Spigelian Hernia Including the Urinary Bladder: A Rare Potential Cause of Surgical Complication

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ABSTRACT

Spigelian hernia is a rare type of anterior abdominal wall hernia. While it is itself very rare, seeing urinary bladder in this hernia is even rarer. Here, in this case, we specifically illustrate a rare case of Spigelian hernia including the urinary bladder, diagnosed with computerized tomography.

CASE REPORT

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A 54-year-old obese female with comorbidity presented to the emergency department with week-long symptoms of severe, sharp, right lower quadrant pain with variable severity. Right lower quadrant tenderness with no evidence of rebound and guarding was revealed during the physical examination. Laboratory results were unremarkable. She had a history of an umbilical hernia repaired with mesh 4 years before.

Since there was clinical suspicion of acute appendicitis, contrast-enhanced computed tomography (CT) was requested. Multiplanar CT images showed urinary bladder extending through a narrow-lipped hernia orifice in the right lower quadrant. A 3 cm defect located between the anterior rectus and oblique muscles was detected. The hernia sac was contained within the aponeurosis of the external oblique muscle and the hernia was consistent with interstitial Spigelian hernia (Figure 1 a, b). The hernia sac was measured to be 10 cm and contained mesenteric fat; the right anterior corner of the urinary bladder without the involvement of bowel. The herniated fat showed mild stranding (Figure 2 a, b).

The hernia sac was reduced manually. The patient was treated conservatively with analgesia, anti-inflammatory medication, and fluid management. The patient was discharged from the hospital having made a satisfactory recovery following the conservative management. The planned treatment was an elective laparoscopic repair, but the patient did not attend for follow-up.

DISCUSSION

Herein we report a rare case of Spigelian hernia including the urinary bladder, diagnosed with CT.

Etiology & Demographics:

Spigelian hernia, also called lateral ventral hernia, is seen in only ~1% (range 0.1– 2%) of ventral hernias, making it a rare type of anterior abdominal wall hernia. It is seen most frequently in the fourth to seventh decades with a slight female predominance. Spigelian hernia occurs in the defects of the anterior abdominal wall along the semilunar line. Usually, the hernia contains omentum or small bowel [1,2]. Although these

hernias are uncommon, they have a significant rate of bowel or organ incarceration [3,4]. While it is itself very rare, seeing urinary bladder in this hernia is even rarer. To the best of our knowledge, only a very small number of cases describing Spigelian hernia containing urinary bladder have been reported in the literature so far [5,6].

Clinical & Imaging Findings:

Spigelian hernias can be classified into two groups: a) interstitial hernias, which are located below the major oblique aponeurosis; and b) subcutaneous hernias, which cross the major oblique aponeurosis and are thought to be the consequence of rupture. Most of them contain omentum, small intestine, or colon; however, the hernia sacs have been reported to contain stomach, gallbladder, a hepatic lobe post-cholecystectomy, Meckel's diverticulum, ovaries, and appendix [7].

Spigelian hernia can be also classified as congenital and acquired. Perforating vessels are thought to weaken the Spigelian fascia, and once a small amount of mesenteric fat enters that space a hernia gradually forms. Like other hernias, Spigelian hernia may also be related to increased intra-abdominal pressure and stretching in the abdominal wall. The main causes are obesity, multiple pregnancies, previous surgery or scarring, chronic cough, ascites with multiple paracenteses, and weightlifting. Prior abdominal surgery, placement of drains, or laparoscopic ports are also thought to be strong risk factors [4,8,9].

Clinical presentation depends on the content of the hernia sac and the hernia type. Although the most common symptom is pain, there is no typical pain for Spigelian hernia. Typically, omentum and bowel protrude through the defect and these hernias have a high prevalence of incarceration. A diagnosis of Spigelian hernia is often made by imaging modalities. CT provides the exact location and contents of the hernia. Ultrasonography, herniography, and magnetic resonance can also be used in the diagnosis [10].

Differential Diagnoses:

Our patient was a 54-year-old woman with risk factors including obesity, multiple pregnancies, and previous surgery. In line with the current literature, we think her hernia may have been related to prior pregnancy, obesity, and laxity of ligament with aging.

Unless characteristic symptoms are present, if the interparietal location has no obvious mass on inspection or palpation then the clinical diagnosis is difficult. On the other hand, patients may present with a palpable mass or tenderness. Generally, incarceration or strangulation are the first clinical signs due to the narrow or rigid neck of the hernia around the defect [11].

A rare cause of pain in the right-lower quadrant is a Spigelian hernia. Differential diagnoses of a Spigelian hernia involving urinary bladder include appendicitis, rectus sheath hematoma, soft tissue masses in the abdominal wall, diverticulitis, omental infarction, and epiploic appendagitis (see Table 1).

Appendicitis

Appendicitis is inflammation of the vermiform appendix and is associated with localized pain, tenderness, leukocytosis, fever, nausea, and vomiting. An ultrasound (US) is the first modality of choice for the diagnosis of acute appendicitis. US findings may include a non-compressible, a dilated appendix (> 6 mm), a single wall thickness of ≥ 3 mm, the appearance of a target sign, and an increased echogenicity of periappendiceal fat, and appendicolith. Computerized tomography (CT) scan can offer greater sensitivity than US when diagnosing, so a complementary CT scan may be performed when the appendix is not visible on the US. The main CT findings for acute appendicitis include a dilated appendix with distended lumen and a thickened and enhancing wall, periappendiceal inflammatory changes, and appendicolith [7].

In the case of abdominal wall masses and mass-like lesions, US is usually regarded as a first-line imaging modality.

Rectus sheath hematoma

Rectus sheath hematoma results from an accumulation of blood within the rectus sheath. In this condition, CT shows heterogeneous fluid collection; US shows a low echogenicity collection in acute hematomas or possible calcification/septa formation in chronic hematomas.

Abdominal wall lipoma

The abdominal wall lipoma appears as well-circumscribed, usually encapsulated superficial soft masses, and is of a variable echogenicity when compared with the surrounding subcutaneous fat on US. On CT imaging, these masses appear as low-attenuation masses or dense fat masses in a thin capsule.

Desmoid tumor

Desmoid tumors are benign, non-inflammatory fibroblastic tumors of the abdominal wall. On CT, most desmoid tumors are solid or partially solid homogeneous masses, with attenuation similar to that of skeletal muscle. US shows a hypoechoic mass, with internal vascularity on a Doppler US [12].

Right-sided colonic diverticulitis

Right-sided colonic diverticulitis is a rare condition, and its clinical presentation mimics that of acute appendicitis. CT is the preferred imaging modality for the diagnosis of diverticulitis. CT findings of acute diverticulitis include diverticula, the stranding of pericolic fat, focal thickening of the colonic wall, and enhancement of the colonic wall. A dedicated US may show diverticula as a bright bowel outpouching, as well as the inflammatory process of the surrounding fat planes and a thickened bowel wall [13].

Omental infarction

Omental infarction is an uncommon cause of acute ride-side abdomen pain, resulting from vascular compromise of the greater omentum. Omental infarction appears on US as a focal

area of increased echogenicity in omental fat. The CT appearance of omental infarction is increased density and stranding in the omental fat in the right-lower quadrant.

Epiploic appendagitis

Epiploic appendagitis is an uncommon, benign, and self-limited inflammatory process of the epiploic appendices. Epiploic appendagitis often manifests with the sudden onset of abdominal pain in the left- or right-lower quadrant. US shows a rounded, non-compressible, hyperechoic mass, without internal vascularity, and surrounded by a subtle hypoechoic line. CT appearances consist of the following: a dense, fatty ovoid structure adjacent to the colon, a thin high-density rim, surrounding inflammatory fat stranding, and thickening of the adjacent peritoneum [14].

In conclusion, the differential diagnosis of a Spigelian hernia involving urinary bladder is challenging and requires appropriate clinical and radiologic investigation.

Treatment & Prognosis:

Spigelian hernias are preferably repaired due to high rates of bowel incarceration and subsequent strangulation. Conventional and intra-abdominal or extra-peritoneal approach laparoscopic surgeries are among the surgical treatment options available. [1,11].

TEACHING POINT

In summary, it should be kept in mind that Spigelian hernias are very rare and the inclusion of urinary bladder is unusual. However, it is important to be aware of this condition to make a modified surgical approach becomes possible and to avoid any surgical complications.

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FIGURES

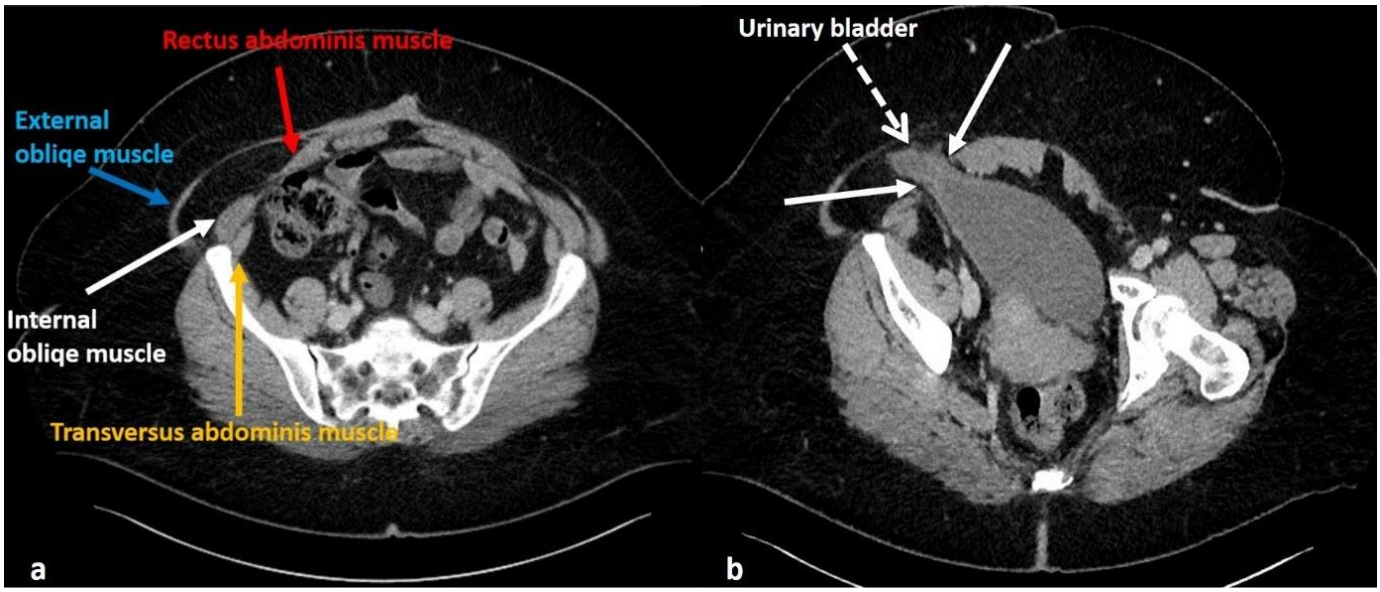

Figure 1: A 54-year-old obese female with Spigelian hernia involving urinary bladder.
FINDINGS: CT images show anterior abdominal wall muscles (a. red, white, blue and yellow arrows) and Spigelian hernia involving fat and urinary bladder (b. dotted arrow). Axial CT images show the defect between the anterior rectus and oblique muscle (b. white arrows point at hernia neck). Note that the hernia is interstitial, the herniated urinary bladder (dotted arrow) is located between the external-oblique and internal-oblique muscles.
TECHNIQUE: CT examinations were performed on 256-slice scanner (Somatom Definition Flash, Siemens, Erlangen, Germany) with the following parameters. CARE Dose4D for automatic exposure control for tube voltage (kV) and effective tube current (mA), slices acquired with 2.0 mm slice thickness, 0.5 pitch, and 0.28-second rotation time. Contrast material was Ultravist® (100 mL).

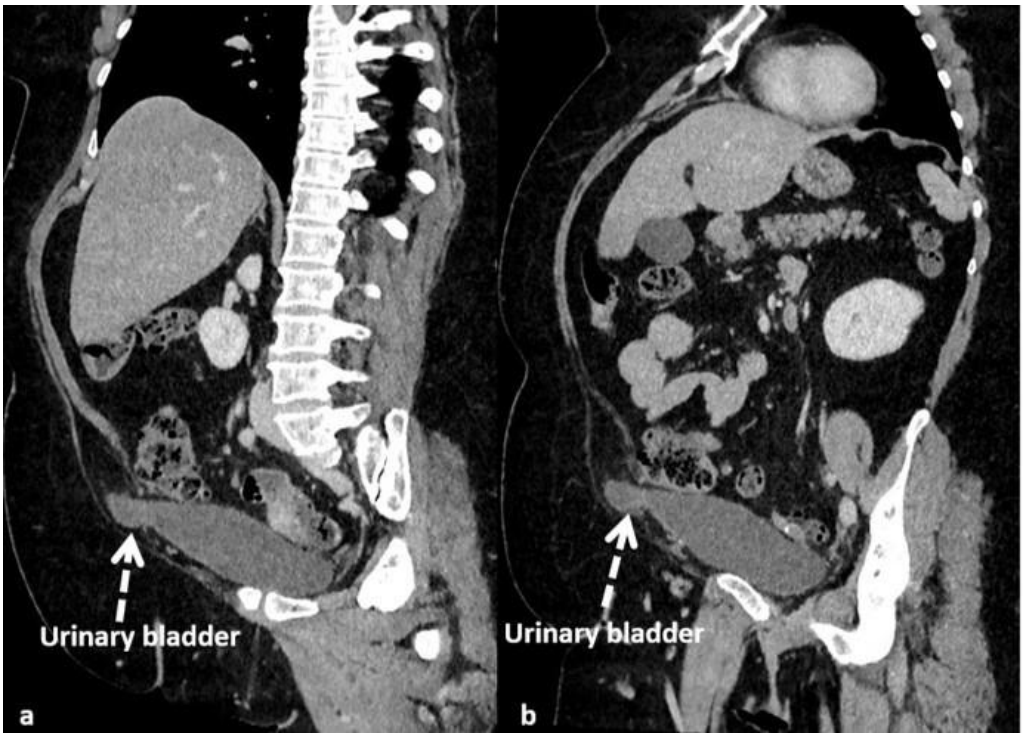

Figure 2: A 54-year-old obese female with Spigelian hernia involving urinary bladder.
FINDINGS: Sagittal (a.), and coronal (b.) oblique reformatted CT images also showed the herniated urinary bladder (a. and b. dotted arrows) was contained within the aponeurosis of the external oblique muscle, and the herniated mesenteric fat showed mild stranding.
TECHNIQUE: CT examinations were performed on 256-slice scanner (Somatom Definition Flash, Siemens, Erlangen, Germany) with the following parameters. CARE Dose4D for automatic exposure control for tube voltage (kV) and effective tube current (mA), slices acquired with 2.0 mm slice thickness, 0.5 pitch, and 0.28-second rotation time. Reconstructions included 5-mm-thick image sets to evaluate sagittal and coronal plan. Contrast material was Ultravist® 300 (100 mL).

Etiology	Increased intra-abdominal pressure and stretching in the abdominal wall
Incidence	Uncommon. ~1% (range 0.1– 2%) of ventral abdominal hernias
Gender ratio	A slight female predominance
Age predilection	Most frequently in the 4th to 7th decades
Risk factors	Obesity, multiple pregnancies, previous surgery or scarring, chronic cough, ascites with multiple paracenteses, and weightlifting.
Treatment	Conventional or laparoscopic surgery
Prognosis	Hernia surgery is curative and recurrence after surgery is rare.
Findings on imaging	The hernia neck and sac can be well demonstrated by CT. CT gives more detailed information on the hernia content than does ultrasound.

Table 1: Summary table of Spigelian hernia.

Differential Diagnosis	Ultrasound (US)	Computerized Tomography (CT)
Spigelian Hernia	Verification of Spigelian hernia and determination of hernia content	The hernia orifice and hernia contents are better demonstrated through CT than through ultrasound.
Appendicitis	Dilated appendix (> 6 mm), single wall thickness of ≥ 3 mm, appearance of a target sign, increased echogenicity of periappendiceal fat, and appendicolith	Dilated appendix with distended lumen, thickened and enhanced wall, periappendiceal inflammation, and appendicolith
Rectus Sheath Hematoma	Acute hematoma: low echogenicity collection; chronic hematomas: calcification-septa formation	Heterogeneous fluid collection, high attenuation on unenhanced images, and a lack of enhancement
Soft-Tissue Masses in the Abdominal Wall (Desmoid Tumor)	Solid or partially solid homogeneously hypoechoic masses with vascularity on color Doppler US	A well-circumscribed homogeneously or focally hyperattenuating mass involving the abdominal wall
Soft-Tissue Masses in the Abdominal Wall (Lipoma)	A well-circumscribed mass, slightly hypoechoic or hyperechoic, with a thin echogenic capsule	A well-circumscribed subcutaneous low-attenuation mass of the anterior abdominal wall, with a thin capsule
Caecal Diverticulitis	Diverticula (as a bright bowel outpouching), inflammatory changes of fat planes adjacent to the diverticula, and a thickened bowel wall	Diverticula, stranding of the pericolic fat, bowel wall thickening, and enhancement of the colonic wall
Omental Infarction	Focal area of increased echogenicity in omental fat	Increased density and stranding in omental fat
Epiploic Appendagitis	Rounded, non-compressible, hyperechoic mass, without internal vascularity	A dense, fatty ovoid structure adjacent to the colon, a thin high-density rim, surrounding inflammatory fat stranding, and thickening of the adjacent peritoneum

Table 2: Differential diagnoses table for Spigelian hernia.

ABBREVIATIONS

CT: Computed Tomography
US: Ultrasound

KEYWORDS

Spigelian hernia; urinary bladder; semilunar line; abdominal; computed tomography

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