Endoscopic Cystolithotripsy for a Giant Stone in The Orthotopic Neobladder: A Case Report

Mustafa Erkoc¹, Alper Otuncemur², Erkan Merder², Huseyin Besiroglu³

ABSTRACT
Radical cystectomy and urinary diversion is an excellent treatment option for invasive bladder cancer. Ileal conduit and orthotopic neobladder have been applied as the most frequent urinary diversion methods for many years. Stone formation is a rare complication in the ortotopic neobladder. In the case presented, a 67-year-old-man who had undergone radical cystectomy and orthotopic neobladder reconstruction ten years ago with no complaints in the following five years presented with fever, dysuria, and urinary frequency. We detected a 10.8 cm stone in the neobladder, and the giant stone was fragmented by endoscopic cystolithotripsy via transurethral approach. Complete stone clearance was achieved.

Keywords: bladder stone, invasive bladder cancer, orthotopic neobladder

Introduction
Radical cystectomy and urinary diversion is an excellent treatment option for invasive bladder cancer that provides long-term disease-free survival rates with a low risk of pelvic recurrence. Thus aggressive radical cystectomy and pelvic lymphadenectomy is the standard treatment in muscle-invasive bladder cancer (1). Ileal conduit and orthotopic neobladder have been applied as the most frequent urinary diversion methods for many years. The orthotopic ileal neobladder has more advantages compared to an ileal conduit. It provides excellent cosmetic appearance, a simple effective alternative for urine storage, upper tract preservation, and efficient voiding (2). Despite these advantages, different early and late complications have been described. In this article, we report a case of a giant stone occurring after radical cystectomy and orthotopic neobladder procedure. This giant stone is a rare and interesting complication in orthotopic neobladder.

Case Report
A 67-year-old-man had undergone radical cystectomy and orthotopic neobladder reconstruction ten years ago. He had no complaints in the following five years but the patient stopped his regular hospital visits in the subsequent five years. After ten years, he presented with fever, dysuria, and urinary frequency. The physical examination did not reveal any abnormalities. His renal function tests and urine analysis were within normal limits, and the urine culture was sterile. A KUB (kidney-ureter-bladder) scan revealed multiple shadows in the neobladder (Figure 1). The ultrasonography detected a stone in the pelvic area with a size of 10.8 cm in the largest diameter. Non-Contrast CT confirmed this finding (Figure 2).
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The patient’s bilateral kidney ultrasonography was normal. The giant stone was fragmented by endoscopic cystolithotripsy via a transurethral approach (Figure 3). Complete stone clearance was achieved. The urine catheter was removed postoperatively on the first day. The patient stayed in hospital for three days. He did not have any complications after surgery. The patient was informed about this report and consented.

Discussion
Stone formation is a leading complication of the orthotopic neobladder diversion method. Deliveliotis et al. (3) reported a stone rate of 5.7% in patients with modified S-shaped ileal neobladder while Abol-Enein and Ghoneim (4) reported a stone rate of 2.9% in patients with orthotopic W-shaped ileal neobladder. Studer et al. (5) did not report any case of neobladder stone in their Studer orthotopic neobladder experience in 482 patients. Wyczolkowski et al. (6) did not report any cases in 61 patients.

Neobladder stone formation depends on many reasons including idiopathic, infectious, metabolic, and structural causes. The leading metabolic reason for stone formation is chronic metabolic acidosis. This situation leads to hypercalciuria and hypocitraturia and possibly hyperoxaluria, hyperphosphaturia, hypermagnesiuria, and supersaturation of the urine due to chronic dehydration. All these metabolic complications predispose to stone formation as well as colonization with urea-splitting bacteria (Proteus, Pseudomonas, Klebsiella) do.

Patients with a neobladder stone may present with dysuria, hematuria, suprapubic pain, infection, urinary frequency; however, the condition can also be asymptomatic. Patients
with these complaints should be evaluated with the suspicion of having neobladder calculi. After routine biochemical profile, serum electrolytes, urine analysis, and urine culture, size, number and location of the stones can be determined by bladder X-ray. Abdominal CT can be used if X-ray is not sufficient. Finally, the stone formation should be verified with cystoscopic examination.

Various treatment modalities have been described, including percutaneous cystolithotripsy, endoscopic cystolithotripsy, and open cystolithotomy. Patel and Bellman (7) recommended percutaneous approach for the management of calculi in continent urinary pouches. In our patient, we used endoscopic cystolithotripsy with a pneumatic cystolithotryptor. After fragmentation of the giant calculus, control tomography revealed that there were no calculi left.

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### References


