



## A Novel Approach to Managing Intravesical Magnetic Beads

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### ABSTRACT

Recent reports of magnetic beads inserted into the urethra have identified challenges for urologists during removal. Even moderate numbers of these beads in the bladder necessitate open removal due to their tendency to cluster tightly in a spherical formation. This case report describes a novel approach to using the magnetic property of the beads to aid in removal.

### INTRODUCTION

Insertion of foreign objects into the urethra is a rare but serious problem that can often be resolved successfully with cystoscopic management. Recently, several reports have highlighted the phenomenon of the insertion of magnetic beads that become lodged in the bladder or urethra [1,2]. While this problem can sometimes be managed cystoscopically, the insertion of a large number of these beads can necessitate open surgical removal due to the magnetic properties of the beads [3]. The purpose of this case report is to describe a novel way that the magnetic properties of the beads themselves may be used to aid in removal.

### CASE REPORT

A 23-year-old man arrived to the emergency room complaining of 48 hours of worsening urinary urgency, frequency, and hematuria. Vital signs were stable but his urinalysis revealed large volume red blood cells and leukocytes. The patient refused further care by emergency staff and requested urology consultation stating he had accidentally put something up his penis. During the urologic evaluation, the patient admitted that he had inserted magnetic beads into his urethra during masturbation following a discussion in an online chat room. The patient reported the beads were initially placed into a string conformation before insertion. At some terrible point,

he realized that he had put in a very large number of beads. He attempted to remove them but was only able to pull out a much smaller number. Embarrassed, the patient waited in silent desperation hoping that he would spontaneously void the remaining beads out. After several hours, he began having difficulty urinating with urgency, frequency, and hematuria. He delayed medical evaluation for an additional day until he developed severe pain.

The patient was taken to the operating room after being consented to both cystoscopic and open management. Initial fluoroscopy revealed a large mass of dense objects in the bladder in a spherical conformation (Figure 1). Cystoscopy was then performed and confirmed that the magnetic beads were densely adherent in a ball shape. Multiple attempts were made to remove the beads cystoscopically using a variety of endoscopic baskets and graspers. The beads were noted to be strongly magnetized to one another and only 2 beads could be removed in this manner. A Foley was placed for bladder irrigation.

An 8 cm retropubic midline incision was made from the pubis and dissected down to the bladder wall. The bladder was irrigated with water and the dome was identified. A 2 cm cystotomy incision was made. In order to work through a small incision, the surgeon decided to try to use the magnetic property of the bead mass and pull it up to the bladder surface with

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## CASE REPORT

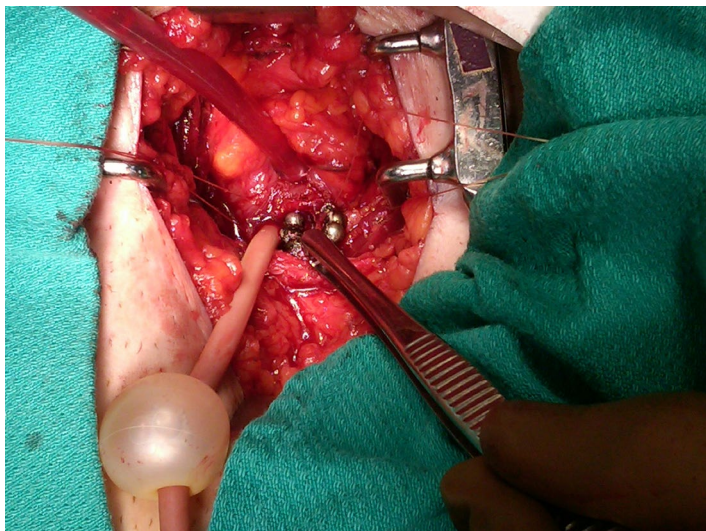
Figure 1. Fluoroscopic X-ray of the pelvis revealing a foreign body.



Figure 2. The magnet used to bring the bead mass to the cystostomy opening.



Figure 3. Magnetic beads being removed in singlets and clusters.



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another magnetic material. A pacemaker magnet (Guidant, Boston Scientific, Natick, Massachusetts, United States) was sterilized (Figure 2) and placed over the cystostomy site. The magnet was then pushed down over the bladder and used to bring the magnetic bead mass up to the bladder dome. The beads were then grasped and removed individually and in small groups off of the bead cluster until all were removed (Figure 3). 62 beads in total were recovered—2 cystoscopically and 60 through the mini incision. The magnetic properties of the beads are demonstrated in Figure 4. Fluoroscopy was used to confirm no further beads were in the bladder. The bladder was closed in 2 layers and the incision was closed with a drain in place. The patient did well and was discharged the next morning on antibiotics and with Foley drainage. The Foley and drain were removed in 1 week. At a 3-month follow-up, the patient was voiding well with no complaints.

## DISCUSSION

The inherent properties of magnetic beads make them especially challenging to remove cystoscopically when they are retained in the bladder after urethral insertion. Large numbers of these beads in the bladder almost certainly mandate the use of open surgery, as their magnetism leads them to condense into a densely adherent spherical shape [4]. This property of

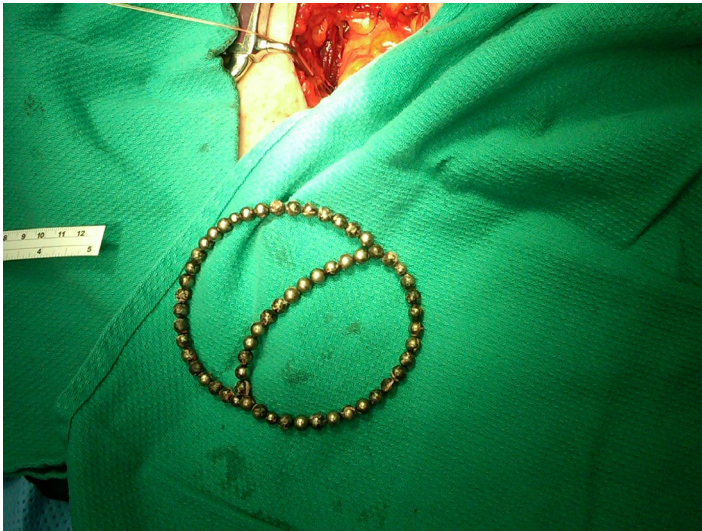
the beads, however, may also be used to aid in their extraction. In this case, we used a pacemaker magnet to bring the bead cluster close to the cystostomy opening, making them more easily accessible through the mini incision.

The novel management described in this report demonstrates one way we can use the magnetic properties of a foreign

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## CASE REPORT

Figure 4. Total bead volume removed through a mini incision and configured to highlight strong magnetic properties.



2. Graziottin, T. M., et al. (2013). "Magnetic spheres as foreign body into the bladder." *J Sex Med* 10(10): 2590-2592. [PubMed](#) | [CrossRef](#)
3. Alyami, F., et al. (2013). "A magnetic mass within the bladder." *Can J Urol* 20(5): 6962-6963. [PubMed](#)
4. Levine, M. A. and H. Evans (2013). "Open removal as a first-line treatment of magnetic intravesical foreign bodies." *Can Urol Assoc J* 7(1-2): E25-28. [PubMed](#) | [CrossRef](#)

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body in order to aid in removal. Another future target to aid in removal may be to alter or negate the magnetism of the beads. One of the approaches we deliberated on after initial cystoscopic management failed was to demagnetize the beads in order to facilitate removal. The possibility of using the magnetic resonance scanner to change the polarization or demagnetize the beads was discussed. However, the theoretical risk of creating a projectile in the bladder greatly outweighed our curiosity to try this approach. Instead, we decided to work through a small open incision and use a readily available magnet to see if we could bring the bead cluster close enough to a small cystotomy to allow for removal. This allowed for minimal additional damage to an already inflamed urothelium.

The ultimate endgame in managing a retained foreign body such as this is to remove the foreign body with minimal damage to surrounding structures. While cystoscopy remains the desired approach, it is unlikely to be successful when the foreign body is large and magnetic. The magnetic properties of the beads themselves, however, may be used to aid in open removal and may ultimately be a target for future management.

## REFERENCES

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