

## Oncology

## A rare complication of intravesical early instillation of mitomycin C after TURBT



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## A B S T R A C T

The early intravesical instillation of mitomycin C (MMC) is accepted as safe adjuvant therapy after TURBT by non-muscle-invasive bladder cancer if there is no perforation. In our case we report a female patient undergoing resection of papillary recurrent tumor on the anterior bladder wall. In the early postoperative period had the patient no complaints regarding to instillation of MMC. The clinical manifestation of the necrosis of the anterior bladder wall appeared after one week requiring a long extended unsuccessful conservative therapy in order to save the bladder.

Finally we performed a radical cystectomy. This complication is reported by some authors in literature.

## Introduction

Bladder cancer is a common urologic cancer. A transurethral resection of bladder tumor (TURBT) is the primary procedure for diagnosing and treating visible tumors. A single intravesical instillation of mitomycin C (MMC) within 24 hour after TURBT has been shown to reduce recurrence. This adjuvant postoperative instillation therapy is considered safe. Necrosis of the bladder wall is a rare complication that has been reported in some studies as in our case.

## Case presentation

We report a 74-year-old female patient with a history of bladder cancer (low-grade pTa diagnosed in 2005). Except for arterial hypertension, there were no comorbidities, and there was no medical history of abdominal or pelvic operations. The preoperative laboratory values were normal (creatinine 0.8 mg/dl; CRP 0.1 mg/dl; negative urine culture).

In May 2018, the patient was admitted to our department to receive a TURBT due to tumor recurrence. A multifocal papillary tumor on the bladder roof (each one smaller than 3 mm) was resected without endoscopic evidence of perforation. Postoperatively, an early instillation of MMC was performed without complaint. After two days, the indwelling catheter was removed and the patient was discharged. Six days after discharge, the patient complained of persistent abdominal pain and dysuria. On the tenth day, she was again admitted to our department. Ultrasound revealed free prevesical fluid, and a follow-up abdominal CT demonstrated an urgent suspicion of perforation with evidence of air bubbles in the bladder wall and in the pelvis (Fig. 1).

No improvement was observed in after the insertion of a urinary catheter; therefore, we performed an extraperitoneal laparotomy. Extremely edematous inflammation of the whole anterior bladder wall was found without sure evidence of a bladder defect, and we inserted a drain. Later, the patient suffered a fever and was in poor general condition. Another CT showed the same recent findings.

According to a positive blood culture for *E. coli*, we started broad-spectrum antibiotic therapy, and the serum infection parameter declined. We removed the drain once the drain output stopped. Before discharge, we exchanged the urinary catheter. It should be removed in two weeks depending on retrograde cystography.

After five days, the patient returned with a purulent secretion from the still opened channel of the removed drainage in addition to being in poor general condition. We performed a renewed laparotomy, drainage of the abscess, debridement of the necrotic tissue, and vacuum-assisted closure (VAC) therapy. At this time, the anterior bladder wall and the prevesical fat were convoluted into a necrotic fibrotic plate with definite extravasation. In an attempt to preserve the urinary bladder, we performed complete drainage of urine through mono-J ureteral stents and nephrostomy. Unfortunately, these maintenance attempts failed after several changes in the VAC system.

In July 2018, we performed a radical cystectomy with a urinary diversion through ureterocutaneostomy. We avoided carrying out an ileum conduit due to pronounced infection in the pelvic area. The pathological finding revealed focal transmural wall necrosis of the anterior bladder wall with high-grade acute exudative phlegmonous inflammation of the perivesical fat as well as a remaining pTa low-grade urothelial cancer at the anterior bladder right pN0 (0/12); L0, V0, R0. After one year of surveillance, no recurrence was found. We regularly

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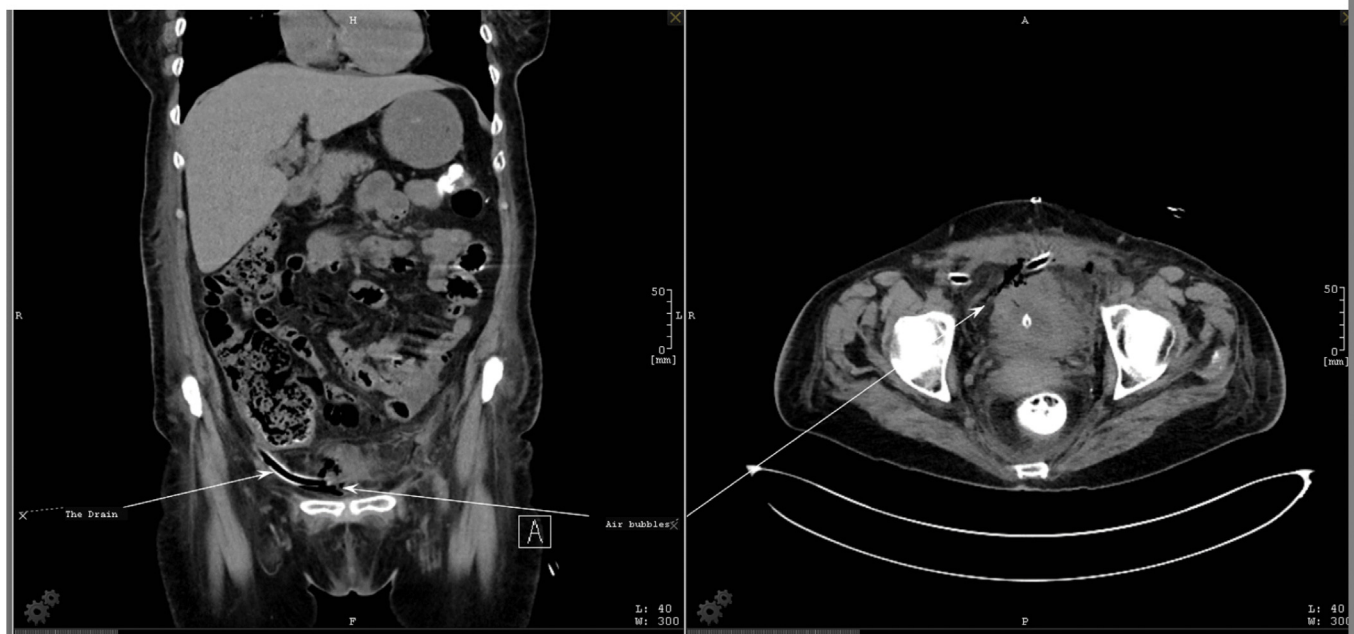


Fig. 1. Shows air bubbles in the bladder wall and in the pelvis.

changed her ureteral catheter in our department.

## Discussion

The most common side effects reported in randomized trials are irritative symptoms (10%) and allergic skin reactions (3%).<sup>1</sup> Weizer et al.<sup>2</sup> showed that dysuria is the most frequent (17%) complaint requiring intervention.

Rare complications such as bladder wall necrosis or even bladder perforation after early instillation have seldom been reported in the literature. In our case, the operator had intraoperatively no concerns about bladder perforation. Furthermore, the early instillation of MMC was symptom-free. It is unclear whether the urinary bladder perforation happened as a consequence of the instillation or a covered perforation was unnoticeable. We assume that necrosis of the detrusor occurred due to the instillation of the MMC, which later led to a secondary perforation with superinfection. Perforation of the bladder after early MMC transvesical instillation has been reported by some authors.

Penna et al.<sup>3</sup> reported a 77-year-old Caucasian male who received an early MMC instillation after TURBT. This patient complained of urinary retention after the removal of an indwelling catheter. Conservative therapy through an indwelling catheter and antibiotics were sufficient, and there was no need for surgical exploration. In this case, the authors felt that the MMC instillation led to weakening of the site of the resection, which indirectly caused a late perforation following bladder overdistension after removal of the indwelling catheter. The authors attributed the risk factors to the following: a) delayed diagnosis of the perforation and b) bladder overdistension, particularly in the

elderly with existent outflow obstruction.

Lim et al.<sup>4</sup> reported a 79-year-old man with a history of recurrent TaG2 bladder cancer managed by TURBT and immediate postoperative instillation of intravesical MMC. One day after removing the catheter, the patient complained of severe abdominal pain due to extraperitoneal perforation. Conservative management, with an indwelling catheter for three weeks, was unsuccessful. Because of fever, the patient underwent an explorative laparotomy, which revealed an abscess and necrotic defect in the anterior bladder wall. This defect was closed and a drain inserted. Similar to our case, transurethral placement of a ureteral catheter was performed. These procedures were sufficient to heal the bladder. The indwelling catheter was removed after one month.

In contrast, in our case, this conservative management, besides the nephrostomy and the VAC system, failed to heal the necrotic defect. Lim et al.<sup>4</sup> thought that the patient's preexisting peripheral vascular disease and suboptimal tissue oxygenation may have led to poor healing.

Although the immediate instillation of MMC after TURBT is still strongly advisable, some studies comparing overnight bladder irrigation after TURBT with immediate intravesical chemotherapy have shown no difference between both procedures regarding early recurrence. Bladder irrigation after TURBT might be an alternative to the early instillation of chemotherapy after TURBT for less complications, especially if there is an unrecognized bladder perforation.<sup>5</sup>

## References

1. Sylvester RJ, Oosterlinck W, van der Meijden APM. A single immediate postoperative

- instillation of chemotherapy decreases the risk of recurrence in patients with stage Ta-T1 bladder cancer: a meta-analysis of published results of randomized clinical trials. *J Urol*. 2004;171:2186–2190 ([PubMed]).
2. Filson Christopher P, Montgomery Jeffrey S, Dailey Stephen M, Crossley Heather S, Lentz Heidi, Tallman Christopher T, He Chang, Weizer Alon Z. Complications associated with single-dose, perioperative mitomycin-C for patients undergoing bladder tumor resection. *Urol Oncol*. 2014 Jan;32(1) <https://doi.org/10.1016/j.urolonc.2013.04.006> 40.e1–40.e8. Published online 2013 Jun 17.
  3. Penna M, Mistry K, Pal P, Sudhanshu C Intravesical instillation of mitomycin C: a cause of delayed bladder perforation? *Case Rep Urol*. 2012. <https://doi.org/10.1155/2012/576519> 2012:576519, Epub 2012 Dec 23.
  4. Lim D1, Izawa JI, Middlebrook P, Chin JL. Bladder perforation after immediate postoperative intravesical instillation of mitomycin C. *Can Urol Assoc J*. 2010 Feb;4(1):E1–E3.
  5. Mahran A, Bukavina L, Mishra K, et al. Bladder irrigation after transurethral resection of superficial bladder cancer: a systematic review of the literature. *Can J Urol*. 2018 Dec;25(6):9579–9584.