. Available from: http://dx.doi.org/10.1016/j.amjsurg.2007.07.035.

[9] de Oliveira MAP, de Leon ACP, Freire EC, de Oliveira HC. Risk factors for abdominal scar endometriosis after obstetric hysterotomies: A case-control study. Acta Obstet Gynecol Scand. 2007;86(1):73-80. Available from: http://dx.doi.org/10.1080/00016340601099346.

[10] Ankita A, Ahluwalia C, Ahuja S. Deciphering deciduosis: A case of ectopic decidual tissue within a caesarean scar. Nep J Obstet Gynecol. 2024;19(2):47-50.

[11] Gunal A, Keskin U, Deveci G, Deveci MS, Yenen MC, Dede M. Tumor-like myxoid change in decidualized scar endometriosis of pregnancy: A case report and review of literature. Turk Patoloji Derg. 2009;25(1):49. Available from: http://dx.doi.org/10.5146/tjpath.2009.00961.

PARTICULARS OF CONTRIBUTORS:

1. Postgraduate Student, Department of Pathology, Sree Balaji Medical College and Hospital, Chennai, Tamil Nadu, India.
2. Postgraduate Student, Department of Pathology, Sree Balaji Medical College and Hospital, Chennai, Tamil Nadu, India.
3. Director and Professor, Department of Pathology, Sree Balaji Medical College and Hospital, Chennai, Tamil Nadu, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:

Dr. M Safin,
Postgraduate Student, Department of Pathology, Sree Balaji Medical College and Hospital, Chennai, Tamil Nadu, India.
E-mail: safurabi1997@gmail.com

PLAGIARISM CHECKING METHODS: [Jain H et al.]

- Plagiarism X-checker: Jul 18, 2025
- Manual Googling: Aug 18, 2025
- iThenticate Software: Aug 20, 2025 (13%)

ETYMOLOGY: Author Origin

EMENDATIONS: 5

AUTHOR DECLARATION:

- Financial or Other Competing Interests: None
- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. Yes

Date of Submission: **Jul 15, 2025**
Date of Peer Review: **Jul 26, 2025**
Date of Acceptance: **Aug 22, 2025**
Date of Publishing: **Feb 01, 2026**