

## Patient with Benign Prostatic Hypertrophy and Two Giant Stones in urinary bladder

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**Giant urinary bladder stones are very rare; very few cases have been reported in English literature and only one case from Africa. Multiple giant bladder stones are extremely rare; no single case report has been found documenting this occasion. This report presents a patient of benign prostatic hypertrophy with two giant stones in the urinary bladder.**

### Introduction

Urinary bladder stones are known since antiquity, and they have been treated both medically and surgically for many centuries. The oldest bladder stone discovered dates back to 4800 BC and was found by archeologists in Egypt around the turn of the 20th century<sup>1</sup>. The literature of urinary bladder stones was documented by Hippocrates twenty three centuries ago<sup>2</sup>. It is generally known that; Urinary bladder stones are rare, and they constitute about 5% of all urinary stones<sup>2,3</sup>. Giant bladder calculus weighing more than 100mg are even rarer, fewer than 30 cases have been reported in English literature<sup>5</sup>. In Africa only one case from Libya has been reported<sup>5</sup>. In my review of literature, a case of two giant bladder stones has not been found. This case report presents a patient with benign prostatic hypertrophy presenting with two giant bladder stones.

### Case Report

A 65 year male patient was admitted in the surgical ward at Dodoma regional hospital, with a history of on and off difficulty in passing urine for about twelve months prior to admission. This was associated with severe lower abdominal pain and painful voiding throughout his illness. The severity of pain progressively increased especially in last three months prior to admission which prompted him to seek medical attention. He had had several episodes of terminal hematuria during the same period. He denied any history of weight loss. He had had attempt at catheterization of the bladder at peripheral hospitals prior to arrival at our clinic which had failed.

At the outpatient department, he was found to be in pain, but otherwise looked healthy. He had pallor and was afebrile. The abdominal examination revealed a partially filled urinary bladder, with two hard, roundish, smooth surfaced masses which were difficult to displace upward. These two masses were only hardly felt during digital rectal examination, and it was difficult to characterize them. The prostate was grade two. It was firm, smooth surfaced with normal overlying rectal mucosa. Investigations done included haemoglobin level which was 8.5 g/dl, he was blood group O-positive. The abdominal ultrasound revealed two bladder stones, with mild hydronephrosis. Urinalysis showed plenty of red blood and white blood cells. No pelvic x-rays were done due to faulty machine at the hospital.

He was scheduled for open transvesical prostatectomy and cystolithotomy the next morning. Perioperative gentamycin and ampicillin were prescribed. A sub umbilical midline incision was used. The bladder was opened and the two giant oval smooth surfaced bladder stones weighing a combined weight of 330 gm were removed [see picture below], and about 75 gm prostatic tissues was enucleated. There were no other pathologies in bladder such as diverticulum or tumor. Urethral and

suprapubic catheters 22 French gauge (Fr) were inserted for bladder washout post operatively. The urethral catheter was removed on the third day. The patient was discharged on the 4th day with suprapubic catheter, which was removed after 10 days at the outpatient department. He was seen after one month without any complication.



**Figure 1.** The Two Bladder Stones Removed.

## Discussion

It has been pointed out that, giant bladder stones are rare and few cases have been reported in English literature<sup>1</sup>. Multiple giant bladder stones are very uncommon and to the best of my knowledge, no single case of two giant bladder stones has been reported worldwide.

There are many causes of bladder stones; Commonly they are secondary to renal stones, bladder outlet obstruction (BOO) or bladder diverticulum<sup>6,7</sup>. These stones are therefore seen commonly in aging males due to benign prostatic hypertrophy, a common cause of bladder outlet obstruction in this age group. On other hand, in young males urethral stricture is a leading cause of BOO, therefore predisposing this age group to bladder stones. The role of bladder outlet obstruction in formation of bladder stones was explained by McKay et al<sup>8</sup>. Rarely Bladder stones have been reported around a foreign body, sutures, catheters or other objects introduced in the bladder. One example is a report published by Pomerantz et al<sup>6</sup> in 1989, he reported a giant bladder stone formed around an arterial graft which was incorporated in the urinary bladder.

One of the postulated mechanisms for the formation of these bladder stones is that; they develop from a single renal or ureteric stone, that has passed into the urinary bladder<sup>8</sup> or from a nidus of infected material within the bladder which then undergoes a progressive layering of the calcified matrix with subsequently formation of giant stones. Lewi et al<sup>9</sup> reported an alternative route, in which a giant bladder stone formed as a result of coalescence of 2 or more stones. This mechanism may be considered in this case; failure of coalescence of the index twin bladder stones lead to parallel growth and therefore formation of two giant bladder stones. Alternatively each of the stone may have originated from separate ureter or both from a single ureter. However, none of the above explained mechanisms can be verified.

Bladder stones vary in size, and different reporters have documented different sizes; for example the largest recorded stone weighing 6294 gm was reported by Arthure<sup>10</sup> in 1953 and this stone was thought to have been formed in a bladder diverticulum. The bladder stone reported by Randall<sup>11</sup> in 1921 weighed 1914 gm. In 1952, Powers and Matfler<sup>12</sup>, Dorsey<sup>13</sup>, and Wenger and Berry<sup>14</sup> respectively reported bladder stones that weighed 1410 gm, 455 gm and 154 gm. In Libya the largest bladder stone reported was 420 gm<sup>5</sup>. The combined weight of the two bladder stones in our case was 330g.

A review of literature did not find any report on multiple giant bladder stones. Our patient had benign prostatic hypertrophy; understandably this is the possible etiological mechanism for the formation of the bladder stones. Benign prostatic hypertrophy not only causes urinary stasis a common predisposing factor for bladder stone formation in elderly men, but also the stasis is an important risk factor for urine infection. However studies have indicated that infection may not be the inciting factor in stone formation, although it plays a major role in further stone crystallization<sup>2</sup>.

Majority compositions of bladder stones include triple phosphate, calcium carbonate, and calcium oxalate, uric acid stones are rare<sup>4</sup>. In this case, chemical composition was not determined due to lack of facilities. However stones are kept for future analysis and reference.

Surgical treatment of bladder stones has evolved over years from 'blind' insertion of crushing forceps into the bladder to open surgical removal and extracorporeal fragmentation or lithotripsy. Open surgery is the recommended modality of treatment for large stones<sup>15</sup>. In small or moderate stones, endoscopic procedures such as optical mechanical cystolithotripsy have an added advantage as it can be combined with corrective procedure for the cause of bladder outlet obstruction<sup>16</sup>. Zhaowu et al (1988) have recommended that electrohydraulic shockwave lithotripsy (EHSWL) preferably to be avoided in large, hard bladder stones and divercular stone or when a stone is stuck to the mucosa<sup>17</sup>. This case was managed by open transversical prostatectomy in which 75gm of prostatic tissue was enucleated and the bladder stones extracted. There was no complication associated with the procedure.

In conclusion, this case report has presented a rare occasion of two giant bladder stones in a patient with benign prostatic hypertrophy. The review of literature has been presented together with surgical management of patients with giant bladder stones.

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