

## peer reviewed CASE REPORT

## The role of computer tomography in the diagnosis of Spigelian hernia: a case report

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### Abstract

A male patient in his fifth decade underwent a computed tomography intravenous urography examination for suspected nephrolithiasis of the kidney and bladder. A diagnosis of Spigelian hernia was made. His clinical history, radiological findings and management are presented.

**Keywords** strangulation, laparoscopy, transversus abdominis, hernia

### Case report

A male patient in his fifth decade presented with severe pain in the left side and back. The pain spread to his lower abdomen and groin and was fluctuating in intensity. He was nauseous but without any vomiting. A computed tomography (CT) intravenous urography examination was requested for suspected nephrolithiasis of the kidney and bladder.

His renal function was checked before the CT examination. Multiplanar reformations, and three dimensional images, were done. The CT images revealed evidence of herniation of the omentum through a

defect in the transversus abdominis muscle aponeurosis, in the left lower pelvis (Figures 1, 2 and 3). The bowel, related to the herniated omentum, had slightly increased wall thickness; there was stranding of the adjacent perinephric fat and thickening of the fascia (Figure 4) raising the possibility of some compromising of blood supply to the omentum. However, bowel proximal and distal to the herniated omentum was of normal calibre. There was no free fluid in the abdomen or pelvis. Appearances suggested left lower abdomen or pelvic Spigelian hernia with omentum having herniated through the transversus abdominis aponeurosis.

An urgent surgical opinion was advised. A laparoscopic hernia repair was successfully done. The patient recovered well.

### Discussion

A Spigelian hernia is a protrusion of preperitoneal fat, a sac of peritoneum or an organ through a congenital defect or weakness in the Spigelian fascia.<sup>[1]</sup> It is an uncommon abdominal hernia, as well as an uncommon cause of acute abdominal pain.<sup>[2]</sup> It occurs in less than 2% of all abdominal hernias, with only just over 1000 reported cases in the literature.<sup>[3]</sup> Spigelian hernias are generally difficult to diagnose because of their location and vague non-

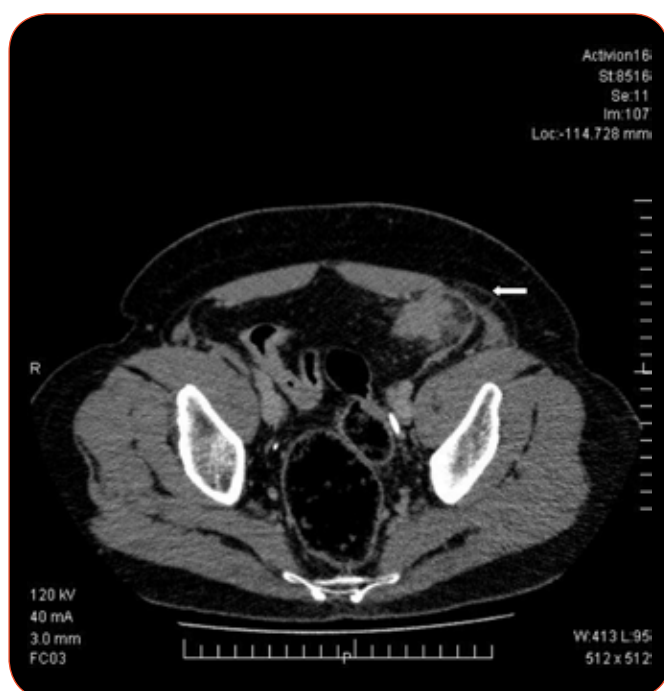


Figure 1. Axial CT image of the lower abdomen showing a Spigelian hernia on the left (white arrow).

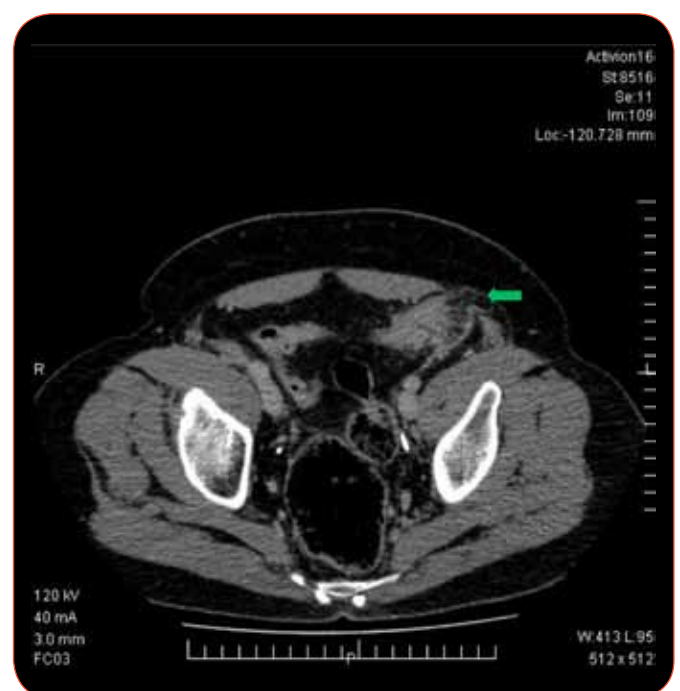
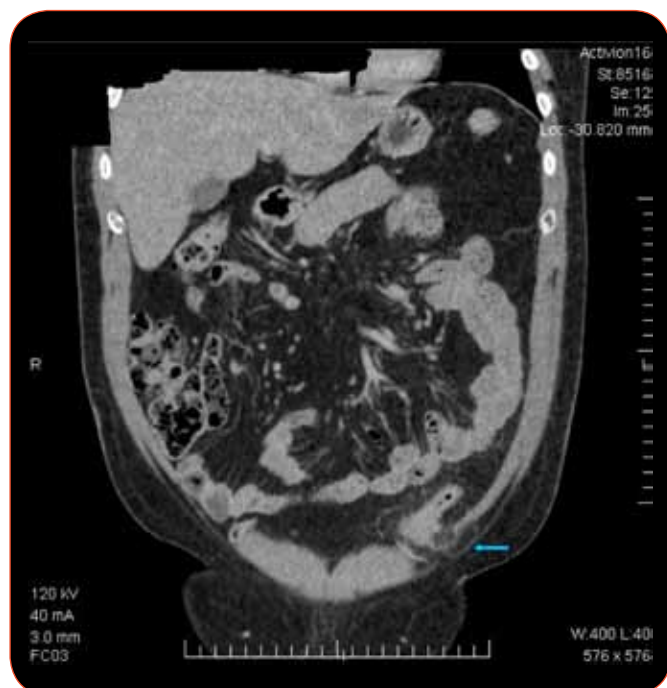


Figure 2. Axial CT image of the lower abdomen demonstrating a protruding Spigelian hernia (green arrow).



**Figure 3.** Coronal CT image of the abdomen showing a left side protruding Spigelian hernia (blue arrow).



**Figure 4.** Sagittal CT showing a Spigelian hernia (yellow arrow). The white arrow shows thickening of surrounding fascia.

specific symptoms.<sup>[4]</sup> The hernia appears to peak in the fourth to seventh decades. The male to female ratio occurrence is 1:1,8.<sup>[5]</sup> Bilateral Spigelian hernias are rare.<sup>[1]</sup>

The most important factor in the diagnosis of this condition is a high index of suspicion. This hernia occurs through slit like defects in the anterior abdominal wall adjacent to the semilunar line which extends from the tip of the 9<sup>th</sup> costal cartilage to the pubic spine at the lateral edge of the rectus muscle inferiorly. Most occur in the lower abdomen where the posterior sheath is deficient. It is also called a spontaneous lateral ventral hernia or hernia of the semilunar line. The hernia ring is a well-defined defect in the transversus aponeurosis.<sup>[5]</sup> Spigelian hernia can be congenital or acquired. Perforating vessels may weaken the area in the Spigelian fascia; a small lipoma or fat enters here which gradually leads to hernia formation. The Spigelian aponeurosis is widest between 0 and 6cm cranial to the inter-spinous plane; 85-90% of the hernias occur within the 'Spigelian hernia belt' (Figures 5a and b). The hernia sac, surrounded by extra-peritoneal fat is often inter-parietal passing through the transverses and the internal oblique aponeuroses and then the rectus muscle.<sup>[5]</sup> Incisional hernias through the Spigelian fascia or line conventionally are not considered as Spigelian hernia. However,

some authors have described them as Spigelian hernia.<sup>[1]</sup>

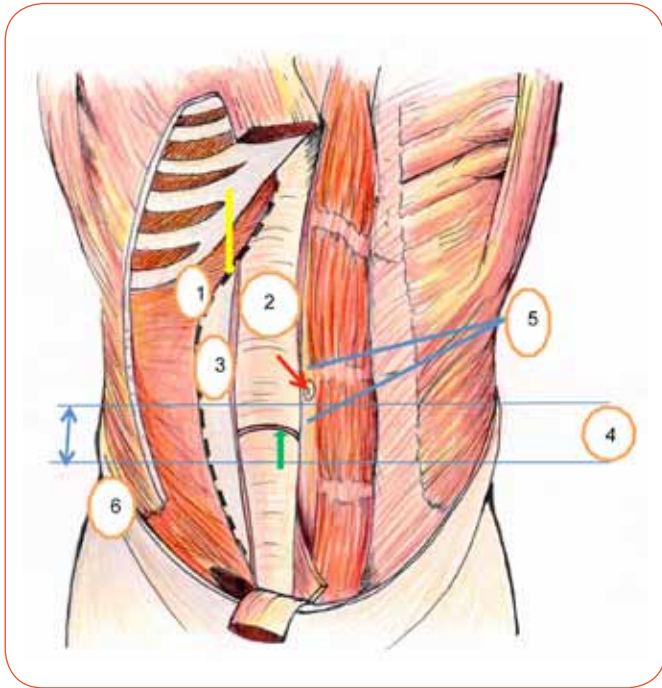
Spigelian hernia occurs through the attenuated Spigelian fascia, characteristically above the inferior epigastric vessels and below the umbilicus and the arcuate line. The external oblique aponeurosis, the most stable structure in the anterolateral abdominal wall, prevents the hernia from entering the subcutaneous tissue. For this reason, the Spigelian hernia sac usually is between the aponeurosis of the external and internal oblique muscle.<sup>[4]</sup> It may also occur in the inguinal region. It may be mistaken for a direct inguinal hernia. Unlike the latter, a Spigelian hernia lies above the conjoined tendon. Other conditions frequently associated with the hernia are obesity, chronic cough, ascites, pregnancy, heavy exertion, and muscular atrophy of the aged.<sup>[4]</sup> Spigelian hernia has been described as a complication of chronic ambulatory peritoneal dialysis (CAPD).<sup>[5]</sup>

Spigelian hernia symptoms may be non-specific and intermittent and might consist of vague abdominal pain, nausea and abdominal discomfort.<sup>[6]</sup> The symptoms vary from abdominal pain, lump in the anterior abdominal wall, or a patient may have history of incarceration with or without intestinal obstruction. Pain varies in type, severity, and location and depends

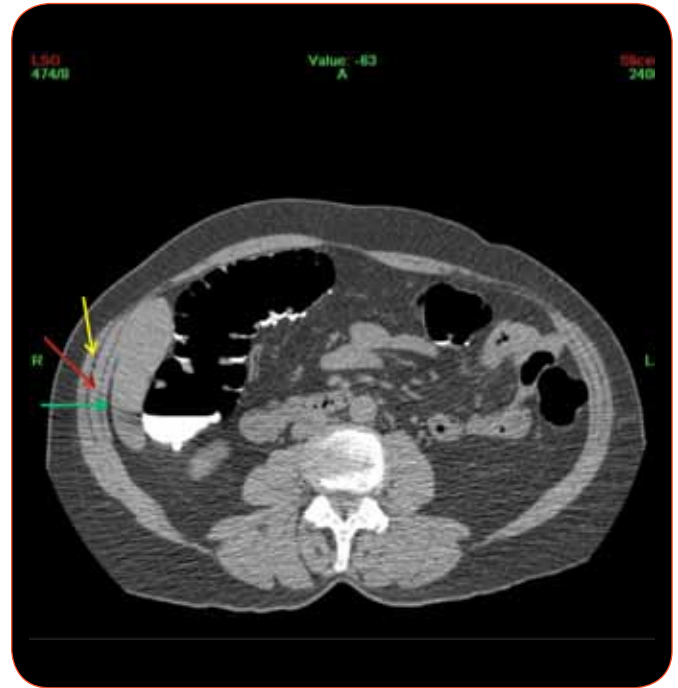
upon contents of hernia. Pain often can be provoked or aggravated by a manoeuvre, which increases the intra-abdominal pressure, and is relieved by rest.<sup>[5]</sup>

If a patient has a palpable lump along the Spigelian aponeurosis, the diagnosis is apparent. The same applies if the hernia appears when a patient is upright and then disappears spontaneously when patient lies down. The clinical diagnosis of hernia is complicated since the defect continues to expand laterally and caudally between two oblique muscles. Some patients present with abdominal pain but no lump. For these patients radiological investigations are required for diagnosis. If after radiological investigations the diagnosis is uncertain, diagnostic laparoscopy may be performed.<sup>[5]</sup>

The diagnosis of a Spigelian hernia is difficult; some surgeons suspect it has no characteristic symptoms. The hernia may be inter-parietal with no obvious mass on inspection or palpation. Only 50% of cases are diagnosed preoperatively. It may present as a swelling adjacent to the iliac crest and a patient may have a classic lump when standing. It is painful if a patient stretches, but the pain disappears on lying down. Sometimes the local discomfort can be confused with peptic ulceration. Although rare, it may enter the rectus sheath thus be confused with spon-



**Figure 5a.** View of the anterior abdominal wall with the external oblique, internal oblique and rectus abdominis muscles peeled away on the right side of the body are (1) the transversus muscle; (2) the posterior rectus sheath; (3) the Spigelian aponeurosis; (4) the Spigelian hernia belt (5) the linear alba; and (6) the anterior superior iliac spine. Yellow arrow = semilunar line; red arrow = umbilicus; green arrow = arcuate line; and double-pointed blue arrow = 6cm width of the Spigelian hernia belt (per courtesy of Dr Joel H Bortz<sup>[3]</sup>).



**Figure 5b.** Axial CT image shows the three flat abdominal muscles: yellow arrow = external oblique; red arrow = internal oblique; and green arrow = abdominis transversus (per courtesy of Dr Joel H Bortz<sup>[3]</sup>).

taneous rupture of rectus muscle or with a haematoma in the rectus sheath.<sup>[5]</sup>

CT, with close thin sections, is considered the most reliable technique to make a diagnosis in doubtful cases. Although ultrasound is recommended as the first line imaging investigation, it is very operator dependent.<sup>[3]</sup> Ultrasound scanning of the semilunar line should be undertaken in all patients with obscure abdominal pain associated with bulging of the belly wall in the erect position. Diagnosis, based on plain-film radiographs, upper and lower gastrointestinal studies, and follow-through studies, is not readily made in the absence of an intestinal obstruction. There has been reported use of magnetic resonance imaging (MRI).<sup>[3]</sup> The use of oral contrast medium during the examination is recommended so that any bowel content can be identified. Computed tomographic colonoscopy (CTC) can play an important part in the diagnosis of a Spigelian hernia. Its main advantage is that the entire large bowel and all extracolonic components can be visualised.<sup>[3]</sup>

The differential diagnosis includes appendicitis and appendiceal abscess, a tumour of the abdominal wall or spontaneous hematomas of the rectus sheath or even

acute diverticulitis.<sup>[5]</sup> Spigelian hernias have a risk of strangulation. The latter is high because of sharp fascial margin around the defect. If strangulation is diagnosed, surgery is advised. Repair is usually done by either an intra or extra peritoneal laparoscopy.<sup>[5]</sup> Laparoscopic hernia repair, with either a trans or extra-peritoneal approach, is recommended when a patient does not have an obstruction. A mesh is fixed with either tackers or manual suturing; the prognosis is excellent.<sup>[7]</sup>

### Conclusion

Spigelian hernias are rare. They do carry a significant risk of incarceration and strangulation that can lead to serious complications; their clinical presentation is often vague, leading to delayed diagnosis. Primary repair has so far been the treatment of choice, while other techniques can also be considered depending on the patient's characteristics and the hernia type. A physical examination, when there is a high clinical suspicion, remains crucial in the diagnosis of a Spigelian hernia. Additional imaging modalities assist in timely and accurate pre-operative diagnosis. Prompt surgical treatment is the key to avoid complications. CT in this case

report was pivotal in the management of the patient. Diagnosis was made before there were any complications. Surgical repair of the hernia was done and the patient recovered well.

### Conflict of interest

Nil

### Acknowledgement

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