

Special Article - Abdominal Surgery

Rupture of a Simple Renal Cyst into the Pyelocalyceal System Induced by Laparoscopic Surgery of the Prostate

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Received: November 13, 2016; Accepted: December 09, 2016; Published: December 12, 2016

Abstract

The spontaneous rupture of renal cysts with communication to the renal cavities has been reported very rarely. We report a patient with an asymptomatic renal cyst and prostate cancer undergoing extraperitoneal laparoscopic radical prostatectomy in Trendelenburg position complicated with a rectal injury repaired laparoscopically and the passing CO₂ into peritoneal cavity by a peritoneal gap. He had a torpid post-surgery evolution due to a rupture of renal cyst into the pyelocalyceal system, that it was successfully treated by a percutaneous nephrostomy.

We report the case for its rarity and the possible relationship with laparoscopic surgery.

Keywords: Spontaneous rupture of renal cyst; Rupture of renal cyst into pyelocalyceal system; Renal cyst

Introduction

The spontaneous rupture of renal cysts with communication to the renal cavities has been reported very rarely [1-11]. The rupture of a simple cyst is an event that may occur into the peri-renal space, the peritoneal cavity or the pyelocalyceal system [2,3]. There are few reports of spontaneous rupture of the renal cyst into the collector system [1,4-11]. We report a patient undergoing laparoscopic radical prostatectomy (LRP) with a torpid post-surgery evolution due to a rupture of renal cyst into the pyelocalyceal system on possible relationship with laparoscopic surgery.

Case Presentation

A 63-year-old male patient with prostate cancer Gleason 7(4 + 3)- T2a- PSA 5.8ng/ml. He underwent transurethral resection of prostate (TURP) in 2012. He had a CT scan taken 2 months earlier that showed a renal cyst in the lower pole of the left kidney measuring 59mm. The patient underwent LRP by extraperitoneal approach and he was placed in 30°-Trendelenburg position. Unfortunately, the total abdominal wall was distended by passing CO₂ into peritoneal cavity (pneumoperitoneum) caused by a potential peritoneal gap. We employed a gas pressure of 12mmHg. An intraoperative rectal injury occurred, that it was repaired laparoscopically with two lines of interrupted suture lines plus placement of interposition tissue. The total operative time was 180 minutes. At 2nd day of postoperative, the patient had an acute flank pain on left side with vomiting and elevated serum creatinine, without evidence of infection or peritonitis or urinary infection. A computed tomography (CT) scan of the abdomen with a contrast enema revealed the rectal wall induration and presence of liquid in left paracolic gutter, thickening of the left pericolic fascia without evidence of contrast extravasation or dilation of the urinary tract, or urolithiasis. After the restoration of renal function with fluid therapy, a new multiphase CT scan was requested for perpetuating pain at 5th day of postoperative. The images revealed a diminution of the previously recognized simple renal cyst with

irregular contours, partially filled with contrast material. These findings demonstrate a spontaneous rupture of the cyst with communication to the pyelocalyceal system (Figure 1 and 2). A percutaneous nephrostomy positioned toward the collecting system was done. The antegrade pyelography revealed retrograde filling of the renal cyst by



Figure 1: Reconstruction from excretory phase of CT scan showed simple renal cyst filled with contrast material.



Figure 2: Coronal projection reconstruction from excretory phase of CT scan showed diminution of the previously recognized simple renal cyst filled with contrast material.



Figure 3: Antegrade pyelography through percutaneous nephrostomy revealed backflow contrast material from the pyelocalyceal system into the renal cyst.

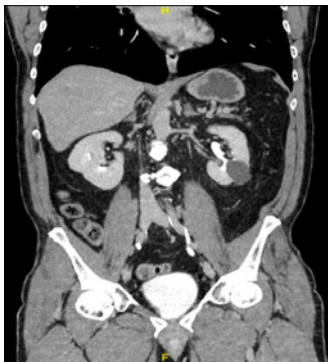


Figure 4: Follow-up CT scan obtained at 4 months showed that the communication of the renal cyst to collecting system has obliterated.

radiopaque contrast material, confirming the connection with the urinary tract (Figure 3). The patient had immediate pain relief after urinary diversion and he evolved favorably and was discharged a few days later. The nephrostomy tube remained in place for 2 weeks and it had been removed after a control pyelogram. At 6 months follow-up the patient remains asymptomatic and without radiologic evidence of the renal cyst communication with the collecting system (Figure 4).

Discussion

The spontaneous rupture of simple renal cysts into the renal cavities is a very rare complication, which pathogenesis is unclear, that it may be caused by trauma, by urinary infection, by acute rise in intracystic pressure following internal hemorrhage, or rise in intra pyelocalyceal pressure following ipsilateral obstructive ureteropathy like stones or alterations in fluid dynamics [1,2]. Tuna M et al presented a report about renal cyst rupture possibly after a laparoscopic intervention in a patient suffering flank pain with massive hemorrhage that may be caused by rise pressure of abdominal cavity due to the pneumoperitoneum of the laparoscopic procedure. They concluded that increased intra-abdominal pressure may also lead to renal cyst rupture, because the peritoneal pressure is usually increased during laparoscopic procedures for the sake of pneumoperitoneum maintenance, and flank or Trendelenburg patient positioning during the surgeries may augment the pressure and affect the renal tissue [12]. In our understanding, spontaneous

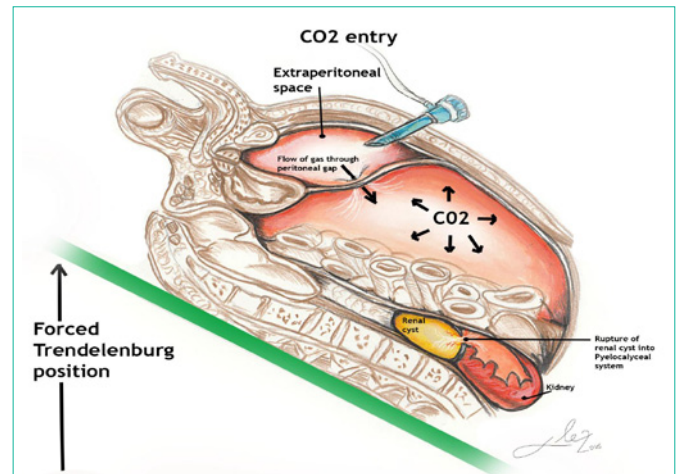


Figure 5: Possible pathogenesis of renal cyst rupture in our patient caused by increase in the abdominal pressure due to laparoscopic surgery in a forced Trendelenburg position with prolonged operative time and inadequately control of the pneumoperitoneum pressure due to extraperitoneal approach with a peritoneal gap.

rupture of renal cyst into the renal cavities provoked by laparoscopic surgery of prostate has not been reported previously. Our patient was underwent to a laparoscopic surgery with prolonged operative time due the intraoperative complications, requiring that we keep in the forced Trendelenburg position and with an intra abdominal pressure inadequately controlled due to extraperitoneal approach with a peritoneal gap (Figure 5). The sum of these factors may have caused an increase in the abdominal pressure lead to an acute tear in the cyst wall.

Radiological examination with contrast medium is essential to ensure an accurate diagnosis to demonstrate backflow of contrast medium from the pyelocalyceal system into the ruptured cystic cavity [1-4]. In these patients, the conservative medical management must be the first option; and the percutaneous renal puncture, percutaneous nephrostomy or the ureteral stenting could be reserved for special cases with refractory pain, urinary obstruction or poor evolution.

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