

Asymptomatic Multiple Bladder Stones Treated by Percutaneous Cystolitholapaxy

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Abstract

Bladder calculi in adults are common and occur as a result of bladder outlet obstruction. Though most of them are composed of calcium, in a few cases the stones may be composed of uric acid. We report on a 72 year old male who presented himself for a health check-up and incidentally was diagnosed to have multiple bladder calculi (85), the largest being 25 mm. Despite the large stone burden, the patient was managed by percutaneous cystolithotripsy. The composition of the stones was uric acid. The patient had a smooth post-operative period.

Keywords Bladder calculi; Endoscopy; Percutaneous cystolitholapaxy; Obstruction

Introduction

Bladder stones are common and currently account for 5% of all urinary stone disease and approximately 1.5% of urologic hospital admissions in industrialized Western nations [1]. Bladder calculi are typically found in adults and are almost always associated with urinary stasis or the introduction of a foreign body. However in certain endemic regions, bladder calculi often arise in children secondary to dietary and socioeconomic factors [1]. Bladder calculi commonly present with macroscopic hematuria, which generally is terminal. Other symptoms include intermittency, frequency, urgency, and dysuria, decreased force of the urinary stream, incontinence, and lower abdominal pain aggravated by brisk movement [2]. Larger stones tend to cause fewer symptoms, probably due to restricted movement within the bladder. Bladder stones are rarely asymptomatic at the time of discovery [1]. We report a rare case of asymptomatic multiple bladder calculi managed by percutaneous cystolitholapaxy (PCCL).

Case Report

A 72 year old male was diagnosed to have multiple bladder calculi when presented for health check-up. The patient was non diabetic and had no lower urinary tract symptoms. Routine abdominal sonography (Figure 1) revealed multiple calculi, when done as a part of the health check-up. Plain X-ray abdomen and plain computed Tomography (Figure 2) of abdomen confirmed the findings. Urine examination revealed 10-15 pus cell/HPF. Urine culture showed *E. coli* growth sensitive to routinely used broad-spectrum antibiotics. Uro-flowmetry showed a Qmax of 9 ml/sec with 30 ml residual urine.

The patient was started on prophylactic antibiotics. Percutaneous cystolitholapaxy was done under regional anesthesia, using a 30 Fr amplatz sheath and 28Fr nephroscope (Storz, Germany). Most of the calculi could be extracted without breaking. A few needed the use of

pneumatic lithotripter (Electro Medical Systems: EMS, Switzerland). A total of 85 calculi (Figure 3) were extracted largest being 25 mm. Post-operative period was uneventful. The patient was advised to take tablet Silodosin 8 mg every day for a months' time. The chemical analysis of the calculi showed uric acid lithiasis. Presently the patient is voiding well and remains asymptomatic on Silodosin.



Figure 1: Ultrasound showing multiple bladder calculi.

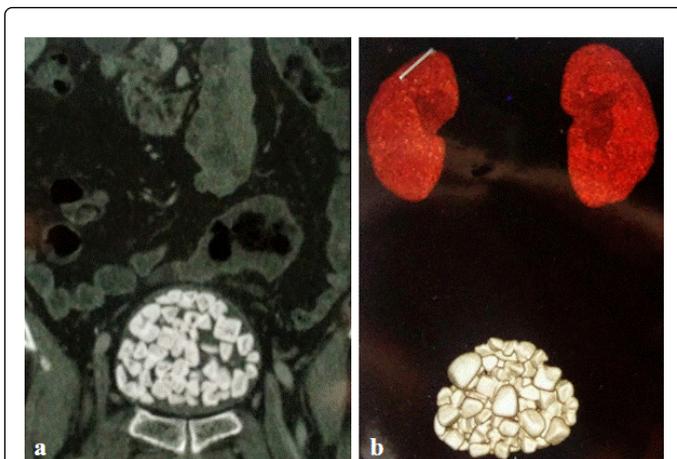


Figure 2: a. CT KUB showing presence of multiple vesical calculi occupying entire bladder. b. Volume rendered image nicely illustrating multiple vesical calculi.

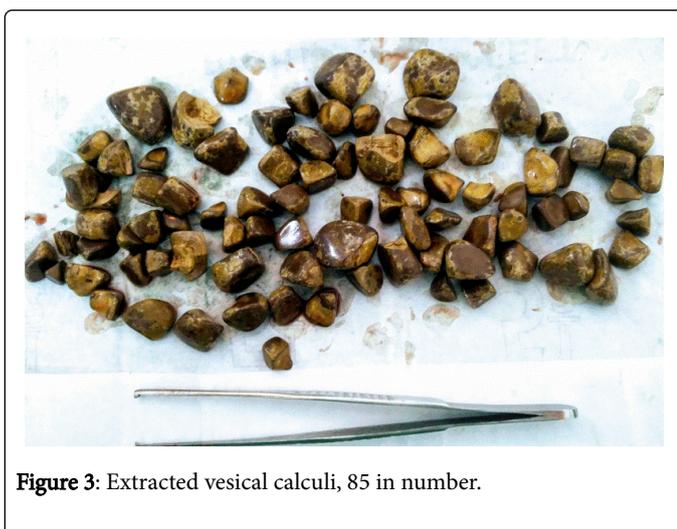


Figure 3: Extracted vesical calculi, 85 in number.

Discussion

Bladder calculi are typically found in older men (age around 60 years.) and are usually secondary to lower urinary tract obstruction, which prevents complete bladder emptying [3]. The overall incidence of bladder calculi seems to have stabilized or decreased among males and increased slightly for females probably due to the increase in the size of the elderly population, as well as by an overall increase in the number of female genitourinary procedures performed annually [1]. Bladder calculi may arise *de novo* within the bladder or may result from the migration of stone from the upper tracts and subsequently fail to be voided spontaneously.

Nearly 70% of bladder calculi are composed of calcium, 20% uric acid, around 10% of magnesium phosphate (struvite) and less than 1% are made of cysteine [1]. The composition of stones secondary to anatomic obstruction varies with geography and ethnicity. In Europe,

struvite, calcium phosphate, and uric acid predominate, whereas in Japan uric acid calculi are uncommon and calcium stones are increasing in incidence, now representing 72% of all stones found in a recent series. Calcium oxalate comprises the majority of bladder stones found in the United States, although uric acid stones predominate among the American Jewish population [1]. Li et al. in a study of 77 patients with urolithiasis (55 in the kidney and 22 in the bladder) reported that local factors were more important than systemic factors in the formation of uric acid bladder stone, because they did not find any significant difference in the urine stone risk analysis between patients with kidney and bladder stones [4], Childs and colleagues [5]. Reported that the patients with bladder stones had lower 24 h urine pH (median 5.9 vs. 6.4; $p=0.02$), lower 24-hour urinary magnesium (median 106 vs. 167 mmol; $p=0.01$), and increased 24 h urinary uric acid super saturation (median 2.2 vs. 0.6; $p<0.01$) when compared to patients without bladder calculi among men who underwent surgical intervention for benign prostatic hyperplasia. In this study, most of the patients had calcium bladder stones (84%), and no correlation between stone composition and urinary pH was found, but all patients with uric acid stones had a 24 h urine pH of less than 5.8, suggesting a metabolic contribution to stone formation.

Most of the patients with bladder stone are symptomatic. Occasionally bladder stones can be asymptomatic, like in our case. Similarly, Madineh [6] reported on an asymptomatic bladder calculi, wherein the patient was incidentally found to have haematuria (3+) when he underwent routine laboratory tests to renew his driver's license.

The options for management of vesical calculi are varied. Any planned intervention should also aim to correct the underlying urinary tract pathologic process, when appropriate, to prevent stone recurrence. Surgical options include open cystolithotomy, percutaneous cystolitholapaxy and perurethral cystolitholapaxy. Perurethral cystolitholapaxy is ideal for a small bladder stone which can be removed intact or in few pieces. Open cystolithotomy is an ideal for large stones (≥ 3 cm) as the surgical time is reduced. Percutaneous cystolitholapaxy is an ideally indicated in patients with multiple, moderate to large bladder calculi.

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