

**Abdominal Wall Endometriosis Diagnosed by Fine Needle  
Aspiration: A Report of Two Cases**

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## **Abstract**

Abdominal wall endometriosis is usually preceded by obstetrical operations and occasionally can be spontaneous. The diagnosis can be suspected clinically when there is systemic endometriosis or cyclical pain; otherwise it is difficult to differentiate it from other abdominal tumors and non-neoplastic conditions. Fine needle aspiration is an extremely valuable and safe tool for pre-operative evaluation of abdominal wall endometriosis, as it usually presents as a cutaneous/ subcutaneous mass. We are presenting two cases of abdominal wall endometriosis. One was associated with systemic endometriosis and the second was spontaneous. A histological confirmation was present in both cases. The reported cases emphasize the need to include endometriosis in the differential diagnosis of abdominal wall mass in a female and to describe the cytological features of endometriosis as well as the common pitfalls such as other benign and malignant abdominal wall tumors.

## **Introduction**

Endometriosis, a common disease during reproductive age, is defined by the presence of endometrial tissue outside the endometrium and myometrium<sup>1</sup>. It can involve a variety of extrauterine locations and is less commonly found cutaneously/subcutaneously<sup>1</sup>. Most of the reported cases of abdominal wall endometriosis occur within surgical scars following gynecologic or obstetric operations, and a few spontaneous cases have been described<sup>1,2</sup>. It usually produces firm, palpable nodules which must be evaluated and differentiated from other benign and malignant abdominal wall tumors. Effective utilization of fine needle aspiration cytology can offer an accurate, cost-effective and safe pre-operative diagnosis of endometriosis.

## **Clinical Summaries**

### **Case1**

A 35 year old female known to have ovarian endometriosis presented with an abdominal mass measuring 6cm in maximum diameter at the site of her previous cesarean scar. She had two cesarean sections, 7 and 5 years ago, due to severe preeclampsia. Clinically, abdominal wall endometriosis was suspected. Fine needle aspiration was performed for confirmation and was followed by surgical excision.

### **Case 2**

A 32 year old female, previously healthy, presented with a lower abdominal wall mass measuring 3cm in maximum diameter. There was no history of endometriosis or previous operations, including gynecological procedures. After obtaining the results of fine needle aspiration, the patient underwent complete surgical excision of the mass.

## **Cytological and histological features**

The fine needle aspiration of both cases showed a biphasic component, composed of stromal fragments and epithelial sheets (Fig1). The epithelial clusters were arranged in a honeycomb pattern, contained round to oval nuclei and were well spaced. No nuclear pleomorphism, hyperchromasia or mitotic figures were noted (Fig 2A&B). The scattered stromal fragment was formed of haphazardly arranged bland fusiform to spindle cells (Fig 3). The background showed fibrofatty fragments and a few scattered inflammatory cells without pigment laden histiocytes or necrosis. The histology sections of both cases showed endometrial glands surrounded by stroma and embedded in fibrous connective tissue (Fig 4A). Extensive decidualization of the stroma was noted in the second case (Fig 4B).

## Discussion:

Isolated abdominal wall endometriosis is rare (up to 4%), while associated pelvic endometriosis was found in 26% of cases of scar endometriosis<sup>3,4</sup>. Most of the reported abdominal wall endometriosis occur at the site of surgical scars of previous gynecological or obstetrical operations<sup>3</sup>. Some authors found that mid-trimester hysterotomy is the most common procedure performed before the development of scar endometriosis<sup>4</sup>. A few reports have described spontaneous abdominal wall endometriosis without a previous history of operations<sup>5</sup>.

Several theories have been raised behind the pathogenesis of endometriosis: implantation theory, direct extension theory, coelomic metaplasia theory (metaplasia of the peritoneum), induction theory (the sloughed endometrium produces a substance that forms endometriosis), lymphatic and vascular metastasis theory and composite theory<sup>6</sup>. Most authors favor implantation and induction theories for abdominal scar endometriosis. In induction theory, the product of the sloughed endometrium can induce the formation of endometriosis, though the viability of the sloughed material is not a requirement<sup>6</sup>. In implantation theory, the viability and ability of the sloughed endometrium to implant is important<sup>6</sup>. This theory is supported by a greater frequency of endometriosis after abdominal hysterotomy than cesarean section, suggesting that the late pregnancy decidua has a lower ability to implant<sup>1,4</sup>. Lymphatic spread has been suggested for spontaneous endometriosis based on the demonstration of lymphatics between the pelvis and umbilicus<sup>1</sup>.

Clinically, endometriosis can mimic incisional hernia, suture granuloma, hematoma and other abdominal tumors (discussed later)<sup>7</sup>. Pre-operative clinical diagnosis can be suggested in patients presenting with a cyclical, painful abdominal mass; otherwise it is difficult to make a specific diagnosis<sup>3</sup>. The radiological findings of endometriosis are not specific, and a definitive diagnosis can only be made by histological or cytological evaluation<sup>8</sup>.

Fine needle aspiration of the abdominal wall endometriosis, which is usually cellular, shows two distinct populations: sheets of epithelial cells and stromal fragments<sup>9,10</sup>. The stromal cells have oval to spindle nuclei without atypia and capillary vessels that may cross the stromal fragment. The epithelial component is composed of sheets with evenly spaced cells forming a honeycomb pattern or tubular structure with peripheral palisading cells. The nuclei show a normal N/C ratio, fine chromatin and visible small, central nucleoli. The background may show pigment laden macrophages and inflammatory cells<sup>9</sup>. Decidual changes of stromal cells have been described as large, plump cells in a myxoid background<sup>11</sup>. The pattern of smears obtained from cystic endometriosis (i.e. an ovarian cyst) is somehow different from solid lesions (i.e. abdominal wall)<sup>9</sup>. The former usually yield a hypocellular smear and lack the stromal component, which makes the diagnosis more difficult<sup>9</sup>. Immunocytochemical study of the cell block may help to establish the diagnosis when CK7 is positive in the epithelial sheets, CD 10 is positive in the stromal cells and vimentin is positive in both components<sup>9</sup>.

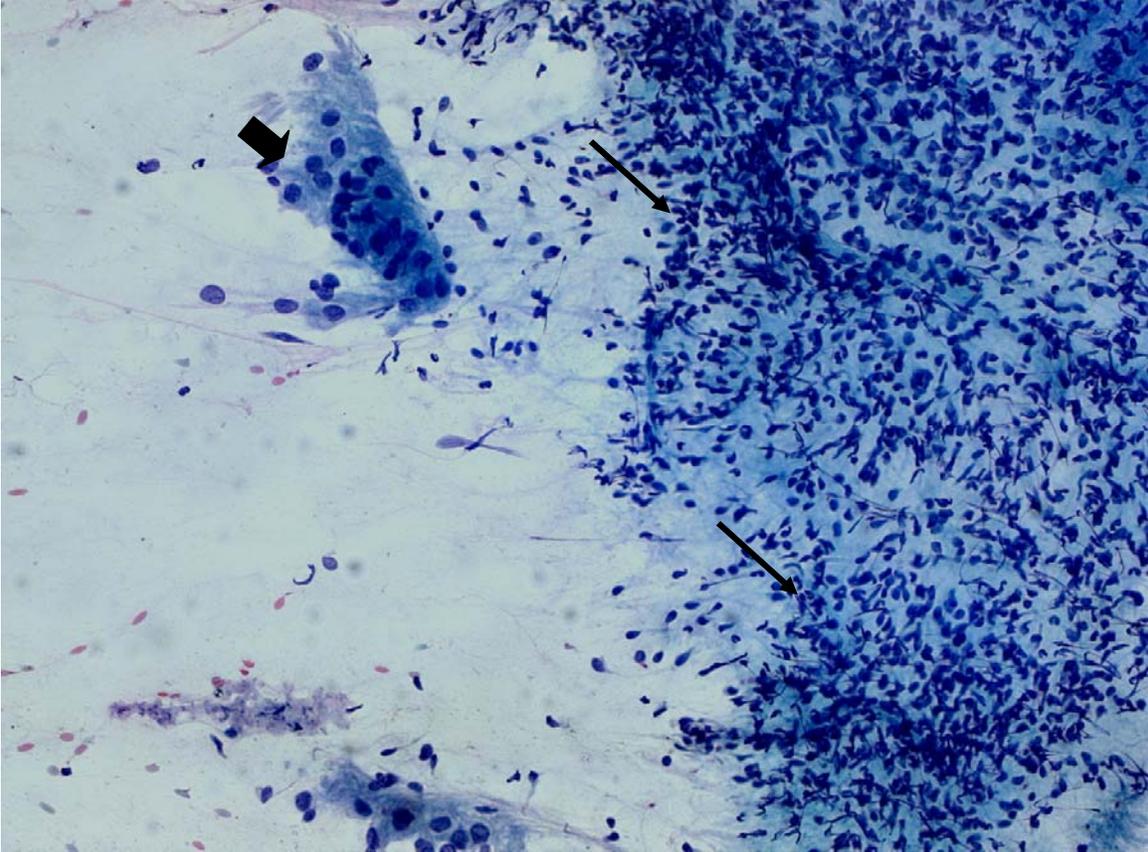
The glands within endometriosis can undergo metaplastic changes such as tubal (ciliated), squamous, mucinous (endocervical –type cells rarely with goblet cells)<sup>1</sup>, making the diagnosis more challenging. Rarely, the gland may exhibit an Arias-Stella reaction during pregnancy<sup>1</sup>.

The differential diagnosis of abdominal wall endometriosis includes reactive lesions, benign and malignant neoplasm, whether primary or metastatic. The category of reactive lesions includes scar, fat necrosis, suture granuloma, nodular fasciitis, proliferative fasciitis and proliferative myositis<sup>7,11,12</sup>. The latter three conditions are usually presented with short durations of symptoms, small size lesions and are rapidly growing<sup>13</sup>. Fine needle aspirations of these conditions produce hypercellular to moderately cellular smears composed of plump spindle cells containing round to oval nuclei with fine chromatin and smooth nuclear borders, along with basophilic cytoplasm<sup>13</sup>. Additional ganglion – like cells with prominent nucleoli are noted; also, frequent mitotic figures (but no atypical mitoses<sup>13</sup>) may be present. The benign tumors that are considered in the differential diagnoses are desmoid tumors and intramuscular myxomas<sup>11</sup>. Both conditions yield a hypocellular aspirate, lack the epithelial component of endometriosis, and present with bland spindle cells in desmoid tumor<sup>11,14</sup>. Intramuscular myxomas will show bland stellate cells in a myxoid background<sup>15</sup>. To exclude primary soft tissue sarcomas, one should consider clinico-radiological correlation. High grade sarcoma usually produces a cellular smear with atypical, bizarre spindle cells, atypical mitoses and multinucleated giant cells<sup>11,15</sup>. Metastatic adenocarcinoma is another pitfall and can be excluded by the bland cytonuclear morphology of the glandular component of endometriosis<sup>14</sup>. Metastatic carcinosarcoma is also in the differential diagnosis due to the presence of biphasic components (carcinoma and sarcoma); however, the presence of a high nuclear grade in both components excludes the endometriosis<sup>2,15</sup>.

Fine needle aspiration provides a safe and effective method for evaluation of abdominal wall endometriosis that should be differentiated from other benign and malignant tumors.

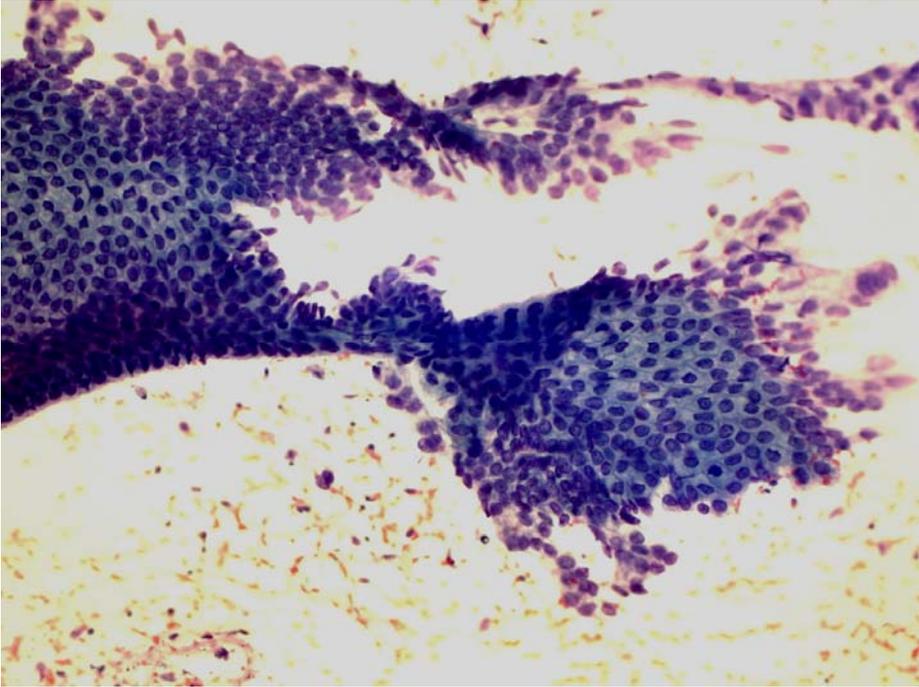
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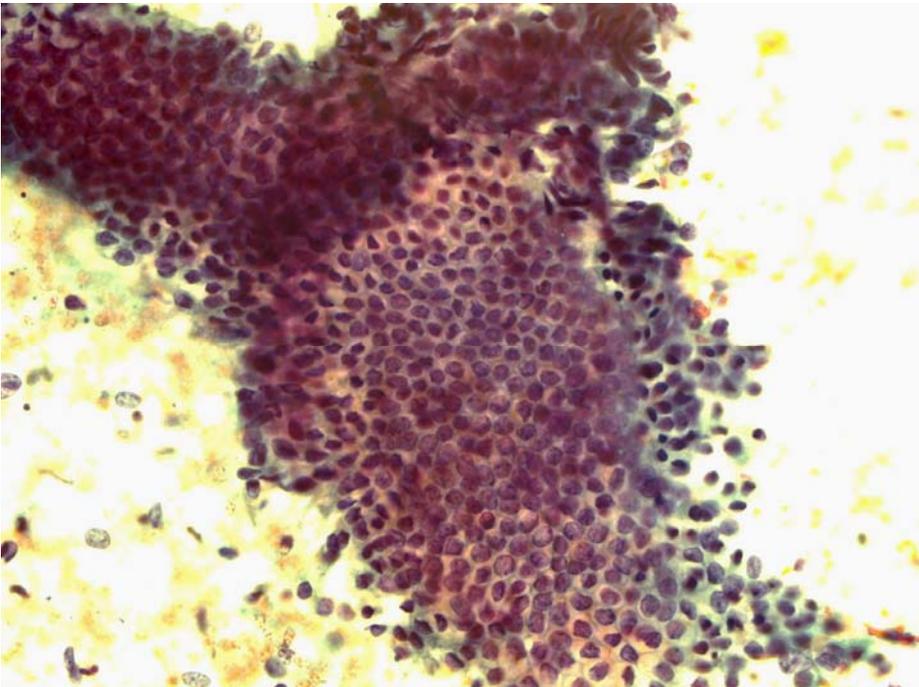


**Figure 1:** A smear showing both the stromal and epithelial components. The stroma formed of oval to spindle cells arranged haphazardly (long arrow) and a cluster of epithelial component (short arrow) (Pap stain, X20).

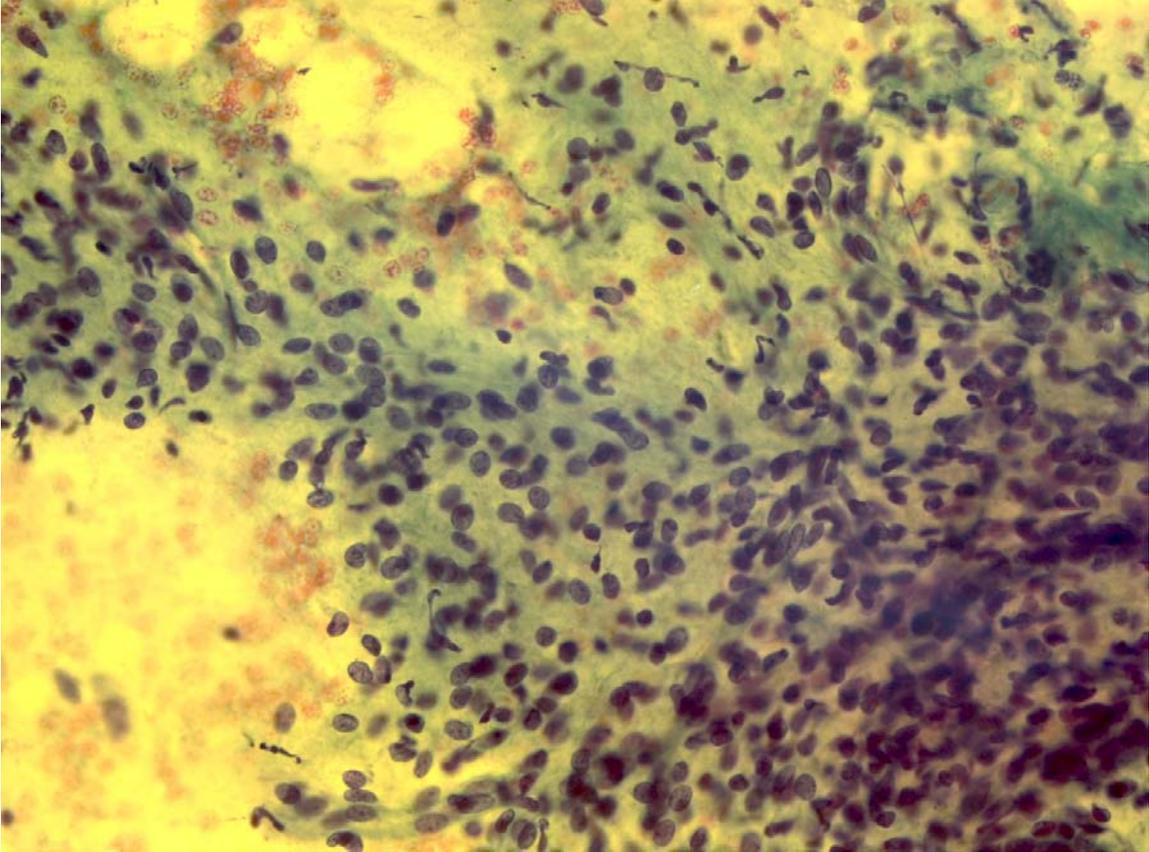
2A



2B

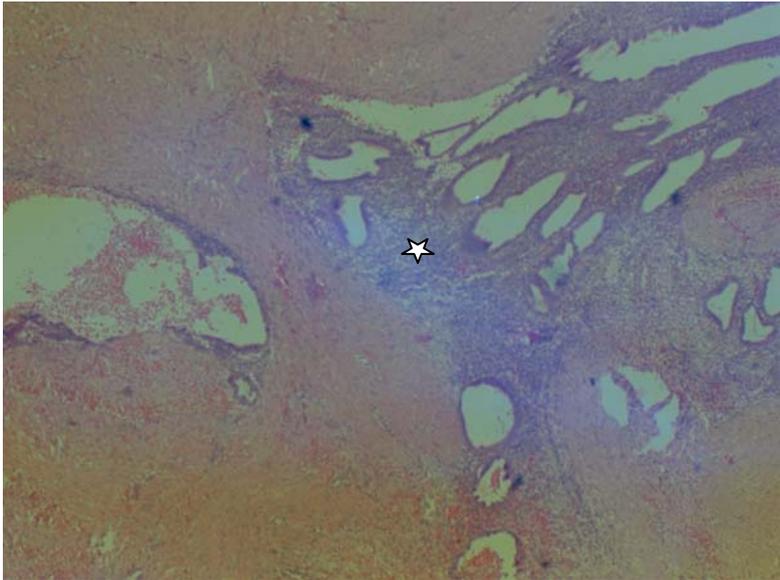


**Figures 2(A &b):** The epithelial clusters showing orderly spaced nuclei arranged in honeycomb pattern. No nuclear pleomorphism, coarse chromatin or prominent nucleoli. No mitoses are visible (Pap stain; A X20. B X 40)

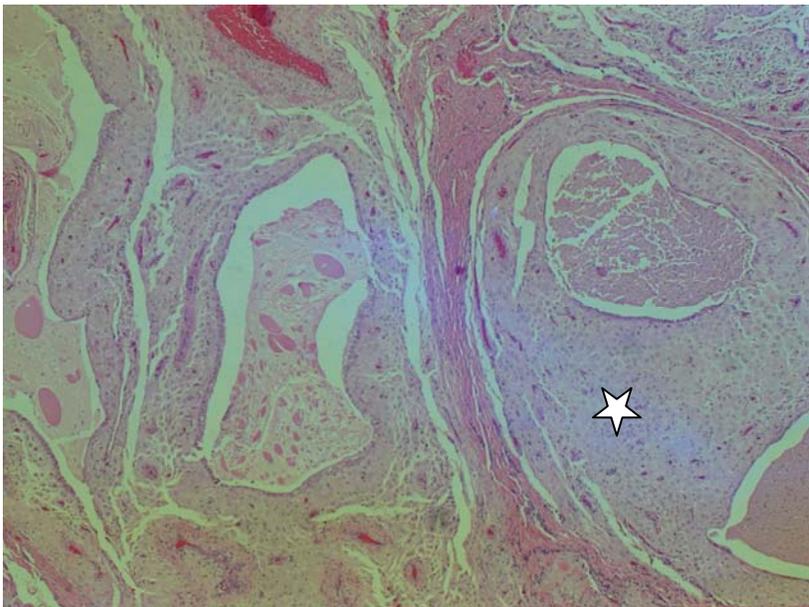


**Figure 3:** A stromal fragment composed of bland oval to spindle cells and arranged haphazardly. No nuclear atypia or mitoses are visible (Pap stain, X40).

4A



4B



**Figures 4(A&B):** The histological sections of excised endometriosis. A. The endometrial glands surrounded by endometrial stroma (\*asterisk) and present within fibromuscular tissue. B. Note the extensive decidualization of the stroma in the second case (\*asterisk)(H&E, x10)