

Thermal Bladder Injury after Inadvertent Irrigation with Overheated Saline during a Bipolar Prostate Resection

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CASE REPORT

A 75-year-old man with a medical history of type 2 diabetes mellitus (T2DM) and hypertension underwent a transurethral prostatectomy with the Olympus bipolar TURis system. Unfortunately, inadvertent bladder instillation with overheated saline at the onset of the procedure complicated the surgery. Shortly after the onset of the operation, the bladder was contracted and could not be distended by the fluid. At the same time, the fluid contacted the surgeon's hand, making him realize that it was overheated. Irrigation was



Figure 1. Inflammation of bladder with patchy areas of necrosis.



Figure 2. Worm-like necrotizing lesions arising from the bladder wall.

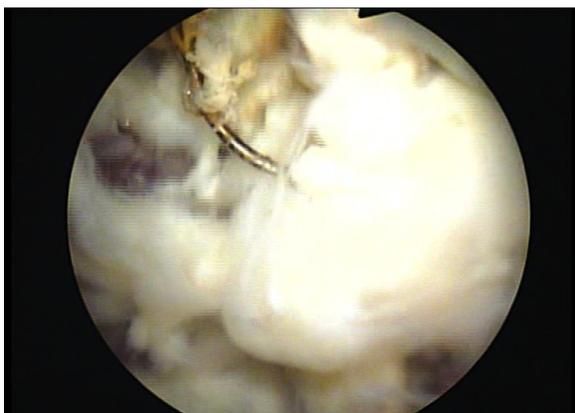


Figure 3. Area of extensive necrosis covered by snow-like dead tissue.

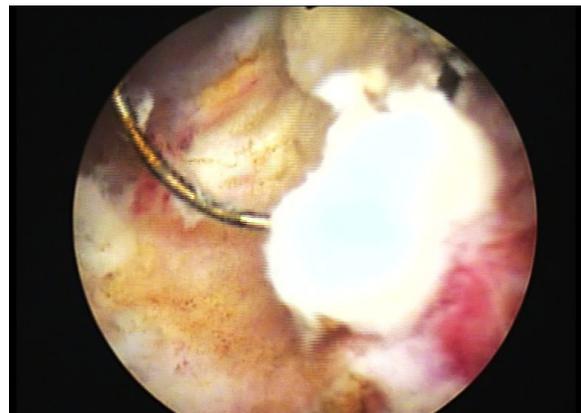


Figure 4. Resection of the lesion in Figure 3 shows necrosis and fibrosis of the detrusor muscle.

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immediately abandoned, and only after the fluid came to the right temperature (41°C) did the surgery continue to completion. Although the contact time of the bladder mucosa with the overheated saline was short, it caused major injuries in the patient's lower urinary tract. To alleviate the consequences of the injury, the patient was managed postoperatively with intravenous antibiotics and supportive treatment with high doses of intravenous and urethral corticosteroids and an indwelling urethral catheter. The patient underwent a cystoscopy under spinal anesthesia 3 weeks later, which revealed the extent of the thermal injury. A heavily inflamed reddish mucosa with alternate pale and white areas was noticed (**Figure 1**). White worm-like necrotizing lesions (**Figures 2–4**) arising from the posterior wall and the dome of the bladder due to the direct contact of these areas with the excessively hot saline were also noticed. Fortunately, both orifices (**Figure 1**) were spared major thermal injury. In the follow-up period, the patient experienced severe frequency voiding and nocturia; both were managed conservatively.

DISCUSSION

During transurethral operations, surgeons should be aware of rare complications that can be caused to the bladder by the use of various kinds of thermal energy.⁽¹⁾ Bladder irrigation using fluids warmed to near boiling point is a rare complication caused by human error. It has been described in the literature and it can be fatal for some patients.⁽²⁾ Animal studies have shown that bladder irrigation using fluids at temperatures below 44°C was well tolerated but temperatures above this level caused decreased bladder capacity, azotemia, and death.⁽³⁾

CONFLICT OF INTEREST

None declared.

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