

## CASE REPORT

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# Urinary Bladder Perforation During Urethral Catheter Insertion in a Female Patient with Prior History of Hysterectomy and Radiotherapy

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**ABSTRACT** Serious urological complications including renal atrophy, hydronephrosis, urinary fistula, contracted bladder, and spontaneous urinary bladder perforation can be seen following pelvic radiotherapy. Radiotherapy causes fibrosis and thickening in the bladder wall and these changes in the bladder wall structure may facilitate urinary bladder perforation. Iatrogenic bladder perforation generally occurs during surgical procedures. Urethral catheter insertion is not a major trauma. Here we report a case of bladder perforation which occurred during urethral catheter insertion in a female patient with prior history of abdominal hysterectomy and radiotherapy.

**Keywords:** Radiotherapy; urinary bladder fistula; urinary catheterization

Urinary bladder perforation (UBP) occurs as a result of trauma or iatrogenic surgical injuries. Several factors including pelvic malignancy, radiotherapy (RT), previous bladder surgery, and diabetes are associated with an increased risk of UBP.<sup>1</sup> Serious urological complications including renal atrophy, hydronephrosis, urinary fistula, contracted bladder, and spontaneous UBP can be seen following pelvic RT for gynecological malignancies.<sup>2,3</sup> Spontaneous UBP is an extremely rare clinical condition. On the other hand, iatrogenic UBP generally occurs during surgical procedures. A case of iatrogenic UBP due to urethral catheter insertion in a female patient with prior history of pelvic RT for cervical cancer is presented in this case report.

## CASE REPORT

A 67 years old female patient presented to the emergency service with diarrhea and weakness for one

day. She did not report any urinary tract symptoms. Abdominal examination was normal. Bowel sounds were increased and no bladder distension was found. Respiratory and cardiac examination was normal. Blood pressure was 110/55 mmHg, pulse rate was 62 beat/min and SaO<sub>2</sub> was 95%. Serum creatinine level was increased (4.2 mg/dL). Other biochemical results were as follows: Urea 249 mg/dL, uric acid 6.7 mg/dL, potassium 5.06 mmol/L and sodium 132 mmol/L. The patient had underwent abdominal hysterectomy and subsequent pelvic RT for cervical cancer 23 years ago. No urological or other surgical procedure, or any comorbidities except chronic kidney disease (CKD) was reported. The patient was under follow-up with the diagnosis of CKD due to urological complications related to hysterectomy and pelvic RT (contracted bladder with low compliance and high pressure, bilateral reflux and renal atrophy). Abdominal ultrasound showed bilateral hy-

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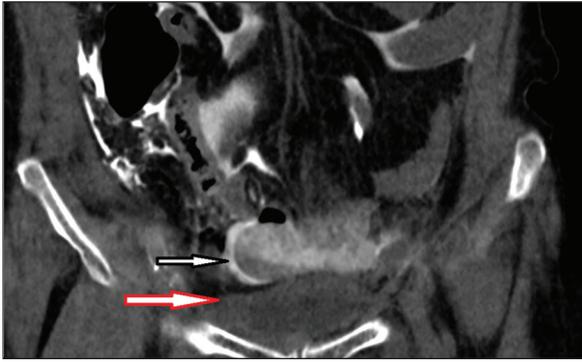
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**FIGURE 1:** Computerized tomography image showing bladder wall perforation (Black arrow: Balloon of the urethral catheter; Red arrow: Bladder wall).

dronephrosis and atrophic kidneys. Urethral catheter was inserted to follow urine output and to perform cystography because diarrhea was thought to be related to vesicointestinal fistula. Computerized tomography (CT) cystography with 100 mL solution (30 mL radiopaque and 70 mL saline) was performed to exclude vesicointestinal fistula. But radioopacity was seen in the abdominal cavity and the balloon of the catheter was placed over the dome of the bladder (Figure 1). Urethral catheter was removed and inserted into the bladder properly under ultrasound guidance. The patient was hospitalised due to bladder perforation and CKD and treated parenterally with broad spectrum antibiotics for 14 days. No ileus or peritonitis occurred during treatment and observation, therefore surgical bladder repair was not performed. The patient was discharged with urethral catheter. During the follow-up visit at 6 weeks, complete healing was confirmed with a cystogram that was showing no extravasation. Patient written informed consent was obtained.

## DISCUSSION

The rate of clinically relevant urological complications after curative RT for primary carcinoma was reported to be 2 to 3% and the rate of severe urological complications that required surgical repair was reported to be 1.24%.<sup>3</sup> Spontaneous UBP is a rare but known complication of pelvic RT. Usually it occurs

more than 10 years following RT.<sup>3</sup> On the other hand, iatrogenic UBP usually occurs during surgical procedures. RT causes fibrosis and thickening in the bladder wall.<sup>2</sup> Changes in the bladder wall structure due to RT induced fibrosis may facilitate UBP. Urethral foley catheter insertion is not a major trauma, but it may lead to bladder perforation in such a patient, given the damage to the bladder wall.

Either conventional cystography or CT cystography can be used for the diagnosis of UBP. About 30% of UBPs are intraperitoneal and 60% are extraperitoneal. Although urethral catheter drainage and observation is sufficient for the treatment of uncomplicated extraperitoneal perforations, surgery is necessary for intraperitoneal perforations to prevent peritonitis. But iatrogenic intraperitoneal UBP can be managed with urethral drainage if there is no ileus or peritonitis.<sup>4</sup> Since peritonitis and ileus did not develop in this patient, she was treated with urethral catheter drainage and antibiotics.

In conclusion, iatrogenic bladder perforation due to urethral catheter insertion is a rare clinical condition and may develop especially in female patients with the history of previous pelvic surgery and pelvic RT.

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### Conflict of Interest

*No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.*

### Authorship Contributions

*This study is entirely author's own work and no other author contribution.*

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