

Case Series of Scar Endometriosis Following Caesarean Sections: A Condition on the Rise

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Abstract

This case series presents the diagnostic conundrum and subsequent management of three instances of scar endometriosis following Caesarean sections. Endometriosis can be classified by location as endopelvic or extra-pelvic and Caesarian scar endometriosis is the most common form of the latter. The first case involves a 43-year-old female with a progressively painful lump above her Caesarean scar, confirmed only as endometriosis through histopathological examination after surgical excision. The second case is a 42-year-old woman with a painful, enlarging lump on the right side of her Caesarean scar, exacerbated during menstruation. Initial GnRH analogues treatment provided symptom relief, but surgical excision was necessary, with histopathology confirming endometriosis. The third case features a 33-year-old woman with a painful lump on her Caesarean section scar, with pain increasing during menstruation. An ultrasound suggested a sebaceous cyst, but surgical excision and histopathological analysis confirmed scar endometriosis. Clinical evaluation, imaging, and a high degree of suspicion are required albeit histopathological confirmation following surgical excision is critical for a definitive diagnosis of scar endometriosis. We encourage healthcare professionals to consider scar endometriosis as a differential diagnosis in all patients who present with a painful abdominal lump near/at their scar and a history of abdominal/pelvic surgery, with or without known endometriosis.

Keywords: Endometriosis; Scar Endometriosis; Caesarean Section; Subcutaneous Nodule; GnRH Analogues; Surgical Excision; Histopathology; Laparoscopic Surgery.

Introduction

Endometriosis is a chronic inflammatory condition where endometrial tissue is found outside the uterus.¹ It affects about 10% of women of reproductive age.² The locations can be endopelvic (ovaries, uterosacral ligaments, ovarian fossa and pouch of Douglas)³ or extra-pelvic (abdominal wall, groin, perineum, kidneys, lungs and pleura).⁴

Primary cutaneous endometriosis (PCE) is a rare condition that occurs when endometrial tissue grows in the skin without a history of surgery. It's one of two types of cutaneous endometriosis, the other being secondary cutaneous endometriosis (SCE), which occurs after surgery. PCE is thought to develop spontaneously, but its exact cause is unknown. Possible causes include vascular or lymphatic spread, metaplasia, or the umbilicus acting as a physiologic scar.

Caesarian scar endometriosis is a rare but common extra-pelvic form. It can also happen following hysterotomy, episiotomy, ectopic pregnancy, salpingostomy and tubal ligation.⁵ Because it is so rare, scar endometriosis is commonly misdiagnosed as hematomas, hernias, granulomas, abscesses, neuromas, or even

neoplastic tissues.⁶ Surgical excision and histopathological examination are key for diagnosis. Our case studies focus on diagnosing scar endometriosis in patients with lumps near Caesarian scars.

Case Report

Case One

The patient, a 43-year-old female with a BMI of 29, had two previous Emergency Caesarean sections, first at 26 weeks 19 years previously and the other at 35 weeks, 18 years previously, both due to severe preeclampsia. The caesarean sections were uneventful with no obvious postoperative event. She presented with heavy menstrual bleeding, abdominal discomfort, and a lump at her cesarean section scar from long time. Despite trying hormonal medications, her heavy and painful bleeding persisted. She noted that the lump had recently become increasingly painful, with the pain being constant and localized to the lump, without any identifiable triggers or relief. In her medical history, she has a previous stroke and is currently on anticoagulant therapy.

The general and gynecology examination was unremarkable. The abdominal examination, a 2cm non-tender, firm non-reducible subcutaneous nodule was palpated just above the Caesarean section scar on the left side. There were no signs of inflammation or skin changes overlying the nodule. A CT scan for generalized abdominal pain 7 years previously had shown a 26x12mm irregular opacity close to the left side of the Caesarean section scar. Ultrasound imaging had revealed a slightly irregular lobular hypoechoic solid lesion measuring approximately 2x1.4x1.9cm in the superficial subcutaneous tissue abutting the muscle compartment, queried to be a dermoid, but remained indeterminate.

Scar endometriosis was suspected based on clinical presentation and her imaging. Differential diagnoses such as incisional hernia and hypertrophic scar were considered but deemed less likely due to the characteristic features of the lesion.

The patient underwent surgical excision of scar Endometriosis and total abdominal hysterectomy and bilateral salpingo-oophorectomy for heavy and painful periods. The surgical findings dense adhesions on anterior and posterior wall of uterus with bowel and omental adhesions in both adnexa. The nodule was excised from caesarean scar. The histopathological examination demonstrated fibro adipose tissue in which there was scarring and deposits of benign endometriosis with no atypia or malignancy confirming the presence of endometrial tissue within the scar, ovary and uterus.

After surgery, she was discharged the following day, and her postoperative period was uneventful. She then followed up at 4 month postoperatively and started on estrogen only HRT. She reported no recurrence of symptoms, and her surgical site was healing well.

Case two

The patient, a 42-year-old female with a BMI of 42, presented with a painful lump on right side of her old Caesarean scar and heavy and painful menstrual bleeding from 5 years. She had a preterm Emergency cesarean section 11 years ago for a twin pregnancy, which was uncomplicated with smooth post op period. The lump had been increasing in size, causing constant stabbing pain, especially during her menstrual periods. Her past medical history includes irritable bowel syndrome, cesarean section, cholecystectomy, and hypertension.

The general and gynaecological examination was normal. The abdominal examination showed a 3x4cm tender, firm irreducible lump on the pfannenstiel incision. Imaging revealed a solid mass measuring 3x2.5cm, highly suggestive of an endometrioma. An MRI scan confirmed a 3.2x2.5x2.8cm endometrioma on the cesarean section scar (Figure 1). Additionally, her CA 125 level was slightly elevated at 57.

Treatment with GnRH analogues and add-back therapy alleviated her pain, but the lump persisted. Due to the pandemic and the patient's BMI, surgical excision was delayed for 3years. After a recurrence of symptoms, she underwent surgical excision of lump. Additionally, the patient underwent laparoscopic bilateral salpingectomies for sterilisation and excision and cauterization of endometriotic spots in pelvis. During the surgery, a 3.5cm firm lump was excised from the end of the right cesarean section scar without breaching the rectus sheath. Active brown endometriosis was observed in the fatty tissues, which were sent for histopathological examination.

Absorbable sutures were used to close the space and skin. She was discharged the same day, with an uneventful postoperative recovery.

Histopathological examination of the Caesarean scar lump and peritoneal biopsy demonstrated there are fragments of fibrous connective and adipose tissue showing evidence of endometriosis associated with fibrosis and focal chronic inflammation with no evidence of atypia or malignancy (Figure 2). The patient was followed up at 4 month after surgery. She experienced complete resolution of symptoms and had no complications during the follow-up period.

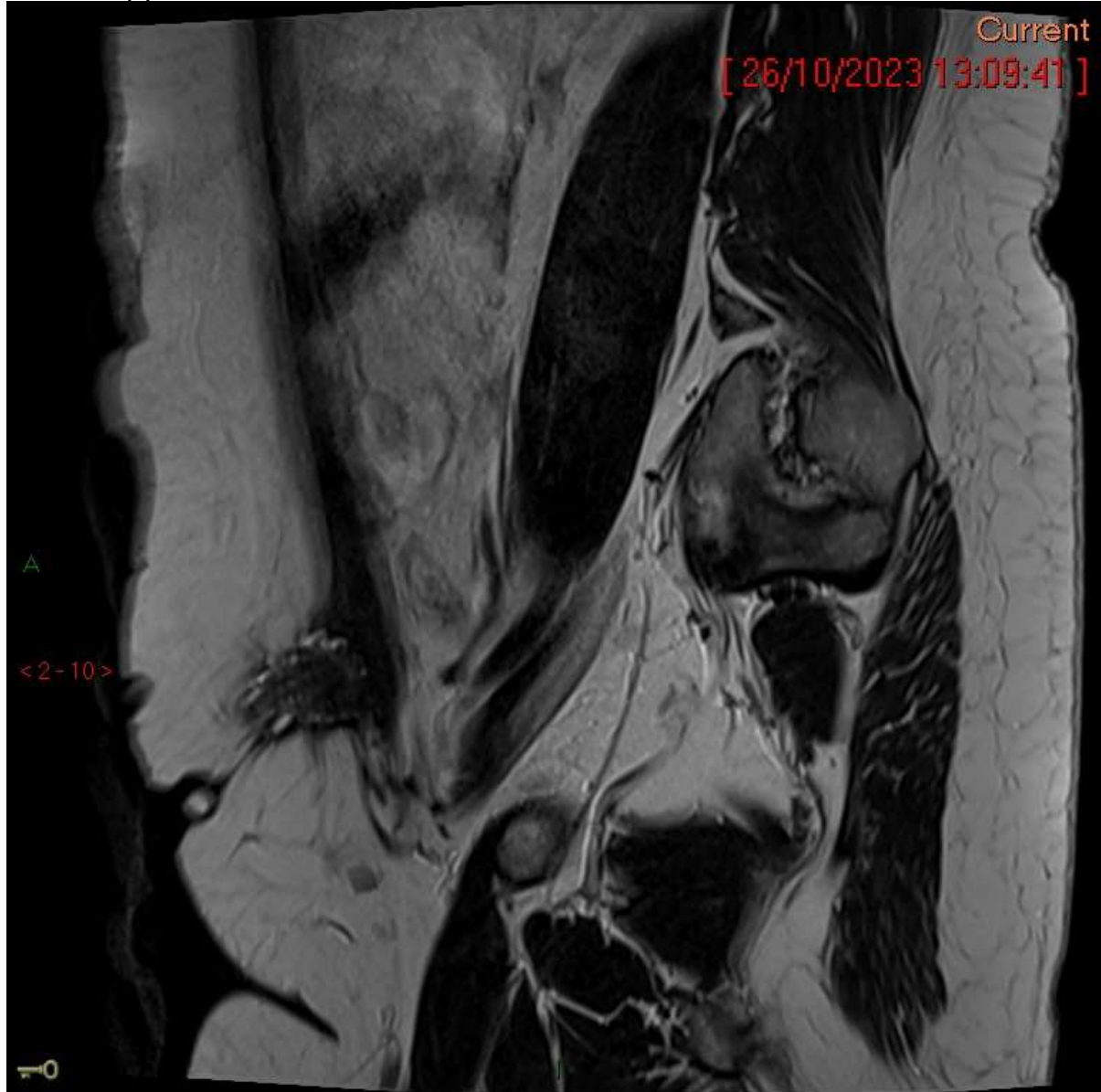


Figure 1: Single sagittal T2-weighted sequence

The lesion in the right corner of the Pfannenstiel scar measures 3.2 x 2.5 x 2.8 cm in AP, craniocaudal and transverse dimensions respectively. It involves the subcutaneous fat, right rectus sheath and right rectus abdominis muscle. It has a typical appearance of endometriosis; spiculate margins with central low signal and peripheral high signal foci, indicating active endometriotic tissue.

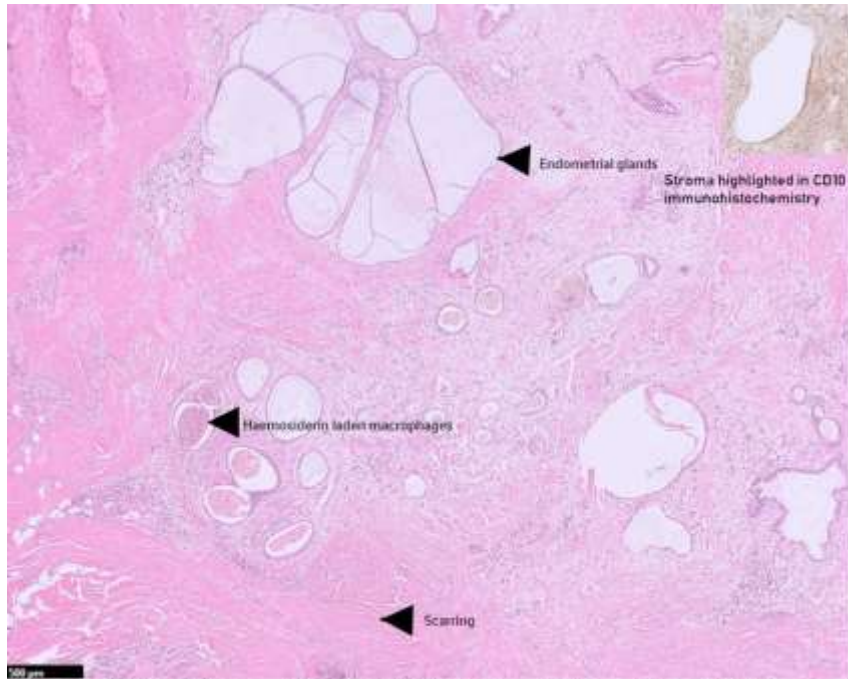


Figure 2: Histological features of endometriosis showing classic triad of endometrial glands, stroma (inset: stroma highlighted in CD10 immunohistochemistry) and haemosiderin laden macrophages.

Case three

A 33-year-old para 3 woman, BMI 28 presented with a painful lump on her Caesarean section scar from several months. She occasionally experiences severe pain, though there is no consistent pattern. The pain has sometimes coincided with her periods, which are heavy but typically not painful. Her obstetric history includes three Caesarean sections, 2 of them were emergency, with the most recent one occurring four years previously. She has no significant past medical and other surgical history. Her general and gynecological examinations were both normal. Upon abdominal examination, a 1 cm lump was detected at the Caesarean scar. Initial clinical suspicion was of a knot granuloma. An ultrasound examination revealed a superficial, heterogeneous, slightly irregular ovoid lesion measuring 0.8 x 0.6 x 0.9 cm, which was thought to be a sebaceous cyst.

The patient subsequently underwent excision of the lump. She was discharged the same day, and her postoperative course was smooth. Histopathology analysis demonstrated endometrial-type glands surrounded by endometrial-type stroma of the excised tissue confirming the diagnosis of scar endometriosis. Follow-up was conducted at 3 months post-surgery. The patient remained asymptomatic, with no signs of recurrence.

Discussion

Scar endometriosis is a condition that most frequently occurs after a Cesarean section specifically in the Pfannenstiel incision at the corners of the wound.⁷ The incidence of endometriosis after Cesarean section ranges between 0.03% and 0.45%, however, there is a significant increase in the incidence of scar endometriosis associated with the increased Cesarean section rates.⁸

While historical and recent prevalence data for scar endometriosis are limited and challenging to obtain, there is evidence suggesting that the incidence of this condition may be increasing. This trend is likely attributed to advancements in diagnostic techniques and heightened awareness among healthcare providers. Further research is needed to provide more comprehensive epidemiological data on scar endometriosis.

There are multiple theories proposed about the development of scar endometriosis. The cellular transport theory states that the pathophysiology of scar endometriosis involves endometrial tissue implanting into the incision, which later forms the surgical scar and subsequent endometrioma.⁹ Under certain hormonal and nutritional conditions, the cells proliferate. The coelomic metaplasia theory states that the metaplasia of the

surrounding tissue is responsible for the genesis of scar endometriosis. Hematogenous and lymphatic spread are also other proposed ideas for the development of surgical scar endometriosis.¹⁰

In our cases, two patients had similar surgical histories with pre-term Caesarean sections and came in late, around 10 years after their surgeries. Interestingly, none of them had been diagnosed with endometriosis before the histological confirmation. One of the patients faced a 4-year gap from when they came in to when they were diagnosed, mainly because of the delays caused by the COVID-19 pandemic.

The literature suggests that factors such as maternal obesity and preterm delivery might influence the risk of developing Caesarean scar endometriosis. Obesity is associated with increased postoperative complications, which may elevate the risk of scar endometriosis (Melamed et al., 2015). Additionally, preterm delivery can complicate surgical procedures, potentially contributing to the development of endometriosis (Loughnan et al., 2017). While direct evidence linking these factors specifically to scar endometriosis is limited, they are relevant considerations for understanding and managing this condition.

The characteristic clinical presentation of scar endometriosis is a triad of an abdominal mass at or near a surgical scar, cyclical pain, and a history of abdominal/pelvic surgery.¹¹ In endometriosis pain is the predominant symptom and can be cyclical or constant, and the severity is not related to the extent or stage of the disease.¹² So, in the case of scar endometriosis, pain isn't always cyclical. One of our cases had constant pain. The ectopic endometrial tissue can change like normal endometrium during the menstrual cycle in response to hormones. Two patients experienced increased pain and swelling during menstruation. Symptoms can be vague, causing delays in diagnosis or confusion with other conditions like suture granuloma or desmoid tumor.

The histological diagnosis is mostly microscopic and presents as a triad consisting of benign endometrial glands, stroma and haemosiderin laden macrophages. The stromal component is most variable, can be subtle, atrophic or sometimes the only component of so-called stromal endometriosis. Careful examination of scar tissue and low threshold for immunohistochemistry in cases showing any of these above-mentioned histological features help in the diagnosis, especially when clinically not suspected.

Conclusion

Our cases highlight the diagnostic and therapeutic challenges of scar endometriosis in patients with Caesarean section scars. We encourage healthcare professionals to consider scar endometriosis as a differential diagnosis in all patients who present with an abdominal lump near or at their scar, lump pain, and a history of abdominal or pelvic surgery, with or without known endometriosis. Clinical evaluation, imaging, and a high degree of suspicion are essential, with histopathological confirmation being key for an accurate diagnosis.

Scar endometriosis predominantly develops in women of reproductive age, particularly those with a history of Caesarean section or other abdominal surgeries. To potentially decrease the occurrence of scar endometriosis, interventions such as careful closure of the uterine and abdominal wall layers during surgery, minimizing the spread of endometrial tissue, and considering prophylactic measures during surgery could be explored.

While medical management can temporarily alleviate symptoms, surgical excision is vital for definitive diagnosis and treatment. A comprehensive surgical approach, including laparoscopic procedures if needed, can effectively address endometriotic lesions and provide lasting relief. Increased awareness and preventive strategies may help reduce the incidence of this challenging condition.

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