Spontaneous leakage of ascites from umbilical hernia in alcohol-related cirrhosis

65-year-old male patient with alcohol-related liver cirrhosis, two-year history of refractory ascites despite diuretics, and previous inguinal hernioplasty. Currently complains of skin ulceration at the site of the umbilical hernia. Physically found afebrile, with distended non-tender abdomen and normal vital signs. Laboratory assays revealed mild anaemia, platelet count and C-reactive protein within normal limits.

Imaging Findings:

One year earlier, multiphase CT (Fig. 1) had shown cirrhotic liver without focal lesions suspicious for hepatocellular carcinoma and abundant ascites, a right-sided inguinal hernia and round-shaped, externally convex umbilical hernia with narrow neck and continuous, uniform hernial sac including the peritoneal serosa; both hernias were filled by ascitic fluid without herniated viscera. Shortly thereafter, he underwent uncomplicated inguinal hernioplasty using prosthetic mesh. Currently on treatment with diuretics, intravenous albumin and antibiotics because of incipient portosystemic encephalopathy, the patient suddenly experienced spontaneous leakage of ascites through the umbilical hernia. Repeated CT (Fig. 2) showed mild decrease of ascites, collapsed umbilical hernia concave outer border of hernial sac, thinned skin overlying the enhancing peritoneal serosa. Microscopy and culture of ascitic fluid revealed leukocytosis (800 cells/mmc, 82% polymorphonucleates), no malignant cells, positive cultures for methicillin-resistant Staphylococcus aureus consistent with spontaneous bacterial peritonitis. Surgical repair of umbilical hernia was ultimately performed.

Discussion:

Umbilical hernias (UHs) are commonly encountered in patients affected with liver cirrhosis, particularly when longstanding ascites are present; conversely, inguinal hernias are not markedly influenced by liver decompensation. At the site of the UH, peritoneal serosa, preperitoneal fat and ascitic fluid generally protrude through the umbilical ring. Unfortunately, UHs exposed patients to potentially life-threatening complications such as visceral or omental incarceration and strangulation (which is often precipitated by rapid removal of fluid through paracentesis), hernial ulceration and rupture [1, 2]. Spontaneous ascitic leakage (SAL) is almost invariably associated with alcoholism because of unknown reasons, is generally preceded by skin ulceration overlying the UH, and develops through a breach of the hernial sac and peritoneum. Currently very uncommon because of improved standards of care, SAL may result in high-volume
paracentesis, represents a risk factor for adverse outcome and is associated with 5-30% mortality rate from peritonitis, sepsis or liver failure [3-6]. As seen in the hereby presented case, the use of CT including multiplanar reformations is very helpful in patients with distended abdomen and limited physical examination: CT allows confirming the presence and assess contents of an UH in the setting of cirrhosis, and to differentiate SAL from other potential complications such as omental necrosis secondary to torsed vascular pedicle, incarceration or strangulation of abdominal viscera [7]. Therefore, currently early surgical repair of UH is recommended, as non-operative treatment is associated with subsequent hernia repair in emergency setting and high mortality. Elective repair using prosthetic mesh after antibiotic prophylaxis, control of ascites, improved coagulation, metabolic and nutritional status allows preventing further complications with limited morbidity. Many centres suggest metabolic optimization using transjugular intrahepatic portosystemic shunt (TIPS) before umbilical hernioplasty [1, 8-11].

**Differential Diagnosis List:** Spontaneous leakage of ascites from umbilical hernia in cirrhosis., Spontaneous bacterial peritonitis, Hernia rupture after trauma, Coughing, Vomiting, Umbilical hernia with herniated abdominal organ(s), Umbilical hernia with visceral strangulation or omental necrosis

**Final Diagnosis:** Spontaneous leakage of ascites from umbilical hernia in cirrhosis.

**References:**


Figure 1

**Description:** Precontrast scans (a,b) showed cirrhotic liver, abundant homogeneously fluid-attenuating ascites (*), and umbilical hernia (arrow in b) containing ascitic fluid. **Origin:** Tonolini M, Radiology Department, “Luigi Sacco” University Hospital – Milan (Italy)
Description: Precontrast scans (a,b) showed cirrhotic liver, abundant homogeneously fluid-attenuating ascites (*), and umbilical hernia (arrow in b) containing ascitic fluid. Origin: Tonolini M, Radiology Department, “Luigi Sacco” University Hospital – Milan (Italy)
Description: Multiphase contrast-enhanced study including arterial (c,d), portal venous (e..h) and equilibrium (not shown) phases. No focal liver lesions suspicious for hepatocellular carcinoma were present. Note abundant ascites (*). Origin: Tonolini M, Radiology Department, “Luigi Sacco” University Hospital – Milan (Italy)
**Description:** Multiphase contrast-enhanced study including arterial (c,d), portal venous (e..h) and equilibrium (not shown) phases. No suspicious focal liver lesions were present. Additionally, a right-sided inguinal hernia (arrowhead) filled with ascitic fluid (*) was present. **Origin:** Tonolini M, Radiology Department, "Luigi Sacco" University Hospital – Milan (Italy)
Description: Portal venous phase images (e..h) confirmed abundant multicompartmental ascites (*), patent porto-mesenteric venous system, absence of suspicious focal liver lesions, and a right-sided inguinal hernia (arrowhead) filled with ascitic fluid. Origin: Tonolini M, Radiology Department, “Luigi Sacco” University Hospital – Milan (Italy)
**Description:** Detail multiplanar contrast-enhanced images (f...h) showed round-shaped, externally convex umbilical hernia (arrows) filled with ascitic fluid, with narrow neck and integrity of the uniform enhancing hernial sac including the peritoneal serosa. Note ascites (*). **Origin:** Tonolini M, Radiology Department, "Luigi Sacco" University Hospital – Milan (Italy)
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Figure 2

Description: Precontrast images showed mild decrease of ascites (*) compared to Fig.1, collapsed umbilical hernia (arrow in b) with concave outer border. Origin: Tonolini M, Radiology Department, "Luigi Sacco" University Hospital – Milan (Italy)
Description: Precontrast images showed mild decrease of ascites (*) compared to Fig. 1, collapsed umbilical hernia (arrow in b) with concave outer border. Origin: Tonolini M, Radiology Department, "Luigi Sacco" University Hospital – Milan (Italy)
**Description:** Contrast-enhanced images confirmed decrease of ascites (*) compared to Fig.1, unchanged liver and portal venous system. **Origin:** Tonolini M, Radiology Department, "Luigi Sacco" University Hospital – Milan (Italy)
Description: Detail multiplanar images showed collapsed umbilical hernia (arrows) with concave outer border of hernial sac, thinned skin overlying the enhancing peritoneal serosa, some residual herniated ascitic fluid (*). Origin: Tonolini M, Radiology Department, “Luigi Sacco” University Hospital – Milan (Italy)
Description: Detail multiplanar images showed collapsed umbilical hernia (arrows) with concave outer border of hernial sac, thinned skin overlying the enhancing peritoneal serosa, some residual herniated ascitic fluid (*). Origin: Tonolini M, Radiology Department, “Luigi Sacco” University Hospital – Milan (Italy)