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A Case Report

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When the Bullet Finds the Only Kidney: A rare happening of a stray bullet embedded in solitary functioning kidney.

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Abstract:

Genitourinary trauma as a result of penetrating injury by gunshot wound occurs in about ten per cent. A bullet left in a solitary functioning kidney is extraordinarily rare. We report the case of a young patient who suffered a gunshot injury with that very rare situation--a bullet remaining in his only operational kidney for years and inflected calculus which had grown over it. After successful endoscopic percutaneous lithotripsy, the bullet was retrieved from the patient's urinary bladder.

Key Words: PCNL, Renal Stone, Fire-arm injury

Introduction:

Genitourinary trauma resulting from gunshot injuries is observed in roughly 10% of incidents (1). Though injuries from firearms affecting organs are quite common, but the issue of foreign bodies remaining in the body after such incidents is not only a challenge in treating war injuries but also a difficult topic in clinical surgery. The most common surgery in these cases involves keeping the bullet inside. When a bullet has been left inside a kidney after a gunshot wound the problem of dealing with such bullets once they have healed presents complex surgical challenges. But this scenario is uncommonly encountered under any other name, which calls for both demanding diagnoses and a challenging operation.(2,3) A stray bullet in the little used single kidney is verly rare.(4) No matter how long it has been retained, any foreign body in the kidney must be removedbecause that is a single functioning kidney's only route to salvation from such calamities as crystallization, infection or blockage.(5) Previous methods for removing foreign bodies from the kidney require great trauma on the body and a long recuperation for the patient, whether it be by open or laparoscopic surgery(with its extensive bleeding).(6) On the other hand, percutaneous nephrolithotomy, a minimally invasive surgical procedure is often used to treat upper urinary tract stones, ureteropelvic junction obstruction and for removing foreign bodies such as displaced ureteral stents or bullets (7). This article presents the first case in which a bullet has been retained in a SFK.

Case Presentation:

A 28-year-old gentleman resident of newly merge district of federally administrated tribal area (FATA) presented to out- patient department with right flank pain for last one year. The pain was dull aching in character, moderate in intensity, not radiating to groin and associated with nausea and vomiting. The patient gave history that he has congenitally absent left kidney. He suffered a fire arm injury in abdomen 10 years back (A stray bullet: Entry wound being shown in figure 1) that resulted in transient hematuria that settled in one week. He was treated conservatively in agency head quarter hospital. On examination A well-built gentleman lying in

Authors Contribution

AH. Concept & Design of Study ,Drafting: **LA.**Data Analysis ,and Revisiting Critically

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bed with a temperature of 98.4 degrees Fahrenheit, a pulse rate of 72 beats per minute, and a blood pressure of 130/70 mmHg. The patient is also well-oriented in time, space, and person. The remainder of the systemic and general physical examinations were uneventful. Numerous RBC, numerous pus cells in the urine without any growth on the pee culture, and sensitivity were all observed in the laboratory. As shown in the table below, all tests (blood complete, renal function test, virology, etc.) were within normal limits. Multiple radiopaque shadows were visible in the right renal area on an X-ray of the kidney, ureter, and bladder (KUB) (figure 2). After a computerized tomography scan, a multiple right renal stones with density of 1310 HFU and a bullet in renal pelvis with a density of 3100 HFU (figure 3). The scan also confirmed an absent left kidney. Since the patient gave history of fire-arm injury and the presence of radiological evidence with high possibility that the multiple radio dense shadows are stone formations over a bullet. Thus, sound wave lithotripsy and ureteroscopic laser lithotripsy using a retrograde technique were considered contraindicated. Following a consultation, the patient was scheduled for an endoscopic bullet removal and a traditional right percutaneous nephrolithotomy to remove the calcified stone formation covering the bullet. The bullet shell's surrounding stone piece was chipped away using the pneumatic probe. Large chunks of stone were removed. The bullet was seized, drawn into the sheath, and extracted because the pneumatic lithoclast was unable to break apart the metal. A double J stent was positioned antegradely. Additionally, a nephrostomy tube was inserted and secured. The photographic representation of the process is shown in Figures 5, 6, and 7. The patient's operation went well, and there was no need for an unforeseen blood transfusion, post-operative fever, or sepsis. The nephrostomy tube and urine catheter were withdrawn on the first post-operative day, and the patient was released to take home medicine on the second post-operative day in a stable condition of health. After a month, we checked up with the patient. Following the removal of the Double J stent, no problems were seen.

Table 1 Laboratory Investigations

S. No	Test	Result	S. No	Test	Result
1	WBC	8000	6	HBs Ag	Negative
2	HB	13.5	7	Anti-HCV	Negative
3	S. Creatinine	0.8	8	Anti-HIV	Negative
4	S. Urea	24	9	RBS	88
5	RBS	110	10	S. Calcium	8

Figure 1 Entry Wound on Abdomen as Pointed by the red arrow



Figure 2: An X-Ray KUB showing multiple radio-opaque shadows

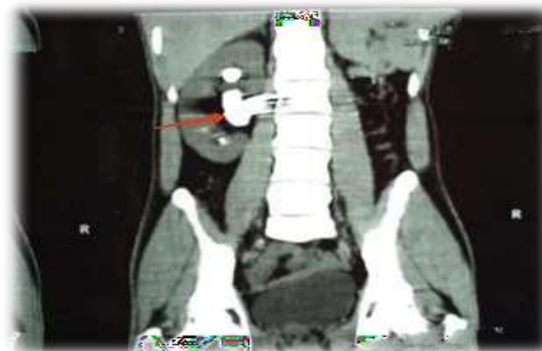


Figure 3: A CT-Scan showed 3 5mm multiple right renal stones and a bullet in renal pelvis.



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Figure 4: Star sign, as pointed by red arrow

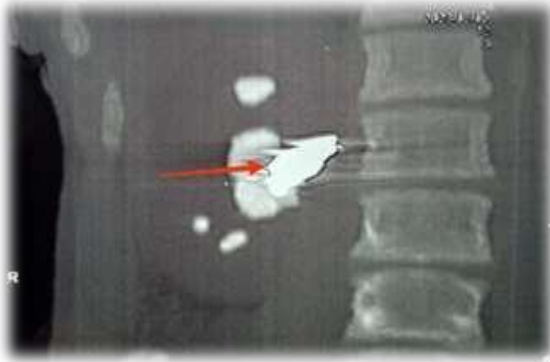


Figure 5: Fluoroscopic guided Puncture and Dilatation



Punct

Tract

Discussion

To find the bullet's exact position, we used a fluoroscopic guidance to choose where to insert the needle accurately. During the surgery, we also used ultrasound to guide the needle directly to the bullet. Using both these modalities together helped us avoid damaging the kidney or its blood vessels, which is crucial for controlling bleeding and having a clear view during surgery. Wang B et al used CT with 3D reconstruction and ultrasound guidance for the same purpose (7). Jhaveri H et al (4) used percutaneous ultrasound lithotripsy to fragment stones over bullet, we used pneumatic modality of lithotripsy for the same purpose. As we had passed a 28Fr am Platz sheet, we could easily retrieve the bullet once it was free from the surrounding tissue and the stones. Dealing such challenging case is associated with inadvertent injury, apart from bleeding or infection (8), we however did not face any such intraoperative or post-operative complications. Although we the surgery was successful and the patient went home in good state of health. There are certain aspects which might have been taken into account. For instance, the patient presented to our us after years so he might have been evaluated for lead poisoning. Another aspect is that these cases rarely occur, so the effectiveness of minimal invasive p

Percutaneous approach has to be established despite the fact that we had a good experience with it. Thus, we believe that reporting this case may be of paramount importance for the purpose being stated above.

Conclusion

This rare case describes a patient who suffered a fire-arm injury from a stray bullet which remained in the solitary kidney for years with superimposed stones formation. He had remained symptomatic. Given that the stone was broken and the bullet was recovered via an endoscopic technique, this particular instance can be effectively treated.

Financial disclosure: No competing financial interests exist.

Conflict of interest: There is no conflict of interest to disclose.

Sources of funding None.

Ethical approval Approval of the Institutional Review Board according to publish this case report was obtained.

Consent Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request. [Abdul Haseeb and Liaqat Ali](#)

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