CASE REPORT

Unusual case of urethral steinstrasse following laser cystolitholapaxy

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SUMMARY

Urethral steinstrasse is a rare finding. This case describes a 35-year-old man presenting with urethral steinstrasse 4 weeks following laser cystolitholapaxy of a large bladder stone.

BACKGROUND

Urolithiasis is a prevalent urological disease, affecting 5%–13% of people worldwide.¹ Bladder calculi are less prevalent than renal calculi, and have a multifactorial pathogenesis, typically associated with urinary infections, urinary stasis and bladder outlet obstruction.² Bladder stones are commonly treated with cystolitholapaxy. We describe an unusual case of urethral steinstrasse, following laser cystolitholapaxy. Steinstrasse, or 'stone street', is a well-documented complication following extracorporeal shock wave lithotripsy (ESWL) for renal stones, which typically manifests in the ureter. Steinstrasse within the urethra, however, is exceedingly rare.

CASE PRESENTATION

A 35-year-old man presented with difficulty voiding and palpable calculi within the penile urethra. Four weeks prior, at an interstate hospital, he had undergone an elective cystoscopy, laser cystolitholapaxy and circumcision for a 4.1 cm bladder stone (figure 1) and tight phimosis. Of note, meatal stenosis and a distal urethral stricture were identified and intraoperatively dilated. On discharge he was instructed to self-catheterise.

He initially succeeded; however, passage of the catheter became difficult and eventually impossible, prompting presentation to the emergency department in urinary retention and dribbling urine. He reported passing multiple large stone fragments, although none recently, and had a deteriorating stream with occasional haematuria and dysuria. Examination revealed palpable solid masses along the entire penile urethra and mild oedema at the urethral meatus. Plain X-ray (figure 2) confirmed a significant stone steinstrasse within the penile urethra and multiple fragments within the bladder. He underwent urgent endoscopic management with meatal and urethral dilatation, and retrieval of all urethral and bladder calculi. Several retrieved fragments are pictured in figure 3. Stone analysis revealed calcium hydrogen, phosphate, tricalcium phosphate and magnesium ammonium phosphate stones.

INVESTIGATIONS

Bloods on admission showed normal renal function, creatinine 65 µmol/L, normal electrolytes, white cell count $12.4 \times 10^9/L$, urine microscopy leucocytes $>500 \times 10^6/L$, erythrocytes $90 \times 10^6/L$, mixed enteric bacteria and skin flora on culture. Plain X-ray on admission is shown in figure 2.

OUTCOME AND FOLLOW-UP

All stone fragments were removed from the urethra and bladder. Following removal of the in-dwelling catheter the following day, the patient was able to successfully pass urine. He was instructed to

Figure 1 Axial (A) and coronal (B) views of a non-contrast CT of the pelvis showing a large 4.1 cm calculus within the bladder.

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Figure 2 Radiogram showing urethral steinstrasse (arrow) and multiple bladder fragments.

perform daily self-catheterisation, and he remains well and symptom-free 4 weeks postoperatively.

DISCUSSION

Urethral steinstrasse in men are exceedingly rare. Only six other cases have been reported, from as early as 1869.³ Steinstrasse following ESWL of renal stones are most commonly found in the ureter, not the urethra, but an interesting report

Figure 3 Intraoperative photograph showing some of the stone fragments retrieved from the urethra and bladder.

from 1993 describes two cases of urethral steinstrasse following ESWL for large renal calculi.⁴ Vaddi *et al*⁵ describe a paediatric case of urethral steinstrasse causing acute urinary retention in a 10-year-old with very large renal calculi. Brahmabhatt *et al*⁶ describe the case of a pancreas-kidney transplant patient who, in a similar fashion to our case, developed urethral steinstrasse following cystolitholapaxy. Lastly, a more complex case is described by Kumar *et al*⁷, where a middle-aged man with a history of distal urethral stricture disease presented with urethral steinstrasse and passing stones through a urethrocuteaneous fistula at the base of the penis.

This rare case of urethral steinstrasse is unique given its association with urethral stricture disease in a young adult man presenting a month after cystolitholapaxy. It is paramount to ensure that, in patients with known urethral stricture disease, all stone fragments are thoroughly washed out following cystolitholapaxy. Alternatively these patients should be considered for open cystostomy, particularly in bladder stones >4 cm, given the difficulties patients may have passing fragments as demonstrated by this case.

Learning points

- ▶ Urethral steinstrasse are exceedingly rare.
- ▶ Urethral steinstrasse may present as a complication of cystolitholapaxy.
- ▶ Care should be taken to extract all stone fragments at the time of cystolitholapaxy, especially in patients with a finding or history of urethral stricture disease.
- ▶ Open cystostomy should be considered for stones >4 cm in patients with a finding or history of urethral stricture disease.

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