

Endoscopic Approach to Giant Bladder Stone in Patient With Orthotopic Urinary Diversion

Ortotopik Üriner Diversiyonlu Hastada Dev Mesane Tařına Endoskopik Yaklařım

Olgu Sunumu
Case Report

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ABSTRACT

Urinary tract stone is a delayed and rare complication in patients with orthotopic urinary diversion. It can be detected incidentally or it may cause symptoms such as dysuria, gross hematuria, incontinence, recurrent urinary tract infection and suprapubic pain. The imaging modalities used in diagnosis and treatment methods are similar to the other stone diseases and the patients with orthotopic diversion require close follow-up and appropriate prophylaxis with regard to stone disease. In this article, we evaluated the management of a 62-year-old patient who underwent radical cystoprostatectomy and orthotopic diversion due to muscle-invasive bladder cancer 20 years ago and reapplied to our clinic with symptoms of a 6 cm stone in neobladder.

Keywords: Orthotopic urinary diversion, bladder stone, cystolithotripsy

Öz

Ortotopik diversiyon yapılan hastalarda üriner sistem tařı geç semptom olarak görülen komplikasyonlardandır. İnsidental tespit edilebildiđi gibi dizüri, gros hematüri, inkontinans tekrarlayan idrar yolu enfeksiyonu, suprapubik ađrı gibi semptomlar verebilir. Tanıda kullanılan görüntüleme yöntemleri ve tedavi diđer tař hastalarına benzer olup ortotopik diversiyonlu hastalarının tař hastalıđı açasından takibi ve uygun profilaksisi gereklidir. Bu yazıda kliniđimize bařvuran 62 yařında, 20 sene önce kasa invaziv mesane kanseri nedeni ile radikal sistoprostatektomi ve ortotopik diversiyon yapılan ve neobladderda yaklařık 6 cm boyutlu tař olan hastanın tedavisini ele aldık.

Anahtar kelimeler: Ortotopik üriner diversiyon, mesane tařı, sistolitotripsi

INTRODUCTION

Radical cystoprostatectomy with pelvic lymph node dissection is the standard treatment of muscle-invasive bladder cancer from the standpoint of long-term survival ⁽¹⁾. Ileal diversion or orthotopic diversion can be performed according to the patient's preference and operation conditions. Orthotopic urinary diversion is a method that can be applied in neurogenic bladder and congenital anomalies. Patients with orthotopic urinary diversion are at higher risk of stone forma-

tion in bladder, ureter and renal collecting system, in comparison to the normal population ⁽²⁾. Stone formation is multifactorial in continent diversion. Infections, metabolic factors, anatomical features, adherence to using clean intermittent catheterization (CIC) can be mentioned among these factors. Patients are often diagnosed incidentally. The most common symptoms are dysuria, incontinence, recurrent urinary tract infection, hematuria, suprapubic pain and pressure sensation, difficulties encountered during CIC and urination ⁽³⁾. There

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are various treatment options for the patients who underwent continent diversion and developed urinary stones as is the case in normal population having urinary stones.

CASE REPORT

The patient was a 62-year-old male patient working in textile industry. He underwent open radical cystoprostatectomy + orthotopic urinary diversion because of bladder cancer in 1998. He remained asymptomatic for many years without using CIC. He suffered from urinary incontinence in deep sleep at nights for the last 10 years. Recently, he applied to our outpatient clinic due to increased frequency of his complaints. He was not using CIC when he applied. Direct urinary system graphy (DUSG) showed an opacity of 66x48 mm in size in the orthotopic bladder. Subsequent urinary ultrasonography (USG) revealed an echogenicity consistent with a 57 mm-sized stone in the operated bladder. In the abdominal computed tomography (CT), a hyperdense appearance consistent with a 6 cm-diameter stone was determined in the bladder inferiorly. Additionally, there were contour irregularities and septations in the bladder. Renal function tests of the patient were within normal limits, despite bilateral grade 2-3 hydronephrosis (HUN). Creatinine and glomerular filtration rate (GFR) were 1.2 mg/dL and 65.21 mg/dL, respectively.

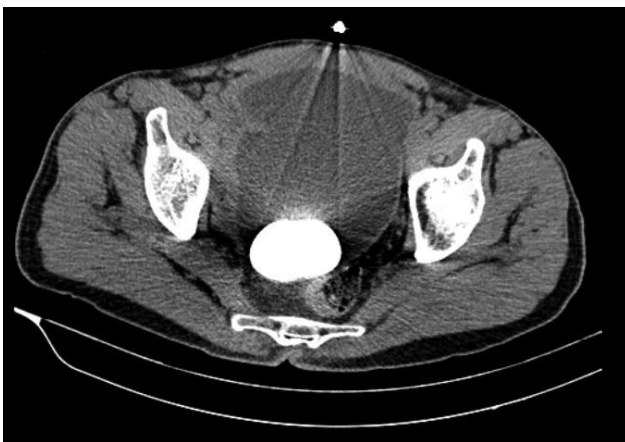


Figure 1.



Figure 2.



Figure 3.

Open stone surgery was not preferred because of the appearance of the neobladder wall structure, so endoscopic treatment was planned. The patient's bladder stone was treated in two sessions of endoscopic surgery (cystolithotripsy). After first operation control abdominal CT revealed the presence of residual stone. However, control abdominal CT after second operation any residual stones were not detected in the bladder.

DISCUSSION

The incidence of bladder stone formation in patients with continent urinary diversion is between %2.9

and %12.9⁽⁴⁾. Although stone formation is generally associated with infection, nonetheless, metabolic factors, structural factors, surgical technique, materials used, non-use of CIC may be effective in stone formation as well^(5,6).

Urinary tract infections caused by urease-positive bacteria facilitate formation of urinary tract stones. Infection-induced stones are usually struvite, calcium ammonium phosphate, carbonate-apatite, magnesium ammonium phosphate stones. Calcium oxalate stones are encountered less likely⁽⁷⁾.

Metabolic factors cause stone formation, depending on the segment used for diversion. The length of the segment used, the origin of the segment, urine contact time, urine pH and urine content cause various metabolic changes⁽⁸⁾. The most frequent complication is metabolic acidosis⁽⁹⁾ which can result in hyperoxaluria, hypercalciuria, hyperphosphaturia, hypermagnesuria and hypocitraturia⁽¹⁰⁾. Ileum is the most used segment while jejunum is the least used one, due to the high risk of related metabolic complications⁽⁹⁾.

Structural factors such as urinary reflux, chronic urinary dilatation, non-use of CIC or non-adherence to CIC, and ureterointestinal strictures are also effective in stone formation⁽¹¹⁾. During the operation, discharging the reservoir completely and not using stapled anastomosis should be kept in mind to prevent stone formation in patients undergoing continent diversion⁽⁶⁾.

Non-use of CIC as in our patient's case stands out among the probable causes of stone formation.

Patients with bladder stones due to continent diversion are usually detected incidentally. In symptomatic patients, dysuria, incontinence, recurrent urinary tract infection, gross hematuria, suprapubic pain and pressure sensation, difficulties in using CIC and during urination are common⁽³⁾. Our patient had a complaint of incontinence during sleep at night.

DUSG is the first method used for diagnosing the patients with orthotopic diversion. Complete abdominal USG and abdominal CT may provide more detailed information. Stone hardness can be determined by using abdominal CT⁽¹²⁾. We also used these imaging methods in our patient sequentially and obtained sufficient information about the localization, size and hardness of the stone in the neobladder.

The treatment of urinary tract stones in the patients with continent diversion is similar to the approach for the general population. Oral hydration of the patient should be provided. Dietary regulation can be implemented. Bladder should be regularly evacuated by means of CIC in order to prevent stone formation. Urinary tract infection should be treated, if present. Urease inhibitors can be used for the treatment of struvite stones. Aluminum hydroxide, known to reduce phosphate absorption, can be used prophylactically⁽¹³⁾. Extracorporeal shock wave lithotripsy (ESWL), stone crushing using stone basket (The Trapezoid RX Wire guided Retrieval Basket), cystolithotripsy or open surgery (cystolithotomy) can be performed as surgical treatment⁽¹⁴⁾. If the patient had anti-incontinence or bladder neck reconstruction, then meticulous attention should be paid in endoscopic approach to conserve continence mechanism⁽¹⁵⁾. We planned to remove the bladder stone by cystolithotripsy in several sessions due to the damaged bladder structure of our patient.

Lifetime prophylactic treatment and follow-up is recommended in cases with formation of stones after urinary diversion. Patel and Bellman recommended annual examinations with DUSG as well as flexible endoscopy of the lower urinary tract⁽¹⁶⁾. Stein et al.⁽¹⁷⁾ recommended serum creatinine and bicarbonate measurements and USG every 6 months during the first 4 years and annual pouch endoscopy after 5th year. In the treatment scheme of Beiko and Razvi, metabolic evaluation and DUSG are recommended at the 3rd month, routine urine analysis, urine culture and DUSG at the 6th month, and routine

urine analysis, urine culture, DUSG and USG at the 12th month and annually afterwards. The recommended metabolic evaluation includes routine urinalysis, urine culture, urine volume, pH, creatinine, sodium, calcium, magnesium, phosphate, oxalate, potassium, carbondioxide, and uric acid measurements in 24-hour urine samples, twice. If stone disease is associated with metabolic factors, annual metabolic evaluation is required ⁽⁷⁾.

CONCLUSION

Stone formation is an important long- term complication in patients with neobladder reconstruction and it is related to several variables. These patients should be provided with appropriate prophylaxis to prevent stone formation and followed up closely. Medical treatment should be provided first if there is an underlying infection and then surgical treatment should be implemented by endoscopic methods, and finally, if they fail, open surgical methods should be performed. Patients whose treatment is complete should be routinely screened for urine and blood parameters and by imaging methods against new stone formation.

Conflict of Interest: None.

Informed Consent: Received.

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