



## Case Report

# Fine-needle aspiration cytology of a cesarean scar endometriosis

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Received : 19-May-2017  
Revised : 22-Jun-2017  
Accepted : 08-Jul-2017

### ABSTRACT

Endometriosis is the presence of functioning endometrium outside the basement membrane of the uterine endometrium. It affects women of reproductive age and usually presents as a painful nodule over a period of 3 months to 10 years after surgery. Extrapelvic endometriosis is uncommon and more difficult to diagnose due to its variable presentation and is often confused with other surgical conditions. Fine-needle aspiration cytology (FNAC) is a rapid, cost-effective, and accurate diagnostic tool when making this diagnosis. Wide excision is the treatment of choice for scar endometriosis as well as for recurrent lesions. We present a case of scar endometriosis in a 30-year-old female who had undergone a cesarean section 2 years previously and was diagnosed by FNAC. A later histopathological examination confirmed the cytological diagnosis of scar endometriosis.

**KEYWORDS:** *Extrapelvic endometriosis, Functioning endometrium, Obstetric surgery, Reproductive age*

### INTRODUCTION

Endometriosis is the term used for the occurrence of endometrial tissue outside the basement membrane of the uterine endometrium and is a major cause of pelvic pain and reduced fertility [1]. The cervix, vagina, vulva, rectovaginal septum, ovary, fallopian tubes, uterine ligaments, appendix, small bowel, large bowel, bladder, ureters, pelvic peritoneum, hernia sacs, lymph nodes, kidney, skin, and even skeletal muscles, peripheral nerves, pleura, lung and nasal cavity can be involved in endometriosis [1]. Under microscopic examination, endometrial glands and stroma are seen and these are often embedded in a dense fibrous mass that exhibits signs of fresh and old hemorrhage [1]. Most cases of abdominal wall endometriosis occur spontaneously following gynecological or obstetric surgery [2]. Endometriosis affects 8%–15% of females of reproductive age group [3]. Fine-needle aspiration cytology (FNAC) is a fast and accurate method of making a diagnosis of endometriosis before surgery, and such an approach avoids errors when treating abdominal wall endometriosis scars [4]. Here, we present a case of scar endometriosis that was diagnosed by such cytology.

### CASE REPORT

A 30-year-old female presented on the 24<sup>th</sup> day of her menstrual cycle with a complaint of lower abdominal pain that had been present for 2 years on and off. There was an increase in the intensity of the pain when menstruating. The patient indicated a history that involved a cesarean section 2 years previously. On palpation, it was possible to identify a nodule, measuring about 3 cm × 2 cm, on the left side of the cesarean section scar. There

had been a fluctuation in the size of the swelling that corresponded with the patient's menstrual cycles. A clinical diagnosis of scar endometriosis was made [Figure 1a]. FNAC was performed using an aspiration technique, a 23-gauge needle and a 10 mL syringe. Air-dried smears were stained with Giemsa stain, while wet ethanol-fixed smears were stained with hematoxylin and eosin. The FNAC smears show monolayered sheets and loosely cohesive clusters of polygonal to oval epithelial cells with unremarkable chromatin, a moderate amount of cytoplasm and inconspicuous nucleoli. Occasional cytoplasmic vacuolation was also seen. A few clusters of fragments of spindle cells with a moderate amount of cytoplasm and elongated nuclei could also be identified. The background showed scattered hemosiderin-laden macrophages [Figure 1b-d and Figure 2a].

A gross examination of the nodules showed 3.0 cm × 2.5 cm × 1 cm of fibroadipose tissue and this was cut into sections; these were grayish yellow with a central grayish white to brown areas of fibrosis. Microscopic examination revealed a few endometrial glands that were irregularly dilated; these were surrounded by endometrial stroma containing foci of lymphomononuclear infiltrate and scattered hemosiderin-laden macrophages. Areas of fibrosis were also seen [Figure 2b-d]. A diagnosis of endometriosis was confirmed by this morphological examination.

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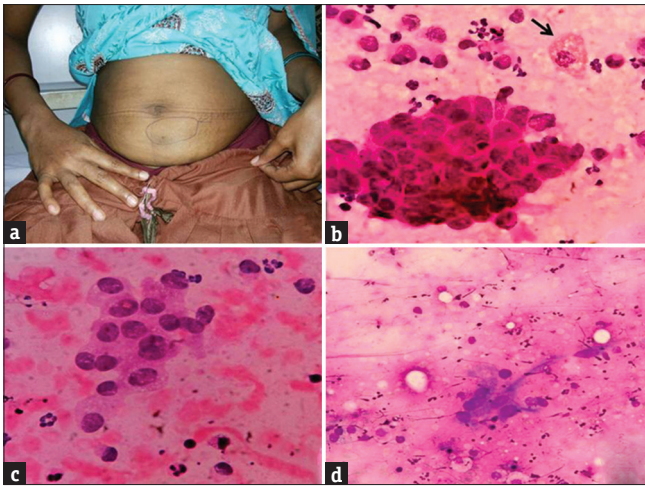
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DOI: 10.4103/tcmj.tcmj\_37\_17

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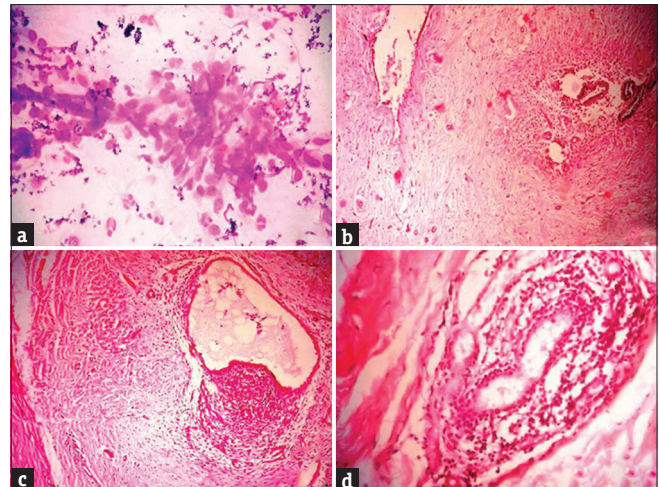
**How to cite this article:** Nigam JS, Omhare A, Sharma A. Fine-needle aspiration cytology of a cesarean scar endometriosis. *Tzu Chi Med J* 2017;29:232-4.



**Figure 1:** (a) Nodule, measuring about 3 cm × 2 cm, left side of the cesarean section scar. (b) Cluster of epithelial cells, together with hemosiderin-laden macrophages and the nuclei of inflammatory cells (H and E, ×1000). (c) Epithelial cells showing cytoplasmic vacuolation (H and E, ×1000). (d) Cluster of spindle-shaped cells with basophilic cytoplasm, together with few scattered epithelial cells (Giemsa ×400)

## DISCUSSION

Endometriosis will occasionally occur within a previous surgical scar and this mainly follows surgery such as a cesarean section, hysterotomy, hysterectomy, episiotomy, and tubal ligation [5]. The metastatic theory involves endometrial tissue being implanted at an abnormal location and is the most widely accepted theory to explain the development of endometriosis [6]. The other possible explanation is the metaplastic theory, in which endometrium directly arises from coelomic epithelium [6]. The incidence of scar endometriosis following a cesarean section ranges from 0.03% to 0.4% [3]. Medeiros *et al.* [4], Blanco *et al.* [7], and Horton *et al.* [8] found that the mean age at which scar endometriosis occurred was 30, 29.4, and 31.4 years, respectively. In the present case, the patient's age was 30 years and she had a history of cesarean section, which agrees well with the above studies. A total of 445 cases of abdominal wall endometriosis were reviewed by Horton *et al.*, and it was observed that 57% and 11% of cases showed endometriosis in scars after a cesarean section and after hysterectomy, respectively [8]. Pathan *et al.* and Blanco *et al.* also observed that scar endometriosis more commonly affected cesarean scars than hysterectomy scars [7,9]. The presence of a lump at the scar site, pain, a fluctuation in the size of the lump, bleeding, and the cyclical nature of the symptoms in parallel with menstruation are the main clinical presentations of scar endometriosis [3-10]. The cyclical nature of symptoms is pathognomonic; however, it may not be seen with all cases [3-10]. Imaging techniques are nonspecific in terms of diagnosis; however, ultrasonography of abdominal wall endometriosis may show cystic, multicystic, mixed or solid lesions or, even a hypoechoic lesion, below the skin layer [10,11]. The presence of endometrial glands, stromal cells, and hemosiderin-laden macrophages has been used as cytological clues when diagnosing endometriosis [3,10]. The cytological findings depend on the hormonal phase of the patient's menstrual cycle. The proliferative phase is characterized by cohesive sheets of uniform small cells and occasional



**Figure 2:** (a) Cluster of epithelial cells mixed with spindle-shaped cells (Giemsa ×400). (b) Endometrial gland and stroma embedded in a fibrous stroma (H and E, ×100). (c) Cystic dilated gland with surrounding spindle stroma in a fibrous stroma (H and E ×100). (d) Endometrial gland and stroma (H and E ×400)

nonatypical mitosis. These cells have scant cytoplasm, round to ovoid nuclei with unremarkable chromatin. In secretory phase, the cells gradually increase in size developing cytoplasmic vacuolations together with predecidual changes and an epithelioid appearance of stromal cells, which can cause diagnostic difficulties [3,10]. In the present case, the patient was on the 24<sup>th</sup> day of her menstrual cycle. The cytological smears were moderately cellular and showed epithelial cells with unremarkable chromatin, spindle-shaped cells, occasional cytoplasmic vacuolations, and these were accompanied by scattered hemosiderin-laden macrophages. Desmoid tumor, suture granuloma, fat necrosis, lipoma, nodular fasciitis, proliferative fasciitis, hematoma, abscess, sarcoma, and metastatic disease are included in the clinical differential diagnosis of scar endometriosis [3]. Desmoid tumors and fibrosis are less cellular with benign-looking mesenchymal cells. Suture granuloma shows nonspecific inflammation and foreign material with or without the granuloma. Fat necrosis shows adipose tissue fragments, foamy macrophages, and multinucleate giant cells. Nodular fasciitis shows pleomorphic cells in a myxoid background. Primary or metastatic malignancies show obvious neoplastic cells [3]. Endometrioid, or clear-cell carcinomas, sarcomas, and carcinosarcomas have also been reported in relation to endometriosis [2]. The treatment of choice is a local-wide excision of the lesion that may sometimes requires mesh placement; however, use of progestogens, oral contraceptive pills and danazol, will also give partial relief of the symptoms [5,11]. The possibility of malignancy should be kept in mind if there is recurrence. To prevent the occurrence of scar endometriosis, abdominal wall wounds should be clean thoroughly and irrigated vigorously before closure at the end of any obstetric and gynecologic surgery [5].

## CONCLUSION

Scar endometriosis is a relatively uncommon condition that usually presents as an abdominal lump; this is accompanied by symptoms that are the cyclical in nature and generally

parallel the patient's menstrual cycle. Obviously, in such circumstances, it primarily affects women of reproductive age. FNAC is a rapid and cost-effective diagnostic tool that allows a preoperative diagnosis of scar endometriosis and thus avoiding unnecessary errors when managing this condition.

#### Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient has given her consent for her images and other clinical information to be reported in the journal. The patient understands that her name and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

#### Financial support and sponsorship

Nil.

#### Conflicts of interest

There are no conflicts of interest.

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