

# Giant vesical calculus

## A case report

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### Summary

An exceptional case of bladder stone is presented. The case is unusual as regards the size of the stone and the fact that the patient did not seek medical assistance much earlier, as this was readily available. Furthermore, recovery after removal of the stone was remarkably quick, as evidenced by the clinical picture as well as the blood and urine biochemical values. The fact that the patient did not return for follow-up seems to confirm that cure was complete. The pathogenesis of the stone remains unknown.

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specimen was sent for further examination. A Foley catheter could not be passed easily.

Laboratory analysis of the urine revealed a pH of 5,5, innumerable leucocytes and erythrocytes, 4+ epithelial cells, 2+ protein and no bacterial growth. The biochemical values were as follows: serum potassium 5,0 mmol/l, sodium 134 mmol/l, chlorides 101,9 mmol/l, carbon dioxide 21 mmol/l and urea 6,9 mmol/l. The serum creatinine value was 133  $\mu$ mol/l, the total protein value 65 g/l, alkaline phosphatase 39 IU/l, aspartate aminotransferase 15 IU/l and alanine aminotransferase IU/l. The white cell count was  $10 \times 10^9/l$ , with a normal distribution, the haemoglobin concentration 12,6 g/dl, the haematocrit 37%, and the ESR 80 mm/h. Unaccountably, the serum uric acid value was not measured.

Intravenous pyelography (Fig. 1) showed a large, rounded, calcified mass in the pelvis with marked right-sided hydronephrosis; the left kidney was almost non-functioning.

According to Becher *et al.*<sup>1</sup> giant vesical calculi weighing 100 g or more are uncommon. Their review of the English literature before 1900 revealed reports of 14 cases, and up to 1978 only 15 more had been described. However, Brodman and Brodman<sup>2</sup> report that these calculi are not at all uncommon in Java. Why this should be so is not explained and possibly not known. Further study of the epidemiological characteristics of genitourinary calculi may help in determining the causation.

### Case report

An Ovambo woman aged about 45 years was sent to the hospital in Walvis Bay from Swakopmund on 18 August 1981 with a history of 'bladder problems' which included frequency, strangury and severe dysuria, moderate lower abdominal and pelvic pain and 'a mass in or next to the uterus'. She had had a hysterectomy for fibroids in the same hospital 15 years previously, but no records could be traced.

On examination the patient was thin and somewhat dehydrated, with a mass of 57,8 kg; she looked ill, but was fully conscious. There was no obvious anaemia, jaundice or clubbing of the fingers. She had a low-grade fever, her temperature being 37,5°C. A suprapubic mass was visible and on palpation the lower abdomen was very tender with a positive release sign; a stony-hard, rounded, well-defined mass was felt in the suprapubic area. It was freely mobile, but movement caused pain. On vaginal examination the mass was found to be lying in the pouch of Douglas and to be protruding well above the rim of the pelvis. An initial diagnosis of a calcified tumour was made.

Urinalysis showed heavy haematopyuria and she was treated with sulphisoxazole, tetracycline and gentamicin, while a urine

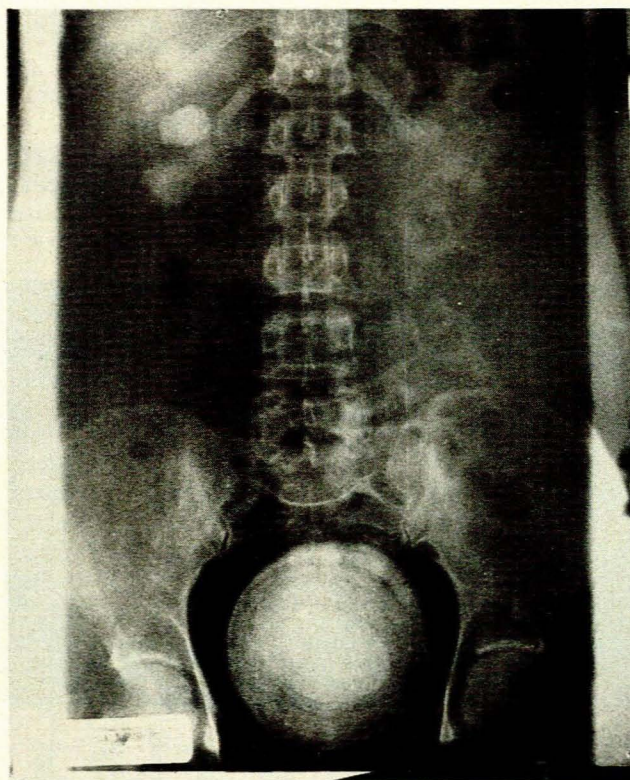


Fig. 1. Pre-operative pyelogram showing the calculus *in situ*, with marked hydronephrosis on the right.

### Operative findings

An operation was performed on 24 August through a midline suprapubic incision. On opening the peritoneum the presence of a huge bladder stone was confirmed. The bladder was opened transperitoneally and the stone removed; it adhered to the bladder wall in two areas, where it had caused erosion and some

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ulceration; the inside of the bladder was otherwise normal, but there was some active bleeding from the areas of adherence.

The bladder was closed with a double layer of Dexon and the peritoneal cavity drained by tube; the abdomen was closed and a Foley catheter inserted for continuous bladder drainage.

### Postoperative course

A continuous ketamine infusion was given for 24 hours as the only analgesic. Intravenous gentamicin and tetracycline were given for 7 days. A fluid intake and output chart was maintained; urinary excretion increased rapidly and was normal by the 2nd day. Blood biochemical analysis was repeated every 2nd day. The patient improved dramatically and was ambulant on the 2nd postoperative day. The tube drain was shortened daily and removed on day 5. The Foley catheter drained visibly clear urine by day 4, although occult blood was still present. The last sutures were removed on day 7. On day 10 the catheter was clamped intermittently to allow bladder pressure to build up and it was removed on day 14, when the patient was discharged, apparently fit and well.

On day 3 the serum urea and electrolyte levels were normal, but the serum creatinine value was still elevated at  $141 \mu\text{mol/l}$ . On day 5 this was normal ( $111 \mu\text{mol/l}$ ). On day 7 the urea value was  $3,4 \text{ mmol/l}$  and the creatinine value  $47 \mu\text{mol/l}$  and the ESR was down to  $48 \text{ mm/h}$ . On day 8 pyelography was repeated and showed a marked improvement in right renal function. Unfortunately the patient subsequently disappeared and was lost to follow-up; it would have been most gratifying to see function also returning to the left kidney at a later stage.

### Description and analysis of the stone

The stone was a dirty greyish-white colour and smelled strongly of decayed urine. It was roughly spherical in shape and measured  $112 \times 94 \text{ mm}$  in size. Parts of the surface were coarsely granular, while other areas were glisteningly smooth; two areas

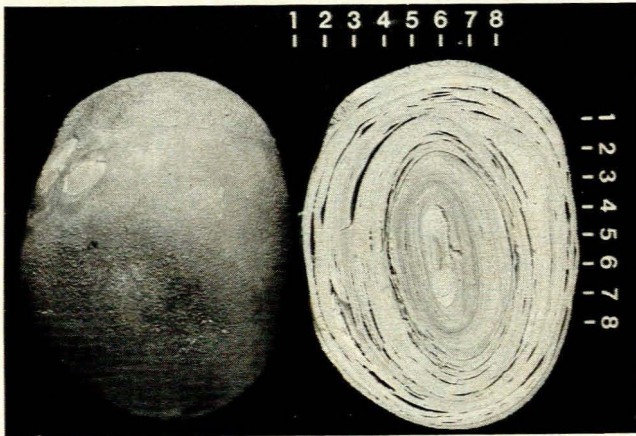


Fig. 2. The outer and cut surfaces of the stone.

were clearly eroded (corresponding apparently to the eroded areas on the bladder interior) (Fig. 2). The stone mass was  $746,8 \text{ g}$ , the volume  $490 \text{ cm}^3$  and the density, including the spaces,  $1,52 \text{ g/cm}$ . The stone was cut to try and find a cause, such as a foreign body, and the outer surface showed marked lamination (Fig. 2), while the core was solid. Photomicroscopy showed the crystalline appearance very clearly (Fig. 3). Samples were selected from the inner and outer regions of the exposed surface and subjected to X-ray powder diffraction analysis. This showed that the entire stone was composed of struvite and apatite in approximately equal concentrations.

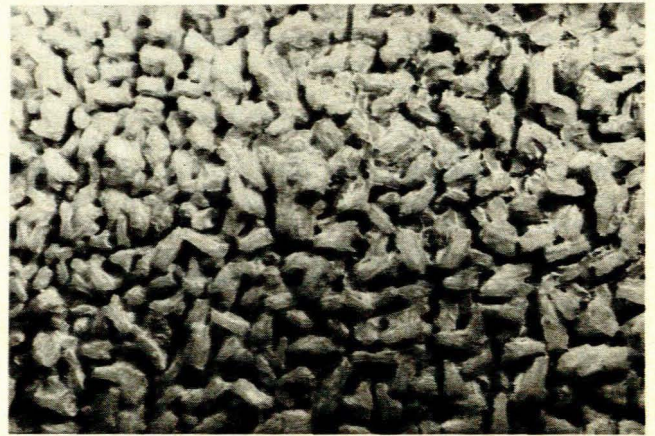


Fig. 3. Photomicrograph showing crystalline appearance.

### Comment

From the available evidence it would appear that this stone may be the 6th largest ever reported, and it may well be a record for southern Africa.

The stone has been halved and the segments have been presented to the departments of urology at the Universities of Cape Town and Stellenbosch for exhibition in their pathology museums.

I wish to thank Professor Guy de Klerk, Head of the Department of Urology at Stellenbosch University, Mr Donal Barnes, Head of the Department of Urology at the University of Cape Town, and Dr Michael du Preez for their encouragement, Dr Allen Rodgers, of the Department of Physical Chemistry at the University of Cape Town, for the analysis of the stone, and Messrs H. Pienaar and Dave Glenister, of the Department of Gemmology at Stellenbosch University, for initial identification and measurement, and the production of the photographs.

### REFERENCES

1. Becher RM, Tolia BM, Newman HR. Giant vesical calculus. *JAMA* 1978; 239: 2272.
2. Brodman HR, Brodman LEB. Giant vesical calculus. *JAMA* 1978; 240: 1338.