

Endoscopic Management of Genitourinary Foreign Bodies

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Retrieval of foreign bodies from the genitourinary system, most commonly inserted for sexual satisfaction or as a result of a psychiatric illness, can pose a significant surgical challenge. Due to their breadth of size, shape, and location within the genitourinary system, endoscopic management can be difficult. Here, we review the management of four cases of foreign object insertion into the genitourinary system and their outcomes and management.

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KEY WORDS

Foreign body insertion • Sounding • Genitourinary foreign object • Endoscopic extraction

Foreign objects within the genitourinary tract present a challenging urologic finding due to the diversity and breadth of presentation. Although many objects are easily removed, more complex approaches may be required depending on the size, shape, and location of the object.^{1,2} In this case series, we discuss the endoscopic management of four patients who presented with foreign bodies in the urethra. Two patients inserted beads into their genitourinary tract for the purpose of sexual stimulation and two patients had a history of psychiatric illness with multiple insertions of a diverse range of foreign objects. In all four cases,

endoscopic management was successful in removing the objects, with no need for an open approach such as perineal urethrotomy or open cystostomy. In case 2, in which an open approach was attempted at an outside hospital, this open approach was associated with intraoperative complications.

Case Reports

Four men requiring complex endoscopic management for one or more foreign bodies in the genitourinary system between 2001 and 2011 were identified (Table 1). Their medical records were queried for history of psychiatric illness and prior

TABLE 1**Four Male Patients Presented for Removal of Foreign Objects From Their Genitourinary Systems**

Pt	Age (y)	Cystoscope Size (Fr)	Objects Extracted	Presentations (N)	Previous Objects	Bedside Cystoscopy?	Presenting Symptoms
1	41	28	Magnetic beads (82)	1	N/A	No	Hematuria, urinary retention, dysuria
2	28	Unknown	Mardi-Gras beads	1	N/A	No	Dysuria, hematuria
3	48	22, 20	Heavy gauge wire, safety pin, unknown object	6	Coiled spring, Phillips head screwdriver	Yes (4)	Abdominal pain, urinary retention
4	15, 20	19, 17, 19, 16	Plastic fork handle	11	Wooden splinter, soap, buttons, syringe cap, toothpicks, 3-cm screw, chicken bone	Yes (8)	Dysuria

Pt, patient.

foreign body removal. Their operative summaries were also reviewed, along with radiographic findings and emergency department (ED) records pertaining to the foreign body extraction. Finally, the specifics of their case were discussed with the surgeon who performed the extractions.

Though these patients presented with a wide variety of symptoms, history and physical examination led to the diagnosis of a genitourinary foreign body in all four cases. In all cases, the foreign bodies were self-inserted. Foreign body insertion into the genitourinary tract was related to sexual activity in the first two patients and to psychiatric illness in the remaining two.

The first is a case of a 41-year-old man with no history of psychiatric disorders who presented to a local ED with hematuria, urinary retention, and 12 magnetic beads protruding from his urethra (Figures 1-3). Pelvic radiograph revealed a collection of round radio-opaque objects in the bladder

and urethra. Attempts at manually removing the magnetic beads were limited because the beads pulled apart and their removal induced further bleeding and pain. The patient was transferred to our hospital, where he was taken to

the operating room for endoscopic management.

The second case is a 28-year-old man who presented to an outside hospital with a string of Mardi-Gras beads entangled in his urethra. Attempts by the patient to remove

Figure 1. A 30° camera inserted into the bladder in Patient 1 revealed multiple metallic beads.



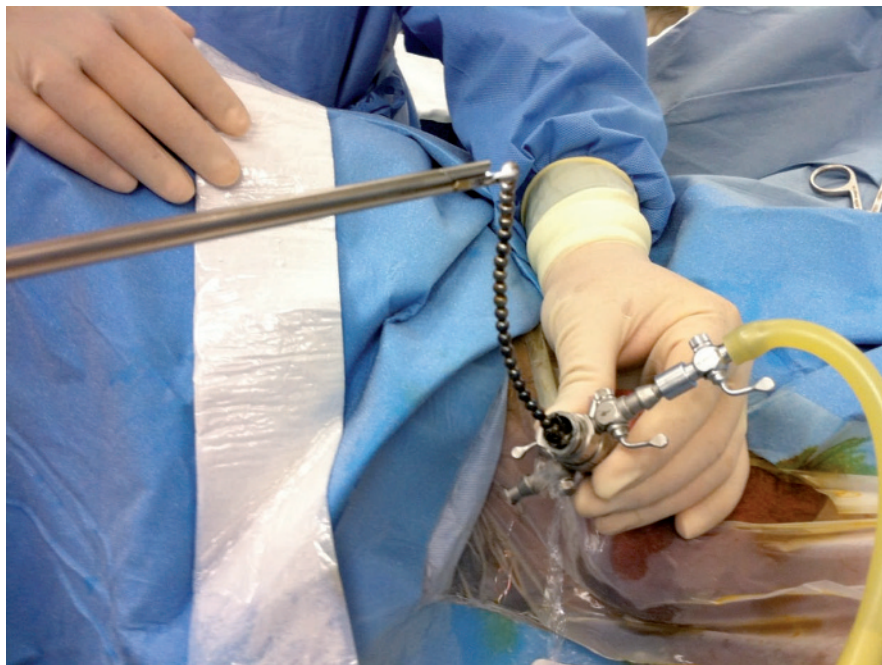


Figure 2. Due to the magnetic nature of the beads, many of the beads in Patient 1 were removed as a series.

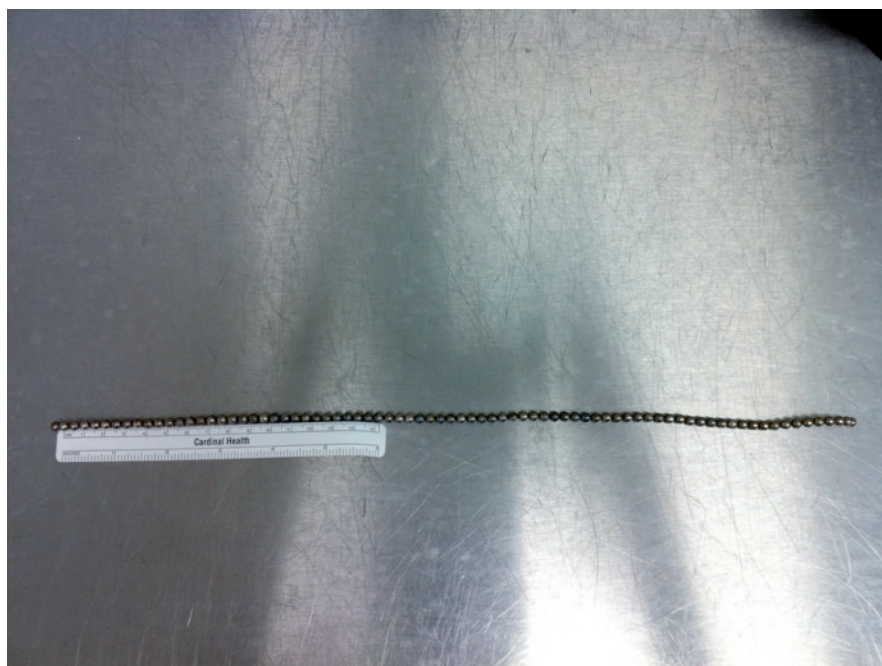


Figure 3. In all, 82 beads measuring a total of 38 cm in length were removed from Patient 1.

the beads had resulted in significant pain and urethral bleeding. Endoscopic removal of the beads was attempted at the outside hospital, with removal of some beads, but a bundle of beads remained knotted in the bulbar urethra. An open cystostomy was performed at the outside hospital, with flexible urethroscopy attempted via

the cystostomy site. A basket was passed via the flexible cystoscope into the urethra, and the beads were engaged with the basket, but the beads still could not be removed. Furthermore, the basket could not be freed from the urethra. Attempts at open foreign body extraction via a perineal urethrotomy also failed. The cystostomy was closed

over the basket, a suprapubic tube and perivesical drain were placed, and the patient was transferred to Washington University School of Medicine (St. Louis, MO) for further management.

The third patient is a 48-year-old man with a history of schizophrenia and five previous admissions for passing foreign bodies into his urethra (Figure 4). He presented to the ED with abdominal pain. Imaging revealed foreign bodies in the urethra (Figure 5), and attempts to remove these bodies in the ED were unsuccessful.

The fourth patient is a 15-year-old boy with an extensive psychiatric history who initially presented to the ED with dysuria. A foreign body was palpable in the penoscrotal junction, and pelvic radiograph revealed a foreign body in the urethra. The patient was taken to the operating room for removal of the object.

Case Resolutions

At the time of treatment, the patients ranged in age from 15 to 48 years. All four were male. Two had a history of schizophrenia and had prior presentations for foreign body extraction from the genitourinary system. Their medical history also included self-mutilating behavior, resulting in numerous prior visits to the ED over an average follow-up of 13 months.

Patient 1

After induction of general anesthesia, a 28-Fr resectoscope sheath was inserted into the urethra. A 30° camera revealed that the proximal urethra contained several beads; these were pushed retrograde into the bladder. Inspection of the urinary bladder with the 30° camera revealed multiple metallic round beads (Figure 1). A rigid grasper was then introduced over the 28-Fr sheath, and the beads were plucked

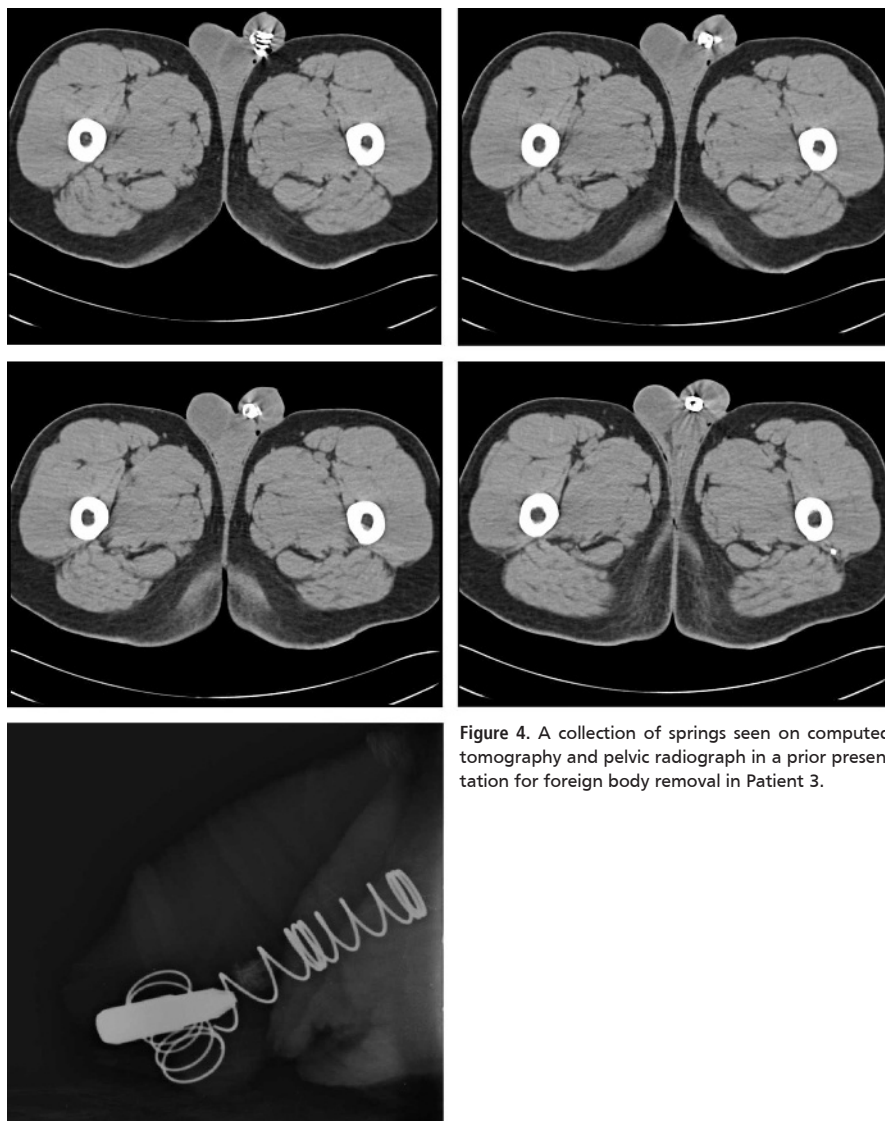


Figure 4. A collection of springs seen on computed tomography and pelvic radiograph in a prior presentation for foreign body removal in Patient 3.

out one at a time. Due to the magnetic nature of the beads, several were removed in a series (Figure 2). This was repeated until inspection of the bladder confirmed the absence of any remaining beads. A total of 82 beads, measuring 38 cm in length when laid out side to side, were removed (Figure 3). The bladder was then emptied, a Foley catheter was placed, and the patient was awakened from anesthesia. He was taken to the postanesthesia care unit in stable condition and eventually discharged to home with a Foley catheter and prescribed 1 week of antibiotics. At 1-week follow-up, the Foley catheter was removed and the patient was doing well.

Patient 2

Upon transfer to Washington University School of Medicine, the patient was taken to the operating room and a rigid cystoscope was introduced into the urethra. Tangled beads were encountered in the bulbar urethra. The strings between each of the beads were cut with endoscopic scissors and the beads were extracted one at a time until none could be visualized. The cystoscope then encountered a basket entrapped in the bulbar urethra. The suprapubic incision through which the basket had been placed was reopened, and the basket was disengaged and eventually removed via the cystostomy site with minimal

trauma. Repeat cystourethroscopy confirmed that the urethra and bladder were free of any remaining foreign objects. A total of 18 Mardi-Gras beads were removed. The patient was discharged home with a course of antibiotics.

Patient 3

After the patient was brought to the operating room, a rigid cystoscope was inserted into the urethra over a 22-Fr sheath. After irrigation, a U-shaped piece of heavy gauge wire could be seen caught in the distal urethra. The wire was initially embedded in the urethral mucosa and could not be manipulated; however, by pushing and twisting the wire in a retrograde fashion, it was freed from the mucosa, allowing subsequent extraction. After removal of the wire, the cystoscope was passed more proximally into the urethra, revealing a safety pin within the bulbar urethra. This was brought out with cystoscopic graspers but became caught in the urethral meatus. Again, by pushing the object retrograde into the urethra, the pin was loosened and eventually removed. A third foreign body was also found in the bulbar urethra and removed, but it could not be identified due to encrustation with stone and debris. After the surgeon ensured that no other foreign bodies remained, a 22-Fr Foley was placed into the bladder without difficulty, and the patient was awakened and taken to the recovery area. He was eventually discharged home with antibiotics and had no further urinary symptoms at 2-week follow-up.

Patient 4

Under general anesthesia, a 30° cystoscope was placed in the urethra over a 19-Fr sheath. A foreign body was seen in the proximal penile urethra, distal to the bulbar urethra. This object was grasped and

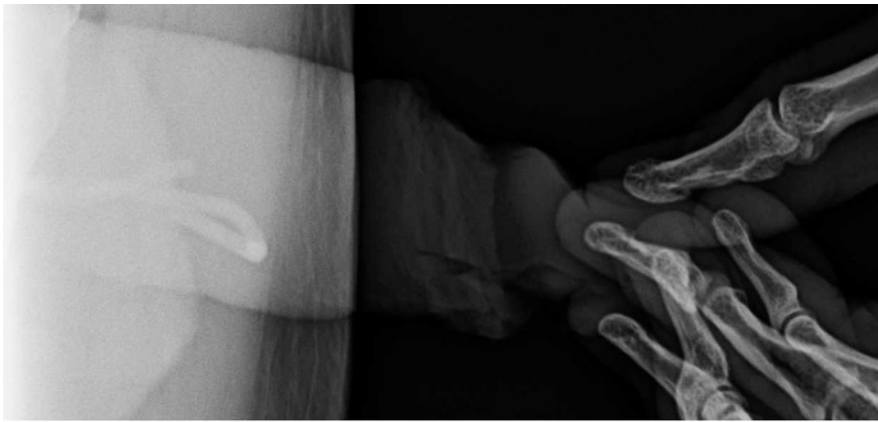


Figure 5. Heavy gauge wires, a safety pin, and an unknown radio-opaque object were seen in a pelvic radiograph of Patient 3.



Figure 6. A magnetic snap found on pelvic radiograph during a return visit of Patient 4.

removed without difficulty. The bladder was inspected and noted to be normal, with no other foreign bodies present. The patient was awakened, extubated, and taken to the recovery room in stable condition. He was discharged on a course of antibiotics.

Over the next 5 years, however, the patient returned 10 more times with foreign bodies in the urethra. Two of those returns required cystoscopic removal of the object in the operating room, but most cases were removed with a flexible cystoscope at the bedside. Objects removed included a wooden splinter, soap, buttons, a syringe cap, toothpicks, a 3-cm screw, and chicken bones (Figure 6). One of the objects, a syringe cap, was inserted

while the patient was hospitalized for another complaint. In all cases, however, cystoscopic management was sufficient to remove the foreign object.

Discussion

Foreign bodies are inserted in the urethra for a variety of reasons, including hygiene, intoxication/confusion, trauma, sexual stimulation, and psychiatric illness.²⁻⁴ Purposeful insertion of a solid or a liquid into the urethra is known as "sounding." In a 2010 survey of men who have sex with men, Breyer and Shindel⁵ found that 10.7% of respondents had engaged in recreational sounding. According to their findings, this practice was associated with increased risk for

sexually transmitted infections and lower urinary tract infections, as well as a higher likelihood of engaging in high-risk sexual activities such as having multiple partners. Though it is unknown how common loss of access to the foreign body is during sounding, many reports of genitourinary foreign body removal identify sexual stimulation as the most common reason for foreign body insertion into the urethra.^{2,6} In many of these cases, there may be a sense of shame or guilt and a resultant delay in seeking medical care. As in the case of patient two, attempts at self-removal may also cause further pain and injury.

Psychiatric illness is also commonly associated with foreign body insertion, and can often result in repeat insertion.¹ Indeed, due to the prevalence of psychiatric illness in the presentation of foreign body insertion into the genitourinary system, some believe that a psychiatric evaluation should be considered in all cases.^{2,7} In our experience, patients who self-insert objects as a result of a psychiatric condition often have multiple presentations and can have a diverse range of foreign bodies. Indeed,

the foreign bodies inserted can be as diverse as the motivations for their insertion. Materials including intrauterine devices, suture, animal bones, telephone wires, snakes, and ballpoint pens have been reported.^{2,8-9}

times, make manipulation more difficult than an open approach, it is significantly less traumatic.

Although endoscopic management of smooth objects such as beads can be difficult, better purchase can be obtained when the

When foreign bodies cannot be removed at bedside, more invasive measures have been employed, including meatotomy, cystoscopy, internal and external urethrotomy, and other invasive approaches.

Although the object size and shape can vary, many are retrievable at the bedside; however, some foreign bodies may migrate into the proximal urethra or bladder and become difficult to retrieve. In other cases, the object may be more distal but may become embedded in the urethral mucosa, precluding manual extraction. Resulting symptoms can differ, with reports in the literature of urinary frequency, dysuria, hematuria, urinary retention, urinary tract infection, and recurrent abdominal or pelvic pain^{4,6,10}; most cases, however, can be identified through verbal history.

When foreign bodies cannot be removed at bedside, more invasive measures have been employed, including meatotomy, cystoscopy, internal and external urethrotomy, and other invasive approaches.¹¹ Whenever possible, however, endo-

scopic methods are preferred, due to the less invasive nature of the approach.³ This method also has a fairly high success rate. In the 18-year case series by Rahman and colleagues,¹ 16 out of 17 cases could be managed endoscopically, and in the 20-year case series by Kochakarn and Pummanagura,¹² 74 out of 78 patients were successfully managed with endoscopy. Although this approach can, at

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object is pushed retrograde and, in some cases, into the bladder. In our experience, this approach allows for minimally invasive removal of a large variety of objects. The superiority of this strategy is further underscored by experiences in which attempts at grasping the object within the urethra are not only unsuccessful but result in injury of the urethral mucosa.² By pushing the object slightly retrograde, sharp edges and points, such as in wires and safety pins, can be dislodged from the mucosa. Furthermore, retrograde displacement of the foreign body allows introduction of a large cystoscope or resectoscope sheath into the bladder, which, in turn, facilitates atraumatic and efficient antegrade extraction of one or more foreign bodies through the protective sheath. Though our highlighted

cases had minimal complications, frequent complications of foreign bodies can include urethritis, urethral tear resulting in abscess or fistula formation, hemorrhage, or urethral diverticuli.¹¹ It is unclear how frequently these complications occur, but, even in our patient who had > 10 presentations for foreign object removal, complications were minimal in the setting of prompt endoscopic management.

In two of the cases presented here, beads were inserted into the urinary tract. In both cases, the objects were difficult to manipulate and endoscopic management was challenging. However, the magnetic nature of the beads in patient 1 allowed for some degree of serial traction between consecutive beads. Beads that did not provide sufficient grip were pushed into the bladder where they were easily engaged with a rigid grasper and successfully removed over a large resectoscope sheath. In patient 2, the beads were attached to a necklace that caused them to knot. Subsequent efforts to pull the beads out likely contributed to the knotting and swelling of the bulbar urethra. However, cutting the threads with endoscopic scissors between the beads facilitated their individual extraction. Ironically, the most difficult part of the management of patient 2 was removal of a basket that was trapped in the bulbar urethra following a failed attempt at bead extraction via a suprapubic incision, which preceded the patient's transfer to our institution.

The other two cases of foreign bodies were in patients who had a diagnosis of psychiatric illness and had both prior and subsequent presentations for removal of a wide range of foreign objects. In both cases, endoscopic management made it possible to visualize and manipulate the objects for extraction. In patient 3, the objects consisted of a heavy gauge wire, a safety pin, and an unidentifiable object that had become encrusted with stone debris. Both the heavy gauge wire and safety pin had sharp ends that became embedded in the mucosa. Attempts at extracting these objects in a strictly antegrade trajectory would have led to significant damage to the surrounding tissue. Instead, in both cases, these objects were pushed further

into the urethra to free their sharp ends. They were then twisted into the cystoscope sheath and easily removed.

Patient 4 had an extensive history of inserting a wide array of foreign objects into his urethra. In this case, he had inserted a plastic fork with the head snapped off, which was easily extracted endoscopically. His past history of objects, however, included soap, multiple buttons, a screw, chicken bones, and even the cap to a syringe needle that he found while admitted in the

exhaustive review of all cases of foreign body extraction performed at Washington University School of Medicine over the span of this case series. Many of our cases also have short follow-up intervals, which might preclude identification of potential long-term complications associated with an endoscopic approach. Despite its limitations, the current case series serves to underscore the wide applicability of the endoscopic approach in managing diverse cases of genitourinary foreign bodies, highlight-

maneuverability and grip can be improved. Furthermore, when the object has sharp ends pointed antegrade along the urethra, pushing the object retrograde can help disengage these objects from the urethra. These objects can then be removed over a protective cystoscope or resectoscope sheath, preventing further damage to the urethra. This strategy has, in our experience, been successful for a wide range of objects caught in the lower genitourinary system and can be utilized for the prompt removal of foreign objects with minimal complications. ■

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hospital. Despite the large variety in shape and size, all of these items were able to be removed through endoscopic manipulation, demonstrating the wide applicability of this approach in removing foreign bodies within the genitourinary system.

Our study is limited by its sample size. Furthermore, although the four cases selected for presentation serve to illustrate key points about the endoscopic management of genitourinary foreign bodies, they do not represent an

ing key technical considerations that may help optimize the application of this approach.

Conclusions

Endoscopic removal of foreign bodies which become lodged within the genitourinary tract is possible for a large range of object shapes and sizes. By systematically approaching the removal, dividing the object into smaller components when possible, and pushing the object retrograde into the bladder,

The authors report no real or apparent conflicts of interest.

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MAIN POINTS

- Foreign bodies are inserted in the urethra for a variety of reasons, including sexual stimulation and psychiatric illness. Removal of foreign objects within the genitourinary tract presents a challenge due to the diversity and breadth of presentation.
- An endoscopic approach to extraction is often successful; however, when foreign bodies cannot be removed at bedside, more invasive measures have been employed, including meatotomy, cystoscopy, and internal and external urethrotomy.
- Better purchase can often be obtained when the object is pushed retrograde and, in some cases, into the bladder. In addition, retrograde displacement of the foreign body allows introduction of a large cystoscope or resectoscope sheath into the bladder, which, in turn, facilitates atraumatic and efficient antegrade extraction of one or more foreign bodies through the protective sheath.

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