

Case Report

Transversus Abdominis Muscle Release without Mesh for Incisional Hernia in a Patient with Advanced Pancreatic Cancer

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ABSTRACT

Background : Incisional hernias, frequent complications of abdominal surgery, are still a challenge for surgeons. However, for incisional hernias in patients with advanced abdominal cancer, no definitive treatment has been established.

Case presentation : The patient was a 69-year-old woman in whom an incisional hernia developed and frequently caused abdominal pain after gastrojejunostomy was performed for an unresectable pancreatic cancer. The hernia was categorized as a complex hernia, with a maximum size of 35 × 30 mm and intermittent presence under the xiphoid process. Therefore, tissue-to-tissue repair with a posterior component separation technique and transversus abdominis muscle release was performed. With the presence of peritoneal dissemination, prosthetic repair was abandoned. The postoperative course was uneventful, and the patient was discharged 10 days after surgery.

Conclusion : Although some controversies are involved in the treatment of incisional hernias in patients with end-stage cancer, fascial repair, such as transversus abdominis muscle release, appears to be effective for the treatment of complex hernias.

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Key words : incisional hernia, transversus abdominis muscle release

INTRODUCTION

Incisional hernias, which develop in approximately 10% of patients who undergo laparotomy, remain a major complication of abdominal surgery¹. These hernias cause such symptoms as abdominal discomfort, pain, and intestinal obstruction and seriously impair the patient's quality of life (QOL). Various surgical procedures have been formulated thus far. Incisional hernias have been reported to recur in 17% to 43% of patients repaired without a mesh or a patch^{2,3}. Although tension-free hernia repair with a mesh

has decreased recurrence rates to less than 10%^{4,5}, this procedure has complications, including seroma formation, mesh or patch infection, and intestinal fistulization⁶.

Component separation (CS) has been reported to enable tension-free abdominal wall closure without the use of meshes⁷, and classified as subtypes of CS are the posterior CS method and transversus abdominis muscle release (TAR)⁸. The TAR technique involves an incision to the transversus abdominis muscle followed by the separation of the transversalis fascia and transversus abdominis muscle and subsequent abdominal wall closure. Because tension-

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free sutures are possible and the abdominal wall becomes fragile, TAR requires the use of a mesh to strengthen the abdominal wall. We report a case in which incisional hernia repair via TAR without the use of a mesh was performed for a patient who had end-stage pancreatic cancer and a limited prognosis.

CASE PRESENTATION

The patient was a 69-year-old woman with pancreatic cancer for whom resection was planned. However, because of intraoperative findings of peritoneal dissemination and retroperitoneal invasion near the ligament of Treitz, the tumor was considered inoperable. Gastrojejunostomy was performed to prevent duodenal obstruction. Subsequently, chemotherapy was performed with a regimen of nab-paclitaxel plus gemcitabine.

Despite 2 years of chemotherapy, the pancreatic cancer progressed. Respecting the wishes of the patient, palliative care was introduced. Two months after the surgery, the patient was found to have an incisional hernia that occasionally caused strangulation (Fig. 1), leading to increased pain and loss of appetite. Her desire to enjoy a meal became stronger each day. Despite a prognosis of 6 months, incisional hernia repair was deemed necessary owing to the circumstances and was, therefore, performed.

SURGICAL PROCEDURE

An incision was made in the skin directly above the hernia sac, under which a normal rectus sheath was revealed. Although primary closure was considered, we decided against it because the hernia was categorized as a complex hernia, with a maximum size of 35 × 30 mm and intermittent presence under the xiphoid process. Multiple disseminated nodules were found in the peritoneum, and TAR without the use of a mesh was performed. Separation was completed between the rectus abdominis muscle and the posterior rectus sheath. After a neurovascular bundle was confirmed, we incised the posterior lobe of the internal oblique muscle fascia to expose the transversus abdominis muscle (Fig. 2). The transversus abdominis muscle was incised, and the muscle and the transversalis fascia were then sufficiently separated to the rib arch and the back of the sternum (Fig. 3). After the rectus sheath was maneuvered (Fig. 4), we sutured posterior rectus sheath and the anterior rectus sheath (Fig. 5a). The excess skin and hernia sac were trimmed off (Fig. 5b). The operation lasted 90 minutes and had an estimated blood loss of 40 mL.

POSTOPERATIVE COURSE

The patient resumed oral food intake the day after surgery. The symptoms of abdominal pain and nausea after meals decreased, and the overall dietary intake improved.



Fig. 1. Hernia with intestinal prolapse in the upper abdomen.

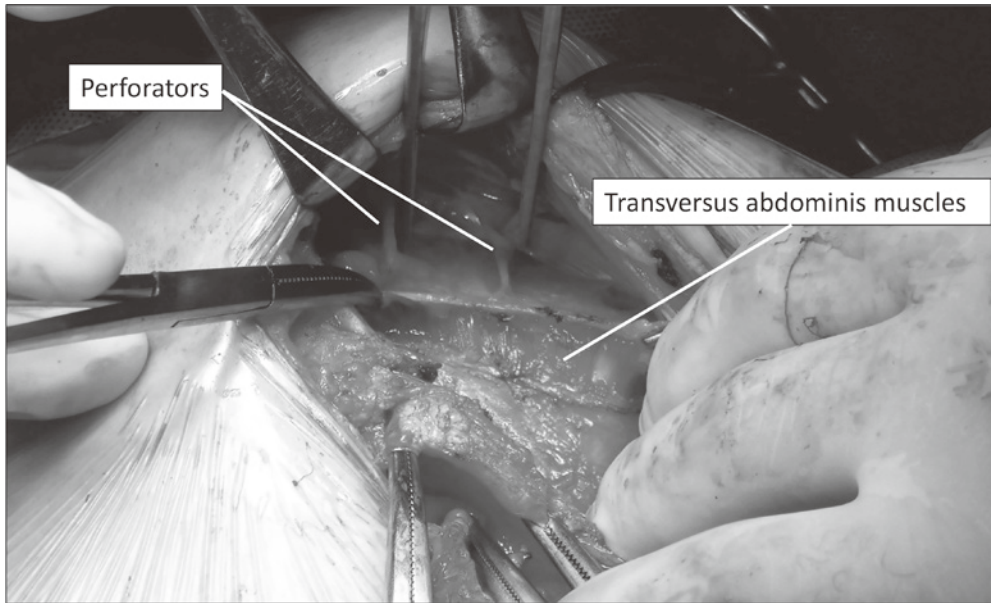


Fig. 2. The posterior rectus sheath was incised in a line that preserves the perforator nerves, after which the transversus abdominis muscle was exposed.

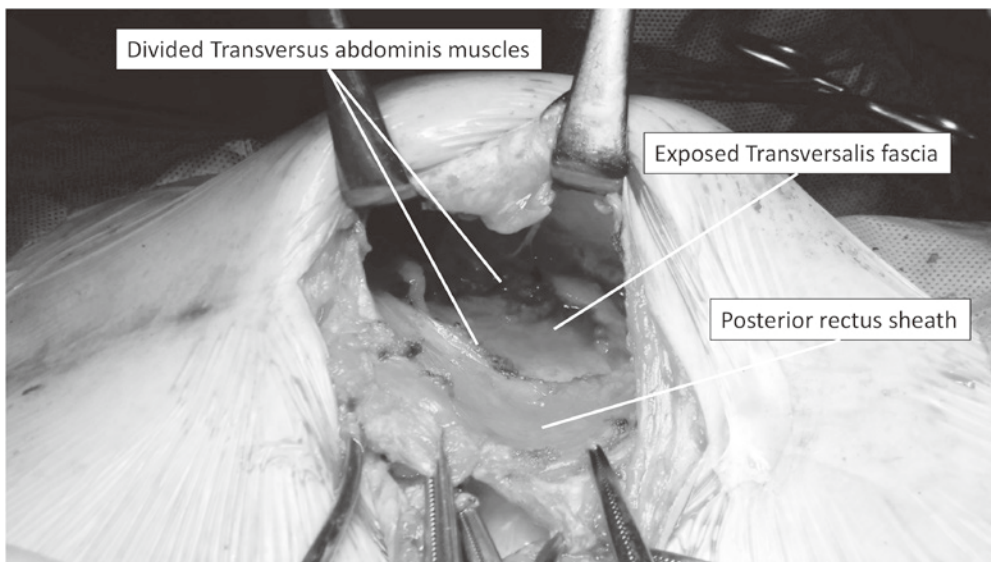


Fig. 3. A new preperitoneal plane is created by separating the undersurface of the lateral transected transversus abdominis from the peritoneum and fascia transversalis.

The patient was discharged on the 10th postoperative day. Although the hernia did not relapse, the pancreatic cancer progressed and caused the patient's death on postoperative day 63. However, the patient was able to enjoy eating meals until 2 days before she died.

DISCUSSION

Although pain, discomfort, and cosmetic disfigurement are often reasons for patients seeking treatment for an incisional hernia, surgical repair in patients with a limited prognosis is controversial. In particular, no clear treatment strategy for incisional hernia has been established for terminally ill patients who have cancer with peritoneal dissem-

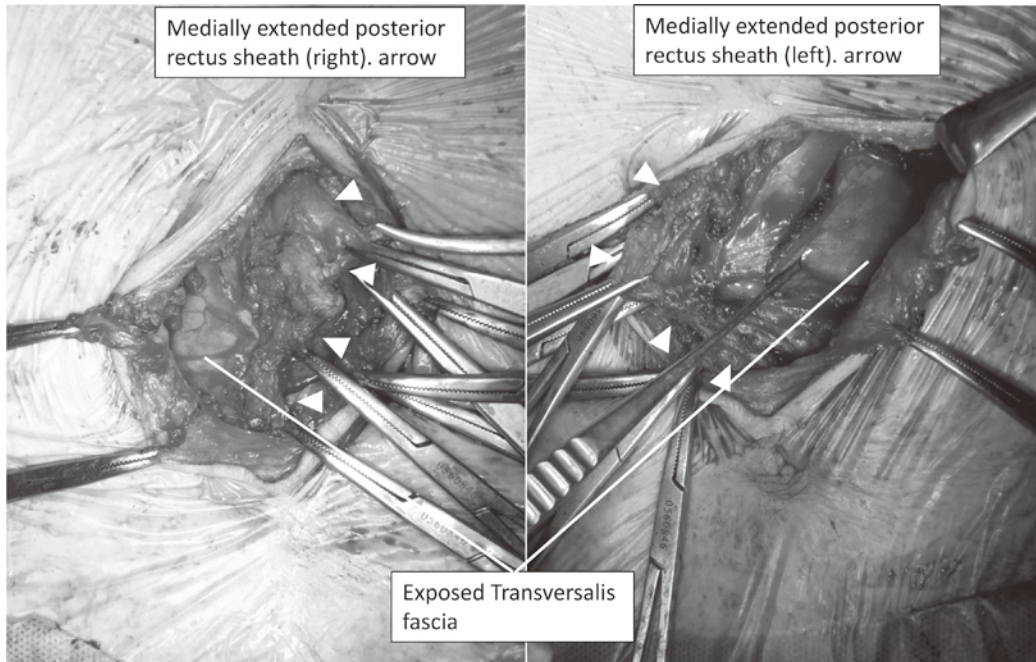


Fig. 4. The right and left rectus sheaths are sufficiently extended (indicated by arrows).

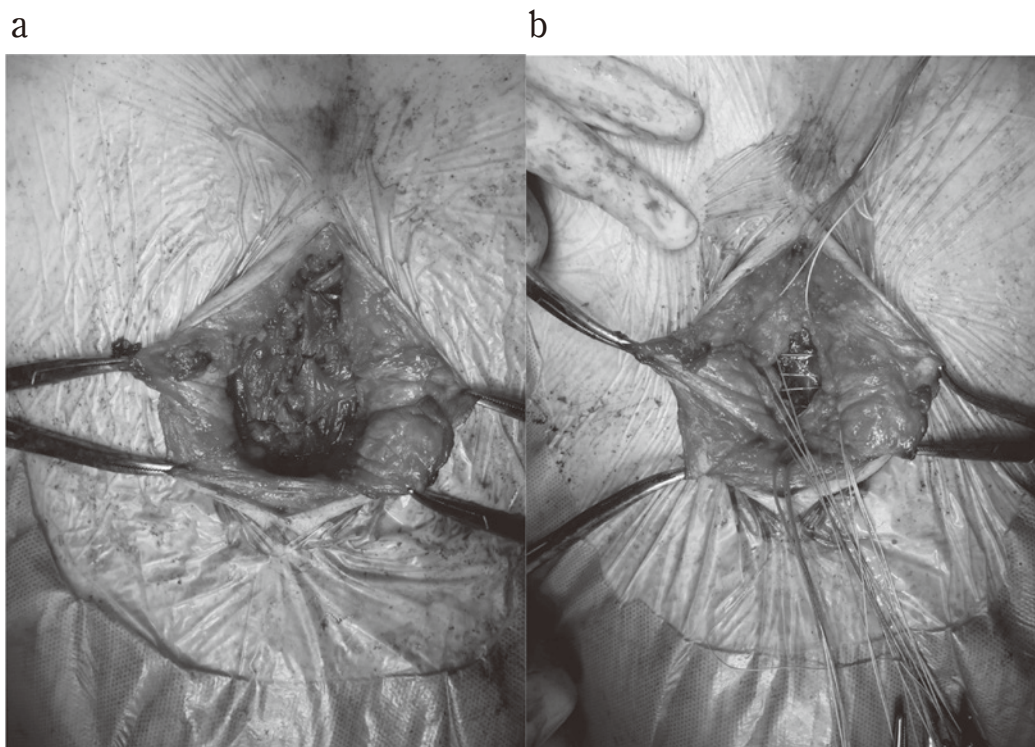


Fig. 5 a,b. The fascia closed with an interrupting suture.

ination, as in the present case. According to a report by Cascales et al.⁹, of patients with peritoneal dissemination, postoperative incisional hernias develop in approximately

3.5%. Complications caused by the repair surgery may impede the treatment of the cancer. Therefore, most patients, except for those with urgent conditions, such as strangula-

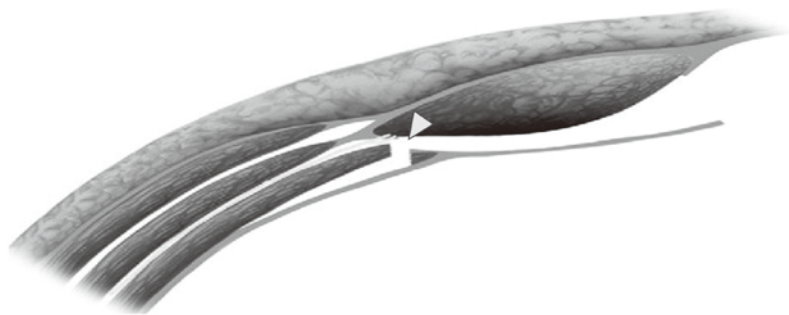


Fig. 6. Division of the posterior rectus fascia just medial to the linea semilunaris and perforator nerves followed by division/release of the transversus abdominis muscle along its entire medial edge.

tion ileus, should be observed rather than surgically treated. However, because incisional hernia often has related symptoms that decrease the patient's QOL, for patients who have completed treatment or are receiving palliative care, surgical treatment should be considered on the basis of how much QOL has decreased.

The present patient had abdominal pain due to an incisional hernia while undergoing chemotherapy for pancreatic cancer for 2 years. However, despite the chemotherapy, the cancer progressed. Therefore, chemotherapy was stopped and palliative care was started. Considering the patient's desire to eat without abdominal pain, surgery to treat the incisional hernia was planned.

The surgery initially planned for the patient was primary closure. Although the defect did not reach 3.5 cm in width, the hernia was complicated because the hernia phylum continued intermittently cranially to the bottom of the rib arch and made primary closure difficult¹⁰. Mesh-free restoration of such a complex hernia would, therefore, require absolute tension-free repair. If mesh is not used, the CS technique should be considered, and several options are available. Although anterior CS is the simplest technique, the current case also had a hernia phylum under the ribs, for which the posterior CS was a more suitable option. For posterior CS, however, the penetrating branch is normally transected, presenting a potential concern for decreased wall strength if the rectus abdominis muscle becomes atrophied. Therefore, the anterior-posterior sheath of the rectus abdominis muscle was sutured by performing TAR, a subtype of posterior CS⁸. Compared with the anterior CS method, the TAR method, in which the transversus abdominis muscle is incised and the anterior peritoneal cavity is dissected, has the advantages of being free of the spacial re-

strictions of the rib arch, even in the upper abdomen, allowing an easy dissection and preservation of the penetrating branches and nerves (Fig. 6). However, if TAR is performed to reinforce the abdominal wall, a mesh is generally required.

For hernia repair in patients with peritoneal dissemination, various procedures have been suggested¹¹. Although a mesh is often used to repair an abdominal wall scar hernia, it should reportedly not be used for patients with peritoneal dissemination¹². Indeed, within meshes used for hernia repair, tumor implantation has been reported^{13,14}. The preliminary results of an experimental study presented during the 2018 meeting of the Peritoneal Surface Oncology Group International verified that the type of prosthetic material was closely correlated with the degree of proliferation and tumor progression¹⁵. Because biosynthetic meshes appear to greatly accelerate tumor proliferation and implantation, when a prosthesis is needed for correcting a defect of the abdominal wall, the use of biological meshes is more sensible.

The incisional hernia of the present patient was repaired via the TAR method without a mesh; as a result, the hernia did not recur and she was able to enjoy meals until shortly before her death. To our knowledge, the present case is the first to be reported of the use of the TAR method without a mesh. However, some patients with a limited prognosis might survive for an unexpectedly long time; therefore, information on more patients should be collected for a further analysis of postoperative results.

CONCLUSION

The present case report shows our experience with

performing mesh-free TAR to repair an incisional hernia in a patient with peritoneal dissemination. This report suggests that TAR without a mesh can be considered for patients with a limited prognosis.

Authors' contributions : TK, YN, EI, and YI performed the operation and management of the patient in this case report. MM and HS supervised this case report. All authors have read and approved the final manuscript.

Authors have no conflict of interest.

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