Obstruction hernia post renal transplant: a case report in a Tertiary Care Center, Jeddah

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ABSTRACT

Background: Kidney transplantation is the preferred treatment for end-stage renal disease (ESRD) due to its superior outcomes compared to dialysis. However, complications such as infection, wound dehiscence, incisional hernia (IH), and rarely, renal paratransplant hernia (RPH) can occur post-transplant. This study reported a case of a patient with a post-renal transplant who presented abdominal symptoms requiring urgent laparotomy for an obstructed hernia at the transplant site.

Case Presentation: A 57-year-old male with non-alcoholic fatty liver disease, ESRD secondary to IgA nephropathy, myelofibrosis, and renal stones underwent a renal transplant from his son. He presented to the emergency department 6 days after he was discharged with severe abdominal pain, vomiting, and a visible bulge at the transplant incision. Ultrasound confirmed an IH with small bowel obstruction. Exploratory laparotomy successfully managed the hernia, and postoperative care included antibiotics and supportive measures. The patient recovered uneventfully and was discharged in good condition.

Conclusion: RPH represents a significant but uncommon complication following kidney transplantation. Timely identification and surgical intervention are essential for favorable outcomes. Despite the immunosuppressive risks, the incidence of RPH remains relatively low. Careful surgical planning is crucial to mitigate complications, and ongoing research is needed to refine treatment strategies, particularly exploring laparoscopic approaches in select cases.

Keywords: Case report, renal paratransplant hernia, hernia, emergency, incisional hernia, kidney transplant.

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Background

Kidney transplant is deemed to be the gold standard treatment for end-stage renal disease due to its higher survivability rate, quality of life, and cost-effectiveness than dialysis [1]. However, certain complications might occur after the transplant which include infection, wound dehiscence, incisional hernia (IH), and in rare cases renal para-transplant hernia [2]. Paratransplant hernia, though uncommon, poses a potentially life-threatening crisis following renal transplantation surgery. It occurs when there is a defect in the peritoneum, the membrane surrounding the transplanted kidney, leading to entrapment of the small intestine. This entrapment can cause bowel obstruction, ischemia, and necrosis, with symptoms often presenting subtly in immunosuppressed patients, leading to delayed diagnosis and increasing the risk of severe adverse outcomes, including multiple organ failure [3]. This complication typically arises due to inadvertent damage to the peritoneum during the surgical process of creating space for the kidney or during closure, where stitches may inadvertently tear the peritoneum [4]. Therefore, this is a report of a case of a post-renal transplant patient presenting with abdominal pain and vomiting who underwent immediate laparotomy for an obstructed hernia at the transplant surgery site.

Case Presentation

A 57-year-old male, a known case of non-alcoholic fatty liver disease with F2 fibrosis, with end-stage renal disease secondary to IgA nephropathy, biopsy-proven 7 years prior. The patient also suffers from myelofibrosis and is JAK 2 positive in genetic testing done in 2016. He is also being treated with Ruxolitinib for polycythemia vera and has a history of renal stones. The patient underwent a living-related renal transplant (from son) and was discharged 12 days later. The patient was clinically and hemodynamically stable; with good oral intake and urine output; and stable graft function with no pain. On post-op day 18, the patient presented to the emergency room (ER) with epigastric abdominal pain since morning, non-radiating and unrelated to food, with no clear triggers. He vomited twice, with moderate amounts of non-bilious, non-projectile,

and non-bloody food content. Additionally, the patient experienced diarrhea for the past 3 days, characterized by watery, non-bloody stools of normal color, occurring at a frequency of two episodes per day.

Vitals at presentation were as follows: blood pressure 143/68 mmHg; heart rate 86 bpm; respiratory rate 18 bpm; temperature 36.8°C; and SpO_2 99%. Upon examination, the patient was conscious, alert, and oriented with a Glasgow Coma Scale of 15/15. Chest auscultation revealed equal bilateral airway entry and normal cardiac sounds (S1, S2) without murmurs. The abdomen was distended at the surgical site, soft, lax, and tender, with negative findings for Murphy's sign and rebound tenderness. The neurological assessment showed no deficits, and there were no signs of lower limb edema or deep vein thrombosis. While the patient was in ER, he developed a bulge at the incision site of his renal transplant associated with severe pain and multiple episodes of vomiting. There was a swelling seen at the incision site and tenderness on palpation, and the swelling could not be reduced. The skin was intact, small stable ecchymosis was seen, and clips were in place. No suprapubic tenderness was present, and voiding was free.

Laboratory findings showed lactic acid 3.54 mmol/l, ESR 17 mm/hour, CRP 1.0 mg/l, WBC 15 ×10^9/l, Hgb 10.4 g/dl, creatinine 108 umol/l, GFR 69, and LDH 293 U/l (Table 1). Abdominal wall ultrasound was performed which showed a C-shaped small bowel loop in the right iliac fossa with afferent and efferent entering adjacent to the interior pole giving a double beak sign. A maximum small bowel diameter of 3.2 cm with preserved vascularity was seen in color Doppler images. The urinary bladder appears under distended with stents noted within. The impression is suggestive of IH and small bowel close loop obstruction was herniated through the defect in the peritoneal and fascial defect and simple collection was noted at the transplanted kidney hilum.

Table 1. *Laboratory results.*

EXAM	REFERENCE RANGE	RESULT
Lactic acid	0.7-2 mmol/l	3.54 mmol/l
ESR	0-15 mm/hour	17 mm/hour
CRP	0-5 mg/l	1 mg/l
White blood cells	4-11 ×10^9/l	15 ×10^9/l
Red blood cells	4.5-6.5 ×10^12/l	4 ×10^12/l
Lymphocyte	1.5-4 ×10^9/l	0.39 ×10^9/l
Monocyte	0.2-0.8 ×10^9/l	0.13 ×10^9/l
Neutrophils	2-7.5 ×10^9/l	13.6 ×10^9/l
MCH	27-32 pg	26.3 pg
MCHC	32-36 g/dl	30.4 g/dl
Creatinine	65-112 umol/l	108 umol/l
GFR	60 ~	69
LDH	100-217 U/l	293 U/l
Hgb	13-18 g/dl	10.4 g/dl
Platelets	150-450 ×10^9/l	260 ×10^9/l
INR	0.2-1.2	1
PT	11-14 second(s)	12 second(s)
PTT	26-41	32

The patient was admitted for an exploratory laparotomy due to an abdominal bulge at the previous kidney transplant site. During the exploratory laparotomy, the surgical team reopened the old wound scar and evacuated a large amount of seroma fluid. Upon exploration, a loop of the small bowel was found herniated through a defect in the peritoneal and fascial layers, though there were no signs of ischemia. The bowel was carefully repositioned into the abdominal cavity, and the peritoneal defect was repaired using non-absorbable sutures in a multi-layered interrupted fashion. The team proceeded to close multiple layers of the abdominal fascia with looped Nylon and reinforced Ethibond sutures, ensuring a secure closure. A subcutaneous drain was placed, and the skin was closed using skin clips with a Silvercel pressure dressing applied. The patient tolerated the surgery well without any complications, with an estimated blood loss of 5 ml and no need for a blood transfusion. Postoperative care was provided, and the patient was discharged in stable condition.

Discussion

Renal paratransplant hernia (RPH) is considered to be an uncommon type of IH [5,6]. It occurs as a result of various reasons, which could be due to inappropriate maneuvers during kidney grafting, stitches during the closure of the peritoneum causing a tear, or a rupture of posttransplant lymphocele [7,8]. Most cases occurred early post-renal transplant complications and among males with a mean age of 41.2 years [6,7]. It is crucial to suspect hernia among post-renal transplant patients showing clinical manifestations of small bowel obstruction which mandates surgical management immediately. Although kidney transplant recipients are expected to have an elevated risk of developing an IH due to immunosuppressive therapy and increased postoperative infection risk, the incidence of IH in these patients is surprisingly lower than in the general population, ranging from 1.1% to 18% [2]. Furthermore, the incidence of RPH is even rarer, with an incidence rate ranging between 0.18% and 0.45% [3]. Gao et al. [5], reported 3 cases of RPH out of 668 patients who underwent renal transplants from 1993 to 2007. One of the patients developed the hernia 3 days after the transplant and complained of abdominal pain, distention, and nausea without vomiting, the patient needed laparotomy as per computed tomography (CT) showing small bowel loops between the allografts and the bladder, unfortunately despite the antibiotic's coverage, and admission into intensive care unit, after 1 week of surgery, the patient died of multiple organ failure. While

the other two patients, complained of abdominal pain, 3-4 days post renal transplant, and the imaging suggested a hernia and required laparotomy, and then they were discharged in good condition after 14-20 days of laparotomy. The symptoms of small bowel obstruction such as abdominal pain, distention, and nausea/vomiting considered nonspecific in which it could be a secondary effect of anesthesia alongside the fact that symptoms of partitionists can be masked by the large doses of corticosteroid to transplanted patients [6,9]. Therefore, CT is considered the preferable modality for identifying RPH as the latest 2 cases reported by Gao et al. [5] had the CT performed earlier than the first case that died. Therefore, this mandates the crucial of taking immediate actions and thinking to achieve proper outcomes, especially for immunosuppressive patients. Upon confirming the diagnosis of RPH, it is critical to proceed with early surgical intervention, typically through immediate laparotomy. The surgical management of RPH presents unique challenges due to the small size of the peritoneal defect, which increases the risk of strangulation. Additionally, bowel necrosis in transplant patients is associated with a high mortality rate, approaching 80% [6]. Therefore, the surgical approach must be meticulously planned to minimize the risk of graft injury during small bowel manipulation and to address the need for intestinal resection if bowel necrosis is detected. Although it is not common, a case report done by Igarashi et al. [3] showed that surgical intervention using laparoscopic exploration can become a treatment option and that it can be used to treat small bowel obstruction in selective patients with great outcomes. However, due to the lack of reports using this method, further studies should be conducted [3].

Conclusion

In conclusion, RPH represents a relatively uncommon but significant complication following kidney transplantation, often attributed to procedural mishaps during grafting or complications like lymphocele rupture. Early identification of RPH is crucial, especially in the presence of symptoms indicating small bowel obstruction, to prompt timely surgical intervention and optimize patient outcomes. Despite kidney transplant recipients being at heightened risk for IHs due to immunosuppressive therapy and infection susceptibility, the incidence of IH, including RPH, remains lower than expected compared to the general population. Surgical management of RPH poses challenges due to the risk of bowel strangulation and high mortality rates associated with bowel necrosis, necessitating careful surgical planning and consideration of potential graft injury. Emerging techniques such as laparoscopic exploration show promise in selected cases but warrant further investigation to establish their efficacy and safety in this patient population. Continued research in this area is essential to refine diagnostic and therapeutic approaches and improve outcomes for kidney transplant recipients affected by RPH.

What is new?

The literature recognizes RPH as a rare but significant complication of kidney transplantation. While previous cases have highlighted its risks, this manuscript presents a novel case of RPH with small bowel obstruction managed surgically, contributing further insights into its timely diagnosis and treatment.

List of Abbreviations

CT	Computed tomography
CRP	C-reactive protein
ESRD	End-stage renal disease
GCS	Glasgow Coma Scale
GFR	Glomerular filtration rate
IgA	Immunoglobulin A
IH	Incisional hernia
INR	International normalized ratio
JAK	Janus kinase (associated with JAK2 mutation)
LDH	Lactate dehydrogenase
NAFLD	Non-alcoholic fatty liver disease
OR	Operating room
PT	Prothrombin time
PTT	Partial thromboplastin time
RPH	Renal paratransplant hernia
WBC	White blood cells

Conflicts of interest

The authors declare that they have no conflict of interest regarding the publication of this case report.

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Consent for publication

Written informed consent was obtained from the patient.

Ethical approval

Ethical approval is not required at our institution to publish an anonymous case report.

Author details

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Summary of the case

1	Patient (Gender, age)	
2	Final diagnosis	RPH
3	Symptoms	Epigastric abdominal pain since morning, non-radiating and unrelated to food, with no clear triggers. He vomited twice, with moderate amounts of non-bilious, non-projectile, and non-bloody food content
4	Medications	Exploratory laparotomy
5	Clinical procedure	Exploratory laparotomy
6	Specialty	General surgery