ABSTRACT
Endometriosis is defined as the presence of a functioning endometrium outside the uterus. Abdominal wall endometriosis is a rare entity. Most of the abdominal wall endometriosis occurs in or around surgical scars following caesarean section or hysterectomy. We report a case of scar endometriosis following caesarean section and diagnosed by fine needle aspiration cytology (FNAC). Excision biopsy confirmed the FNAC diagnosis of scar endometriosis.

Key words: Abdominal wall endometriosis; FNAC, Scar endometriosis

Introduction
Endometriosis is defined as the presence of a functioning endometrium outside the uterus.[1,2] It is a common gynecological condition that affects up to 22% of all women, 8-15% of women of reproductive age and 6% of premenopausal women.[3,4] Most of the reported cases occurred in gynecologically induced abdominal or pelvic scars, including hysterectomy, episiotomy, caesarean section and laparoscopy.[2,4,5] It is extremely rare in a surgical scar, appearing in 0.1% of women who have undergone caesarean section.[5] Its clinical diagnosis is confused with suture granuloma, hematoma, abscess, sarcoma, desmoid tumor and metastatic malignancy.[2-5] We report a case of scar endometriosis in a woman who underwent caesarean.

Case Report
A 27-year-old (G1P1) female presented with mass of 2 years’ duration near a previous caesarean section scar that was gradually increasing in size. It was associated with cyclic pain during menstruation in the swelling and polymenorrhea. On examination, the nodule was 3 cm × 3 cm, well defined, firm, brown to black in color, tender on palpation and non-reducible. Ultrasound abdomen showed a nodule that was well defined and anechoic, and there was no other significant contributory finding. The clinical differential diagnosis was suture granuloma, hematoma, melanoma and desmoid tumor. The patient was then referred for fine needle aspiration cytology (FNAC).

Cytology
FNAC from the abdominal lump was carried out. Some smears were air dried and stained with Giemsa stain and some smears were fixed in 95% ethanol and stained with hematoxylin and eosin stain. The smears were cellular, consisting of epithelial and stromal fragments. The epithelial cell was arranged in monolayer sheets of polygonal cells with large, hyperchromatic nuclei and moderate amount of cytoplasm, with considerable nuclear overlapping. The stromal aggregates also showed crowded overlapping nuclei and scant admixed hemosiderin-laden macrophages; mild to moderate epithelial atypia was observed in this case [Figures 1 and 2]. Subsequent biopsy material revealed the characteristic histologic pattern of endometriosis [Figure 3]. Per-operatively, there was no evidence of endometriosis anywhere else. The patient was asymptomatic after 6 months of follow-up.

Discussion
The first case of scar endometriosis was reported by Meyer in 1903.[7] Most surgical reports indicate that pre-operatively,
the condition is often confused with other pathologic conditions such as incisional hernia, suture granuloma, abscess or lipoma. Majority of the reported cases have been observed in and adjacent to surgical scar following caesarean sections, hysterectomy, hysterotomy and, rarely, following surgeries on fallopian tube, appendicectomy, amniocentesis and episiotomy.[8]

Two theories concerning the pathogenesis have been proposed:
1. Metastatic theory that states that it is the transport of endometrial cells to adjacent location via surgical manipulations, hematogenous or lymphatic dissemination and
2. Primitive pluripotential mesenchymal cells undergo specialized differentiation and metaplasia into endometrial tissue (metaplastic theory).[3]

The interval between onset of symptoms in a patient and patient’s surgery varies between 3 months and 10 years. Clinically, the scar endometriosis present as a lump in the scar. Increasing in size of the lump, bleeding and skin discoloration with cyclical changes of menstruation are not characteristically seen in all cases; however, if present, they are pathognomonic of scar endometriosis.[9] As the nodule is firm, it can easily be diagnosed by FNAC[10] thus helping in differentiation from the metastatic disease, desmoids tumor, lipoma, sarcoma, cysts, nodular and proliferative fasciitis, fat necrosis, hematoma or abscess.[3,5]

Smears from endometriomas show varying cellularity comprising epithelial and spindle stromal cells, with variable number of hemosiderin-laden macrophages and inflammatory cells.[3] The presence of any two of the three components (endometrial glands, stromal cells and hemosiderin-laden macrophages) has been used for the cytological diagnosis of endometriosis.[3] The cytological features of scar endometriosis are related to cyclical hormonal changes. In the proliferative phase, the epithelial cells form cohesive sheets of uniform small cells with scant cytoplasm, round to ovoid nuclei with bland chromatin and occasional non-atypical mitosis. During the secretory phase, the cell size gradually increases with cytoplasmic microvacuolations. The stromal cell shows abundant cytoplasm and pre-decidual change with an epithelioid appearance, causing diagnostic difficulties. The background is generally sanguineous, contains inflammatory cells and histiocytes (with/or without hemosiderin). Squamous, tubal and mucinous metaplasia and isolated cases of malignant transformation in scar endometriosis have been reported.[3]
The lesions in the differential diagnosis of mass associated with abdominal scar have well-defined cytological features. Desmoid tumor and fibrosis show less cellularity with benign-appearing mesenchymal cells. Suture granuloma shows non-specific inflammation with or without granulomatous elements and foreign material. Fat necrosis shows foamy macrophages, inflammatory and multinucleated giant cells, fragments of adipose tissue and no epithelial cells. Nodular fascitis shows myxoid background and pleomorphic cells. Smears from primary or metastatic malignancies show hypercellularity with frankly neoplastic cells.[9]

The imaging modalities are non-specific but useful in determining the extent of the disease and planning of operative resection, especially in recurrent and large lesions.[10] Thus, FNAC is a promising tool for rapid and accurate pre-operative diagnosis. The treatment of choice is wide local excision.[3,10] Abdominal wall musculature involvement requires en bloc resection of myofascial elements.[11]

Scar endometriosis is a rare condition that affects women of reproductive age because of typical clinical history and clear-cut cytomorphological features. Cytodiagnosis of scar endometriosis was rendered without any difficulty in this patient. Thus, FNAC is an inexpensive, rapid and reliable method to conclude the diagnosis before surgery.

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