

## Case Report

# A vesico-peritoneal fistula in a patient with history of diverticulitis-related colovesical fistula repair: a case report

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**Received:** 08 June 2020

**Revised:** 13 July 2020

**Accepted:** 16 July 2020

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## ABSTRACT

A vesico-peritoneal fistula is an epithelialized communication between the peritoneal cavity and the urinary bladder. It is a rare entity scarcely reported in medical literature. High index of suspicion is needed for diagnosis and treatment. Here we expose the case of a vesico-peritoneal fistula presenting with chronic abdominal pain 4 years after sigmoidectomy. A 38-year-old male presented with lower quadrant abdominal pain. He had history of sigmoidectomy with colorectal anastomosis and bladder repair due to diverticular disease-related colovesical fistula 5 years prior to admission. Elevated serum creatinine levels and oliguria were documented. Intraperitoneal free fluid was found by computed tomography (CT) scan. Percutaneous drainage was performed, and laboratory test showed elevated peritoneal creatinine levels. CT-Cystography revealed a vesico-peritoneal fistula. Dissection of fistulous tract and primary closure of bladder defect was achieved. Vesico-peritoneal fistulas have been described as surgical procedure complications with a variable postoperative time of presentation. Low index of suspicion led to delayed diagnosis, finally suspected by intraperitoneal fluid analysis and confirmed by cystography. Intraperitoneal reabsorption of urine elevated serum creatinine levels mimicking renal failure. Management ranges from conservative to surgical procedures, in this case fistulous tract dissection and primary bladder closure was accomplished. Vesico-peritoneal fistulas are rarely reported. Common clinical findings include chronic abdominal pain and free intraperitoneal fluid. Misdiagnosis of acute renal failure is frequent due to elevated serum creatinine levels and oliguria. Laparoscopic dissection of fistulous tract and primary closure of bladder defect is a safe option as treatment of this condition.

**Keywords:** Vesico-peritoneal fistula, Colovesical fistula, Diverticular disease, Case report

## INTRODUCTION

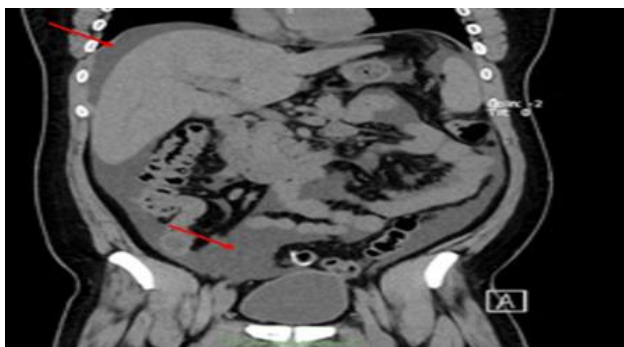
A vesico-peritoneal fistula is an epithelialized communication between the peritoneal cavity and the urinary bladder.<sup>1,2</sup> It is a very rare condition, reported as a long-term complication of mesh-patch hernioplasty and gynecological surgery.<sup>1-4</sup> Due to a low incidence and scarce reports in literature, a high index of suspicion is needed for diagnosis and treatment, leading to delayed

recognition and misdiagnosis. As the fistulous tract develops, urinary ascites causes chronic abdominal pain, elevated serum creatinine levels, and decreased urine output, which could simulate renal failure. Imaging studies show intraperitoneal free fluid, and diagnosis is confirmed by cystography.<sup>2</sup> Treatment is controversial, since conservative and surgical procedures have been practiced and reported safe with limited evidence.<sup>1-4</sup>

It is known that acute diverticulitis can often develop complications such as abscess, perforation, obstruction or fistula in 25% of patients. Sixty five percent of diverticulitis-related fistulas are colovesical with no reported incidence of vesico-peritoneal fistulas.<sup>5</sup> Here we present a case of a vesico-peritoneal fistula in a patient with history of a diverticular disease-related colovesical fistula treated with bowel resection 5 years earlier. To our knowledge, this is the first case report of this entity. The patient was treated in a private practice setting.

### CASE REPORT

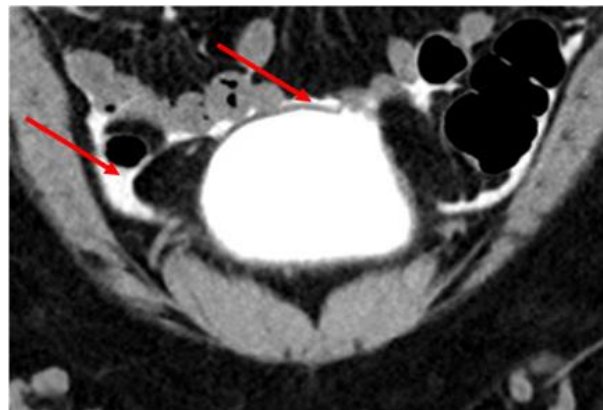
A 38-year-old male was admitted to the emergency department with abdominal pain. He had history of type 2 diabetes mellitus and hypertension. He also had a laparoscopic assisted sigmoidectomy for a colovesical fistula, with colorectal anastomosis, fistula removal and bladder repair due to diverticular disease 5 years prior to admission with no perioperative complications. He referred a year with abdominal pain located in lower quadrants with symptomatic treatment only in another medical center. During the last four months pain had intensified, reason for which he was newly referred for medical attention. At the emergency department oliguria was documented. Laboratory tests showed an elevated creatinine level in 4.15 mg/dl, and an abnormal urinalysis with >100 white blood cells per high power field. He was diagnosed with acute renal failure. A computed tomography (CT) scan was performed due to severe abdominal pain, showing intraperitoneal free fluid (Figure 1).



**Figure 1: Abdominal CT scan showing intraperitoneal free fluid.**

A urethral catheter was placed and gradual increase in urine output and partial improvement of symptoms occurred. Paracentesis was done to rule out bacterial peritonitis, and laboratory analysis showed an elevated creatinine level of 12.2 mg/dL, and physical aspect of urine. Diagnosis of urinary ascites was confirmed. A CT scan with contrast administration through the urinary catheter revealed leakage of bladder content into peritoneal cavity (Figure 2). Patient was programmed for surgery. Laparoscopic dissection of the urinary bladder was performed by a colorectal surgeon, and the fistulous tract

identified while methylene blue was administered through the urinary catheter (Figure 3 and 4). A Pfannenstiel incision was made to expose bladder defect, which was repaired using vycril 2-0 suture by urologist. Dome of bladder was sealed with no further leakage (Figure 5). The patient was seen asymptomatic in the ambulatory clinic three months after surgery for a follow-up examination, which resulted in a satisfactory evolution. Urinary catheter was retrieved 10 days after surgery.



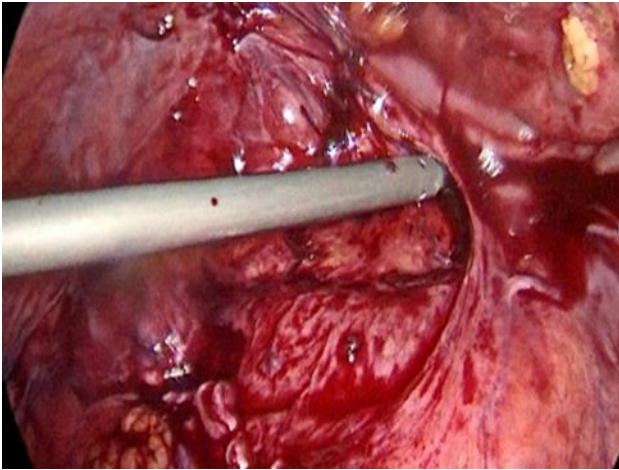
**Figure 2: Abdominal CT scan with contrast administration through urinary catheter showing intraperitoneal contrast material.**



**Figure 3: Laparoscopic approach at the dome of the bladder showing methylene blue leakage.**



**Figure 4: Laparoscopic dissection of dome of the bladder and fistulous tract.**



**Figure 5: Dome of bladder with primary closure.**

## DISCUSSION

A vesico-peritoneal fistula is a rare condition.<sup>1-4</sup> Abdullah reported this entity in a 48-year-old female with history of laparoscopic hernia repair with composite mesh three years before the diagnosis.<sup>2</sup> Ooi and Ismail described it in two female patients with emergency cesarean section.<sup>1,4</sup> In this case a resection of a colovesical fistula was made 5 years prior to diagnosis. Common clinical findings in these cases are history of surgical intervention, chronic intermittent abdominal pain, elevated serum creatinine, and free fluid in peritoneal cavity.<sup>1,2,4</sup>

Regarding the etiologic factor, in our case, surgical treatment of the colovesical fistula included primary closure of the bladder defect. Although no studies have compared outcomes in surgical management of bladder defect in benign enterovesical fistulas in the long term, closure of the bladder wall does not appear to have different outcomes in the short term.<sup>3</sup> The 5-year interval between etiology and diagnosis could be explained by a urinary bladder diverticulum formation and rupture, adhesions of the fistulous tract limiting leakage, and delayed diagnosis.

Absorption of urine in the peritoneal cavity elevates serum creatinine levels.<sup>2</sup> In our case oliguria was present and partial resolution of symptoms with improvement in renal function laboratory results after urinary catheter placement followed the physiopathological pathway but led to acute renal failure misdiagnosis.

In this case persistent abdominal pain led to free intraperitoneal fluid analysis, before which urinary ascites was not contemplated as a differential diagnosis.

Diagnosis was confirmed by CT cystography just as the rest of cases mentioned.<sup>1,2,4</sup>

Management consisted of a laparoscopic dissection of the fistulous tract aided by the administration of methylene blue, and primary repair of the dome of the bladder where the defect was identified. Conservative management has been described with no further problems after urethral catheter removal.<sup>4</sup> Other vesico-peritoneal fistulas have been managed with primary closure all the same.<sup>1,2</sup>

## CONCLUSION

Vesico-peritoneal fistulas are rarely reported in medical literature. History of a surgical intervention is present as a probable etiologic factor. Chronic intermittent abdominal pain and free intraperitoneal fluid are common clinical findings. An elevated serum creatinine level could mimic renal failure. Oliguria and resolution of symptoms with urethral catheter placement are frequent. Laparoscopic dissection of fistulous tract and primary closure of bladder defect is a safe option in the treatment of this condition.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: Not required*

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**Cite this article as:** Garza AR, Lizárraga JIOE, Müller GA, Saldivar MAO, Cruz LES. A vesico-peritoneal fistula in a patient with history of diverticulitis-related colovesical fistula repair: A case report. *Int Surg J* 2020;7(9):3086-8.