

DE NOVO URETHRAL STONES IN THE PROSTATIC SURGICAL BED AFTER HOLMIUM LASER ENUCLEATION OF THE PROSTATE: FIRST REPORT BASED ON A PROSPECTIVE COHORT STUDY

Hypothesis / aims of study

This study is to characterize de novo urethral stones in the prostatic surgical bed as a complication of Holmium laser enucleation of the prostate (HoLEP).

Study design, materials and methods

Patients who underwent prostatic urethral stone removal after HoLEP from July 2008 to December 2015 in our institutional prospectively collected Benign Prostatic Hyperplasia Database Registry were included. Clinical data, including preoperative evaluation, postoperative symptoms with a detailed history, urinalysis, pathology, cystourethroscopy, and stone analysis, were collected and described. HoLEP was performed in a dorsal lithotomy position under spinal or general anesthesia. Ho:YAG laser was set in 80W (2 J, 40 Hz). After the initial incision of 5 and 7 o' clock directions, transverse incision was made just proximal to the verumontanum. After the removal of the median lobe, lateral lobes were removed, completing the enucleation process. After careful hemostasis, morcellation was performed using 26Fr nephroscope and tissue morcellator (Versacut, Lumenis Ltd.). Patients were followed up at postoperative 2 weeks, 3 months and 6 months with IPSS, OABSS, 3 days voiding diary, urinalysis and uroflowmetry. Prostatic calcifications confirmed from the preoperative TRUS were checked and removed during the operation.

Results

Nine patients with a history of HoLEP underwent prostatic urethral stone removal, including one patient who underwent HoLEP at another hospital (Table 1). Among the 877 patients in our BPH database, 8 (0.91%) underwent prostatic urethral stone removal. They had a median age of 67 years and a prostatic volume of 39–121 mL. The most common symptom was severe stabbing urethral pain (n=5). It was typically very unpleasant, burning pain during voiding. The median time of symptom onset after HoLEP was 13 months (range, 3–44 months). The stones were pedunculated in the prostatic surgical bed or in the bladder neck with a small mucosal connection. Resected tissue showed granulation tissue formation and dystrophic calcification (Figure 1).

Interpretation of results

To our knowledge, this is the first report on de novo urethral stones in the surgical bed after HoLEP. The occurrence of urethral stones after laser prostatectomy is rare but possible. Previous reports include a case of urethral stone formation after potassium-titanyl-phosphate (KTP) laser ablation of the prostate. Stasis of urine at the prostatic fossa, debris attached to the surgical bed of the prostatic fossa or foreign bodies after the surgery becoming a nidus for stone and coagulative necrosis inducing dystrophic calcification are suggested causes for stone formation after the laser surgery.

Persistent pyuria despite of the treatment, recurrent gross hematuria and unexplained irritating urethral pain at any time after HoLEP necessitates cystourethroscopy to evaluate the prostatic fossa.

Concluding message

Urethral stones in the prostatic surgical bed or the bladder neck after HoLEP have never been reported previously. Although urethral stone formation is a rare complication, recurrent urethral pain, persistent pyuria, and recurrent gross haematuria are signs for further investigation. Cystourethroscopy should be performed to rule out the presence of stones. Careful history taking and having an index of suspicion are important for the diagnosis.

Table 1. Characteristics of the patients

| | Case 1 | Case 2 | Case 3 | Case 4 [†] | Case 5 | Case 6 | Case 7 | Case 8 | Case 9 |
|---|--------------------------------|----------------------|-------------------------|-------------------------------|------------------------------|----------------------|-------------------|-------------------------|-----------------------|
| Age (years) | 61 | 61 | 67 | 62 | 71 | 70 | 75 | 69 | 64 |
| Total prostate volume (mL) [*] | 121 | 39 | 68 | N.A. | 85 | 85 | 56 | 83 | N.A. |
| Prostatic calcification [*] | No | No | No | N.A. | No | No | No | No | N.A. |
| Preoperative PSA (ng/mL) | 3.1 | 2.0 | 2.8 | N.A. | 2.5 | 2.5 | 2.8 | 14.5 | 2.2 |
| Qmax (mL/s) | 4 | 12 | 8 | N.A. | 12 | 12 | 12 | 5 | 5 |
| PVR (mL) | 220 | 20 | 0 | N.A. | 210 | 210 | 30 | 10 | 270 |
| Main presenting symptom | New onset of persistent Pyuria | Severe urethral pain | Gross haematuria | Severe urethral stabbing pain | Severe urethral pain | Severe urethral pain | Gross hematuria | Urethral pain, pyuria | Microscopic hematuria |
| Symptom onset after HoLEP (months) | 3 | 13 | 19 | 13 | 11 | 11 | 6 | 44 | 26 |
| Symptom onset to diagnosis (months) | 3 | 1 | 0.7 | 1 | 6 | 6 | 12 | 3 | 1 |
| Stone analysis | 90% CA, 10% COxD | 65% CaOxD, 35% CA | 80% Brushite, 20% CaOxM | 60% CaOxM, 30% CaOxD, 10% CA | 60% CaOxM, 30% CaOxD, 10% CA | 95% CaOxD, 5% CaOxM | 65% CaOxD, 35% CA | 80% CaOxM, 20% Struvite | 95% CaOxD, 5% CaOxM |

CA, carbonate apatite; CaOxM, calcium oxalate monohydrate; CaOxD, calcium oxalate dihydrate; N.A., not available; PSA, prostate-specific antigen; PVR, postvoid residual volume; Qmax, maximal flow rate.

^{*} Measured with transrectal ultrasonography. [†] Referred from another hospital.

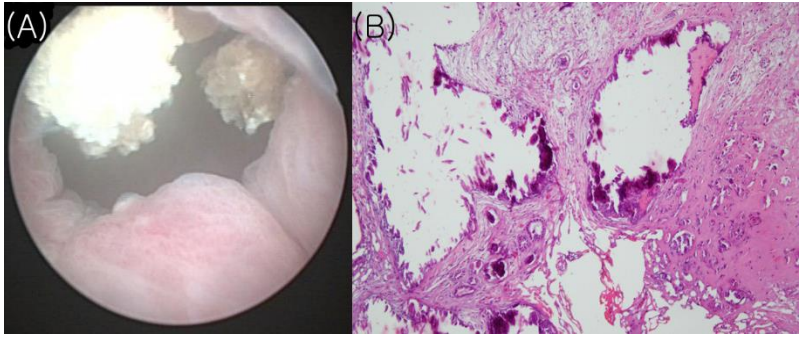


Fig. 1. (A) Urethral stones dangling from the bladder neck. (B) Pathology of the specimen showing dystrophic calcification from the transurethral resection of prostatic surgical bed. (x100, Haematoxylin and eosin staining)

Disclosures

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