Spontaneous cholecystocutaneous fistula with a subcutaneous gallstone: a case report
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Section: Abdominal imaging
Area of Interest: Abdomen
Procedure: Diagnostic procedure
Imaging Technique: CT
Special Focus: Calcifications / Calculi Abscess Case
Type: Clinical Cases
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Patient: 93 years, female

Clinical History:
A 93-year-old women was referred to the emergency department by her general practitioner because of decreased appetite and general fatigue for one week. The only relevant finding in the medical history was the presence of a gallstone for several years. There was no history of biliary or hepatic surgery.

Imaging Findings:
Plain abdominal radiography shows a round calcified structure in the right lumbar region (Fig. 1). It projects lateral and caudal to the gallbladder fossa. There is a normal bowel gas pattern.

Contrast enhanced CT images (Fig. 2) show a hyper-attenuating inflamed gallbladder wall. The abdominal fat around the gallbladder is infiltrated. There is a normal outlining of the liver. At the fundus of the gallbladder there is a defect in the gallbladder wall. A fistula trajectory arises from this wall defect, goes through the muscles of the abdominal wall and extends to the subcutaneous fat (Fig. 3). The radio-opaque round structure can be seen in the subcutaneous compartment of the fistula (Fig. 4). It is a calcified gallstone that has eroded through the inflamed gallbladder wall. This process has been named 'spontaneous cholecystocutaneous fistula'.

Discussion:
Before the modern age of antibiotic therapy and cholecystectomy procedures, spontaneous cholecystocutaneous fistula was a more common finding [1]. Today, it is a rare complication of cholecystitis. The accepted theory for the pathophysiology is that the high intraluminal pressure leads to impaired blood flow of the gallbladder wall, which causes mural necrosis and perforation. This allows the gallstone to erode through the gallbladder wall [2]. Malignancy of the gallbladder or acalculous cholecystitis have also been reported as a cause of spontaneous cholecystocutaneous fistula [3]. In contrast to this case, the gallstone can perforate into adjacent abdominal organs, such as the duodenum or small bowel [3].

This pathology occurs in an elderly population. Presentation is atypical, with a long-standing low-grade infectious process and indistinct complaints. The patient can become septic if the infection is not contained. Imaging is needed to recognize this rare infectious process and to evaluate the extent.

Computed Tomography (CT) and ultrasound (US) are the modalities of choice to evaluate this abdominal infectious
process [1]. These modalities can demonstrate radio-opaque gallstones if present. Imaging typically shows a thickened and hyper-attenuating gallbladder wall (Fig. 2). Pericholecystic inflammatory fat stranding is an indirect sign. The fistula trajectory has a characteristic hyper-attenuating wall with a relatively hypo-dense content that extends from the gallbladder to the subcutaneous abscess (Fig. 3). If the fistula has already drained externally, a fistulography can be performed.

The expected evolution of this inflammatory process would be a spontaneous evacuation of the abscess through the skin. If evacuation has not yet occurred, drainage of the abscess would be the therapy of choice. In this elderly population, a conservative approach is often preferred because of the high risk for an emergency surgical intervention and extensive co-morbidity. Imaging can evaluate the extent of the infectious process and will contribute to therapy planning. In this case, a surgical cutaneous incision was made, the gallstone was removed and pus was drained. There was persistent bile drainage through the cutaneous incision. Given the age and clinical condition of the patient, the treating physicians opted for a conservative approach.

Typically, the patient is an elderly woman with a chronic neglected, calculous and contained cholecystitis. The patient often has an atypical clinical presentation without fever or pain. US and CT are the modalities of choice to evaluate the extent of the infectious process and to demonstrate the fistula. A conservative approach to treatment is often preferred.

**Differential Diagnosis List:** Spontaneous cholecystocutaneous fistula with subcutaneous gallstone., Cholecystocutaneous fistula with subcutaneous gallstone, Infectious cutaneous abscess with calcification, Corpus alienum with surrounding infectious abscess

**Final Diagnosis:** Spontaneous cholecystocutaneous fistula with subcutaneous gallstone.

**References:**


Description: Plain abdominal radiography shows a round calcified structure in the right lumbar region. This calcified structure projects lateral and caudal to the gallbladder fossa. There is a normal bowel gas pattern. Origin: AZ Groeninge Hospital, Kortrijk, Belgium.
**Description:** Axial CT image at the level of the gallbladder. An inflamed gallbladder with hyperattenuating wall is seen, along with a fistula trajectory that arises from the gallbladder and extends to the subcutaneous fat. **Origin:** AZ Groeninge Hospital, Kortrijk, Belgium
Description: Paracoronal CT image demonstrates the fistula trajectory. The gallstone has eroded through the inflamed gallbladder wall, has migrated through the fistula that perforates the abdominal wall and resides in the subcutaneous component of the fistula. Origin: AZ Groeninge Hospital, Kortrijk, Belgium
Figure 4

Description: Coronal CT image shows the subcutaneous abscess with a hyperattenuating inflamed wall and homogeneous hypodense content. The radiopaque gallstone can be seen in the subcutaneous compartment. Origin: AZ Groeninge Hospital, Kortrijk, Belgium