Foreign bodies in the urinary bladder and their management: a Pakistani experience

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ABSTRACT

Introduction: This was a retrospective study conducted to assess the nature, presentation, mode of insertion, diagnosis and management of foreign bodies in the urinary bladder.

Methods: Between January 1998 and December 2007, 20 patients with foreign bodies in their urinary bladder were treated at our centre. The records of these patients were reviewed and analysed for their symptoms, mode of insertion, diagnosis, management and complications.

Results: A total of 20 foreign bodies were recovered from the urinary bladders during the study period. These included JJ stents with calculi, intrauterine contraceptive devices with stones, a rubber stick, ribbon gauze, encrusted pieces of Foley catheter, proline thread with calculus, a suture needle, broken cold knives, the ceramic beak of a paediatric resectoscope, a knotted suprapubic tube, a hair clip, a nail, an electrical wire and a hairpin. The common presenting features were dysuria and haematuria. The diagnosis was established radiologically in most of the cases. The circumstances of insertion were variable; iatrogenic in 16 (80.0 percent) cases, sexual stimulation in two (10.0 percent), accidental insertion by a child in one (5.0 percent) and physical torture in one (5.0 percent). 17 (85.0 percent) foreign bodies were recovered endoscopically, and cystolithotomy was required in three (15.0 percent) patients.

Conclusion: The instances of foreign bodies in the urinary bladder are uncommon. A diagnosis is usually made radiologically. Iatrogenic foreign bodies were found to be the most frequent type of insertion encountered. Endoscopic retrieval is usually successful, with minimal morbidity.

Keywords: endoscopic management, foreign bodies, iatrogenic, urinary bladder

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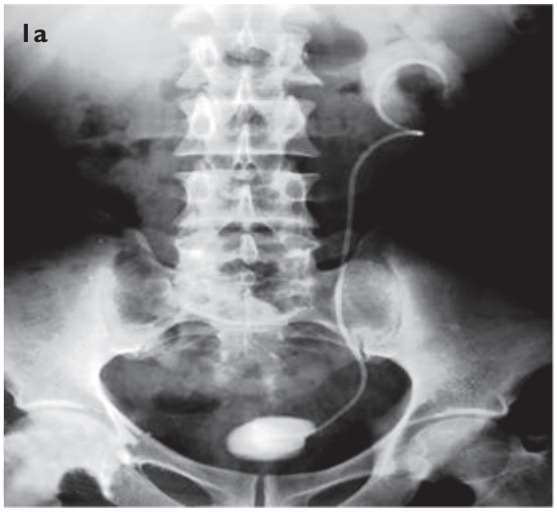

Fig. 1 (a) Plain radiograph shows a JJ stent with a calculus. (b) Photograph shows the JJ stent with a calculus after removal.

INTRODUCTION

The presence of foreign bodies in the urinary bladder has always been an interesting topic. Every urologist occasionally comes across such patients in his practice. A large number of cases have been reported in the literature, and they have now become an important part of the study of urological diseases. Objects that have been reported in the urinary bladder include electrical wires,[1] chicken bones,[2] wooden sticks,[3] thermometers,[4] bullets,[5] intrauterine contraceptive devices (IUCDs),[6-8] encrusted sutures,[9] surgical staples with stones,[10] ribbon gauze,[11] pieces of Foley catheter,[12] broken pieces of endoscopic instruments,[13] knotted suprapubic catheter[14] and many other items.

Not all patients volunteer their history of insertion, especially those who have inserted the objects for

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Table I. Iatrogenic foreign bodies found in our study (n = 16).

Type of foreign body	Mode of removal	No. of cases
JJ stent with calculus	Cystolithotomy	2
IUCD with calculus	Endoscopy	3
Rubber stick	Endoscopy	1
Ribbon gauze	Endoscopy	2
Piece of Foley balloon	Endoscopy	2
Propylene suture with calculus	Endoscopy	1
Suture needle	Endoscopy	1
Broken cold knife	Endoscopy	2
Ceramic beak of paediatric resectoscope	Endoscopy	1
Knotted suprapubic tube	Endoscopy	1

IUCD: intrauterine contraceptive device

Table II. Foreign bodies via urethral insertion found in our study (n = 4).

Type of foreign body	Mode of removal	No. of cases
Hair clip	Endoscopy	1
Nail	Endoscopy	1
Electrical cable	Cystolithotomy	1
Hair pin	Endoscopy	1

sexual gratification. Many patients do not seek advice for months due to embarrassment. The presenting features usually include urinary tract infection, pain and haematuria.[15] The physical examination is almost always unremarkable, and urine microscopy usually reveals pus cells and red blood cells. Radiopaque objects can easily be seen on radiographs, while others are identified by the sonologist. Cystoscopy is rarely required for diagnosis. Most of the inserted objects can be retrieved endoscopically using the latest available equipment and open surgery is usually not required. In this study, we present our experience with foreign bodies in the urinary bladder over the course of nine years.

METHODS

A total of 20 patients with foreign bodies in the urinary bladder were treated between January 1998 and December 2007 at our institution. The patients' records were reviewed retrospectively. Their clinical features, mode of insertion, diagnosis, management and complications were analysed.

RESULTS

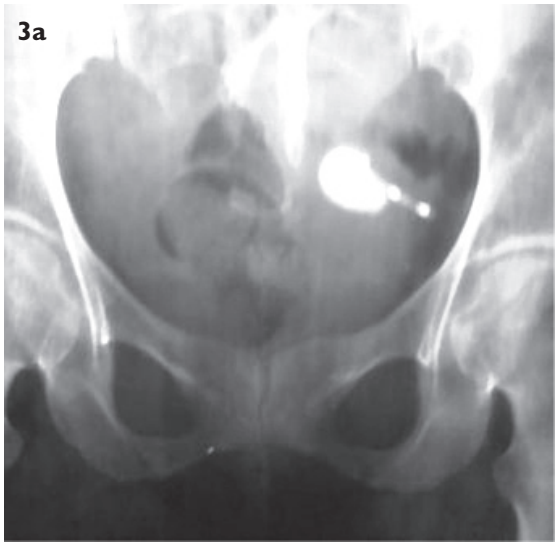
The mean age of the patients was 35.8 ± 20.0 years. The nature of the foreign bodies in the urinary bladder, modes of insertion and management are listed in Tables I and II. Dysuria and haematuria were found to be common symptoms among the patients. A diagnosis was made by plain radiography in 14 (70.0%) patients with radiopaque foreign bodies. Six (30.0%) patients required ultrasonography or cystoscopy for diagnosis. The circumstances of insertion were iatrogenic in 16 patients, sexual stimulation in two patients, accidental insertion by a child in one patient and torture in one patient. The foreign bodies were endoscopically retrieved in 17 (85.0%) patients without any complications. Endoscopic removal was not possible in three (15.0%) patients, so cystolithotomy was carried out.

DISCUSSION

Foreign bodies may reach the urinary bladder by one of the following modes: iatrogenic, perforation from adjacent organs, via the urethra or the traumatic route.[16] The incidence of iatrogenic foreign bodies in the urinary bladder is on the rise as a result of the large number of surgical procedures being conducted all over the world. The tips of Foley catheters and pieces of balloon have been found in the bladder on many occasions.[12] In our study, pieces of Foley catheters were found in two patients undergoing transurethral resection of the prostate. Forgotten urological stents may present with encrustations or stone formation, making their removal difficult.[17] We had to perform cystolithotomy in two cases in order to remove large vesical calculi over the DJ stents (Fig. 1). Broken parts of endoscopic instruments can sometimes be retrieved from the urinary bladder. We successfully removed the ceramic beak of a paediatric resectoscope sheath and broken cold knives from the urinary bladder endoscopically. Many iatrogenic foreign bodies have also been reported following open bladder surgery. These include ribbon gauze,[6] clips[10] and sutures with stones.[9] In our study, most of the cases (80.0%) were iatrogenic in nature.

The perforation of foreign bodies into the urinary bladder from the adjacent organs is extremely rare. Foreign bodies can perforate the urinary bladder from the gastrointestinal or female genital tract. Although IUCDs are widely used, only a small fraction perforates the bladder. They can perforate either at the time of insertion or by slow migration across the bladder and uterine walls.[8] Most of the perforations take place at the time of insertion and go unnoticed. Dietrick et al reported one case of IUCD migration into the urinary bladder that became symptomatic 16 years after

Fig. 2 (a) Plain radiograph shows a Lippes loop with a calculus. (b) Photograph shows the Lippes loop with stone fragments after endoscopic removal.



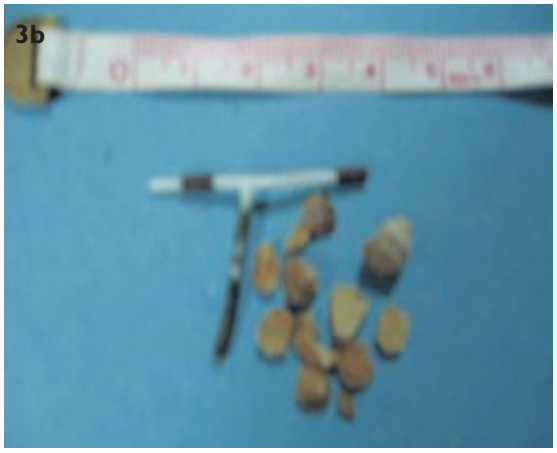


Fig. 3 (a) Plain radiograph shows a Copper T with a calculus. (b) Photograph shows the Copper T with stone fragments after endoscopic removal.

insertion.[7] Encrustations and stone formation over a migrated IUCD are common; however, the duration is variable. In our study, we retrieved three IUCDs with stones from the urinary bladder endoscopically (Figs. 2 & 3).

Urethral insertion is encountered in both male and female patients; however, it is more common in the latter due to the presence of a short urethra. A variety of objects can be introduced via the urethral route into the bladder. Some of the common aetiologies of urethral insertion include psychiatric disorder, autoerotic stimulation and senility.[18] In our study, we retrieved a large nail and a hair clip from two young girls, which had been inserted for sexual stimulation (Figs. 4 & 5). Foreign bodies can sometimes be inadvertently placed in the bladder by women in order to induce an abortion (Fig. 6). It is rare, however, for foreign bodies to be forcibly pushed into the urethra by another person. In our study, one patient presented with the forced insertion of an electrical cable by an enemy (Fig. 7). Similar cases have been reported by others.[16] In rare instances, living foreign bodies can also reach the urinary bladder by the urethral route. Mukherjee reported two cases of invertebrates in the urinary bladder that required cystolithotomy.[19] Suicide attempts have also been reported among mentally retarded persons through the self-insertion of foreign bodies into the urinary bladder. These patients require psychiatric evaluation.[20,21] Self-insertion among children is rare. In our study, we encountered a four-year-old girl who introduced a hair pin into the bladder while playing with it (Fig. 8).

In rare cases, foreign bodies can erode the gastrointestinal tract and produce enterovesical fistulae. Many such cases have been reported in the literature. These include a chicken bone,[2] wooden stick,[3] knife blade,[22] thermometer[4] and a piece of gauze.[11] Foreign bodies may sometimes reach the urinary bladder by the traumatic route. These include bullets, pieces of shells

Fig. 4 Plain radiograph shows a hair clip.

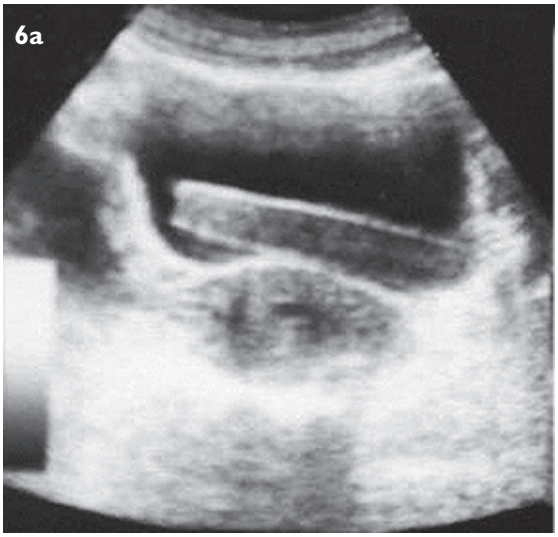


Fig. 5 Plain radiograph shows a large nail.

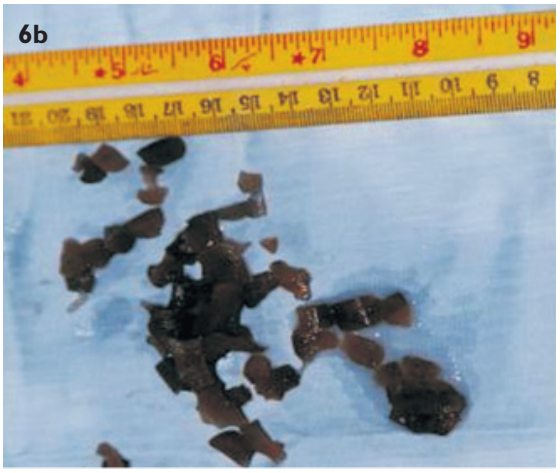


Fig. 6 (a) Ultrasonography image of the urinary bladder shows a large rubber stick. (b) Photograph shows pieces of the rubber stick after endoscopic removal.

and splinters. Bullets are able to stay in the bladder without significant symptoms being reported.[5]

Most of the foreign bodies in the urinary bladder can be successfully removed endoscopically using grasping forceps, stone punch, glass syringe, basket or cutting loop. Smaller foreign bodies can be retrieved intact, whereas bigger ones require fragmentation. In our study, a stone punch was used to cut up the foreign bodies or their associated calculi on six occasions. A resectoscope loop may sometimes be used to disentangle foreign bodies from the urinary bladder. Care must be taken to avoid bladder mucosal injury during removal. Endoscopic removal is associated with minimal morbidity and hospital stay. With the advent of a variety of modern endoscopic instruments, open surgery is rarely required.

Since laparoscopy has become a popular technique, innovations have been made to utilise its instruments in the urinary bladder. Recently, some studies have reported the use of laparoscopic techniques to retrieve foreign bodies from the urinary bladder. These techniques are especially useful in children, where bigger scopes cannot be used transurethrally.[14] Chitale and Burgess reported a case in which pieces of a one-metre long telephone wire were removed from a urinary bladder through the use of laparoscopic techniques.[23]

A nephroscope sheath may sometimes be useful to extract larger foreign bodies from the urinary bladder. Nishiyama et al reported the removal of a thermometer from the bladder through the use of a nephroscope sheath.[4] A pencil has been retrieved from the urinary bladder in a similar fashion.[24] Recently, a holmium laser was utilised to fragment complex foreign bodies in the urinary bladder in order to save patients from having to undergo cystotomy. It was used to fragment a suture needle with a stone,[25] propyline mesh[26] and the ceramic beak of a resectoscope.[13]

Fig. 7 Plain radiograph shows an electrical wire in the bladder and urethra.

Fig. 8 Plain radiograph shows a hair pin.

In conclusion, the number of iatrogenic foreign bodies found in the urinary bladder is alarming. Extra care must be taken to avoid such occurrences. Urologists, surgeons and paramedical staff must be very vigilant when performing procedures. For instance, it is always wise to examine the tip of the Foley catheter after removal. Endoscopic instruments should be checked before and after use. Moreover, patients with stents should receive clear instructions about their removal.

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