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Case Report

A Self-Insertion of 26 High-Strength Neodymium Magnetic Beads in the Bladder: A Case Report

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Abstract

Background: The presence of a foreign object inside the urinary bladder is a rare occurrence in urological emergencies. These objects can enter the bladder through various routes, including medical procedures (iatrogenic causes), self-insertion for sexual stimulation, sexual abuse, physical assault, or migration from nearby organs. Gathering a thorough patient history can be particularly difficult when the insertion was done for sexual gratification. Commonly encountered foreign bodies include everyday items like electrical wires and pencils, medical devices such as intrauterine contraceptive devices (IUDs) and catheter components, or, as seen in this case, high-strength neodymium magnetic beads.

Case Presentation: We describe a rare occurrence where a 24-year-old man inserted 26 high-strength neodymium magnetic beads into his urethra for sexual gratification. The clinical presentation with management outline is discussed. The patient underwent two cystoscopic procedures for complete removal of the intravesical foreign body. During the initial intervention, seven neodymium magnetic beads were successfully extracted. A second cystoscopy was performed the following day, resulting in the complete retrieval of the remaining 19 beads. While treatment's main objective is the removal of the foreign object, it is essential to take into account both immediate and long-term complications that may arise.

Conclusion: Bladder foreign bodies are rare, requiring individualized management. This case highlights the challenges of managing magnetic bead insertion, emphasizing the importance of prompt diagnosis and staged endoscopic removal.

Keywords: Magnetic beads, Foreign Body, Cystoscopy, Bladder, Case report

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Introduction

Foreign bodies in the lower genitourinary tract are an uncommon but potentially dangerous urological emergency. These occurrences may stem from a variety of factors, such as impulsive actions, psychological conditions, sexual experimentation, assault, or abuse.[1] Commonly inserted objects can range from everyday items like electrical wires and pencils to medical devices like intrauterine contraceptive devices and catheter parts, or, as seen in our case, high-strength neodymium magnetic beads. Diagnosis can be challenging unless the insertion is disclosed early on. The condition is often presented late due to feelings of shame and embarrassment. Failure to remove the foreign body may result in complications such as dysuria, hematuria, urinary retention, and the development of secondary calculi. Cases of foreign body insertion are often either not reported or misdiagnosed. Al-Heeti et al., in a retrospective study on foreign bodies in the urinary bladder during a period of 10 years in a teaching hospital, only reported 21 cases, of which the most common cause is iatrogenic (42.9%) followed by self-insertion (33.3%), migration from outside the bladder (14.3%) and external trauma (9.5%).[2] As far as we know, such research has not been done yet in Malaysia, and to the best of our knowledge, this is the first such case documented in our region. Magnetic foreign bodies are especially worrisome because they can compress the urethral or bladder wall, potentially leading to ischemia. Their removal is often challenging due to the strong magnetic attraction between the objects.[3] We emphasize the importance of prompt diagnosis and intervention, which is why we have chosen to present this case. In our patient, a total of 26 high-strength neodymium magnetic beads were successfully removed from the bladder.

Case Presentation

A 24-year-old male without notable medical comorbidi ties presented with a 48-hour onset of dysuria, urinary hesitancy, and burning sensation over the penile area. Upon further investigation, it was disclosed that he had inserted 26 high-strength neodymium magnetic beads into his urethra. The patient was unable to specify the precise dimensions of the magnetic beads and admitted to inserting them into his urethra to heighten sexual stimulation. This indicates a lack of awareness regarding the potential medical complications associated with such behaviour. At that time, he had no prior history of any diagnosed mental or psychiatric conditions. The physical examination of the patient showed normal results, with no evidence of trauma to the external genitalia. Blood tests, including white cell count, hemoglobin, platelet count, and renal function, were all within normal limits. Additionally, urinalysis did not reveal any signs of bacterial infection, but there were red blood cells. An anterior-posterior pelvic X-ray showed a cluster of radio-opaque shadows in the pelvic region, with the shape consistent with magnetic beads that are adhered to one another (Figure 1). Given the patient's stable hemodynamic status, absence of peritoneal irritation, and lack of clinical indication of foreign body migration, advanced imaging modalities such as a computed tomography (CT) scan were not pursued. A plain pelvic radiograph was deemed sufficient for evaluation. The patient was brought to the operating room, where a cystoscopy was performed under general anesthesia. The presence of magnetic foreign bodies is especially concerning due to the risk of pressure-induced ischemia in the bladder or urethral walls. Cystoscopic examination revealed the presence of magnetic beads within the bladder (Figure 2). Removing all the magnetic beads in a single surgical session proved challenging, as they were tightly attached to one another. This posed a significant risk of increased morbidity due to prolonged operating time and the potential for repeated instrumentation of the urethra, which could result in epithelial damage. The patient underwent a transurethral cystoscopy to remove the foreign body using forceps on two separate occasions. In the first procedure, only 7 magnetic beads were successfully extracted (Figure 3A). The following day, the procedure was repeated, and the remaining 19 magnetic beads were removed entirely (Figure 3B). While treatment's primary goal is removing the foreign body, it is crucial to consider both short-term and long-term complications that may arise. These complications can include, but are not limited to, urethral strictures, urinary incontinence, and the formation of urethral diverticula. The likelihood and severity of these complications depend on various factors such as the depth of the initial insertion, the frequency of foreign body insertion, and the method employed for extraction. Postoperatively, he made a smooth recovery and subsequently received an outpatient psychiatric evaluation at the clinic, where he was diagnosed with obsessive-compulsive disorder. He continued to do well throughout his follow-up visits at our urology clinic, which were scheduled at the first and third months. He has established normal voiding without any complications.

Figure 1 An anterior-posterior pelvic X-ray showed a cluster of radio-opaque shadows in the pelvic region, with the shape consistent with magnetic beads.

Figure 2 Cystoscopic examination revealed the presence of magnetic beads within the bladder.

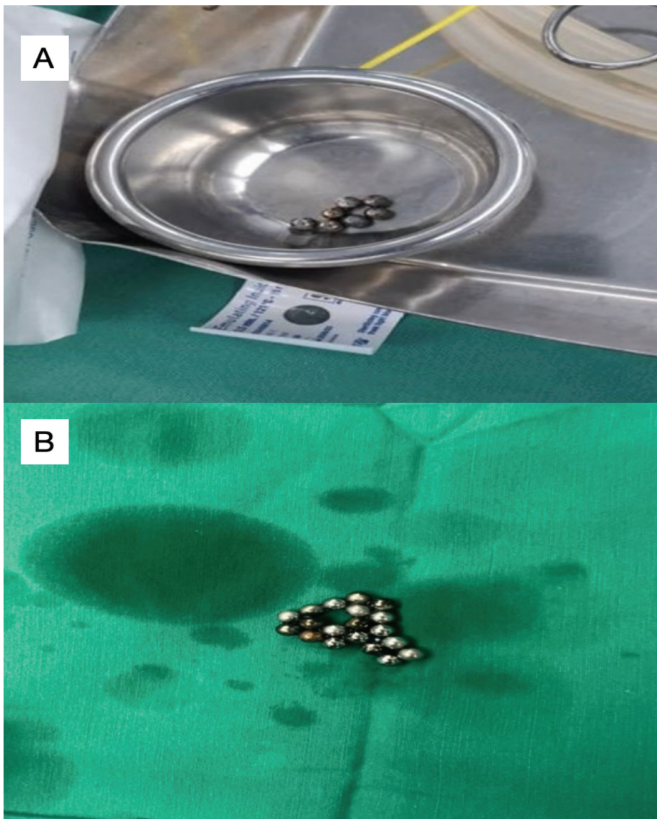

Figure 3 Intraoperative retrieval of magnetic beads (A) 7 Magnetic beads on the first cystoscopic retrieval (B) 19 Magnetic beads on the second cystoscopic retrieval

Discussion

A genitourinary foreign body is uncommon, although the incidence has increased in recent decades. Among the various genitourinary structures, the urethra and bladder are the most frequent sites for foreign body insertion and are typically linked to a condition called polyembolokoilamania. This disorder involves individuals inserting objects into various bodily orifices for a variety of reasons, including psychopathological motives, urological procedures, self-stimulation, enhancement of erections, seeking attention, or merely out of curiosity. Urologists have been dealing with this issue for years, as it presents considerable challenges in both diagnosis and management.[4] Due to frequent under-reporting, the true prevalence remains largely uncertain. Accidental insertion is most commonly observed in children, whereas in adolescents and adults, it typically results from curiosity-driven behaviour, underlying psychiatric conditions, or paraphilic tendencies linked to sexual gratification.[5] In certain instances, like the present one, underlying

motivations can be multifactorial—where auto-erotic activities coincide with compulsive behaviours. Patients often withhold information due to the stigma surrounding this behaviour, which makes the diagnosis difficult to establish. When assessing a suspected foreign body, it is crucial to carefully consider the patient's medical history, symptoms, clinical examination results, and imaging findings comprehensively and coordinately. For non-radiopaque foreign bodies, plain radiography provides a straightforward method for visualization, allowing direct evaluation of their shape and size. With a specificity of up to 91%, plain radiography is generally sufficient to identify both metallic and non-radiopaque foreign bodies, assisting in their localization and confirming their presence or movement. Ultrasound has become an increasingly reliable and popular choice, with an 81% sensitivity for detecting urogenital foreign bodies. It is a safe, radiation-free, non-invasive, and cost-effective imaging technique, particularly well-suited for pediatric patients. A CT scan, on the other hand, offers enhanced soft tissue imaging and greater diagnostic accuracy when ultrasound or conventional radiography are unable to detect or characterize the foreign body.[6] Plain radiography can provide a general overview of a foreign body, but ultrasonography or computed tomography (CT) may be necessary for precise localization. CT is particularly useful when there is suspicion that a foreign body has migrated into adjacent structures. As noted, in this case, plain radiography was the preferred imaging modality since the patient was hemodynamically stable and showed no signs or symptoms pointing towards the migration of a foreign body. Managing a retained foreign body should focus on its complete removal while aiming to reduce the risk of complications as much as possible. Treatment options for bladder foreign bodies include endoscopic, percutaneous, open, and laparoscopic procedures. The choice of extraction technique depends on the size and mobility of the foreign body within the bladder. Nonetheless, endoscopic removal is typically the method of choice for most urologists.[2]

In the case mentioned above, a total of 26 high-strength neodymium magnetic beads were removed over two separate procedures. The staged removal technique, as performed in our case, is preferred in cases with strong magnetic adherence to minimize trauma. Alternative approaches, such as suprapubic cystostomy, have been reported in cases with larger objects or failed endoscopic retrieval. Endoscopic techniques are widely utilized to remove foreign bodies from the bladder in urological practice. Using a cystoscope, clinicians can directly visualize the bladder cavity and accurately retrieve the object with specialized instruments such as baskets, forceps, graspers, and clamshell devices. Although cystoscopic retrieval is often effective, the success rate can vary considerably, ranging between 50% and 90%.[7] Striving for complete removal in a single procedure could have led to additional complications, such as prolonged general anesthesia time and the risk of repeated urethral instrumentation, which could cause epithelial damage and potentially result in future strictures. The optimal management approach depends on the characteristics of the foreign body, its location, the surgeon's expertise, and the available equipment at that point in time.

Conclusion

The insertion of high-strength magnetic beads is rare and poses a significant hazard. Often, it poses a diagnostic challenge due to the unclear or incomplete medical history provided by the patient. A comprehensive approach to patient management is crucial in these cases. To determine the precise location, size, shape, and quantity of foreign bodies, imaging techniques such as plain radiography, ultrasound, or CT scan can be used, each with its own advantages and limitations. Surgical intervention should be considered promptly once the foreign body is confirmed. The main goal of surgery is to remove the foreign body successfully while minimizing the risk of complications. The choice of removal technique depends on factors such as the location, size, and configuration of the foreign body, the surgeon’s expertise, and the available instruments. Surgical options typically include cystoscopic removal or open surgery. Management should be tailored to the specific circumstances of each case. Given the high prevalence of mental illness in these patients, it may be beneficial to conduct thorough assessments. The primary motivation for ruling out mental illness is to reduce the likelihood of recurrence.

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Ethical statement

The authors are accountable for all aspects of the work and ensure that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee(s) and with the Helsinki Declaration (as revised in 2013). Written informed consent was obtained from the patient to publish this case report and accompanying images. A copy of the written consent is available for review by the editorial office of this journal. Patient confidentiality and anonymity were maintained during the publication.

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