

A submucosal bladder stone in a 65-year-old woman

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Abstract

We describe a case of a 65-year-old woman with a submucosal bladder stone with no apparent underlying cause. She presented with lower abdominal pain, dysuria, and a history of recurrent cystitis. Ultrasound and computed tomography of the lower abdomen revealed the presence of lithiasis nearby to the left ostium. During ureterorenoscopy, stone was found neither in the bladder nor in the left ureter. Instead, we observed a macroscopic bulge close to the left ureter. After opening of the mucosa, a stone became visible and could be removed. Mostly, imaging of the calculus was done some time before surgery. During this time interval, it is a possibility that the stone has already passed the urinary tract. Our case illustrates that it is important for each patient to search for the calculus extensively to prevent needless symptoms and investigations.

Keywords: Bladder stone, submucosal calculus, urolithiasis, urologic endoscopy

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INTRODUCTION

Urolithiasis is a highly prevalent disease worldwide, with an incidence rate of 5%–9% in Europe.^[1] Bladder stones (BSs) comprise 5% of all urolithiasis and usually occur secondary to obstruction, foreign bodies, or infection.^[2] The most common cause is an enlargement of the prostate; hence, they are not often seen in female patients. We describe a case of a bladder stone in a 65-year-old woman with no history of urologic procedures, whose stone was found inside the bladder mucosa, next to the ureter ostium, during endoscopic surgery. After a review of the literature, we have found only one other case of a submucosal bladder stone.^[3]

CASE REPORT

A 65-year-old Caucasian woman was referred to the hospital with lower abdominal pain and dysuria of 5

months' duration. Routine laboratory investigations ordered by the general practitioner were within normal limits. Urinalysis revealed pyuria (11–20 white blood cell/visual field), hematuria (3–5 red blood cells/visual field), and positive leukocyte esterase and was negative for nitrites. Culture showed the presence of *Pseudomonas aeruginosa*. Both fosfomycin and nitrofurantoin were prescribed by the general practitioner but had no effect on the symptoms. Four months later, the patient was referred to our urology department (the delay was contributed to the COVID-19 pandemic). Anamnesis revealed a history of recurrent cystitis, use of a contraceptive spiral, and a hysterectomy with anterior and posterior colpopexy in 2006. The patient had no further history of stone disease, smoking, radiation exposure, or previous urological surgical procedures. Family history consisted of one first-degree family member with a history of nephrolithiasis. One year before the first presentation at the general practitioner, the calculus was

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noticed by chance on pelvic radiographic imaging. Since no symptoms were present at that time, the patient was not referred to a specialist. During the consultation, a urologic ultrasound of the lower abdomen showed a small lithiasis at the vesicoureteric junction, presumably encapsulated in the bladder mucosa. Computed tomography (CT) scans reported bilateral small nonobstructive lithiasis in the kidney calyx, no signs of hydronephrosis, and a calculus of approximately 9 mm in the bladder bottom close to the left trigonum [Figure 1]. Ureterorenoscopy (URS) was performed, during which lithiasis was seen neither inside the bladder nor in the left ureter. There was macroscopic bulge visible medial of the left ostium [Figure 2]. After reevaluation of the abdominal CT, it was decided to open the bladder mucosa at the area of bulging. Hereby, a stone became visible and could be resected easily [Figure 3]. Postoperative bladder irrigation was installed. The stone was successfully removed, and there was no damage to bladder integrity.

DISCUSSION

Vesicular calculi represent 5% of urinary calculi.^[2] BS can be divided into primary, secondary, and migratory stones.^[4] In adults, BSs rarely occur spontaneously. Most common predisposing factors found in women include bladder outlet obstruction, infection, female pelvic surgery, neurogenic bladder, or foreign bodies.^[2] In the literature, we found numerous reports of BS secondary to intravesicular migration of intrauterine devices.^[5] Migratory BSs form in the upper urinary tract. In our case, we were not able to determine whether the BS was primary formed in the bladder or migratory, since no stone analysis is available. Our literature search revealed only one other case which described a submucosal BS. In the case reported by Singh *et al.*, a BS is found in a 40-year-old male patient.^[3] The calculus measured approximately 20 mm and was removed during open cystolithotomy; the exact location of the stone was not mentioned neither where any medical antecedents.

Patients with BS usually present with lower urinary tract symptoms, lower abdominal pain, and terminal hematuria.^[4] A history of urinary calculi increases the risk of bladder cancer.^[6] The calculus removed from our patient may have lodged in the wall of the urinary bladder, causing an inflammatory reaction which in its turn caused the mucosa to grow over it and making the calculus submucosal. A differentiation should be made with a stone inside ureterocele or paraureteric bladder diverticulum. A ureterocele is a congenital cystic dilatation of the distal part of the ureter.^[7] A bladder diverticulum, congenital or acquired, is a herniation of the mucosa through the smooth muscle layer and can be seen



Figure 1: Axial computed tomography of the lower abdomen showing a calculus of approximately 9 mm in the bladder bottom close to the left trigonum

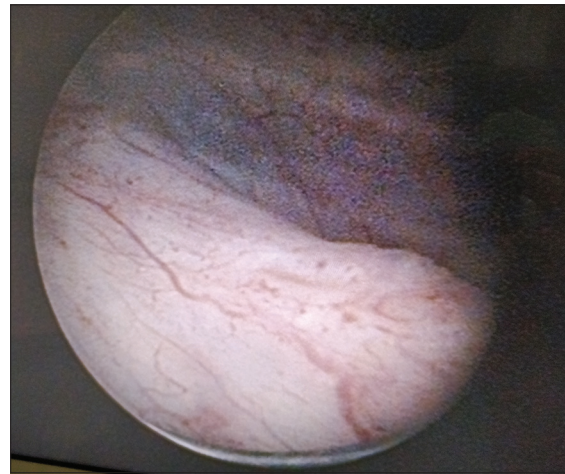


Figure 2: Endoscopic bulging of bladder mucosa visible next to left ostium

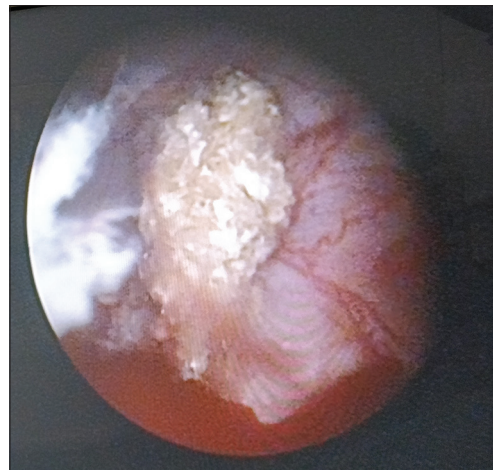


Figure 3: Bladder stone visualized after opening of the bladder mucosa

with retrograde cystography CT or cystoscopy.^[8] In our case, based on the *à blanc* CT images and the cystoscopy, neither

a bladder diverticulum nor a ureterocele was suspected. We consider both entities as highly unlikely as our stone was found embedded in the bladder mucosa and a clear distinction could be made between the ureteric orifice and the mucosal bulging in which the BS was found.

Often, when no stone is found during URS, it will be perceived that the stone has already passed through the urinary tract. It is not always possible to clearly determine where the stone is located based solely on imaging. This case provides a good example that a thorough search for an impacted stone is important to avoid unnecessary imaging and operations.

Ethical approval

All applicable international, national, and/or institutional guidelines were followed.

Informed consent

Informed consent was obtained from all individual participants included in the study.

All authors have read and approved the manuscript, the requirements for authorship have been met, and each author believes that the manuscript represents honest work.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given

her consent for her images and other clinical information to be reported in the journal. The patient understand that name and initials will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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