

Arcuate Line Hernia Initially Missed Getting Complicated: A Case Report

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Abstract

The arcuate line hernia is an, usually asymptomatic, ascending protrusion of intra peritoneal structure under the fold of Douglas, classified into three types depending on its severity and the degree of complication.

We report a case of a 64-year-old Caucasian woman whose diagnosis of arcuate line hernia was initially missed at a computed tomography and diagnosed 3 weeks later on the repeat computed tomography scan when an intra-hernian necrosis of the epiploic fat appeared.

The present case discusses the classical anatomical and radiological features. The therapeutic approach is based on laparoscopic surgery.

Keywords: Arcuate line of Douglas; Rectus abdominis muscles; Computed tomography; Hernia

Introduction

The Arcuate Line Hernia (ALH) is an, usually asymptomatic, ascending protrusion of intra peritoneal structure under the fold of Douglas, classified into three types depending on its severity and the degree of complication. Only few cases of arcuate line hernia have been reported in literature, but none showed a pejorative evolution over a short period as in our experiment.

Case Report

A 64-year-old woman consulted the emergency department for right flank pain. She was known for obesity (BMI 25) and laparoscopic cholecystectomy. Physical examination was normal. An ultrasound of the abdomen and chest X-ray were considered normal. An abdominal unenhanced computed tomography (CT) looking for kidney stones had been performed and was described as normal. The localized pain on the right and the presence of a thin right basal pulmonary atelectasis at CT led to the introduction of an antibiotic treatment for pneumonia suspected for seven days.

Three weeks later, she presented herself to the emergency department with a recurrent lower-right abdominal pain with progressive onset and nausea. Physical examination revealed an abdominal guarding and a mass at the level of the arcuate line. The white blood cell count was 12,000/L (normal range, 4.5-13.5 $10^3/L$) and the C-reactive protein was 41 mg/L (normal range, 0-10 mg/L).

We directly performed an enhanced CT scan with portal venous-phase which showed an ascending protrusion of intraperitoneal fat tissue between the rectus abdominis muscles and the posterior rectus sheath at the level of the arcuate line (Figure 1a). Fat tissue infiltration was consistent with local suffering (Figures 1a and 1b). There was no bowel loop in the hernia.

Shortly after the CT the patient was taken to the operating room and underwent an explorative laparoscopy, which confirmed the diagnosis of fat peritoneal arcuate line hernia (Figures 2a and 2b). A resection of incarcerated peritoneal fat was performed and the ALH was reduced and repaired by pre-peritoneal mesh placement. A 20 mm \times 15 mm Symbotex[®] mesh was placed and fixed by approach threads and circumferential clips. Then, threads of the mesh were tied out of the abdominal wall. The postoperative course was uneventful. Her pain disappeared and she was discharged from the hospital after two days.

Retrospectively the study of the previous CT showed a fat tissue hernia under the arcuate line without complication sign (Figure 3).

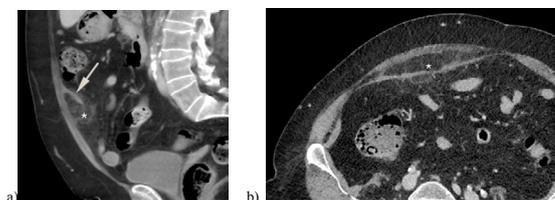


Figure 1: Sagittal and axial portal venous-phase CT scan shows a right arcuate line hernia (arrow) with an ascending protrusion of infiltrating omental fat tissue (*).

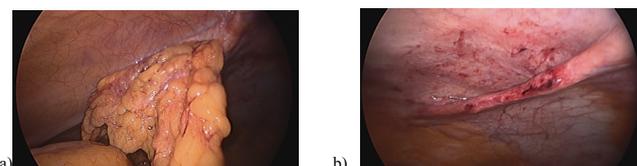


Figure 2: Photograph obtained during laparoscopic surgery performed after CT scan demonstrates omental fat under the right arcuate line (a). Arcuate line after resection of the incarcerated omental fat (b). Courtesy Dr Delphine Arni.

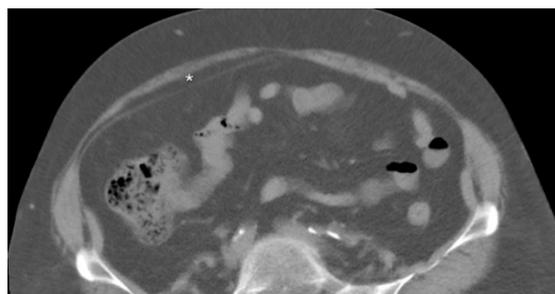


Figure 3: Axial unenhanced CT scan performed 3 weeks before, retrospectively, shows the arcuate line hernia with minimal bulging of intraperitoneal fat (*).

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Discussion

The arcuate line (AL), also called linea semicircularis or fold of Douglas, marks an anatomic transition point inferior to which all the aponeurotic layers of the abdominal muscles, except the transversalis fascia, pass simultaneously anterior to the rectus abdominis muscle [1]. As a consequence, under this line the posterior rectus abdominis muscle is only covered by the transversalis fascia.

The arcuate Line hernia is an ascending protrusion of intra peritoneal structure under the AL. Unilateral and bilateral ALH are possible [2].

ALH are classified into three types. Single delineation of the AL due to a minimal bulging of intraperitoneal fat (grade I); minimal but substantial real herniation of fat and/or intestinal loops under the AL (grade II); and a frankly prominent hernia of abdominal structures (omental fat and/or intestinal loops) is classified as grade III [3,4]. In the case reported herein, the patient had a grade I ALH at the first CT scan (Figure 2) which has evolved in a grade III ALH three weeks later (Figure 1).

As clinical diagnosis of arcuate line hernia is difficult, conventional abdominal radiography and abdominal ultrasound often non-contributory, computed tomography shall be carried out without delay. Enhanced computed tomography (with Valsalva Manoeuvre) describes any arcuate line and allows the diagnosis of an arcuate hernia and its contents.

The treatment is not clearly defined but it is accepted to treat ALH with a fascial repair and by pre-peritoneal mesh placement by laparoscopy [5], depending on the clinical situation.

Conclusion

ALH are rare and mostly asymptomatic, but physicians should always keep this diagnostic in mind with tender spots or masses at the level of the arcuate line. X-rays and ultrasound are often non-contributory. Computed tomography with multiplanar reformations makes it easy to diagnose. Treatment consists of laparoscopic surgery, for pre-peritoneal mesh placement. We emphasize this entity to avoid the eventual diagnostic errors, similar to the one we committed before the complications appeared.

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