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Laparoscopic treatment for renal paratransplant hernia: A case report

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ABSTRACT

INTRODUCTION: There are limited reports regarding renal paratransplant hernia (RPH), which is a rare type of internal hernia. Herein, we report a case of successful laparoscopic treatment of RPH.**PRESENTATION OF CASE:** A kidney transplant recipient presented to our emergency department with a 6-h history of abdominal pain and vomiting. The patient had received a living-related donor kidney transplantation and native nephrectomy in our hospital last year. Computed tomography (CT) confirmed a diagnosis of RPH. We performed laparoscopic exploration, and the findings showed an incarcerated small bowel in the retroperitoneal space through a peritoneal defect. Short laparotomy was performed to resect the non-viable bowel. The peritoneal defect was opened adequately. The patient's postoperative course was uneventful, with no complications.**DISCUSSION:** RPH is an uncommon variant of internal hernia, which is a rare surgical complication after kidney transplantation. Early diagnosis and treatment are important once RPH develops. Due to immunosuppression in kidney transplant recipients, typical signs of peritonitis were not observed. This event can be critical to the patient. Laparoscopic surgery has recently become a treatment option for small bowel obstructions. We believe that this surgical procedure is useful for patients with RPH.**CONCLUSION:** We report a case of RPH treated laparoscopically. This approach can be a treatment of choice for RPH.© 2021 The Author(s). Published by Elsevier Ltd on behalf of IJS Publishing Group Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

1. Introduction

Renal paratransplant hernia (RPH) is a rare internal hernia and a surgical complication of kidney transplantation [1]. During the operation, an unanticipated peritoneal defect was created, and the bowel was incarcerated through the space. Few cases of RPH have been reported [1–6], but this is the first case of a laparoscopic-assisted treatment. We report our experience with some literature reviews. This work has been reported in line with the SCARE criteria [7].

2. Presentation of case

We report a case of an ambulatory, kidney transplant recipient who presented to our emergency department with a 6-h history of abdominal pain and vomiting. Eight years ago, the patient was diagnosed with end-stage renal disease due to autosomal

dominant polycystic kidney disease (ADPKD). Haemodialysis was started 3 years ago. Living-related donor kidney transplantation and native nephrectomy were also performed in our hospital last year. The patient's medical history included hypertension, hyperlipidaemia, and secondary hyperparathyroidism. Immunosuppressive medications including tacrolimus, everolimus, and methylprednisolone were prescribed after kidney transplantation. Vital signs were normal aside from tachycardia. Abdominal examination revealed tenderness in the right lower quadrant around the transplanted kidney. Laboratory tests revealed unremarkable findings. Computed tomography (CT) showed closed-loop small bowel obstruction above the transplanted kidney (Fig. 1a,b). We performed a laparoscopic exploration using a rigid scope (Precision IE Laparoscopes, Stryker Japan K.K., Tokyo, Japan). A 12-mm port was inserted into the umbilical incision, and 5-mm ports were inserted in the left upper and lower abdomen. Laparoscopic findings showed an incarcerated small bowel in the retroperitoneal space via a peritoneal defect (Fig. 2a,c). The small bowel was carefully reduced laparoscopically (Fig. 2b) and was resected by small-incision laparotomy because of non-viable ischemic changes in the serosa (Fig. 3). The peritoneal defect was not closed but just resected large enough to prevent the recurrence of incarceration (Fig. 2d). The postoperative course was uneventful without any

Abbreviations: RPH, renal paratransplant hernia; CT, computed tomography; ADPKD, autosomal dominant polycystic kidney disease.

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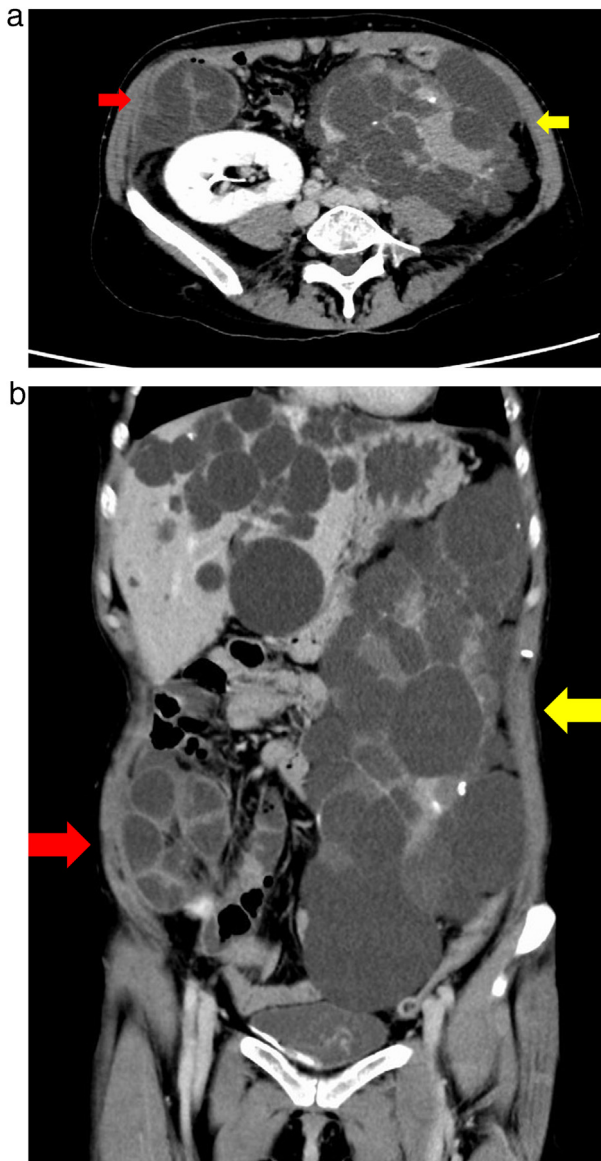


Fig. 1. Contrast CT shows dilatation of small bowel in front of the transplanted graft (red arrow) and right polycystic kidney (yellow arrow). A closed loop is detected in the retroperitoneal space. (a) axial view; (b) coronal view.

complications; thus, the patient was discharged on postoperative day 7.

3. Discussion

Paratransplant hernia was first reported in 1978 [2] and has been reported in 13 cases up to the present time, including in one review article in the literature [1–6]. This disease is an uncommon variant of internal hernia, which is a rare surgical complication after kidney transplantation, with an incidence rate ranging between 0.18% [4] and 0.45% [5]. The aetiology has been considered as an iatrogenic surgical complication, where the peritoneum is injured because of a rough procedure or an excessive dissection in the retroperitoneal space during transplantation. If this injury is found intraoperatively, any defect should be closed, regardless of size. It goes without saying that prevention of defects is important. Once paratransplant hernia occurs, early diagnosis and treatment are vital. Due to immunosuppression in kidney transplant recipients, they often have no typical signs of peritonitis; thus, this can be fatal [8].

Peritoneal defects are usually small, thereby causing strangulation. Therefore, surgical intervention should be indicated. In almost all cases, RPHs are resolved by performing exploratory laparotomy. Open laparotomy for small bowel obstruction has gained acceptance among most general surgeons, but laparoscopic surgery has recently become a treatment option. Otani et al. concluded that laparoscopic surgery for small bowel obstruction can be safely performed in selected patients, but indications in cases involving strangulation still remained controversial in their study [9].

Regarding RPH, laparoscopic surgery can efficiently identify peritoneal defects and release the small bowel easily by opening the defect. The hernia orifice is opened wider by resecting the peritoneal defect laparoscopically. Since laparoscopic suturing is time-consuming, we considered that this approach simplified the procedure, thereby shortening the operative time. If a bowel is non-viable, it can be resected with a minimal incision as compared with that of an open surgery. Therefore, immunosuppressed patients after transplantation benefit from the advantages of this minimally invasive treatment. However, further study is required to determine the extent of resection of the peritoneal defect and to observe this with more patients and a longer follow-up period.

To the best of our knowledge, there have been no reports of cases involving the laparoscopic treatment of RPH. Herein, we recommend a laparoscopic approach for managing RPH.

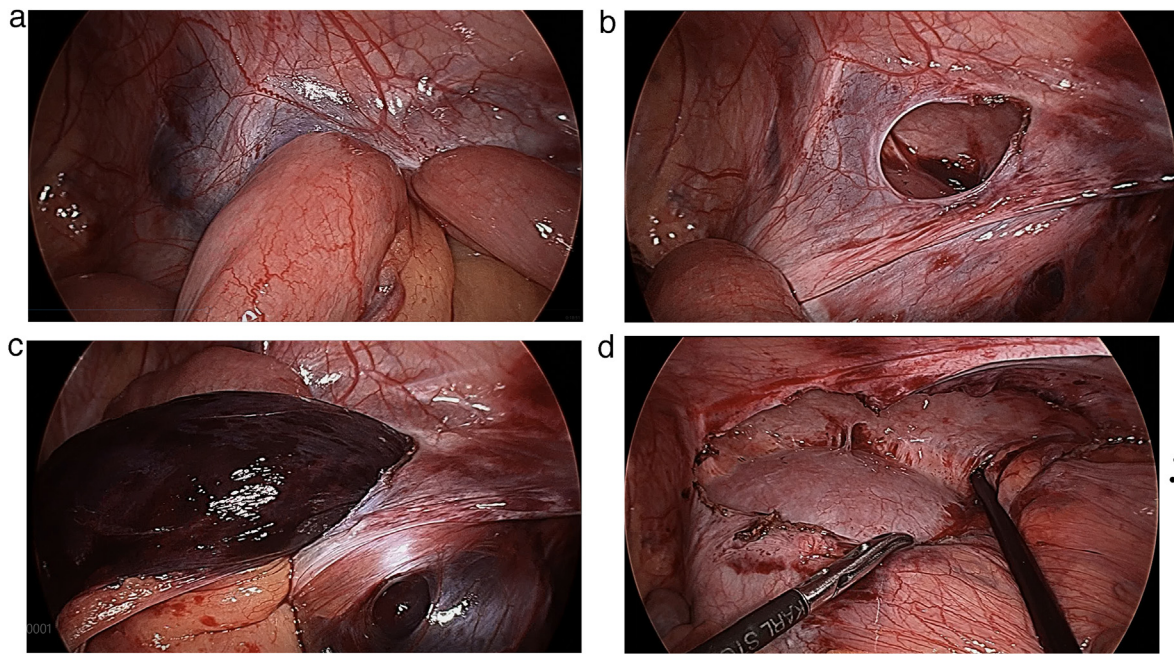


Fig. 2. Intraoperative findings. (a) the incarcerated small bowel; (b) reduced necrotic small bowel; (c) peritoneal defect; (d) opened peritoneal defect.

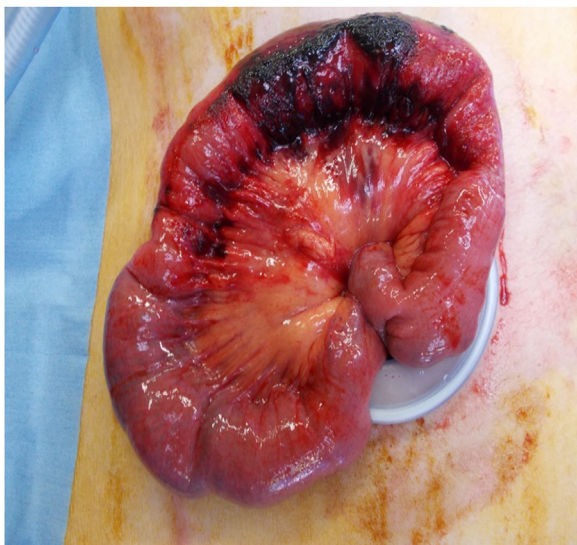


Fig. 3. Small-incision laparotomy findings.

4. Conclusion

We report a case of RPH treated using a laparoscopic approach. This approach can be the treatment of choice for RPH.

Declaration of Competing Interest

None.

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Ethical approval

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Author contribution

Dr. Yuto Igarashi, the first and corresponding author, drafted and finalised the manuscript, and performed the surgery. Other doctors, Jun Kawachi, Rai Shimoyama, Hiroyuki Kashiwagi, Katsunori Miyake, Mizuki Yamano have cooperated in this manuscript.

Registration of research studies

Not Applicable.

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