

Spontaneous urinary bladder perforation as a cause of recurrent, progressive ascites with multiorgan dysfunction syndrome

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ABSTRACT

Spontaneous rupture of the urinary bladder wall is a rare complication that may lead to intraperitoneal accumulation of urine and is mistaken for ascites from other causes. This often leads to repeated and inconclusive diagnostic tests. Here, we report the case of a 60-year-old female, with a past history of cervical cancer, who presented with recurrent episodes of pain abdomen and breathlessness over 1 year period. She was hospitalized multiple times and found to have ascites. Ultrasound and computed tomography scan of the abdomen along with an ascitic fluid analysis were done at each admission, which were inconclusive as to the cause of the ascites. A diagnostic laparoscopy to rule out peritoneal metastases showed perforation of the urinary bladder wall with intraperitoneal urine leakage. Bladder wall repair was done the following which the patient recovered uneventfully.

Key words: Ascites, Cervical cancer, Laparoscopy, Urinary bladder diseases

Spontaneous intraperitoneal rupture of the urinary bladder is an extremely rare event and a complication that may lead to intraperitoneal accumulation of urine and is mistaken for ascites from other causes [1,2]. This often leads to repeated and inconclusive diagnostic tests. It has been reported to be a rare complication of radiation therapy for cervical cancer [3]. We report the case of a patient with spontaneous perforation of the urinary bladder, 20 years after pelvic radiotherapy for carcinoma of the cervix who presented with ascites and acute abdomen progressing to multiorgan dysfunction syndrome.

CASE REPORT

A 60-year-old female presented to the emergency department with the complaints of increasing pain in the abdomen for 1 day with three episodes of vomiting. She also complained of tiredness and breathlessness on lying down flat. She reported normal bowel function and no history of fever or abdominal trauma. About 20 years back, she was diagnosed with Stage IIb carcinoma cervix for which she underwent a total abdominal hysterectomy and bilateral salpingo-oophorectomy with pelvic lymph node dissection followed by radiotherapy.

She had presented 1 year back with similar complaints to another hospital and was treated for urosepsis with an acute kidney injury. Computed tomography (CT) scan of the abdomen at that time revealed right paramedian hernia with the features of incarceration with mild ascites. Ascitic fluid analysis showed lymphocyte-predominant picture with reactive mesothelial cells and was negative for malignant cells. She underwent open ventral

hernia mesh repair and omental biopsy, which showed mild chronic inflammation and was also negative for malignancy. The follow-up ultrasonography abdomen and pelvis showed a fatty liver with no evidence of ascites.

At the present admission on clinical examination, she showed signs of respiratory distress, with a distended and severely tender abdomen and absent bowel sounds. All the vitals were within normal range.

Abdominal X-ray showed signs of fecal loading. CT scan of the abdomen revealed mild hepatomegaly and mild-to-moderate ascites with small bowel loops adherent to the dome of the urinary bladder (Figs. 1 and 2) with no evidence of intestinal obstruction. Paracentesis was done which yielded about 600 mL of a straw-colored fluid, and analysis of which revealed mesothelial cells but no malignant cells. Laboratory reports showed evidence of urinary tract infection. Hence, she was started on antibiotics and supplemental oxygen.

The patient continued to deteriorate clinically, becoming increasingly drowsy, with Type II respiratory failure and worsening renal function. Intra-abdominal pressure was noted to be in the range of 18–24 mmHg. She was intubated and treated with mechanical ventilation and also required vasopressor support.

As the various imaging and laboratory tests had failed to reveal a cause for the recurrent ascites, she was taken up for a diagnostic laparoscopy and peritoneal biopsy. Laparoscopy revealed small bowel and omental adhesions to an anterior abdominal wall and previously placed mesh with extensive interloop adhesions. A perforation was noted in the dome of the urinary bladder (Fig. 3), partially walled off by a segment of



Figure 1: Computed tomography abdomen and pelvis sagittal view showing small bowel loops adherent to the dome of the urinary bladder



Figure 2: Computed tomography abdomen and pelvis coronal view showing small bowel loops adherent to the dome of the urinary bladder

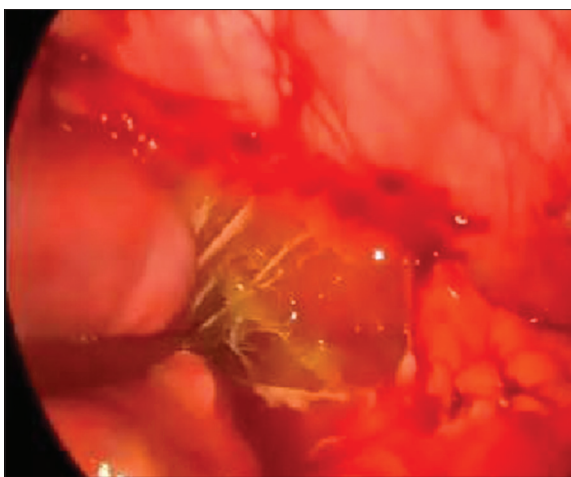


Figure 3: Laparoscopy findings of urinary bladder perforation

small bowel with Foley's catheter protruding into the peritoneal cavity. Laparotomy was done followed by adhesiolysis and repair of the bladder wall perforation in two layers with 2-0 vicryl, along with repair of serosal tears in the small bowel. A thorough

intraperitoneal lavage was given. Bladder wall biopsy showed no evidence of malignancy. A drain was placed in the pelvis, and the abdomen was closed in layers. Her bladder was catheterized at the end of surgery with adequate urine output in the post-operative period. The pelvic drain did not show any urinary leak in the post-operative period and was removed on the 5th post-operative day. The urethral catheter was removed on the 7th post-operative day after confirmation of no leak with a cystogram. The patient was discharged on the 10th post-operative day.

DISCUSSION

Urinary ascites from intraperitoneal urine leakage is an unusual but clinically important sequel to the bladder fistula or bladder wall rupture. The most commonly reported cause of rupture of the urinary bladder is trauma [4]. Non-traumatic or spontaneous causes of rupture include lesions of the bladder wall (inflammation, malignancy, and irradiation) and distention of the bladder wall (neurogenic bladder, alcohol intoxication, and outlet obstruction) [5,6].

The spontaneous intraperitoneal rupture of the urinary bladder subsequent to pelvic radiotherapy is an extremely rare event [1-3]. Effects of radiation on the bladder are usually seen within 2-4 years [7] but may occur long after the completion of radiation therapy up to 10 years [6] or even after 30-40 years [8]. Mizumura *et al.* [9] reported a case of an 88-year-old woman who presented with abdominal pain, massive ascites, and acute kidney injury. Urinary bladder rupture was diagnosed using ascitic fluid odor, patient volume status, and CT attenuation values of ascites. A conclusive diagnosis of spontaneous bladder rupture was made using cystography.

In the present case, the findings of acute abdomen, ascites, and respiratory distress led to an initial diagnosis of subacute intestinal obstruction. This was ruled out by a CT scan of the abdomen, but the cause of ascites still remained inconclusive. With the past history of carcinoma cervix, the possibility of peritoneal metastases leading to recurrent ascites was considered, necessitating confirmation by laparoscopy and peritoneal biopsy.

Any case of radiation-induced cystitis, post-carcinoma cervix, leading to bladder perforation, will have preceding lower urinary tract symptoms, so cystoscopy should be done to rule out local bladder recurrence but was not done in the present case. Laparoscopy showed a previously unsuspected bladder perforation, which had been undiagnosed on the earlier CT scan of the abdomen, probably because of the small bowel loops walling off the perforation. When the routine biochemical, microbiological, and histopathological tests of ascites proved inconclusive, assessing its urea and creatinine content may have led to the diagnosis of urinary ascites much earlier. A delayed CT scan with contrast leak into the peritoneal cavity can aid in the diagnosis of bladder perforation. Hence, delayed CT images with contrast should be requested to rule out any bladder involvement.

CONCLUSION

Spontaneous urinary bladder wall perforation should be considered as a differential diagnosis of recurrent ascites when other investigative modalities have proven inconclusive, especially in patients who have received radiotherapy for abdominal carcinoma. This case also highlights the benefit of diagnostic laparoscopy as a last resort in unresolved abdominal complications. Although a major, invasive procedure, this may help to curtail costs and further morbidity.

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