Urol Res (2011) 39:319–321
DOI 10.1007/s00240-010-0350-x

CASE REPORT

The giant calculus within the prostatic urethra

Omer Demir · Aykut Kefi · Asif Cahangirov · Ahmet Cihan · Funda Obuz · Adil Ahmet Esen · Ilhan Celebi

Received: 22 March 2010 / Accepted: 2 December 2010 / Published online: 28 December 2010

Abstract The giant calculus within the prostatic urethra is a rare clinical entity in the young population. Most of the calculi within the urethra migrate from the urinary bladder and obliterate the urethra. These stones are often composed of calcium phosphate or calcium oxalate. The decision of treatment strategy is affected by the size, shape and position of the calculus and by the status of the urethra. If the stone is large and immovable, it may be extracted via the perineal or the suprapubic approach. In most cases, the giant calculi were extracted via the transvesical approach and external urethrotomy. Our case is the biggest prostatic calculus, known in the literature so far, which was treated endoscopically by the combination of laser and the pneumatic lithotriptor.

O. Demir (✉) · A. Kefi · A. Cahangirov · A. Cihan · A. A. Esen · I. Celebi
Department of Urology, Dokuz Eylul University, School of Medicine, 35340 Inciralti, Izmir, Turkey
e-mail: omer.demir@deu.edu.tr

A. Kefi
e-mail: aykut.kefi@deu.edu.tr

A. Cahangirov
e-mail: dr.cahangirov@gmail.com

A. Cihan
e-mail: ahmet.cihan@deu.edu.tr

A. A. Esen
e-mail: adil.esen@deu.edu.tr

I. Celebi
e-mail: ilhan.celebi@deu.edu.tr

F. Obuz
Department of Radiology, Dokuz Eylul University, School of Medicine, Inciralti, Izmir, Turkey
e-mail: funda.obuz@deu.edu.tr

Keywords Urethra · Calculi · Endoscopic lithotripsy

Introduction

Calculi within the prostatic urethra are rare in children and in young men below the age of 40 years, but are common in males over 50 years [1]. Most of the urethral calculi are reported in developing countries, owing to the high prevalence of bladder calculi, having migrated to the posterior urethra [2]. The prostatic calculus of the giant size is very rare in routine clinical practice and literature. Most of them were treated by surgery. We report the case of a giant prostatic calculus in a young man treated via an endoscopic approach.

Case report

A 40-year-old man was referred to our clinic with the diagnosis of prostatic calcification and urinary retention. He had a history of L1 fracture 10 years ago. He had surgery for stabilization of the vertebral column, and after that a Foley catheter was required for 1 month. He had some voiding symptoms including frequency and urinary incontinence after 3 months following the operation. One month ago, he attended to another medical center with complaints of urinary retention. Bilateral hydroureteronephrosis, elevation of serum creatinine level and rising blood urea nitrogen (BUN) levels were found. Suprapubic cystostomy catheter was applied following an unsuccessful trial of urethral catheterization. Radiological examination confirmed a giant opacity in the usual location of the prostate gland. Although a suprapubic transvesical access was performed for extraction of the calculus, it was not

successful. The patient was referred to our clinic. His rectal examination revealed an enlarged prostate gland and with stony hard consistence in all areas. His urinalysis demonstrated microscopic hematuria and pyuria, whereas his urine culture remained sterile. We performed antegrade cystography and retrograde urethrography and computed tomography imaging. These investigations confirmed a regular giant opacity within the prostatic urethra of 65 mm × 70 mm × 60 mm in size (Fig. 1). We decided to treat this stone endoscopically as soon as possible. Cystourethroscopy revealed almost complete obliteration of the prostatic urethra by the giant calculus at the level of external sphincter. Initially, we applied a laser lithotripsy and fragmented the stone at the inferior and the posterior sides. Thus, we opened a tunnel between the posterior edge of the stone and the prostatic lodge wall. Then a pneumatic lithotriptor was applied and stone was divided into small fragments. After the removal of the calculi it was visible that the stone had already formed a cavity within the prostatic urethra by compressing the prostate. Cystoscopic view of the bladder revealed that bladder capacity was small and there was no calculus within the bladder. The extracted fragments of calculi weighed 119.6 g (Fig. 2). The urethral catheter was removed and patient was discharged on the third postoperative day. The control X-ray radiogram revealed no remnants of calculi in the lower urinary tract. The stone analysis with X-ray diffraction method revealed that the stone composed of calcium phosphate. The patient was invited to clinic for postoperative evaluation, but he did not come for follow-up.

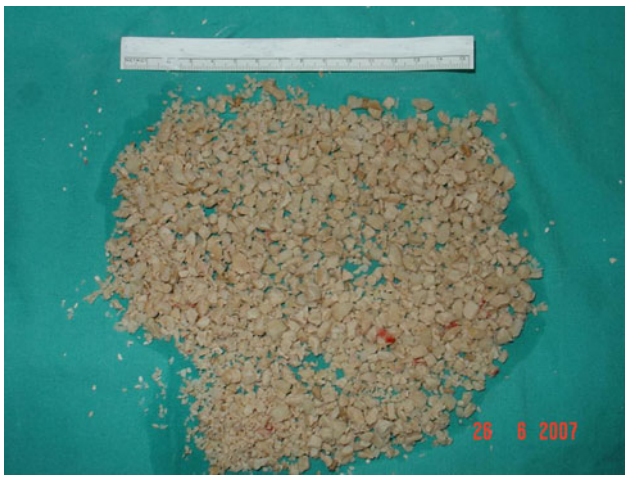

Fig. 2 Extracted fragments of calculi 119.6 g in weight

Discussion

The majority of urethral calculi in the male consist of stones expelled from the bladder into the urethra. Rarely a calculus may form primarily within the urethra when a stricture is present, or it may form in a pouch or a diverticulum that opens into the urethra [3].

The possible mechanism about the stone formation in this case is that stone formed in the bladder resulting to the urinary stasis after the vertebral trauma. Then this calculus migrated into the prostatic urethra and grew up there leading to urinary retention. The incidence of acute urinary retention was reported to be 78% [2]. Other symptoms are sudden cessation of urination, inability of emptying the bladder completely, post voiding dribbling, pain that may radiate to the tip of penis or to the perineum when the calculus is lodged within the posterior urethra [3].

Most urethral stones (88%) occurred in the posterior urethra [2]. Calculi that have migrated to the urethra obviously have the same constituents as bladder or upper urinary tract calculi [3]. De novo urethral stones are generally composed of magnesium ammonium phosphate (struvite). In contrast, migrating stones are often composed

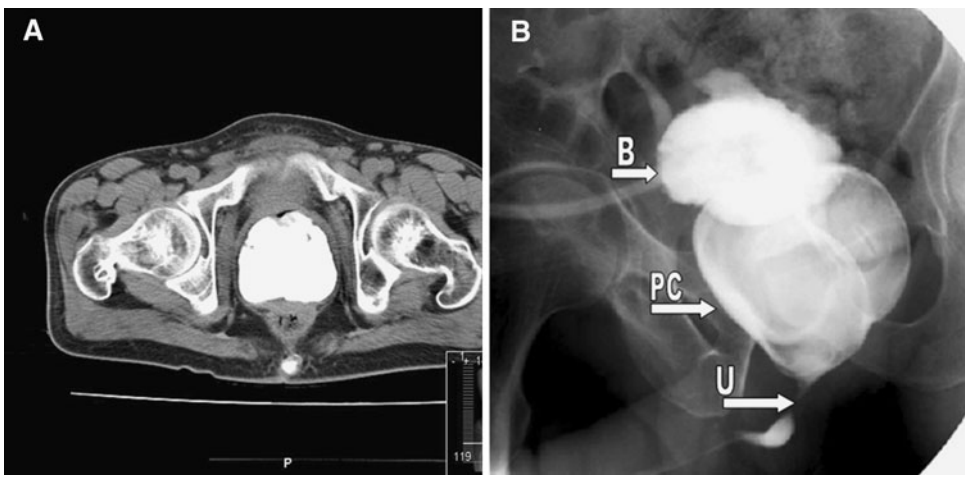

Fig. 1 Pelvic CT (**a**) and plain X-Ray during antegrade cystography and retrograde urethrography (**b**) reveal the giant calculus within the prostatic urethra (*B* Bladder, *PC* Prostatic urethra calculus, *U* Urethra)

of calcium phosphate or calcium oxalate [4]. In our case, the mineral composition of calculus was calcium phosphate in accordance with migrating stones.

Prostatic urethra stones and prostatic calculi are often confused with each other. In our case, the stone is a prostatic urethra calculus. Prostatic calculi are depositions of calcified material on corpora amylacea and primarily composed of calcium phosphate trihydrate and carbonate. Prostatic calculi are most commonly seen in men older than 50 years. The possible mechanism is infection contributes to the formation of prostatic calculi [5].

Treatment is influenced by the size, shape and position of the calculus and by the status of the urethra [3]. If the stone is large and immobile, it may be extracted via a perineal or a suprapubic approach [3]. In most cases, the calculus was extracted via a transvesical approach and external urethrotomy [1, 2]. In our case, transvesical technique was performed at the beginning, but it was not successful. The calculus was fragmented with the laser and the pneumatic lithotriptor via transurethral route. The patient was stone-free without any peroperative and post-operative complications.

This case is the biggest prostatic calculus being treated via an endoscopic approach using the combination of laser and pneumatic lithotriptor.

References

1. Klimas R, Bennett B, Gardner WA (1985) Prostatic calculi: a review. Prostate 7:91–96
2. Kamal BA, Anikwe RM, Darawani H, Hashish M, Taha SA (2004) Urethral calculi: presentation and management. BJU Int 93:549–552
3. Menon M, Resnick M (2002) Calculi of the prostate and seminal vesicles; urethral calculi in men. In: Walsh PC (ed) Campbell's urology, 8th edn. Saunders Inc., Philadelphia, pp 3287–3289
4. Kaplan M, Atakan IH, Kaya E, Aktoz T, Inci O (2006) Giant prostatic urethral calculus associated with urethrocutaneous fistula. Int J Urol 13:643–644
5. Ho KL, Segura JW (2007) Calculi of the prostate and seminal vesicles; lower urinary tract calculi. In: Wein AlanJ (ed) Campbell's urology, 9th edn. Saunders Inc, Philadelphia, pp 2663–2673