RESIDENT'S CORNER

Indiana pouch stone formation caused by a long-forgotten metallic ball bearing

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The presence of a foreign body in the urinary tract may serve as a nidus for stone formation. A 40-year-old male was found on CT scan to have a 2.4 cm stone in his Indiana pouch urinary diversion. As the stone was

Introduction

A myriad of foreign bodies have found their way into the genitourinary tract.¹ The presence of a foreign body in the urinary tract can serve as a nidus for stone formation.² We describe the unique case of a metallic ball bearing (BB) leading to the formation of a stone in an Indiana pouch urinary diversion.

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Address correspondence to Dr. Bernard Fallon, University of Iowa, Department of Urology, 200 Hawkins Drive, 3 RCP, Iowa City, IA 52242-1089 USA fragmented during endoscopic lithotripsy, a metallic round object was visualized, which was subsequently established to be a metallic ball bearing. Upon questioning after the procedure, the patient reported that 4 years earlier he had been accidentally shot with a blow dart gun and the "miraculous hit" went directly into his Indiana pouch stoma.

Key Words: foreign bodies, calculi, urinary diversion

Case presentation and management

A 40-year-old male with a history of bladder exstrophy previously underwent conversion of an ileal conduit to an Indiana pouch continent urinary diversion at age 24. A plain abdominal radiograph, ordered by his nephrologist for evaluation of an episode of pyelonephritis, showed a calcification in the area of the Indiana pouch. A CT scan demonstrated a 2.4 cm \times 1.8 cm calcification in the Indiana pouch, Figure 1. Pouchoscopy was performed, but mucus in the Indiana pouch obscured visualization of the stone. The patient was taken to the operating room for pouchoscopy with lithotripsy. A flexible cystoscope



Figure 1. CT scan demonstrating a 2.4 cm x 1.8 cm stone in an Indiana pouch.

was passed through the continent catheterizable stoma and a 2.5 cm yellow stone was visualized in the Indiana Pouch. After a guidewire and balloon dilator were used to place a sheath, an ultrasound probe was inserted and an attempt was made to perform ultrasonic lithotripsy. This was very slow, due to hardness of the stone, so a 5-French electrohydrolic lithotripsy probe was inserted and successfully fragmented the stone into smaller pieces which were then treated with ultrasound. When one of these smaller fragments was broken with the ultrasound probe there was noted to be a small round metallic object within it, which was removed by suction and verified as being a metallic BB, Figure 2. The remainder of the stone was fragmented and removed by suction, and stone analysis revealed it to



Figure 2. Operative photographs of the fragmented stone revealing a metallic BB.

be 80% calcium phosphate and 20% magnesium ammonium phosphate (struvite). At the conclusion of the case there was no visualized residual stone.

In discussion with the patient after the case, he reported that 4 years earlier he had been accidentally shot with a blow dart gun and it had been a "perfect shot" that went directly into his Indiana pouch stoma. This was close to the surface and he tried to remove it; however, it moved deeper into the pouch. He expected that this would not cause problems and never sought medical care.

Comment

Penetrating injury to the bladder from high velocity projectiles like bullets unfortunately happens commonly and is well described in the urologic literature.³ Damage from lower velocity metallic foreign bodies from air-powered guns has been documented to lead to a variety of injuries, most commonly to the eye⁴ but also to the heart.⁵ Our case describes a metallic BB that accidentally found its way into an Indiana pouch and thus served as a nidus for subsequent stone formation. Stones have been found to form in about 10%-13% of Indiana pouches,^{6,7} but to our knowledge the formation of a stone around a metallic BB in an Indiana Pouch or in the native bladder has never been previously reported in the literature.

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