CASE REPORT

Umbilical paracentesis for acute hernia reduction in cirrhotic patients

Katie W Russell, Mary C Mone, Courtney L Scaife

Department of Surgery,
University of Utah, Salt Lake
City, Utah, USA

Correspondence to
Dr Katie W Russell, katie.
russell@hsc.utah.edu

SUMMARY

Emergent repair of umbilical hernias in cirrhotic patients is associated with a high risk for morbidity and mortality. We propose a new technique, umbilical paracentesis, for reduction of incarcerated hernias in the patient with ascites. Under ultrasound guidance, removal of ascitic fluid from the umbilical hernia sac can reduce the local pressure and thereby allow for easy hernia reduction, thus avoiding the need for an emergent operation.

BACKGROUND

Umbilical hernias are commonly observed in patients with liver disease and ascites. While elective repair after medical optimisation may be indicated in select patients, emergency surgery carries a high risk of complication and death.

CASE PRESENTATION

A 63-year-old man with a history of end-stage liver disease due to non-alcoholic steatohepatitis presented at the hospital with an acutely incarcerated umbilical hernia. Five months prior to presentation, he had undergone a transjugular intrahepatic portosystemic shunt (TIPS) procedure for refractory ascites. Despite the TIPS procedure, the patient continued to have persistent ascites. On hospital admission, the model for end-stage liver disease score was calculated at 27. Examination revealed normal vital signs and a firm bulge at the umbilicus without skin ulceration or erythema. CT imaging documented ascitic fluid and small bowel within the umbilical hernia sac (figure 1). Under conscious sedation, multiple attempts at hernia reduction were performed without success.

TREATMENT

Using sterile ultrasound guidance, an umbilical paracentesis was performed, with 40 mL of fluid drained from the hernia sac (figures 2 and 3). Following the paracentesis the hernia was easily reduced. Overnight monitoring for signs of bowel compromise or other complication was followed by discharge to home within 24 h. An abdominal binder and extrapadding at the umbilicus to discourage reherniation was employed.

OUTCOME AND FOLLOW-UP

Approximately 1 month following this reduction the patient presented with recurrent incarceration. An umbilical paracentesis was again successfully performed followed by reduction of the hernia. Six months after the last presentation, the patient succumbed to progressive liver disease and died,

without requiring surgical repair or experiencing further complication related to the hernia.

DISCUSSION

The prevalence of umbilical hernias in patients with cirrhosis is at least 20%, which is 10 times higher than that observed in the general population,¹ and in as high as 42% of patients with ascites.² Ascites causes an increase in intra-abdominal pressure, thereby applying pressure on intestinal contents and causing protrusion through weaknesses in the abdominal wall, most commonly at the umbilical ring. These hernias are generally asymptomatic, but do carry a risk of serious complications including incarceration, strangulation and rupture.

Surgical repair of this type of hernia has associated complications that include leakage, dehiscence, infection, exacerbation of liver disease and prolonged hospital course as well as a high-recurrence rate. Because of these risks, many surgeons are hesitant to repair umbilical hernias in this patient population. There is evidence that elective repair using a surgical mesh product in medically optimised patients can be safe with a complication rate similar to that seen in non-cirrhotic patients.^{3–5} Aggressive preoperative and postoperative control of ascites is essential and may require undergoing a TIPS procedure if medical management is unsuccessful.⁶ Elective repair in select, appropriately managed patients is being recommended in order to prevent complications of non-operative management and to prevent the need for emergent repair.^{4 6–8}

Figure 1 CT image of incarcerated umbilical hernia.

To cite: Russell KW, Mone MC, Scaife CL. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2013-201304

INCARCERATED UMBILICAL HERNIA

Figure 2 Schematic of umbilical paracentesis allowing for reduction of incarcerated umbilical hernia.

There is no doubt that emergent repair is associated with a higher risk profile. In a large cohort study of patients undergoing emergent repair, comparing 1197 patients with cirrhosis to 30 836 patients without cirrhosis, there was a sevenfold higher mortality in the cirrhotic patients (3.8% vs 0.5%; $p < 0.0001$).⁸ Some authors have reported an emergency surgery death rate as high as 30%.⁹ Effort should be taken to avoid emergent repair whenever possible.

Some practitioners advocate paracentesis to aid in hernia reduction and this can be considered. There are, however, several reports of hernia incarceration following resolution of ascites by large volume paracentesis, aggressive diuresis, TIPS and/or portosystemic shunting.^{9–11} It can be hypothesised that the fluid shift caused by the treatment for ascites reduction alters pressure in the abdominal cavity, which decreases the size of the fascial defect leading to incarceration. From radiographical imaging of patients with ascites and umbilical hernias we know that there is often a related and significant volume of ascitic fluid within the hernia sac. This information led to the idea that changing the local pressure within the hernia sac, by removing the fluid, may allow for reduction of hernia contents in these patients. Fluid within the hernia sac can be easily identi-

Figure 3 Ultrasound visualisation of ascites within the hernia.

fied by ultrasound and removed, similar to a traditional paracentesis procedure.

This is the first documented report of umbilical paracentesis for reduction of an incarcerated hernia in a patient with significant cirrhosis and ascites. This technique for treatment can be safe and effective and may help avoid the need for emergent surgical repair in this delicate patient population.

Learning points

- ▶ Umbilical hernias are common in patients with cirrhosis and management of these hernias can be challenging.
- ▶ Elective repair of umbilical hernias in selected, medically stable, cirrhotic patients may be indicated.
- ▶ Emergent repair carries a high risk of morbidity and mortality and should be avoided whenever possible.
- ▶ Umbilical paracentesis is a technique for reduction of incarcerated hernias in these patients, thereby avoiding the need for an emergent surgical procedure.

Acknowledgements The authors would like to thank the patient and his family for consenting to the publication of this case. They would also like to thank Bill Kelly and the Medical Graphics & Photography Department at the University of Utah for the medical illustrations.

Contributors KWS observed the patient, performed the procedure, wanted to write it up, helped create the image and wrote the first draft of the report. CLS was attending the case and came up with the idea of umbilical paracentesis. CLS also helped write the manuscript. MCM helped with image creation and manuscript editing.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

REFERENCES

- 1 Dokmak S, Aussilhou B, Belghiti J. Umbilical hernias and cirrhosis. *J Visceral Surg* 2012;149:e32–9.
- 2 Chapman CB, Snell AM, Rowntree LG. Decompensated portal cirrhosis. *JAMA* 1931;97:237–44.
- 3 Ammar SA. Management of complicated umbilical hernias in cirrhotic patients using permanent mesh: randomized clinical trial. *Hernia* 2010;14:35–8.
- 4 Eker HH, van Ramshorst GH, de Goede B, et al. A prospective study on elective umbilical hernia repair in patients with liver cirrhosis and ascites. *Surgery* 2011;150:542–6.
- 5 Gray SH, Vick CC, Graham LA, et al. Umbilical herniorrhaphy in cirrhosis: improved outcomes with elective repair. *J Gastrointest Surg* 2008;12:675–81.
- 6 Triantos CK, Kehagias I, Nikolopoulou V, et al. Surgical repair of umbilical hernias in cirrhosis with ascites. *Am J Med Sci* 2011;341:222–6.
- 7 Belghiti J, Durand F. Abdominal wall hernias in the setting of cirrhosis. *Semin Liver Dis* 1997;17:219–26.
- 8 Carbonell AM, Wolfe LG, DeMaria EJ. Poor outcomes in cirrhosis-associated hernia repair: a nationwide cohort study of 32,033 patients. *Hernia* 2005;9:353–7.
- 9 Triantos CK, Kehagias I, Nikolopoulou V, et al. Incarcerated umbilical hernia after large volume paracentesis for refractory ascites. *J Gastrointest Liver Dis* 2010;19:245.
- 10 Trotter JF, Suhocki PV. Incarceration of umbilical hernia following transjugular intrahepatic portosystemic shunt for the treatment of ascites. *Liver Transpl Surg* 1999;5:209–10.
- 11 Lemmer JH, Strodel WE, Eckhauser FE. Umbilical hernia incarceration: a complication of medical therapy of ascites. *Am J Gastroenterol* 1983;78:295–6.

Copyright 2013 BMJ Publishing Group. All rights reserved. For permission to reuse any of this content visit <http://group.bmj.com/group/rights-licensing/permissions>.
BMJ Case Report Fellows may re-use this article for personal use and teaching without any further permission.

Become a Fellow of BMJ Case Reports today and you can:

- ▶ Submit as many cases as you like
- ▶ Enjoy fast sympathetic peer review and rapid publication of accepted articles
- ▶ Access all the published articles
- ▶ Re-use any of the published material for personal use and teaching without further permission

For information on Institutional Fellowships contact consortiasales@bmjgroup.com

Visit casereports.bmj.com for more articles like this and to become a Fellow