CASE REPORT

Stress urinary incontinence as a rare presentation of large prostatic stones in neurogenic bladder: implications and management

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SUMMARY

We report a case of a 38-year-old man with a background of a neglected neurogenic bladder, who presented with a recent onset history of stress urinary incontinence. He was diagnosed as having large prostatic stones along with a low-compliance, small capacity bladder and bilateral hydronephrosis with deranged renal functions. As self-catheterisation was not possible due to obstructing prostatic stones, holmium-YAG laser lithotripsy of prostatic stones was performed as initial procedure that resulted in complete resolution of stress incontinence as well. Successful gastrocystoplasty was performed as a second step to deal with the underlying condition of neurogenic poorly compliant bladder. The present case describes the successful endoscopic management of prostatic calculi using holmium-laser lithotripsy and draws attention to other important issues that need to be addressed in certain special situations like neurogenic bladder.

BACKGROUND

Prostatic calculi are common incidental findings in elderly men, diagnosed on pelvic x-ray, ultrasonography or CT. Generally, these prostatic calculi are asymptomatic and of little clinical importance.¹ However, giant prostatic calculi are very rare, affect younger men and are symptomatic.² We present a case of a 38-year-old man with neurogenic bladder who presented with a recent onset of stress urinary incontinence. He was diagnosed as having giant prostatic calculi along with small capacity, low compliance bladder with deranged renal functions. We have discussed the implications and detailed management of this difficult to treat patient.

CASE PRESENTATION

A 38-year-old married man presented with urinary frequency (every 1 h), urgency and severe stress incontinence for last 2 years. He was operated upon for myelomeningocele when he was 6 months old. There were few residual urinary symptoms in the form of urinary frequency, since his childhood, but he did not take any medical advice for the same. He had no paraesthesia or gait abnormality. His digital rectal examination revealed enlarged, stony-hard and irregular prostate gland, with reduced anal tone.

INVESTIGATIONS

Routine blood investigations showed deranged renal function (serum creatinine 3.4 mg/dL) with serum

prostate specific antigen of 0.22 ng/mL. Urine culture showed heavy growth of *Escherichia coli*.

Abdominal ultrasonography showed bilateral hydro-ureteronephrosis, small capacity, thick-walled urinary bladder and large prostatic stones replacing almost whole of the gland. Pelvic x-ray and CT scan showed large multilobed radiodense stones in the region of the prostate (figure 1A,B).

TREATMENT

Initial management

In view of bilateral hydronephrosis, urethral catheterisation was attempted but failed. Urethro-cystoscopy showed normal anterior urethra, dilated prostatic urethra with large stones peeping out of parenchyma, a high bladder neck and a small capacity bladder (approximately 70 mL). A urethral catheter was passed over a guidewire, negotiated under vision. After 3 weeks of culture-specific antibiotics and urethral catheterisation, urine culture became sterile and bilateral hydronephrosis had subsided with serum creatinine fixed at 2.2 mg/dL. Urodynamic study was suggestive of a low-compliance, small capacity, unstable bladder, with mixed urinary incontinence. Voiding cysto-urethrogram showed a small capacity bladder and right vesico-ureteral reflux (figure 1C).

Surgery

The patient was planned for gastrocystoplasty with open prostatolithotomy. But the major issues in the present case that need to be addressed before bladder augmentation were:

- ▶ Inability to pass a urethral catheter that meant failure to do clean intermittent self-catheterisation (CISC).
- ▶ Component of stress incontinence, which may have worsened after open prostatolithotomy.

So an alternate management approach was taken with urethrosopic stone removal as the initial step. This was to ensure ability to perform CISC and see the effect of prostate stone removal on stress incontinence, before proceeding to bladder augmentation surgery. Transurethral holmium-laser lithotripsy was performed with complete stone removal as the first step (figure 2). One week after the surgery, the patient was started on CISC, which he was able to perform easily. The component of stress urinary incontinence had also improved significantly to our surprise. Two months later, the patient underwent gastrocystoplasty and had a normal postoperative course. At 3 months of follow-up the patient is doing well with timely CISC and no recurrent

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Figure 1 Plain x-ray (A) and pelvic CT (B) reveal giant prostatic stones in a young patient with a neurogenic bladder. Voiding cystogram (C) shows a small capacity bladder with vesicoureteral reflux on the right side.

hydronephrosis. Now, the patient does not have urinary incontinence and his serum creatinine is around 2.4 mg/dL.

DISCUSSION

Small prostatic calculi are common, incidental findings on CT scan or ultrasound in elderly men. They are typically asymptomatic and may be found in association with normal glands, benign prostatic hyperplasia or prostate cancer.¹ Less than 20 cases of giant prostatic calculi have been reported in the English literature.² They occur more frequently in younger men and are usually symptomatic, with lower urinary tract symptoms, urinary retention and pain being the common presentations.³ Stress urinary incontinence has rarely been reported as the presenting symptom of large prostatic stones before. In present patient, though the stress incontinence could be multifactorial in origin, its complete resolution after stone removal point towards the major role being played by prostatic calculi in causing stress incontinence.

As microlithiasis is considered a part of the normal ageing process, the exact aetiology of symptomatic prostatic calculi is not clear.⁴ Factors held responsible for large prostatic stones are recurrent infections, prostatic urethral dilation combined with urinary stasis and intraprostatic reflux that may cause chemical prostatitis leading to prostate atrophy and stone formation.^{2 5 6} Large prostatic stones have been reported following open retro-pubic prostatectomy, urethral stricture and rarely in neurogenic bladder patients.^{3 7}

Another important issue in large prostatic calculi is their management. Although prostatic stones have been successfully managed endoscopically,^{8 9} open surgery has been used more commonly for management of large calculi.^{2 7} Bladder neck

incision during open prostatolithotomy has been described as an important adjunct to ensure complete prostatic drainage.^{2 10} However, in the current patient, the bladder neck needs to be preserved to ensure continence. Owing to the patient's deranged renal function, gastrocystoplasty was the first choice, which was successfully performed after endoscopic stone removal.

This case highlights that a neurogenic bladder patient may develop large prostatic stones if neglected and not appropriately managed that may present with worsening of pre-existing symptoms or appearance of new incontinence. The present case describes the successful endoscopic management of prostatic calculi using holmium-laser lithotripsy and draws attention to other important issues that need to be addressed in certain special situations like neurogenic bladder.

Learning points

- ▶ A neurogenic bladder patient may develop serious complications including large prostatic stones if neglected and not appropriately managed.
- ▶ Appearance of new incontinence in a patient of neurogenic bladder may point towards the formation of prostatic calculi as a rare complication.
- ▶ Holmium-laser lithotripsy is a highly effective endoscopic modality for the management of symptomatic and large prostatic calculi.
- ▶ This case draws attention to other important issues that need to be addressed in certain special situations like neurogenic bladder.

Figure 2 Endoscopic view (A) of the prostatic urethra showing multiple large prostatic calculi seen peeping out of the prostate parenchyma. All the stones were completely removed after urethrosopic holmium-laser lithotripsy (B).

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Competing interests None.

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