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An increasing trend of iatrogenic scar endometriosis after lower segment cesarean section

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ABSTRACT

Cesarean scar endometriosis is an uncommon disorder developed due to iatrogenic implantation of endometrial tissues in the cesarean incision site. The frequency of the scar endometriosis is assumed to increase because of the increasing trend of lower segment cesarean section in modern obstetric practice. Cesarean section might be a great risk factor for the development of scar endometriosis due to higher exposure of endometrial cells to the subcutaneous tissue during the procedure. Prevention of decidual cell contamination to the superficial abdominal layers may reduce the occurrence of iatrogenic scar endometriosis. We reported a 21-year old para 2 woman with a history of cesarean section 2.5 years back who presented with a small mass at the middle of the cesarean scar which was associated with pain and blood-stained discharge during menstruation. Based on clinical and USG findings the provisional diagnosis was made scar endometriosis and subsequently we managed her by wide local excision of the lesion followed by adjuvant hormone therapy. No recurrence of scar endometriosis was observed during her follow up period.

Keywords: Endometriosis; Scar; Cesarean; Iatrogenic Disease (Mesh terms)

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Introduction:

The growth of functional endometrial tissues outside the uterine cavity is termed as endometriosis. It is a gynecological disorder depended on the sex hormone¹.

Endometriosis is categorized as intra-pelvic and extra-pelvic endometriosis. Intra-pelvic endometriosis is developed in different pelvic structures like ovaries, uterosacral ligaments, pelvic peritoneum, recto-uterine pouch, cervix, vagina, and round ligament. Although extra-pelvic endometriosis is rare but may develop in gastrointestinal tract, respiratory tract, urinary tract, skin, brain, and abdominal wall².

In previous studies, the etiopathogenesis of scar endometriosis is described as, the direct implantation of endometrial tissues to the uterine scar, abdominal musculature or subcutaneous tissue during surgical procedures which eventually become active and spread under the influence of Oestrogen³.

Abdominal wall endometriosis is seen at the surgical incision site following obstetric or gynecological surgeries, commonly observed in cesarean section scar⁴.

During surgery, as the wall of the uterus is cut and opened, the endometrial cells may move to the pelvic cavity by amniotic fluid and may be transported to ectopic sites, such as on the skin, subcutaneous tissues, muscles of the abdomen, near the scar. Then the implanted endometrial cells at the new site have the capability to proliferate due to a highly vascularized environment and then the hormonal effects (mainly for oestrogen) allowing the implanted endometrial tissues to grow and to form a mass which leads to clinical symptoms⁵.

The causes of iatrogenic scar endometriosis (ISE) are mainly due to the longitudinal pattern of the abdominal vessels and the large dissection. During a Pfannenstiel incision, more capillaries are cut off than in a vertical incision, causing more blood loss. So the Pfannenstiel incision that is commonly used in the lower segment cesarean section (LSCS) is the most

commonly reported type for the occurrence of ISE; The endometrial cells require an adequate blood supply to grow on the ectopic sites, thus the angiogenesis plays an important role in the pathogenesis of endometriosis¹.

In previous literature, the incidence of abdominal wall endometriosis following the cesarean section is mentioned approximately 0.03% to 0.4%. The incidence is increased by up to 1.08% after hysterotomy^{2,4,6}. Prevalence of iatrogenic scar endometriosis is raised due to the recent increasing trend of cesarean section⁷.

Patients with cesarean scar endometriosis may present following the several months to years after the surgical intervention. The provisional diagnosis can be made if there is a tender palpable mass seen overlying the cesarean scar which may be associated with the secretion of blood during menstruation⁴.

Case: A 21-year old para 2 woman had a history of cesarean section 2.5 years back, presented to us with a painful swelling on the overlying skin of cesarean wound scar. She noticed the swelling around 1 month back which became tender during her last menstruation with blood stained discharge. Her previous obstetric course was uneventful, at term she had cesarean section due to fetal distress. On local abdominal examination, a healthy Pfannenstiel scar was seen with a small mass measuring around 1.5x1.5 cm in the middle of the scar (Figure 1). On palpation, the mass was found to be mild tender, firm feeling with restricted mobility. USG and doppler examinations of the abdominal wall soft tissue revealed a heterogeneous hypoechoic mass with echogenic shadow and vascular signals inside the lesion (Figure 2). The lesions showed the involvement of some superficial fibers of the fascia.

On the basis of the history, clinical and USG findings the provisional diagnosis was made scar endometriosis. We performed surgical excision of the suspected cesarean scar endometrioma with a 1 cm clear margin (Figure 3A & 3B). Histopathological analysis revealed endometrial glands and stroma associated with

evidence of hemorrhage in the fibrous scar (Figure 4A & 4B). Following surgery, we kept her on the combined oral pill for 3 months as

adjuvant therapy to avoid recurrence. No recurrence of scar endometriosis was observed during her follow up period.



Figure 1: Cesarean section scar with a small mass on overlying skin at the midpoint of the scar



Figure 2: Anterior abdominal wall showing an irregular hypoechoic lesion measuring 1.8x1.5cm and color doppler demonstrates Doppler signal inside the lesion

Discussion:

Cesarean scar endometriosis is an uncommon disorder developed due to iatrogenic implantation of endometrial tissues in the cesarean incision site. The implantation theory is not sufficient to explain the pathogenesis of ISE completely. The development of ISE may be related to the hereditary predisposition. Although The occurrence of ISE is commonly reported in Pfannenstiel type incision, the relationship between the CS incision type and the pathogenesis of ISE is not well described in literature¹.

Surgical scar endometriosis is commonly seen in abdominal skin and subcutaneous tissues in

comparison to muscle and fascia. In our case, we found that the endometrial tissues spread up to some superficial fibers of the facia. Other than the cesarean section, the scar endometriosis is observed after the gynecological surgeries also which include hysterectomy, tubal ligation, laparotomy for ectopic pregnancy, salpingectomy and episiotomy³.

The patients with cesarean scar endometriosis typically presented with a painful mass or lump on the abdominal wall or at the cesarean scar site. The mass is becoming more tender and sometime may associate with bleeding during menstruation⁸. Our patient also reported to us with the typical presentation.

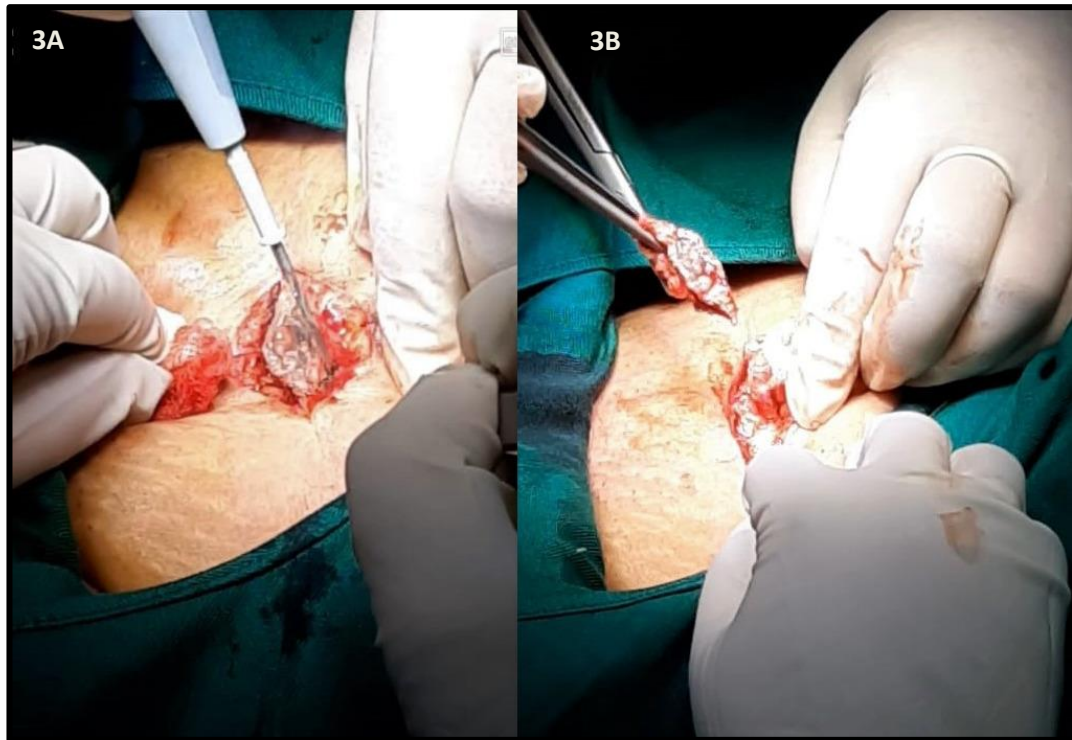


Figure: 3 A & 3B Gross photograph showing wide excision of the mass

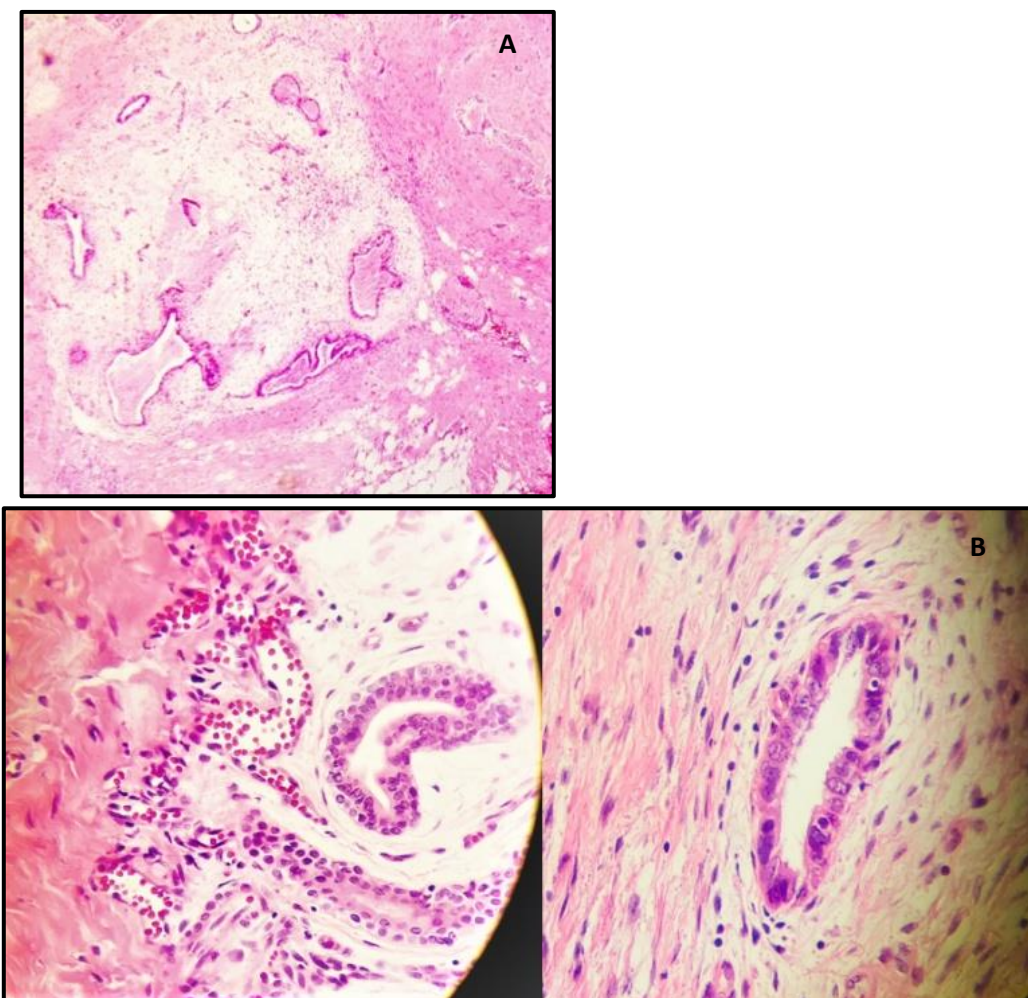


Figure 4: Histopathology A: 10X view of endometriosis showing endometrial glands and stroma (surrounding purple area); B: 40x close up view of the endometrial glands with endometrial stroma associated blood

The diagnosis of scar endometriomas can be challenging. These lesions need to be distinguished from a number of other lesions⁹. The differential diagnosis of ISE may include other causes of abdominal wall mass like desmoid tumor, hematoma, fibrosis, suture granuloma, keloid scar, nodular fasciitis, and incisional hernia^{3,7}.

After the preliminary clinical diagnosis of ISE, the further evaluation of the mass should be done by various imaging techniques like USG, CT or MRI. Imaging techniques are nonspecific in terms of final diagnosis, which is only achieved in 20-50% of cases, probably due to low clinical suspicion due to the non-specific nature of the symptoms and their late development¹⁰.

But by these investigation tools the location of the mass, size, volume and local extension can be determined which may be helpful for further management plan^{11,12}.

USG and MRI are the most accepted methods for the diagnosis of ISE. The typical USG features of SE includes a hypoechoic echogenic texture with internal scattered hyperechoic echoes^{8,11}.

MRI is considered the superior imaging modality for differentiating the glandular and fibrous components of the implanted endometrial tissue in an endometriotic lesion, and to exclude other differential diagnoses, as well as helpful in preoperative management plan⁷. We didn't perform MRI for our patient because our clinical suspicion and ultrasound finding was obvious for endometriosis.

In some studies authors suggested that FNAC can be the option for the definitive diagnosis of scar endometriosis prior to surgical intervention. On the contrary, in other studies the authors didn't encourage to use this technique as a diagnostic tool because with this procedure there is an increased risk of de-novo endometriotic implants at the puncture site, as well as organ injury if the diagnosis is uncertain^{6,8,11}.

Wide local surgical excision with 1 cm negative

margin is the most recommended treatment modality for the scar endometriosis. To repair the large defect after the excision polypropylene mesh should be used to reinforce the defect for the prevention of incisional hernia^{2,8}.

In previous studies authors have suggested that postoperative adjuvant therapy with GNRHa, OCP or aromatase inhibitor may be useful in symptomatic relief and recurrence of endometriosis⁷.

Following surgery, we started combined oral pill for our patient and continued till 3 months.

Histopathological analysis of the excised specimen is required for the Final diagnosis of ISE.

The presence of endometrial tissue can be confirmed if two out of the three following histopathological features are present, endometrial-like glands, spindled endometrial stroma or hemosiderin pigment either within macrophages or in the stroma, Histopathological examination reveals a mixture of different sized glandular structures that are capable of undergoing cyclical changes and epithelial cells lining the glands can range from cuboidal to columnar with relatively normal cytomorphology and are surrounded by a mucinous and edematous stroma⁷.

Regarding the prevention of Iatrogenic Scar endometriosis, in some studies authors have proposed a variety of recommendations on the basis of the implantation hypothesis. These recommendations include meticulous irrigation and pelvic lavage with saline before the closure of abdominal wall, to use separate sutures, needles, gloves and sponges during uterine and the abdominal wound closure and closure of the parietal and visceral peritoneum^{13,14}.

Conclusion:

The frequency of the ISE is raised because of the increasing trend of lower segment cesarean section in modern obstetric practice¹. CS might be a great risk factor for the development of scar endometriosis due to higher exposure of endometrial cells to the subcutaneous tissue

during the procedure¹⁵. Prevention of decidual cell contamination to the superficial abdominal layers may reduce the occurrence of ISE¹⁶. Early diagnosis of ISE and timely surgical intervention and excision of endometrioma is crucial because failure to perform the necessary treatment, or any delay in performing the treatment may have a detrimental effect on the quality of life of the patient⁸.

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