

Giant Vesical Calculus

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ABSTRACT

BACKGROUND: Giant bladder calculi are not common in modern urologic practice and many have been found to grow to enormous proportions with minimal symptoms.

METHOD: We report a 1.6 kg stone removed from the urinary bladder of a 48 year old Nigerian man. The stone increase in size associated with troublesome urinary frequency, which necessitated removal by open vesicolithotomy

RESULTS: The calculus weighed 1.6kg and measured 13cm X 9.5cm X 9.2cm in length breadth and height; and contained calcium carbonate, calcium oxalate, magnesium phosphate and uric acid. It was a complex stone, sticking to the hypertrophied bladder wall. A biopsy of the bladder mucosa revealed no malignancy. The patient was on continuous bladder drainage for 10 days and had a urine flow rate of 20mls/sec on discharge. He has been seen in the surgical outpatient department 2 weeks and 4 weeks after discharge with no complaints.

CONCLUSION: Giant vesical calculi are rare and can present with few symptoms. It is very important to exclude lower urinary tract obstruction as the aetiology though a significant number have no such obstruction. The stones are usually mixed because of associated urinary tract infection.

KEY WORD: giant, asymptomatic urinary bladder calculus, vesicolithotomy

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INTRODUCTION

Giant vesical calculus is defined as a stone in the urinary bladder weighing more than 100g¹. Such giant stones are rare in modern urological practice. In earlier centuries however, bladder stones were a common problem requiring surgical intervention. Urinary bladder stones account for about 5% of urinary calculi²; a giant one is rare and commoner in males due to a higher incidence of lower urinary tract obstruction. These stones are usually composed of calcium oxalate or magnesium ammonium phosphate and are frequently associated with urinary tract infection by urea splitting organisms³. The risk of urinary tract calculus formation includes urinary stasis, urinary tract infection and the presence of a foreign body. The symptoms of giant vesical calculi include dysuria, urinary frequency, haematuria, urine retention, hydronephrosis and renal failure. The technique of removal of giant vesical calculus includes open suprapubic vesico lithotomy which is the treatment of

choice⁴, cystolitholapaxy and percutaneous cystolithotomy. This relieves the urinary obstruction and infection is eliminated by potent antibiotics. We report an unusually giant vesical calculus, highlighting the challenges of its surgical management and the important place of open surgery.

CASE REPORT

ND a 48 year old driver, presented with 21 year history of frequency, dysuria and poor urinary stream which does not improve with straining associated with strangury and history of passage of stones per urethra on several occasions. There was no history of fever, loin pains or haematuria. One year ago, he had an Ultrasound Scan of the abdomen and was told he had bladder stone but did not seek medical assistance. He is not a known diabetic or hypertensive. He is married and has 5 children.

On examination, he was a fit looking young man, who was afebrile and not pale or dehydrated. Examination of the chest and cardiovascular system showed no abnormality.

Abdominal examination revealed a stony dull and hard suprapubic mass 22cm above the pubic symphysis. A clinical diagnosis of bladder stone was made.

Investigations included a urine culture, which yielded no bacterial growth, a urine microscopy revealed 20-25 leucocytes per high power field along with numerous erythrocytes, casts and oxalate crystals. An abdomino-pelvic ultrasound scan confirmed the presence of huge vesical calculus. The packed cell volume (PCV) was 35% and the urea, electrolytes and creatinine were within normal limits. The urinalysis was also normal. Informed consent was obtained, and the patient had open vesicolithotomy 3 days after admission.

The operative procedure was as follows: under general anaesthesia in supine head down position, the bladder was explored through a 7cm length of transverse skin crease suprapubic incision and a huge calculus was removed manually. The bladder wall was thickened to about 3cm with areas of haemorrhage in its mucosa. The stone was extracted and the bladder lavaged with warm saline. Multiple biopsies of the bladder mucosa (haemorrhagic areas) were taken and the bladder closed in two layers of continuous Vicryl 1 suture. A Foley's urethral catheters was left for continuous drainage for ten days. A retro-pubic drain was also in place for 48 hours. The patient made an uneventful recovery and was discharged 14 days after with a urine flow rate of

20mls per second. The chemical composition of the stone is as outlined below.

Fig. 1 Open vesicolithotomy

The appearance of the giant stone on opening the bladder between stay sutures



received, possessing rough surface (uneven surface with pigmentation from blood clots), and very hard texture. It is brown in color with some reddish and pale whitish areas. It has an irregular shape but roughly ovoid and weighted 1.45 Kg and measured 14cm X 10 cm in the widest dimensions.

Fig 2: The stone is now completely out of the bladder cavity



2. Chemical Analysis:

Carbonate	-	Positive
Calcium oxalate	--	Positive
Calcium other than oxalate		Positive
Magnesium		Positive
Ammonium	-	Negative
Uric Acid/Ureates	-	Positive
Xanthine	-	Negative
Cystine	-	Negative

CONCLUSION: This bladder stone contains calcium Oxalate, Calcium Carbonate, Magnesium Phosphate and uric acid. It is a complex stone.

DISCUSSION

A stone of 1.6kg in a man's bladder is clearly very big and in excess of the definition of giant vesical calculus; which the literature defined as any stone above 100g in weight¹. Majority of such neglected stones will have symptoms of chronic suprapubic pain and urinary tract infection. These stones are frequently associated with urinary tract infection, stasis (due to prostatic enlargement, urethral stricture, bladder neck stenosis etc) foreign body, bladder diverticulum and a neurogenic bladder among others. Other associations of giant urinary tract calculi include bladder wall

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CALCULUS ANALYSIS
 48 YRS MALE GIANT URINARY CALCULUS (bladder)

1. Gross description: one giant urinary tract stone

inflammation, hypertrophy, leukoplakia, erosion and even bladder neoplasm. These are common in developing countries where schistosomiasis is endemic. Where there is no obstruction, infection, foreign body or a neurogenic bladder, the cause of giant urinary calculi must be thoroughly investigated in the patient and this has been shown to include; nutritional deficiencies of Vitamin A, Magnesium, phosphate, and vitamin B₆, combined with a low protein and high carbohydrate diet⁵, among other factors.

There was no obstructive lower urinary tract lesion in this patient that would have predisposed him to the formation of such a huge stone and similar cases have been reported in the literature⁶. Rahman *et al* reported 2 cases of giant bladder calculi with no lower obstructive urinary tract lesions⁷. In the present patient we removed a huge bladder stone (Figs 1,2 and 3) that was stuck to the bladder mucosa posteriorly in several areas that required gentle and painstaking manipulation to free. This was quite different from the use of obstetric forceps or other devices as described by Chen and colleagues⁸. Most reports recommend an open suprapubic vesicolithotomy as the treatment of choice^{2,8}. In this patient open vesicolithotomy was the best option because the stone was very hard and stuck to the bladder wall posteriorly. Using an obstetric forceps may tear the bladder wall and a lithotripsy may not successfully crush

such a very hard stone. We therefore recommend an open suprapubic cystolithotomy as the treatment of choice for giant vesical calculi that are clearly several times the average weight of 100g.

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