

Trauma and reconstruction

## Case report: Caustic foreign body insertion into the male urethra

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### ABSTRACT

Self-insertion of foreign bodies into the male urethra is a rare presentation. We report a unique case of urethral insertion involving three AAA batteries and the resulting battery acid leakage and urinary obstruction. This report discusses the approach to management, extraction techniques and effects of battery acid within the male urethra.

### Introduction

Insertion of objects into the urethra is a rare urological emergency, prompting immediate intervention. Insertional items reported in the literature include but are not limited to; electrical wire, thermometer, nail clippers, needles, leeches, hooks, vegetables, bones and animal parts. Medical attention is typically delayed due to embarrassment and sought after symptom onset of pain, urinary retention, infection, dysuria or hematuria.<sup>1</sup> The motivations guiding each insertional event are unique, but can be categorized into sexual gratification, religious beliefs, autoeroticism, intoxication/substance abuse, psychiatric illness, neurocognitive decline or perceived birth control.<sup>2</sup> The psychopathological reasons for self-insertion activities are varied with the potential for multiple etiologies occurring simultaneously.

### Case history

A 77-year-old male presented to the emergency department due to an inability to void, after inserting three AAA alkaline batteries into his urethra 24 hours prior. Significant past medical history included a myocardial infarct with by-pass surgery in 2010 and hypertension. There was no history of neurocognitive decline or psychiatric illness. The physical exam confirmed the presence of foreign bodies within the urethra and the remainder of the exam was normal aside from an enlarged prostate. Two batteries were manually extracted with the help of forceps within the emergency department. The post-void residual volume assessed after two batteries were removed was 800 cc indicating

a continued obstruction. The remaining battery was identified on x-ray in the proximal urethra (Fig. 1).

The patient was admitted to hospital for endoscopic retrieval of the remaining battery. Under spinal anesthesia, cystoscopy confirmed location within the external urethral sphincter with leakage of battery acid within the penile and bulbar urethras (Fig. 2). Using a Storz nephroscope and Storz grasping forceps with ring handle and serrated double action jaws 38 cm, the object was retrieved. A 3-way 22-French foley catheter was inserted with overnight continuous bladder irrigation. The patient was discharged 48 hours post-operative with a two-week course of oral broad-spectrum antibiotics and indwelling catheter for 3 weeks.

Upon catheter removal, the patient experienced difficult urination with a high residual volume. Cystoscopy revealed a stricture in the bulbar urethra and several patches of circular well demarcated friable rusty lesions and severe surrounding inflammation (Fig. 3a). No bladder injury was identified, and the external urethral sphincter was intact. The patient was able to freely void after the stricture was dilated using plastic S- Shaped dilators. No further catheterization was required. Repeat cystoscopy at 3-month post-operative revealed a pin-point stricture at the bulbar urethra (Fig. 3b). The patient was then referred to a reconstructive urologist for urethroplasty.

### Discussion

Foreign body insertion into the urethra is well described in the literature and spans genders, ages, backgrounds, education and

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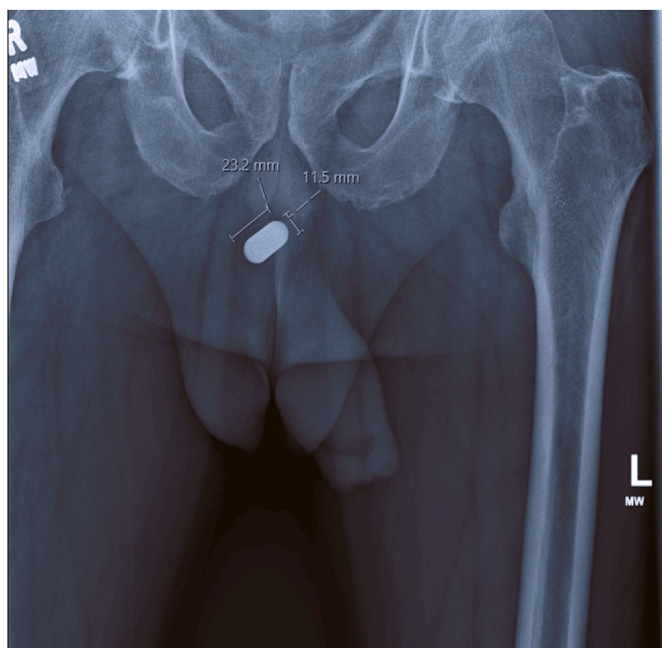


Fig. 1. Pelvic radiograph showing a 23.2 × 11.5 mm foreign body within the proximal urethra.

lifestyles. This case discusses the management and complications following insertion of three AAA batteries into the urethra of an elderly male with suspected neurocognitive decline.

Neurocognitive decline is a pathological condition that affects memory, behavior, executive functions and independence. Behavioral and psychological symptoms of dementia can occur at any stage of the illness, with sexual disinhibition, hypersexuality and paraphilias being common symptoms. Shafi et al. reported a case in a 94-year-old male without a prior diagnosis of neurocognitive decline who initially presented with a scrotal mass, dysuria and incontinence. A sharpened No 2. Pencil was the offending agent and endoscopically removed. A psychiatric evaluation confirmed a diagnosis of major neurocognitive disorder of mixed etiology.<sup>3</sup> Elderly males presenting with recurrent or persistent urinary complaints or unusual sexual behaviors, should prompt physicians to have a high index of suspicion for underlying neurocognitive decline and initiate a psychiatric evaluation.

Definitive management of urethral insertions requires removal of the foreign body while mitigating trauma to the surrounding tissue and preventing long-term complications. Ascertaining the identity and location of the object through x-ray or CT scan is the initial step in evaluation. Three general categories of retrieval methods are employed of which non-operative is the first choice, using grasping forceps, snares or a basket. The second is endoscopic retrieval by cystoscopic or nephroscopic means, which can be aided by adjuvant grasping devices or their modified counterparts. Surgical procedures are of last resort and involve internal or external urethrotomy, cystotomy or meatotomy. Immediate management post extraction requires pain relief, broad spectrum antibiotics and control of voiding complications with catheterization and/or medications to reduce irritative symptoms.<sup>1,2</sup>

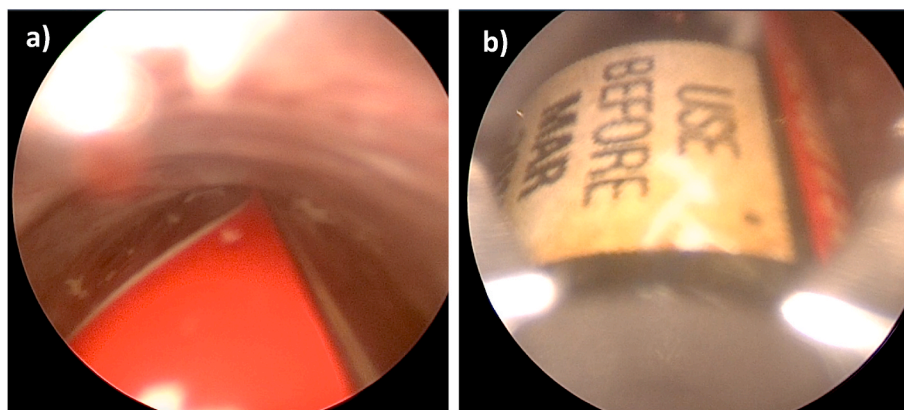


Fig. 2. a) Cystoscopic findings revealed impacted AAA battery inside the external sphincter b) Cystoscopic findings during extraction of AAA battery using Storz grasping forceps.

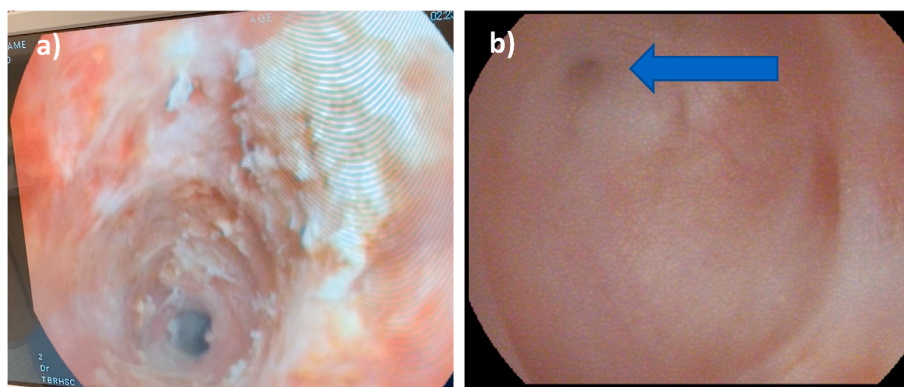


Fig. 3. a) Cystoscopic findings 3 weeks post-operative foreign body retrieval b) Cystoscopic findings 3-month post-operative foreign body retrieval. Arrow indicates pin-point stricture at the bulbar urethra.

A number of factors influence the severity of trauma and subsequent complications and thus retention time, number of insertional events, depth, object migration, object and extraction techniques need to be considered. Complications arising can include; infection (Fournier's gangrene, pyelonephritis, acute cystitis, periurethral abscess, urosepsis), chronic pain (urethritis, chronic genitourethral pain), voiding issues (weak stream, obstructive uropathy, urethral and bladder neck strictures, hematuria, dysuria) and anatomical or sexual defects (penile scarring, urethral avulsion, erectile dysfunction, fistulas and urethral diverticula).<sup>4</sup>

Within this case, battery acid leakage occurred within 24 hours of insertion. Little has been reported in the literature on the effects of battery acid within the urethra, however battery ingestion and acid exposure within the esophagus offers some insight. Corrosive agents at the extremes of pH are highly caustic to mucosal surfaces. The chronic effects of caustic injury to the urethra are unknown, however it's suspected to enhance tissue susceptibility to stenosis, stricture or cancer. Known risk factors for urethral cancers include but are not limited to inflammation and recurrent infections, all of which are complications of urethral foreign body insertion and corrosive mucosal injuries.<sup>2,5</sup>

### Conclusion

This is a case of self-insertion of three AAA alkaline batteries into the urethra of an elderly male. The underlying motivations are unknown, but undiagnosed neurocognitive decline is suspected. New onset behavior in elderly patients should prompt physicians to rule out neurocognitive decline, as abnormal sexual behavior can be an early symptom of dementia. In this case, objects were successfully removed using forceps and endoscopic techniques, however residual mucosal injury was sustained due to battery acid leakage. A urethral stricture

occurred post-extraction which required urethroplasty for correction.

### Consent

Informed consent was collected from the patient prior to the start of this report. Documentation was signed by the patient and witnessing physician, which was presented to the Thunder Bay Regional Health Sciences Centre Health Records department for approval.

### Declaration of competing interest

There is no conflict of interest to be declared and publication is not for monetary gain.

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