



Urethral Calculi in Young-Adult Nigerian Males: A Case Series

Calculs urétraux chez les hommes nigériens Young-adultes: Une série de cas

B. M. Gali^{*†}, N. Ali[†], G. O. Agbese[‡], I. I. Garba[‡], K. Musa[‡]

ABSTRACT

BACKGROUND: Urethral calculi are rare and usually encountered in males with urethral pathology.

OBJECTIVE: To present our experience managing urethral calculi in a resource limited centre and review the literature.

METHODS: We did a chart review of management of patients with urethral calculi between January and April 2009, at Federal Medical Centre (FMC) Azare, Nigeria. We also reviewed the literature on this rare condition.

RESULTS: Four young adult male Nigerians between the ages of 17 and 27 years presented with varying degrees of urethral pain and palpable calculi in the anterior urethra. Two presented with acute retention of urine, but none had haematuria. The calculi were radio-opaque, located in the anterior urethra with no associated urethral pathology. Three were solitary and one multiple. The composition of the urethral calculi was a mixture of calcium oxalate calcium carbonate, magnesium phosphate, one has additional cystine but none had struvite or uric acid. Their sizes ranged between 1cm x1.5cm and 1.5cm x 5.5cm. External urethrotomy was the method of treatment.

CONCLUSION: Urethral calculi are rare in our setting, with no clear identifiable aetiological factors which suggests urinary schistosomiasis being associated. The occurrence of urethral calculi appears to have a relationship with childhood urinary schistosomiasis. *WAJM* 2011; 30(6): 457–460.

Keywords: Urethral calculi, Young adult Nigerian males, Literature review.

RÉSUMÉ

CONTEXTE: calculs urétraux sont rares et l'on rencontre habituellement chez les hommes avec l'urètre pathologie.

OBJECTIF: Pour présenter notre expérience de la gestion des calculs urétraux dans un centre de ressources limitées et revue de la littérature.

MÉTHODES: Nous avons fait un examen des dossiers de la gestion des patients atteints de calculs urétraux entre Janvier et Avril 2009, à Centre médical fédéral (FMC) Azare, le Nigeria. Nous avons également examiné la littérature sur cette maladie rare.

RÉSULTATS: Quatre mâles adultes jeunes Nigériens entre les âges de 17 et 27 ans présentaient des degrés divers de la douleur de l'urètre et des calculs palpables dans l'urètre antérieur. Deux patients présentaient une rétention aiguë d'urine, mais aucun n'avait une hématurie. Les calculs sont radio-opaques, situés dans l'urètre antérieur sans pathologie associée urétraux. Trois étaient solitaires et multiple. La composition des calculs urétraux était un mélange d'oxalate de calcium carbonate de calcium de phosphate de magnésium, on a la cystine supplémentaire, mais aucun n'avait l'acide urique ou de struvite. Leurs tailles variaient entre 1cm et 1,5 cm x 1.5cm x 5.5cm. Externe urétrotomie a été la méthode de traitement.

CONCLUSION: calculs urétraux sont rares dans notre milieu, sans clairement identifiable facteurs étiologiques qui suggère schistosomiasis urinaire associée. La présence de calculs urétraux semble avoir une relation avec schistosomiasis urinaire enfance. *WAJM* 2011; 30 (6): 457–460.

Mots-clés: Calculi urétraux, jeunes adultes mâles nigériens, revue de la littérature.

Departments of Surgery, [†]University of Maiduguri Teaching Hospital, Borno State, [‡]Federal Medical Centre, Azare, Bauchi State.

*Correspondence: Dr. Bata M. Gali, P.M.B. 1414, Maiduguri, Borno State, Nigeria. E-mail: mbgali@yahoo.com Tel: +234-8038320090.

Abbreviations: A/E, Accident and Emergency; EUC, Electrolytes, urea and creatinine; FMC, Federal Medical Centre; KUB, Kidneys, ureters and bladder; SPC, Suprapubic cystostomy.

INTRODUCTION

Urethral calculi are uncommon and are usually encountered in men with urethral stricture or diverticulum.¹⁻³ Primary (native) urethral calculi are extremely rare; they are usually secondary (migratory) with the primary originating in the kidneys or bladder.^{1,3} Presentations and treatment are varied depending on the size, shape, location of the urethral calculi and the associated anatomical pathology.^{4,5} Facilities and expertise availability also play a great role in the treatment modality ranging from least invasive (non-operative) to most invasive (operative).⁵ There are some reports on urinary tract calculi in Nigeria,⁶⁻⁹ but few to our knowledge on urethral calculi alone.^{10, 11} Our aim with these case reports was to present our experience in managing four young-adult Nigerian males with urethral calculi at Federal Medical Centre Azare, Bauchi state and review the literature.

Case Reports

Case 1: A 17-year-old young man presented to the accident and emergency unit of Federal Medical Centre (FMC) Azare with one-year history of difficulty in passing urine characterized by a poor weak stream that improved with straining and a day's history of inability to pass urine. He had terminal dribbling of urine, frequency, dysuria and a past history of childhood terminal haematuria. He also felt a palpable hard mass along his penis. He was a fit young man, not pale and afebrile, in painful distress, with swollen indurated phallus and a hard mass along the urethra. A diagnosis of acute urinary retention secondary to urethral calculus was made and was confirmed on a plain pelvic radiograph (Fig. 1). Abdomino-pelvic ultrasound scans, plain abdominal radiograph outlining the kidneys, ureters and bladder (KUB) and serum electrolytes, urea and creatinine (EUC) were within normal range. He had suprapubic cystostomy (SPC) and was placed on antibiotic for one week. When the penile induration settled, he had external urethrotomy via an incision along the long axis of the palpable calculus and the stone removed. It measured 8cm by 4.5cm and weighed 15 grams (Fig. 1). The urethrotomy wound was closed in two layers using PDS

(Polydioxanone) 3/0 suture over a size 18 Foley's catheter. He had an uneventful recovery; catheter was removed two weeks. The patient was discharged with good stream of urine but he never came for follow-up.

Case 2: M was a 25 year-old Hausa farmer who presented with poor, weak and frequently interrupted urinary stream for two weeks, associated with dribbling, pain in the penis and increased frequency of micturition. He had a past history of terminal haematuria but not with the present presentation. He had no history of passage of urethral calculi, but he felt a hard mass in the penile shaft that gradually moved to the tip. On examination he had normal male external genitalia with a hard palpable mass around the penile tip. A plain radiograph confirmed an oval calculus in the fossa navicularis (Fig. 2a). He was scheduled

to have surgery (meatotomy and removal of the calculus) but spontaneously passed out the stone. It measured 2 cm x 1.5cm x 1cm and made a cast of the fossa navicularis (Fig. 2b). Results of plain abdominal radiograph (KUB) and abdominal ultrasound scan did not show any other stone in the rest of the urinary tract. Since then he has been enjoying good urinary stream.

Case 3: Was a 20-year old young male Hausa farmer who presented with difficulty in passing urine characterised by poor weak stream, dribbling, frequency, and pain in the perineum. He also noticed a hard mass in the perineum posterior to the scrotal sac. There was no associated haematuria but he had had a history of childhood terminal haematuria and passed out a urethral stone spontaneously while passing urine a year earlier. On examination, he was a

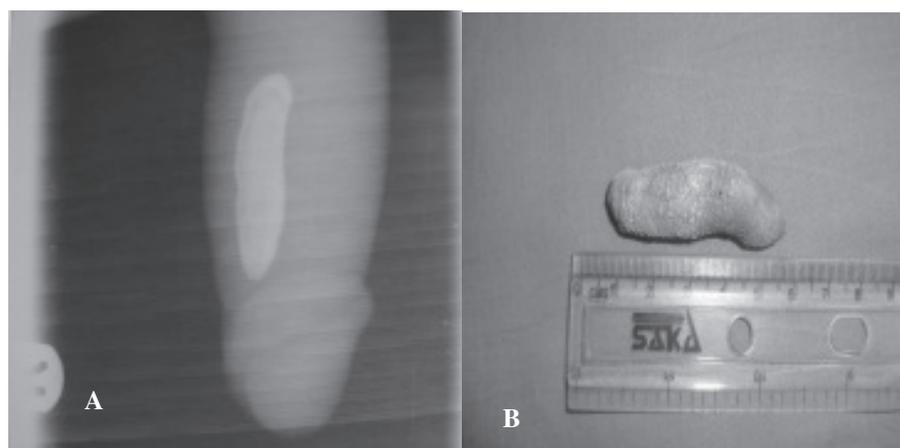


Fig. 1: Fig. 1A is Plain Pelvic Radiograph showing the Stone in the Urethra and Fig. 1B, the Stone removed, measuring 5.5cm x 3cm.

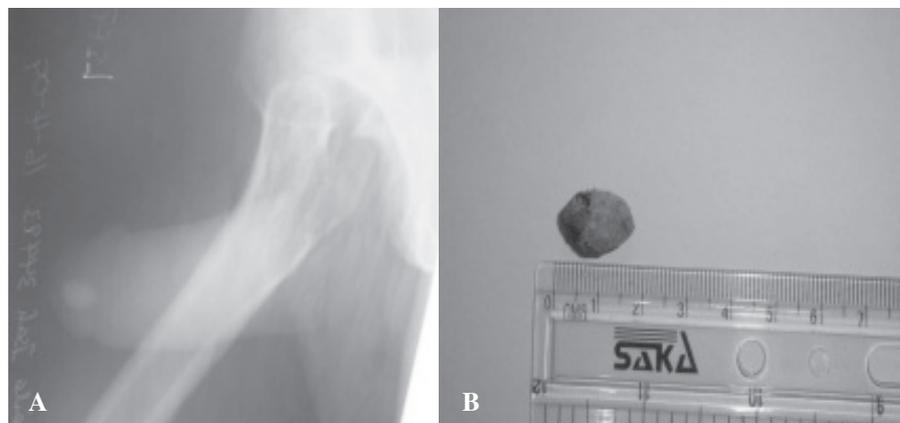


Fig. 2: Fig 2A plain Radiograph, shows a small stone in Fossa Navicularis and Fig. 2B is the stone spontaneously voided, measuring 2cm x 1.5cm.

young man with normal male external genitalia. There was a palpable stone in the bulbous part of the urethra. A plain radiograph and an abdominopelvic ultrasound scan confirmed the urethral calculus (Fig 3). No other calculi were found along the rest of the urinary tract. He had external urethrotomy where two urethral calculi were removed (Figs. 3a & 3b). He did well postoperatively.

Case 4: Was a 27-year-old male farmer referred from a peripheral hospital to the accident and emergency (A/E) unit of FMC Azare with difficulty in passing urine of four days duration characterized by a poor and weak stream that improved slightly with straining and inability to pass urine on the day of the referral. There was an associated painful suprapubic swelling and attempts at urethral catheterization failed. He had no previous history of passage of stone in the urine or past history of urethritis or trauma to the urethra. He had history of

childhood terminal haematuria. He had felt a hard mass along the urethra associated with pain. A diagnosis of acute urinary retention secondary to urethral calculus was made to rule out urethral stricture. He had suprapubic cystostomy done then micturating cystourethrogram/retrograde urethrogram confirming complete urethral obstruction secondary to a calculus with no urethral stricture but showed multiple bladder diverticuli (Fig. 4). The patient was scheduled for external urethrolithotomy and left to source for fund but did not return.

DISCUSSION

We were opportuned to have managed four patients with urethral calculi within a span of four months at the FMC Azare variously reported as a rare condition. The few reports on its management in Nigeria further attest to this fact, with only 19 and 7 patients managed over 16 and 9 year periods

respectively in Zaria and Gusau; North-western (NW) Nigeria.^{10,11} Urethral calculi are more common in males, with only males affected several reports,^{2,4,5,10,11} which is similar to the four reported now. Females are only rarely involved with only two of 36 patients reported by Sharfi.¹² Most other reports on females were case reports of giant calculi in the female urethra.¹³⁻¹⁵ The experience among Saudi community by Kamal⁵ did not support the fact that urethral calculi are more common during childhood because almost all age groups were evenly affected with only one of the cases occurring in childhood. Similarly, the reports from NW Nigeria^{10,11} and our present report with all the patients being young adult males between the ages 17 and 27 years do not support that fact.

Clinical Features

The mode of presentation of urethral calculi is dependent on the size, shape, location, associated urethral pathologies and complications. The main presenting symptoms include; acute retention of urine, weak and interrupted urinary stream, pain and haematuria. Urinary retention was reported as the most common symptom in Zaria,¹⁰ while all the seven patients from Gusau presented in acute urinary retention.¹¹ Kamal and colleagues⁵ reported 78% of their patients presenting in acute retention of urine, compared to two of our four patients. All our patients presented with varying severities of pain that was penile or perineal, but none had haematuria except that all had a history of childhood terminal haematuria; an evidence of earlier schistosomal infestation in an endemic area which might be a predisposing factor.³ Other etiological or risk factors apart from urethral stricture and diverticulum include; foreign bodies and lithogenic diathesis.³ All our patients presented having felt a hard mass, along the penile shaft compared to only 4 (8%) of Kamal *et al.*⁵ A history of having passed out a urethral stone can be one of the less common symptoms at presentation¹⁶ and this was the case in one of our patients (case 2); Fig. 2.

The diagnosis of urethral calculi was made clinically and confirmed on plain radiographs in all our patients, which

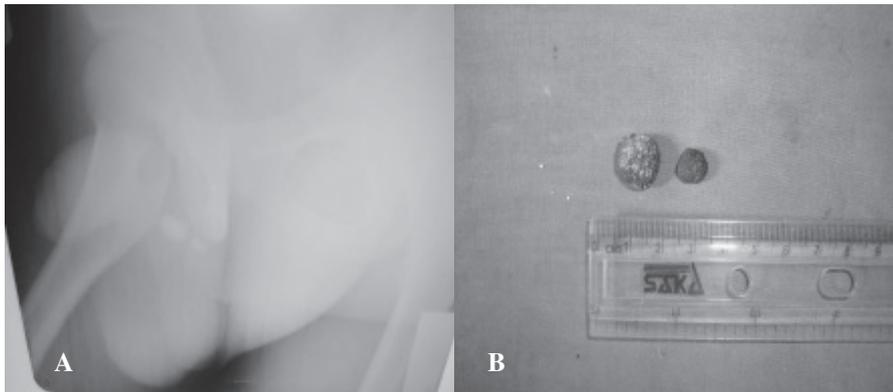


Fig. 3: Plain Radiograph showing Urethral Calculi (Fig. 3A) and Fig. 3B shows the two Urethral Calculi removed at Urethrotomy.

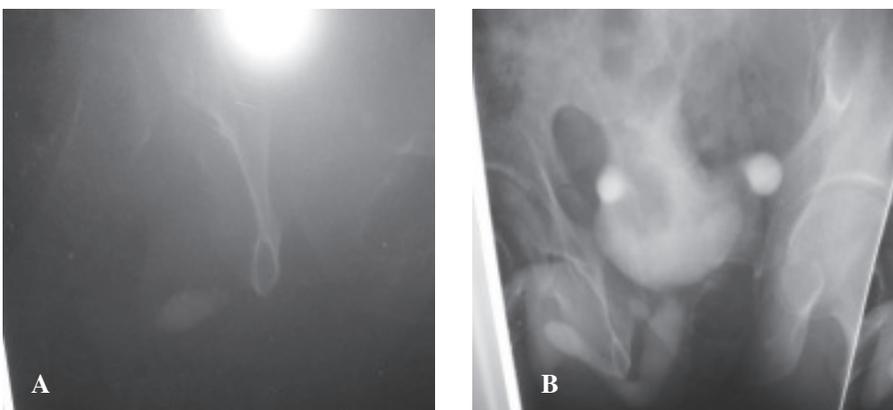


Fig. 4: The Stone in the Bulbar Urethral (Fig. 4A) and Micturating Cystourethrogram showing multiple bladder diverticuli (Fig. 4B).

is similar to Kamal *et al.*⁵ report where 98% of patients had radio-opaque calculi,⁵ but this differs from Paulk *et al.*'s¹⁷ report that urethral calculi are mostly radiolucent.¹⁷ Urethral calculi are reported to occur more in the posterior urethra.^{5,12} However, some Nigerian authors reported more calculi in the anterior urethra in 68% to 70% of patients.^{10,11} All our patients had anterior urethral calculi; one in the fossa navicularis (passed out spontaneously), two in the penile and one in the bulbar urethra. None of our patients had associated urethral pathology similar to the report from Gusau,¹¹ but contrary to earlier report by Hassan¹⁰ and Kamal⁵ where 74% and 6% of their patients had associated urethral pathologies. Thirty-three percent of Sharfi's¹² patients had associated urinary tract calculi, compared to 18% of those of Kamal *et al.*⁵ Earlier reports showed urethral calculi to be solitary²⁻⁵ and fusiform,² compared to our patients; where one had multiple calculi and two others fusiform.

Treatment

Treatment of urethral calculi is influenced by the size, shape, position and status of the urethra.⁵ Kamal *et al.*⁵ adopted a methodical incremental approach in treating their patients based on the degree of invasiveness of the procedure; from non-invasive (non-surgical) to invasive (open surgical approach). The non-surgical approach which includes spontaneous expulsion, occurred in one of our patients who had a calculus impacted in the fossa navicularis before he could have meatotomy. All the remaining patients except one had external urethrotomy.

The milking procedure advocated by was not attempted in any of our patients because the calculi were impacted which contraindicates the procedure. The non-operative expulsion of stone using 2% xylocaine jelly was in use in the 1990's and was applied to all categories of urethral calculi,¹⁸ but milking and endoscopic forceps extraction were contraindicated in patients with urethral obstruction. External urethrotomy and open cystolithotomy were the methods used for treatment in Zaria.¹⁰ Instillation of 2% xylocaine into the urethra after which Foley's catheter was used to push-

back the calculi into the bladder followed by cystolithotomy was used to remove the calculi in Gusau.¹¹ This can be compared with the endoscopic 'push-back' technique where after pushing the stones back into the bladder; they can be fragmented by stone crushing forceps; electrohydraulic or ultrasonic lithotripter, or recently holmium laser.⁵ These can only be practised where the resources and expertise abound, but in a resource limited environment like ours where the facilities are non-existent, the invasive technique are still widely practiced.

Composition of Calculus

The composition of primary (de novo) urethral calculi is generally believed to be magnesium ammonium phosphate (struvite) and originates from the bladder especially in developing countries. Kamal⁵ countered this assertion based on his finding of only 6% of 51 patients with urethral calculi to be composed of struvite and 18% migratory from the upper urinary tract. Though, there were previous reports on the chemical composition of urinary calculi in Maiduguri, North-eastern Nigeria,¹⁹ it was not specific to urethral calculi. Our urethral calculi were composed of calcium oxalate, calcium carbonate, magnesium phosphate, and one had additional cystine as a component but none contain struvite or uric acid.

Conclusion

Urethral calculi are rare in North Eastern Nigeria and occur mainly in males. All our patients had past history of childhood terminal haematuria suggesting that they had suffered from urinary schistosomiasis. The association between urinary schistosomiasis and the development of urethral calculi in our environment needs further evaluation. External urethrotomy can still be safely practised with good out-come in a resource limited centre like ours.

ACKNOWLEDGEMENT

The authors acknowledge the contribution of S. A. Habu in analysing the calculi.

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