

## ATYPICAL INCARCERATED ABDOMINAL WALL HERNIA MIMICKING ACUTE DIVERTICULITIS

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### Abstract

An 89-year-old female presented with typical symptoms of acute diverticulitis. Abdominal CT revealed an abdominal wall hernia with signs of acute incarceration in the lateral part of the transverse abdominis muscle and rupture of the transversalis fascia. The findings were confirmed intraoperatively. The present case underlines the diagnostic importance of abdominal CT, especially in patients with acute abdomen, allowing for selection of appropriate therapy options.

*Key words:* Diverticulitis – abdominal wall hernia – computed tomography.

### INTRODUCTION

Abdominal wall hernias have become the most common type of external hernias [1-3]. Principally, the diagnosis of the abdominal wall hernia is based on a physical examination including the Valsalva maneuver which leads to an enlargement of the hernia sac and to a consecutive protrusion through the anatomical defect [4]. However, clinical diagnosis may be difficult, especially in patients with severe abdominal pain, obesity, or abdominal wall scarring [5]. The diagnostic work up includes the identification of the size and location of the anatomic defect as well as the content of the hernia sac.

Abdominal plain radiography and barium studies are of limited sensitivity and specificity in the diagnosis of abdominal wall hernia. Computed tomography (CT) is increasingly used to show the exact anatomy of the hernia sac, distinguish a hernia from its mimics, and has assumed a predominant role in diagnostics. Major advantages of CT include a more accurate identification of abdominal wall hernia and their contents, differentiation of hernias from other abdominal masses such as tumors, abscesses, and detection of complications such as incarceration, bowel obstruction, volvulus and strangulation. Multidetector computed tomography (MDCT) has additional potential to advance the preoperative assessment of abdominal hernias by permitting rapid acquisition of 3D image data sets and multiplanar reformations as well as more precisely delineating the type, location, size and shape of the hernia. However, as stated by Giroto et al. in 2002 radiological studies should augment and not replace

the clinical diagnosis. The diagnosis of a strangulated hernia remains primarily a clinical task [6].

Recently, we encountered a female patient who presented with acute left lower quadrant pain and vomiting. These symptoms were believed to be due to an acute diverticulitis. Abdominal CT revealed an abdominal wall hernia with incarceration of small bowel loops permitting the appropriate surgical procedure.

### CASE REPORT

An 86-year-old female presented with severe pain in the left lower quadrant and prolonged vomiting for many hours. She did not complain about previous constipation, and the history yielded no prior abdominal surgery. Physical examination revealed only mild tenderness to palpation in the left lower quadrant. Vital signs were not remarkable as well as the laboratory evaluation.

In the decubitus abdominal plain radiography, vertical loops and air-fluid levels, especially in the small bowel, were described without signs of free intraabdominal air, dilated bowel loops or coprostasis (Fig. 1). Helical CT of the abdomen including the pelvis was performed (Somatom Sensation 16; Siemens, Erlangen, Germany) using routine parameters of 120 kV and 200mAs performing 3 mm thick reformats in medium frequency kernel (B30f).. 120ml iodinated contrast agent was applied at a flow rate of 3.0 ml/sec. The CT examinations demonstrated multiple diverticulas along the entire colon frame without signs of wall thickening or inflammatory reaction in the surrounding fat tissue. Most of the small bowel loops were filled with fluid and showed air-fluid levels. A smaller bowel loop in the left lower abdomen was collapsed and extended into the ventral abdominal wall. The incarcerated bowel segment presented with edema of the bowel wall. The fluid collection was located within the lateral part of the transverse abdominis muscle and the bowel segments were incarcerated due to a break in the fascia abdominalis (Fig. 2).

Immediately performed diagnostic laparoscopy proved an incarcerated small bowel segment with signs of enteronecrosis. Resection of the involved ileal segment and repair of the transverse fascia were subsequently performed. Histological examination of the resected bowel segments showed acute hyperemia of



Fig. 1. The lateral decubitus radiogram of the abdomen shows air-fluid levels and vertical loops in the small bowel.

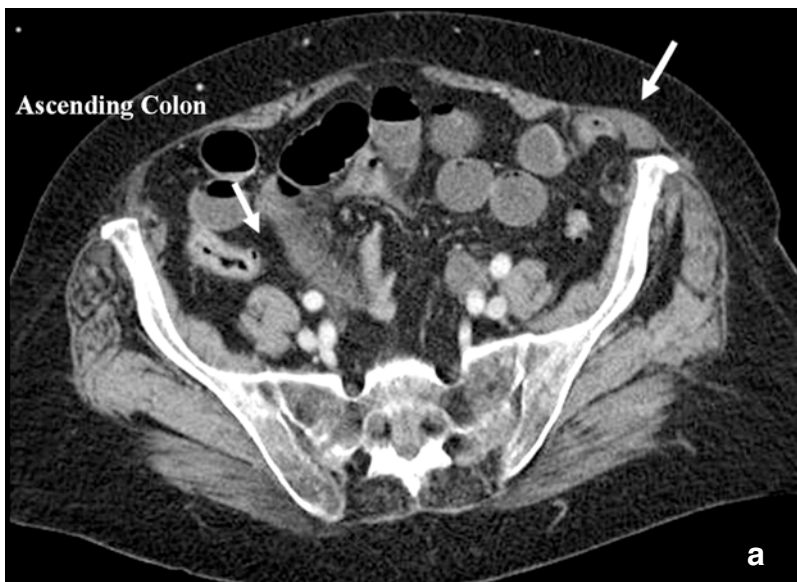


Fig. 2. On axial CT images a) wall thickening and edema of a small bowel segment and edema of the transverse abdominis muscle is shown, in b) collapse of the respective bowel segment is detected, whereas all other segments of the small bowel are distended and fluid filled with several air-fluid levels. The collapse of the ascending and descending colon is indicative of an obstruction at a more orally location.

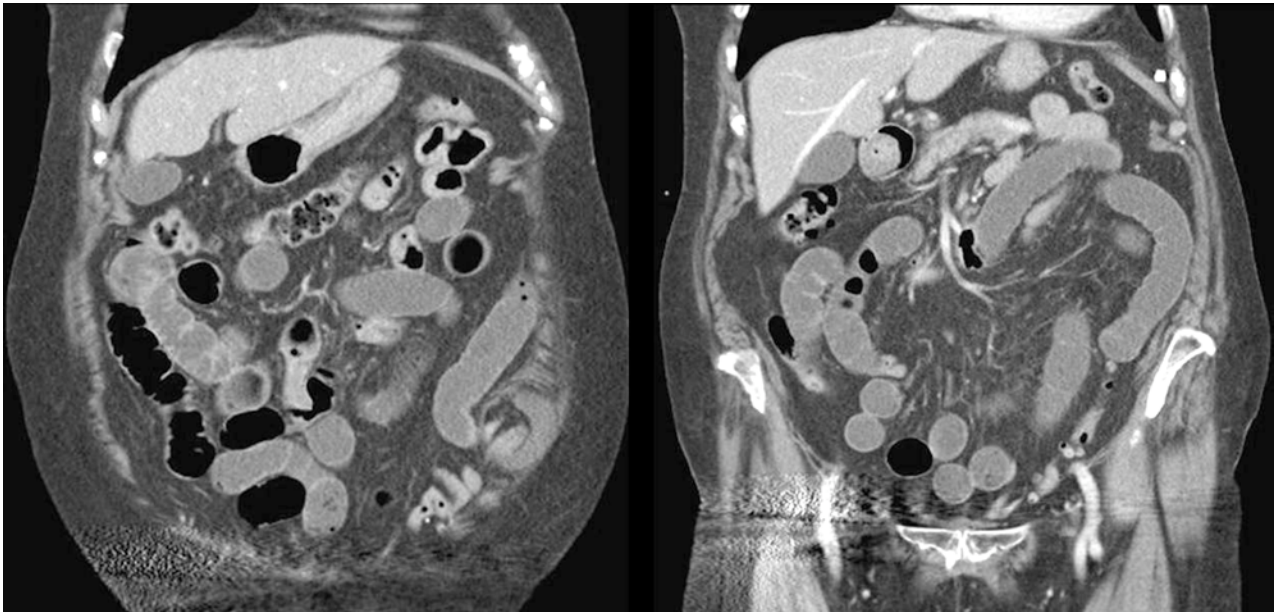


Fig. 3. Coronal reformats exhibit distension and fluid filling of the small bowel segments, the incarcerated segment of the ileum and the collapse of the descending colon, which exhibits several diverticula.

the mucosal and submucosal layer with inflammatory cell infiltration, which was considered an acute ischemia with subsequent bowel necrosis. At day 18 after surgery, the patient was discharged from our hospital after an uneventful period of recovery.

#### DISCUSSION

This special location of abdominal wall hernia has been described very rarely in the literature before, e.g. by Nelson and Pesola as differential diagnosis of left lower quadrant abdominal pain [7].

In terms of the abdominal wall, several different types of hernia exist. First, groin hernias should be subclassified into inguinal and femoral hernia. Inguinal hernia present as the by far most common abdominal wall hernia, accounting for approximately 66% of all surgically repaired hernias in the U.S.A. [8]. Femoral hernias are less frequent, mostly occurring in women and showing a tendency to be right-sided for unclear reasons [2]. The differentiation process to inguinal hernias is hard and they show a great potential to incarcerate [10].

Ventral hernias include all types of hernia through the anterior and lateral abdominal wall. Midline and lateral defects are subclassifications of this hernia-type. Midline defects include umbilical, epigastric and hypogastric types of hernias. These types are usually present in adults, occur 10 times more often in women and present the second most common surgically treated hernia in the U.S.A [8]. Typical risk factors are multiple pregnancies, ascites, obesity and large intraabdominal masses [9]. Our patient has never been pregnant and gave birth to a child.

Among the lateral defects, the Spigelian hernia occurs through a defect in the linea semilunaris, which is a fibrous union of the rectus sheath with the aponeurosis of the transverse and the oblique abdominal

muscle that extends from the level of the ninth costal cartilage to the symphysis pubis. Abdominal wall defects frequently result from acquired weakness of the aponeurosis or after surgical incisions and typically the omentum and short segments of bowel protrude through this wall defect [1, 3] with a high risk of incarceration.

Habib and Elhadad reported about a Spigelian hernia which was considered as sigmoid diverticulitis for a long time [12]. They found out that the reducible, the incarcerated and the strangulated Spigelian hernia represent the majority of its clinical aspects. Although many differential diagnoses are proposed, but the diagnosis of sigmoid diverticulitis is an infrequent one. They reported that ultrasound or a CT scan showing the defect in the abdominal wall, the hernia sac and its contents is an easy means of confirming the diagnosis of Spigelian hernia.

Posterior defects, such as lumbar hernias, spontaneously occur after surgery or following trauma, especially after pelvic fractures. The site of herniation is the lumbar muscles or the posterior fascia.

Of course hernias may also be present in the inguinal area. For example Yahchouchy-Chouillard reported about a case of a transverse colon diverticulitis simulating inguinal hernia strangulation [13]. Strangulation is the most serious complication of inguinal and most of the other abdominal hernias. Diverticulitis presenting a common condition is usually located in the left colon whereas the reported association between inguinal hernia and diverticulitis is very rare.

Incisional hernias are delayed complications of abdominal surgery occurring in 0.5- 13.9 % of patients [5]. In our patient no abdominal surgery had been performed previously. Most of incisional hernias develop in the first months after surgery, but 5-10% of them may remain clinically silent for up to 5 years until they are detected. Risk factors are old age, obesity, postop-

erative wound infection, malignant tumors, or malnutrition. The clinical symptoms in our patient were comparable to an acute diverticulitis, which sometimes may also result in bowel obstruction. The absence of bowel distension and air-fluid levels in the colon, together with reduced air filling of the colon, however, is suggestive of a small bowel obstruction.

In our department, patients with suspect of diverticulitis with or without perforation are usually examined with CT including rectal filling with water, as reported by the present patient. Clinical signs of diverticulitis are frequently non-specific; atypical findings are present in up to one third of patients [11]. CT is not only highly accurate in establishing and excluding acute diverticulitis but also very effective in differential diagnosis of diseases mimicking diverticulitis. Moreover, CT is a cost-effective procedure providing greater confidence in diagnosis, whenever there is doubt in the clinical diagnosis. However, there is evidence in the literature that abdominal wall hernias may be diagnosed as well by ultrasound, even when small bowel loops are involved in abdominal hernias [12].

Complications of diverticulitis, such as abscess formation and perforation, are readily recognized in CT. Once again, the high diagnostic utility of CT in patients with acute abdomen is once again confirmed by our case, since it allowed a previously unsuspected diagnosing and rapidly triaging the patient to the appropriate type of therapy.

In conclusion, this case report underlines the usefulness of CT in the diagnostic work-up of patients with acute abdomen. A previously unknown type of an abdominal wall hernia could be identified in a female patient with symptoms highly suggestive of acute diverticulitis, thus enabling for adequate therapy and to avoid any delay.

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