The New Journal of Urology
eISSN 3023-6940
doi: https://doi.org/10.33719/nju1608073

CASE REPORT

Hundreds of Ileal Condylitis Stones

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Submitted: *2024-12-27*
Accepted: *2025-02-12*

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Abstract

One of the long-term complications of urinary diversion, urolithiasis, is influenced by factors such as bacterial colonization, urinary stasis, mucus, and anatomical abnormalities. Stones are typically observed in the upper urinary tract, and they are rarely seen in the ileal conduit. Although endoscopic surgery can be used for the treatment of stones in the ileal conduit, it is predominantly treated with open surgery. We report a 28-year-old male patient with 282 urinary stones, the largest of which measures 8 cm, found in the ileal conduit. The case is evaluated in terms of treatment and surgical approaches.

Keywords: ileal conduit, lithotripsy, urolithiasis, urinary diversion

INTRODUCTION

Urinary diversion, which is frequently preferred by surgeons today to ensure urine output following radical cystectomy, was first described by Bricker in 1950. (1) Urolithiasis, one of the late complications of urinary diversion, occurs in 3-43% of patients with urinary diversion, and its etiology is typically associated with factors such as anatomical abnormalities, urinary stasis, bacterial colonization, and mucus. (2) Due to anatomical differences in these patients and factors such as intra-abdominal adhesions, although endoscopic surgery can be used to manage stones, open surgery is generally preferred (3).

Our case is a rare patient with Bricker urinary diversion who has 282 urinary stones, the largest of which is 8 cm.

CASE REPORT

A 28-year-old male patient underwent cystectomy and Bricker urinary diversion 15 years ago due to vesical exstrophy. The patient has a history of recurrent urinary tract infections (Proteus and Escherichia coli) over the last 10 years, with repeated antibiotic use. He presented with right upper quadrant pain, a firm mass on the right side, and continuous mucus discharge from the urostomy.

Cite; Turhan A, Basaranoglu M, Nebioglu A, Akbay E. Hundreds of Ileal Condylitis Stones. New J Urol. 2025;20(2):113-116. **doi:** https://doi.org/10.33719/nju1608073

On physical examination, multiple incision scar marks were noted on the abdomen, and a naturally observed ostomy was found in the right lower quadrant. The patient's renal function (creatinine: 1.36 mg/dL, urea: 29 mg/dL) and urinalysis (nitrite negative, leukocytes negative, pH 6.5, culture-negative) were within normal limits. Computed tomography revealed a hypoplastic left kidney (80 mm), a normal right kidney, and no stones or dilation in the upper urinary system. The patient had a Bricker urinary diversion extending to the right lower quadrant, with multiple stones, the largest measuring 8 cm (Figure 1a,b,c). Multiple stones were observed on the plain radiograph (Figure 1d).

The patient underwent laparotomy through a right paramedian incision. The stones were completely removed by opening from the anti-mesenteric side while preserving the ileal conduit and ureteral anastomosis (Figure 2). The ileal conduit was closed with two layers.

Postoperative computed tomography images were obtained (Figure 3). The patient had the drain removed on the third postoperative day and was discharged on the ninth day.

At the one-year follow-up, no recurrence was observed in the patient. No changes in renal function were detected. Urinary tract infection prophylaxis was administered. The stones' analysis was not done.

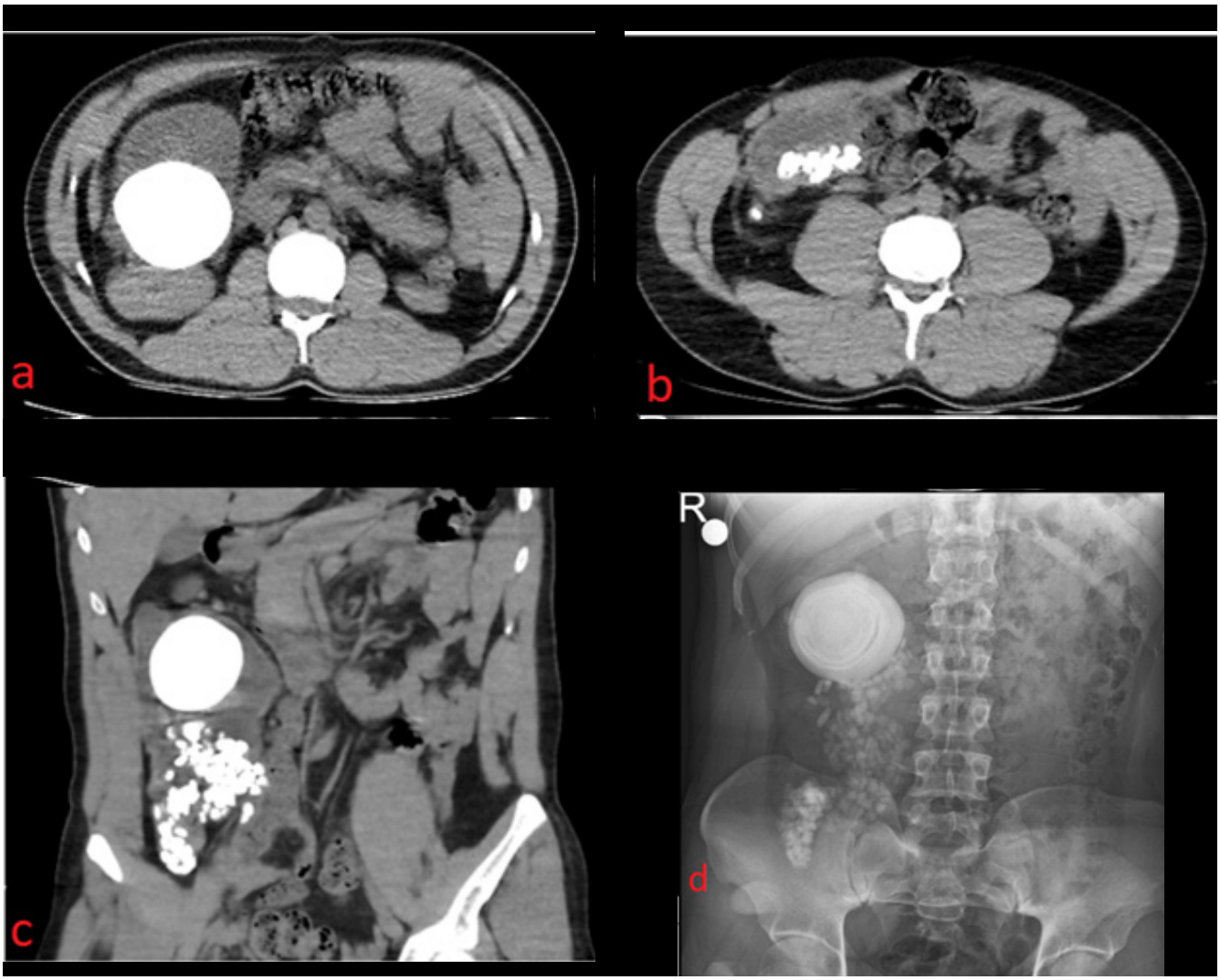

Figure 1.a. Axial computed tomography at the level of L1, **b**: Axial computed tomography at the level of L3, **c**: Coronal computed tomography, **d**: Plain urinary system radiograph

Figure 2. 282 stones removed from the ileal conduit.

Figure 3. Postoperative computed tomography images

DISCUSSION

Radical cystectomy and urinary diversion are the main treatment modalities for muscle-invasive bladder cancer. Ileal conduit, a type of urinary diversion, is associated with early postoperative complications such as urinary infections, urinary or fecal leaks from the anastomosis, wound infections, and ileus. Urolithiasis within the ileal conduit is one of the late complications and is typically observed in the upper urinary system, though it is rarely seen within the ileal conduit itself (3,4,5). Risk factors for stone formation in the ileal conduit include bacterial colonization, mucus secreted by the ileum into the urine, metabolic reactions, and stapler-related issues secondary to surgery. Additionally, urinary stasis, which arises due to anatomical differences depending on the type of urinary diversion, is a factor that influences the frequency of urinary stones (2).

In patients with urinary diversion, bacteriuria is observed in a range of 14-96%, with the majority being asymptomatic. These bacteria typically possess urease enzymes, and the breakdown of urea leads to the production of ammonia, which increases the urine pH and contributes to the formation of magnesium phosphate stones (2). The prevention of urostomy stoma stenosis contributes to reducing bacterial colonization by ensuring the complete drainage of urine from the ileal conduit. In patients with infection-related stone formation, prophylactic antibiotic use is recommended (2,5).

Another cause is hyperoxaluria, which develops due to the length of the ileal segment. The length of the ileal segment should be 15-20 cm; if it is longer, the patient's ability to absorb bile acids and fatty acids decreases. In this case, bile and fatty acids cannot be absorbed and combined with calcium, which would normally bind with oxalate. As a result, ionized oxalate remains in the intestines, leading to the development of hyperoxaluria (2).

In patients with urinary diversion, various endoscopic and open surgical methods are applied depending on the anatomical location of the stone. The surgical approach for stones in the upper urinary system is managed in the same way as in normal patients. However, for ileal conduit stones, endoscopic surgery is not preferred due to a 50% recurrence rate and anatomical differences (6).

Despite the fact that postrenal failure due to ileal stones has been reported in the literature, in our patient, renal function was only partially affected, and no changes were observed

during follow-up after surgery (7). While cases involving ileal conduit stones have been reported in the literature, the removal of such a large number of stones is rare, making this case a significant contribution to the literature.

In all patients with urolithiasis, high oral fluid intake, and dietary modifications, such as reducing animal protein consumption, are advised. Additionally, it is essential to identify the underlying etiological factors contributing to stone formation and implement appropriate treatment strategies (2,5).

CONCLUSION

Ileal conduit stones are rare complications following cystectomy. In patients with a history of radical cystectomy, urolithiasis should be considered in the presence of recurrent urinary tract infections and persistent mucus in the urine. The definitive treatment for urolithiasis is surgery, with open surgery being preferred over endoscopic surgery in most cases. The use of prophylactic antibiotics in these patients is of great importance.

Funding: This study , being a case report, did not require any funding.

Conflict of Interest: The author declares that they have no conflicts of interest.

Informed Consent: Written informed consent was obtained from the patients for publication of these reports and accompanying images.

Ethical Approval: This article does not contain any studies with human participants or animals performed by any of the authors.

Authors' Contributions: EA performed the diagnosis, treatment, surgery and follow-up of the patient. AT, MB, AN and EA made significant contributions to the writing of the case report. All authors read and approved the final draft.

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