

## Subcutaneous Inguinal Mass

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A 21-year-old white female presented to the emergency department with intermittent right lower quadrant pain associated with a palpable nodularity that has waxed and waned in size and tenderness over the past year. The lesion seems to be more prominent around the time of her menses. Her symptoms significantly worsened over the past 3 days with associated nausea and vomiting. She denies any radiation of the pain. Further denies dysuria, constipation, diarrhea, or significant dysmenorrhea otherwise. The patient's past medical history is significant only for an uncomplicated Caesarian section delivery 6 year's prior (G1, P1). Prior to her presentation to the emergency department, she did not use any type of intervention.

Physical exam revealed the patient to be afebrile, with stable vital signs, and in no acute distress. Abdominal evaluation revealed a small palpable subcutaneous mass with associated tenderness, approximately 1cm x 1cm in her right inguinal region with remainder of exam otherwise unremarkable. Laboratory evaluation included a urine pregnancy test, a complete metabolic panel, complete blood count, and screening for Sexually Transmitted Infections – all of which were unremarkable. An ultrasound revealed a heterogeneous 1.3 cm x 0.6cm x 0.8 cm mass deep within subcutaneous tissue near proximal right femur (Figure 1). Radiology recommended that she undergo repeat ultrasound in two weeks to evaluate for interval change and if persistent, consider fine needle aspiration (FNA) versus excision biopsy. She was given naproxen and ondansetron with recommended follow-up with her primary care physician.

Repeat ultrasound found the mass to be persistent with no appreciable interval change. An abdominal pelvic CT scan was performed which revealed a 3.8 x 3.9 cm right adnexal mass (Figure 2) and incidental note of multiple bilateral basilar 4-6 mm pulmonary nodules were noted with recommended 6 month follow up for surveillance (Figure 3). She underwent excision of mass from right lower abdominal wall under general anesthesia without any complications (Figure 4). The pathology report revealed yellow to pink fibro-fat tissue with cystic spaces, some filled with blood (Figure 5).

### QUESTION:

What is the most likely diagnosis?

- A. Endometrioma
- B. Epidermal Inclusion Cyst
- C. Lipoma
- D. Lymphadenitis
- E. Seroma

FIGURE 1:

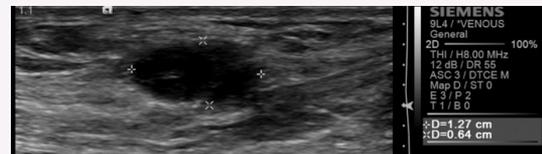


FIGURE 2:

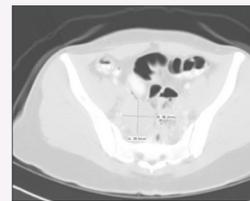


FIGURE 3:



FIGURE 4:



FIGURE 5:



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## ANSWER

### What is the most likely diagnosis?

The correct answer is:

A) Endometrioma

## DISCUSSION

An Endometrioma is a well circumscribed mass of uterine mucosal tissue outside of the uterus and is a form of endometriosis. Endometriosis is a broad term that describes extra-uterine growth of mucosal uterine tissue. Endometriomas have been described in several organ systems including lungs, gallbladder, central nervous system, small and large bowel, kidney, bladder, extremities, abdominal wall and peritoneum.<sup>1,2,3,4</sup> One of the most common presentations (as in our case) is abdominal wall endometriosis (AWE), which typically presents as a palpable abdominal mass that is more painful around menses. Typically these occur subsequent to surgeries such as Cesarean sections, though there have been cases of abdominal wall endometriomas in women who have had no surgeries.<sup>2,5</sup> The most common presentation is in the rectus abdominis muscle following a cesarean section.<sup>2,6</sup> 96% of cases occur within the pelvic cavity.<sup>7</sup> For this reason, there was a high degree of suspicion for the larger intra-pelvic mass found on CT, though this was later determined to be an ovarian cyst which completely resolved upon follow up imaging. Our diagnostic approach began with ultrasound to help better characterize the lesion (solid or cystic) and to better help guide further work up. Although fine needle aspiration was recommended for tissue analysis, the performing surgeon elected to do excisional biopsy for greater tissue yield.

Risk factors for endometriosis include decreased BMI, menorrhagia and dysmenorrhea. Exercise may be protective against endometriosis.<sup>3</sup> The exact cause of endometriosis is not well understood and several differing theories exist. Common concepts include retrograde menstruation involving viable endometrial cells with subsequent adhesion, implantation, and proliferation within the peritoneum as well as hematogenous and lymphatic metastasis.<sup>6,8</sup> Chronic abdominal pain and infertility are potential outcomes of endometriosis.<sup>2,5</sup> This case illustrates that endometrioma is an important diagnosis to consider with all abdominal wall masses in women of reproductive age. As noted above, one of the most common extraperitoneal sites is the thorax. For this reason the incidental pulmonary nodularities observed on CT will be followed up with repeat imaging in 6 months.

Epidermal Inclusion Cyst, also referred to as epidermoid cysts, epidermal cysts, or, improperly, "sebaceous cysts," are the most common of cutaneous cysts and can occur anywhere on the body. They typically present as skin-colored dermal nodules, often with a clinically visible central punctum ranging from a few millimeters to several centimeters in diameter. Infected, fluctuant cysts tend to be larger, more erythematous, and more painful than sterile inflamed cysts, although an intense inflammatory response to cyst rupture may also present as a fluctuant nodule.

The cyst wall consists of normal stratified squamous epithelium derived from the follicular infundibulum. The cyst may be primary or may arise from the implantation of the follicular epithelium in the dermis as a result of trauma or comedone. Lesions may remain

stable or progressively enlarge. Spontaneous inflammation and rupture can occur, with significant involvement of surrounding tissue. There is no way to predict which lesions will remain quiescent and which will become larger or inflamed. The diagnosis of epidermoid cyst is usually clinical and can be confirmed by histologic examination. The cyst itself is freely movable upon palpation. The cavity is filled with laminated layers of keratinous material. In ruptured cysts, a foreign-body inflammatory granulomatous reaction due to the release of the cyst content into the dermis may result in the formation of a keratin granuloma.<sup>9,10,11,12</sup>

Lymphadenitis refers to inflammation or infection of a lymph node, can be found anywhere on the body. Lymphadenitis occurs when the glands become enlarged by inflammation in response to bacteria, viruses, or fungi. The swollen glands are found near the site of an infection, tumor, or inflammation. Lymphadenitis can range from feeling rubbery to fluctuant depending on the underlying components.<sup>13,14,15</sup> Most commonly, the etiology is bacterial and can include staph and group A strep. MRSA should be considered in those with recent hospitalization or occupational exposure. Patients with a poor response to initial antibiotic therapy may require needle aspiration or incision and drainage of the abscess, with subsequent culture for bacterial diagnosis. Viral lymphadenitis can be due to adenovirus, rhinovirus, enterovirus, or EBV.<sup>16,17</sup>

Seroma, or a collection of serous fluid most commonly seen after surgery or after a trauma. Because it contains no or very little blood and no purulent material, it is different from a hematoma or an abscess.<sup>18</sup> They are formed as plasma and other serous fluid collects at the site of tissue removal or trauma. The fluid collects at the site of the scar tissue causing pain, discomfort or an esthetically displeasing lesion. They are usually diagnosed clinically, but can be seen as fluid collections on CT or ultrasound.<sup>19</sup>

Lipomas are a collection of adipocytes, or fat cells. These are benign tumors and are the most common soft tissue tumor. Simple lipomas are encapsulated masses made up almost entirely of fat cells.<sup>20</sup> Occasionally, they can contain other structures including blood vessels, muscle fibers and fat necrosis. While most are subcutaneous, occasionally, about 1% of the time, they will be considered deep meaning they will be found deep to the fascia and muscles. These should be treated as more suspicious as they could be liposarcomas. Also, rarely, lipomas can infiltrate surrounding tissues. When this occurs, they are referred to as intramuscular lipomas.<sup>21</sup> On physical exam, they are seen as soft, painless, subcutaneous nodules found most commonly on the trunk and upper extremities. Identified clinically, but appear as a well-circumscribed lesion with homogenous characteristic of fat surrounded by a thin capsule with MRIs being the preferred imaging to evaluate them, especially to evaluate atypical features which could indicate liposarcoma. When there are no abnormal findings, MRI is 100% specific in diagnosing lipomas.<sup>22</sup> In general, no treatment is required for these as they are benign. However, if abnormalities are seen on imaging, surgical resection is necessary. Recurrence is possible and seen in 4-5% of cases.<sup>21</sup>

Though not specifically covered in our case, other important considerations as part of a thorough differential diagnosis include: neuroma, suture granuloma, hernia, desmoid tumor, and sarcoma.<sup>24, 25, 26, 27</sup>

**AUTHOR DISCLOSURE**

No relevant financial affiliations.

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