Letter to the Editor

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Percutaneous surgical repair for a patient with adult pararectal hernia caused by intractable ascites associated with liver cirrhosis

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SUMMARY Patients with liver cirrhosis are at increased risk of various visceral hernia because of persistent ascites and tissue fragility. Here we report successful treatment in a patient with pararectal hernia due to liver cirrhosis by a less invasive approach *via* para-anal region. The patient was a 73-year-old woman with a history of chronic hepatitis B that had been untreated for at least 20 years. At the age of 68 years, she was referred to our hospital for treatment of persistent ascites and thrombocytopenia due to advanced liver cirrhosis. Neither diuretics nor cell-free and concentrated ascites reinfusion therapy could decrease the ascites. She needed repeated paracentesis. She was referred to the surgical department due to the painful swelling of the left buttock which was diagnosed as the pararectal hernia. The welling was huge enough with the erosion of the covering skin. Surgery was planned in view of concern about the possible rupture of the hernia. Due to the massive ascites with the advanced liver cirrhosis, we were reluctant to do the laparotomic approach, and simple closure of the hernial orifice *via* direct approach from the cutaneous side was planned and performed. The patient was fortunately discharged seven days after the operation without any complications. One year later, there has been no recurrence of the hernia. Even in cases with massive ascites, direct simple closure of the hernia by percutaneous approach may be one of the options for the treatment of the pararectal hernia in case of urgent situation.

Keywords Liver cirrhosis, pararectal hernia, repair of hernia

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Patients with liver cirrhosis accompanied by massive ascites and sarcopenia are at risk of visceral hernia. The incidence of hernia involving the abdominal wall is particularly high in these patients (*1*). Pararectal hernia tends to occur in older multiparous women and those who have undergone extensive resection of the pelvic floor. However, there have been no reports of pararectal hernia in patients with liver cirrhosis, and there is no established treatment. In this report, we describe a case of pararectal hernia in a patient with liver cirrhosis who was treated by the surgical repair *via* trans-cutaneous approach.

A 73-year-old woman with progressive and symptomatic enlargement of the pararectal hernia was referred to the surgical department by hepatologists in our hospital. She had two children born with normal vaginal delivery. She had a history of cholecystectomy 12 years ago, but had no history of operations of the pelvic organs. She had been treated for hepatitis B cirrhosis for more than 5 years with persistent ascites and thrombocytopenia. A nucleic acid analog could turn the hepatitis B virus DNA negative, but her ascites did not resolve and has persisted. Various kinds of diuretics, like the v2-receptor blocker (tolvaptan), furosemide, and spironolactone, were applied. They could slow down the increase of the ascites but were not possible to decrease. Three years ago, cell-free and concentrated ascites reinfusion therapy was attempted, but she developed fever as an adverse effect and could not try again. Some invasive treatments, like transjugular intrahepatic portosystemic shunt or peritoneovenous shunt, were rejected by the patient. Therefore, she had been managed by paracentesis almost every month, with around 1,500 ml drainage each time. The pararectal hernia had been diagnosed 14 months before the operation with the abdominal computed tomography examination, but at that time the surgical

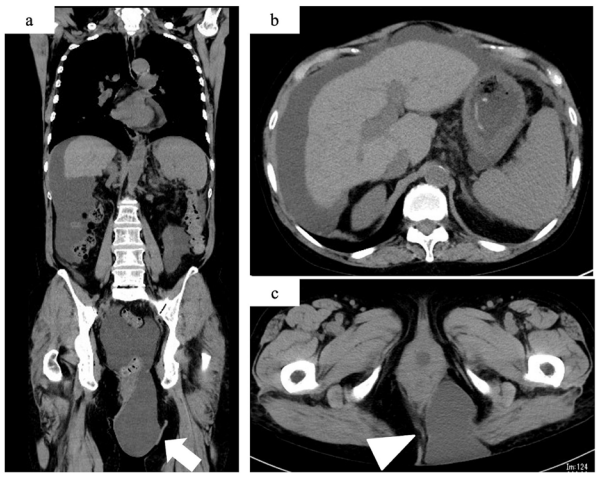

Figure 1. Preoperative computed tomography. a. Preoperative computed tomography (coronal section) demonstrating abdominal ascites and pararectal hernia (White arrow). **b.** Preoperative computed tomography demonstrating liver cirrhosis (atrophy of right robe and large amount of ascites). **c.** Preoperative computed tomography demonstrating pararectal hernia (White arrowhead).

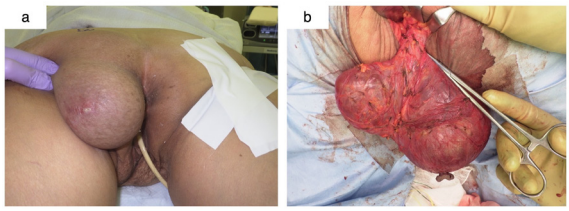

Figure 2. Intraoperative findings. a. Figure shows a pararectal hernia in the prone position. **b.** Figure shows a hernia sac after peeling to the hernia orifice.

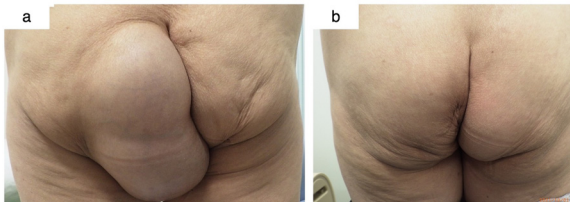

Figure 3. Patient's preoperative and postoperative appearance. a. Patient's preoperative standing position shows a huge mass of hernia sac. **b.** Patient's postoperative standing position shows disappearance of hernia sac.

repair had not been attempted because the hernia was small and her symptom was mild. In addition, there was concern about the possibility of postoperative infection or dehiscence by the laparotomic approach. However, the hernia gradually enlarged and she developed painful symptoms, including severe tightness in her left buttock (Figure 1). Her daily movement, including the sleeping, was much disturbed. Finally, skin erosion like a pressure ulcer appeared on the top of the swelling (Figure 2). Concerning the rupture, strangulation and sever symptoms, we decided to perform surgery. We selected the per-cutaneous approach from the peri-anal skin, considering to make the injured area as small as possible.

The patient was placed in the jack-knife position under general anesthesia (Figure 2). After making a spindle-shaped incision on the top of the swelling, cutaneous and connective tissue were meticulously peeled off from the hernia sac. While approaching the proximal side of the hernia, the hernia was completely isolated up to the orifice, with identifying the boundary between the adipose tissue of the pelvic floor and the levator ani muscle. The orifice was double-ligated with 4-0 prolene suture (Figure 2). The connective tissue and muscle were reinforced around the hernia orifice with a vertical mattress suture using 3-0 prolene. The skin was primarily closed. The operation time was 5 h 36 min, and blood loss was 30 mL. To decrease the abdominal pressure, ascites was drained by indwelling fine catheter for 3 days after the operation. The patient was discharged on postoperative day 7 with no complication. As of 1 year after the operation, no recurrence has been observed (Figure 3), although her ascites has been remained. Her subjective symptoms disappeared and she has maintained good quality of life.

Repair of the abdominal wall hernia with intractable massive ascites due to liver cirrhosis has been recommended only after or with the liver transplantation (*1*). However, in Japan, liver transplantation is currently limited, and impossible in elderly patient over 70 years. Considering that persistent ascites is a major risk factor for repair of the hernia, it is also recommended that any type of portosystemic shunt or peritoneovenous shunt should be performed before the radical hernia repair (*1*). However, under the limited chance of the liver transplantation, such shunt operations that has been used as the bridge to the transplant is rarely done. Therefore, surgical treatment of the hernia tends to be avoided in patients with massive ascites. However, hernias may be associated with several life-threatening events in cirrhotic patients, including incarceration and/or strangulation of the gastrointestinal tract, and then may lead to the fatal outcome. That is why the symptomatic hernia had to be treated surgically in selected cases.

Pararectal hernia is a kind of the internal hernia, and primary pararectal hernias are extremely rare hernia in the abdominal wall hernia (*2,3*). Because of its rarity, the best approach for the repair of the hernia has not been established among the abdominal, the perineal, and the combined abdominoperineal approaches (*2,3*). In addition, the repair under the massive ascites due to the liver cirrhosis has not been reported. Hernia repair consists of closure of the orifice and reinforcement of the surrounding tissue by the autologous tissue or artificial material. Simple closure only has a high recurrence rate especially under the remaining high pressure of the abdominal cavity. The risk of recurrence is naturally low with enforcement, and using the mesh is now quite popular in these days (*4*). However, in

the repair with massive ascites, concern about the postoperative infection is not small. Arroyo *et al*. reported that the recurrence rate after hernia repair in patients with cirrhosis was significantly lower using mesh, occurring in 11% of simple closures versus 1% of mesh-based procedures (*4*).

In our case, considering the balance between the risk and benefit of the surgery, simple closure using the perineal approach was preferred. The surrounding tissue including some pelvic floor muscles was used for coverage of the orifice, although it sounded palliative without enforcement by the mesh placement. The effectiveness of robotic-assisted pelvic floor hernia surgery has recently been reported (*5*). The benefits of an intra-abdominal approach include avoidance of organs near the hernia and reliable mesh deployment. However, we hesitated to do a laparoscopic approach in our case, because it would be too difficult to secure the visual field due to the massive ascites. Although the repair in our case was performed under direct vision, all procedures needed to be performed very carefully while identifying the boundary between the peritoneum and surrounding tissue using a magnifying glass. Furthermore, bleeding was thoroughly controlled using a ball-shaped electrode that was appropriate even for small blood vessels in the middle of surgical procedure. Although the procedure was challenging, it was useful for avoiding postoperative complications.

In conclusion, direct simple closure *via* perineal approach could be a safe option for the repair of pararectal hernia with intractable ascites associated with liver cirrhosis.

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