



Late Migration of a Retained Bullet into the Urinary Bladder Presenting with Acute Urinary Retention

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Gunshot injuries to the urinary tract are uncommon and are usually associated with an injury to adjacent organs. The phenomenon of spontaneous migration of retained bullets in various parts of the body, through different time frames, has been widely described in the medical literature. We report a case of delayed migration of a bullet, which was initially retained in the perivesical fat, into the bladder. The patient presented with acute urinary retention 20 months after the injury.

Patient Description

A 36 year old man with a previous history of multiple gunshot injuries, 20 months earlier, presented to our emergency center with acute urinary retention. During the week before his admission he complained of dysuria, urinary frequency, straining and dribbling, without hematuria, urethral discharge or fever. On the day of admission, urinary retention developed. On physical examination the patient was afebrile, and suprapubic tenderness was noted. Insertion of a Foley catheter failed due to resistance met in the bulbar urethra, and a rigid Tiemann catheter was needed to negotiate the urethral obstruction.

Cystoscopy revealed a normal urethra, and a 9 mm bullet inside the bladder. The urinary bladder mucosa was normal with no obvious portal of entry of the bullet into the bladder. The bullet was removed by a grasper, following urethral dilatation. The catheter was removed 24

hours later and the patient voided normally, and was discharged home.

Twenty months previously the patient sustained multiple gunshot injuries involving the left groin, right thigh and acetabulum and a fracture of the right proximal tibia. At that time there was no hematuria or other urinary symptoms suggesting injury of the urinary tract. A computerized tomography scan revealed no injuries to any abdominal organs. The patient was followed conservatively for 9 days and was discharged home with two retained bullets: one bordering the right acetabulum and another in the right lower pelvis, adjacent to the urinary bladder wall [Figure]. In the interval between the gunshot injuries and his current admission the patient had been asymptomatic.

Comment

Gunshot injuries to the urinary bladder are uncommon, and are clinically evident in acute cases. In most cases, bullets penetrate the bladder at the time of injury as their trajectory involves that organ. In our case, however, the bullet did not penetrate the bladder at the time of the injury. Rather, it came to rest in the perivesical fat and remained



CT scan on the day of the trauma, demonstrating two retained bullets: one bordering the right acetabulum (black arrow) and another in the right lower pelvis, adjacent to the urinary bladder wall (white arrow).

in that location for an extended period, causing no urinary symptoms. We believe that penetration of the bullet into the bladder occurred subsequently through compression of the bladder wall from the outside, creating decubitus and focal ischemia of the bladder wall and gradually eroding its way into the bladder. When the bullet became free within the vesical lumen it passed into the urethra and got stuck when the patient tried to void, causing acute urinary retention.

In previous reports bullets penetrated the bladder wall and were retained in the bladder lumen. Such cases manifested immediately with hematuria and severe voiding symptoms, and the bullets were either passed spontaneously in the urine

or were extracted. In four cases the patients voided the bullets spontaneously soon after the injury. In another report, the bullet was lodged in the urethra and was subsequently pushed back into the bladder and removed by cystoscopy. In two other cases, endoscopic removal failed and the bullet was removed through a small cystotomy or through a suprapubic laparoscopic port.

Another less frequent mechanism of bullet entry into the bladder occurs when bullets that were stopped within the renal parenchyma subsequently gain access into the collecting system and advance along the ureters into the bladder. The reported transit time through the upper urinary tract was 18 days in one case [1] and 2 months in another [2].

A third rare mechanism of bullet entry into the bladder is delayed migration from the outside through the vesical wall. To our knowledge, only two such cases have been described to date. In the first case, the bullet entered in the left supraclavicular area, coursed into the left renal pelvis through the ureteral lumen, and was removed from

the urethra 11 months after the injury [3]. In the second case, acute urinary retention was caused by migration of a retained bullet from the right hemipelvis through the urethral wall 9 years after a gunshot injury [4]. Nevertheless, there are numerous reports on other foreign bodies that eroded their way into the bladder, such as surgical sponges, surgical mesh and even a prosthetic acetabulum [5].

In our patient, the initial CT scan showed the bullet in the perivesical fat with no suggestion of bladder injury. In addition, there were no urinary symptoms. In our opinion this provides enough evidence that the bullet did not penetrate the bladder initially. Rather, it was retained within the perivesical fat and gradually eroded its way into the lumen by decubitus and focal ischemia to the bladder wall. There is ample evidence that chronic focal tissue compression eventually leads to ischemia and focal tissue damage. Decubitus ulcers in immobilized patients evolve by this mechanism. This case demonstrates that delayed complications of gunshot inju-

ries may include subsequent penetration of a retained bullet into a hollow viscus.

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