

## Case Report

# A successful delivery of giant bladder stone by obstetric forceps: a case report

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**Received:** 23 January 2021

**Accepted:** 06 April 2021

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### ABSTRACT

Giant bladder stone is a rare phenomenon. Surgical treatment which involves open vesicolithotomy and delivery of the bladder stone is usually straightforward. Herein, we report a 69-year-old gentleman with a neglected giant bladder stone complicated by obstructive uropathy and acute renal failure. After medical condition was stabilized, he underwent open vesicolithotomy. At surgery, delivery of the giant bladder stone was difficult both manually and with stone forceps. The stone was later delivered successfully by Wrigley's obstetrics forceps. We report this case to highlight the rare cause of acute renal failure and the use of obstetrics forceps in the management of giant bladder stones.

**Keywords:** Giant bladder stone, Obstetrics forceps, Vesicolithotomy

### INTRODUCTION

Bladder stones are the most common form of lower urinary tract stone and are frequently seen in elderly men. Most cases develop as a result of infravesical obstructions such as prostatic hyperplasia and neurogenic bladder.<sup>1</sup> Giant bladder stone on the other hand is a rare phenomenon. In current urological practice, giant bladder stones weighing over 100 grams are rarely seen.<sup>2</sup> Giant bladder stones which cause obstructive uropathy and acute renal failure are even less common. Retrieval of bladder stone during open surgery is usually uncomplicated except in some cases. Obstetric forceps have been described to successfully deliver giant bladder stones in such cases.<sup>2-4</sup>

### CASE REPORT

A 69-year-old Malay gentleman was seen at a district hospital with breathing difficulty and inability to pass urine. Clinically he appeared drowsy, dyspnoeic and tachypnoeic with metabolic acidosis on blood gases. He

was subsequently intubated for impending cardiorespiratory arrest and was sent to Hospital Sultanah Nur Zahirah, Kuala Terengganu, Malaysia.

He needed inotropic support and clinical examination showed a hard-palpable suprapubic mass. Per rectally the prostate gland was also enlarged. Blood works showed acute renal failure with blood urea of 65 mmol/L and serum creatinine of 1304 µmol/L. Plain radiograph and advanced imaging diagnostics (Figure 1, 2) demonstrated a giant bladder stone measuring 12x10cm with bilateral gross hydronephrosis. Diagnosis of obstructive uropathy with acute renal failure secondary to huge bladder stone was made.

The patient needed to be dialysed and nursed in the intensive care unit preoperatively. He underwent open vesicolithotomy and transurethral resection of prostate (TURP), in which a bladder stone measuring 12x10cm was found. Bladder stone forceps was initially used to grasp the stone but failed to do so as the stone was too big

and densely adhered to the bladder wall (Figure 3). Manual delivery was attempted but also failed. Eventually, the surgeon managed to remove the bladder stone successfully by using Wrigley's obstetric forceps (Figure 4, 5). The stone weighed 810gm. He had uneventful post-operative recovery.



**Figure 1: Demonstrating the giant bladder stone by plain CT urogram.**



**Figure 2: CT urogram showing part of the bladder stone with severe hydronephrosis and hydroureter.**



**Figure 3: Intraoperative-standard stone forceps unable to fully grasp the huge stone.**



**Figure 4: Delivered giant bladder stone measuring 12x10 cm, with weight of 810 gm.**



**Figure 5: Demonstrating application of the Wrigley's obstetrics forceps onto the giant bladder stone.**

## DISCUSSION

Bladder stone has been a fascinating subject to man since time immemorial. Ancient documents from Egyptian civilization mentioned treatment for stones from 1500BC.<sup>5</sup> Description of symptoms and treatment prescription to dissolve the stone were also found in Mesopotamian medical text between 3200 and 1200 BC.<sup>5</sup> Throughout the centuries, surgical treatment for bladder stones has evolved from being a dangerous operation with high mortality and morbidity to a safe endourological procedure such as transurethral vesicolithotripsy or minimally invasive surgery (MIS) such as percutaneous vesicolithotripsy (PCVL). Open vesicolithotomy is also being performed for larger stones not amenable for endourology or MIS. With the advent of technology in diagnostic imaging, surgical technique and health care delivery, many patients with bladder stones are receiving early treatment and cases of giant bladder stones nowadays are rare occurrences.

Most bladder stones are in the range of 1 to 2.5 cm and weigh less than 100gm.<sup>6</sup> Giant bladder stones are referred to any stones weighing more than 100gm or measuring more than 4cm in its largest diameter.<sup>2,7</sup> The largest bladder stone ever recorded was an astounding 13 pounds 7 ounces stone or equivalent to 6.2 kilograms as reported

by Athure in 1953 which was thought to have developed in the bladder diverticulum.<sup>8</sup> Interestingly, despite the massive weight, it did not cause significant obstructive uropathy.

Bladder stones generally do not interfere with urine flow and rarely lead to the development of renal failure.<sup>1</sup> However, if left untreated, relatively larger stones become impacted in the bladder neck and exert mechanical compression on the ureteral orifices, leading to the emergence of infravesical obstructive uropathy which subsequently would lead to renal failure.<sup>9,10</sup> Komeya et al in 2013 found only six English literatures in which bladder stones were described to have caused renal failure in the last several decades.<sup>10</sup> Interestingly, most of the bladder stones in Komeya's review weighed between 200gm and 450gm with only one case weighing 1640gm.<sup>11</sup> Diniz et al who performed the literature review on giant bladder stone and renal failure a few years later, concluded that bladder stone greater than 400 grams may be associated with renal failure.<sup>12</sup> On the other hand, a handful of other reported cases with heavier (>1000 gm) and bigger bladder stones (>10 cm) have normal collecting systems and normal renal function.<sup>13-16</sup> The giant bladder stone in our case weighed 810 grams and measured 12×10 cm. It was also adhered to the posterior bladder wall. These factors could have caused chronic blockage of bilateral ureteric orifices causing obstructive uropathy and subsequent renal failure.

The size and weight of the bladder stone and its adherence to the posterior bladder wall in our case lead to difficulty in stone retrieval. Wrigley's forcep is a small outlet forceps used for lift-out deliveries at caesarean sections. Our case is one of the few cases reported in the literature which utilized obstetric forceps to successfully deliver giant bladder stone.<sup>3,4,17</sup> The obstetric forceps were an ingenious invention by Peter Chamberlen the elder in the 17th century to assist difficult childbirth.<sup>18</sup> However, the instrument was kept as a family secret for more than 100 years by the five generations of the Chamberlen family.<sup>18</sup> Nowadays, it is a standard instrument readily available in both delivery suites and operating theatres. Resorting to obstetric forceps during difficult bladder stone operation is a wise strategy as it allows the surgeon to remove the stone in toto without causing much tissue trauma to the bladder. This is one of the non-obstetric usage of forceps.

## CONCLUSION

Although rare, giant bladder stones still exist. It might be complicated with obstructive uropathy and in due course, renal failure. Obstetric forceps could be used successfully in cases of difficult surgical extraction of giant bladder stones. This report illustrates the management of such cases.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: Not required*

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**Cite this article as:** Ismail SFC, Abdullah J, Rahim MFA, Saiful MIBM, Ramli R. A Successful delivery of giant bladder stone by obstetric forceps: a case report. *Int Surg J* 2021;8:1589-91.