## **Case Report**

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# Isolated renal pelvis injury in case of penetrating injury

Debanga Sarma, Ashish Ghanghoria\*, Sasanka Kumar Barua, Saumar Jyoti Baruah, Rajeev T. P., P. K. Bagchi, Mandeep Phukan

Department of Urology, Gauhati Medical College and Hospital, Guwahati, Assam, India

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\*Correspondence: Dr. Ashish Ghanghoria,

E-mail: ashishghanghoria0311@gmail.com

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#### **ABSTRACT**

Isolated renal pelvis injuries are uncommon in a case of penetrating injury. These injuries are associated with other solid or hollow viscous injuries or fractures of transverse process of the adjoining vertebrae. We report a case of a 41 year old male involved in a homicidal stab injury. This patient presented with pain abdomen and protrusion of omentum at wound side while CECT whole abdomen revealed extravasation of contrast from left renal pelvis at L3 vertebral level into retroperitoneum with localized collection. He underwent exploratory laparotomy which revealed isolated (Grade III) injury in left renal pelvis with no associated renal parenchymal injury.

Keywords: CECT, Penetration, Renal pelvis, Stab injury

#### INTRODUCTION

Renal pelvis injuries are most commonly iatrogenic in External trauma giving rise to renal pelvis/ureteral injuries account for less than 1% of cases of genitourinary injuries. Amongst this 4%, most of them are penetrating injuries associated with gunshot injuries or stab wounds, while blunt trauma accounts for 1%.<sup>2</sup> Needless to say that blunt trauma causing renal pelvis/upper ureteral injury is extremely rare. 3 Blunt trauma acts through deceleration or acceleration mechanisms where the ureter is stretched over the vertebral column going into hyperextension.4 In these cases renal pelvis/ureteric avulsions, laceration, contusion can occur. This is because of the shearing forces acting between mobile and fixed parts at both ends of the ureter. In cases of external trauma, renal pelvis/ureteric injuries are often missed. Usually the focus lies on other serious more evident problems. Absence of symptoms like hematuria or urinary leak intraoperatively contribute to the missed diagnosis. Complications of ureteral injury are urinoma, abscess, sepsis, fistula (ureterovaginal and/or ureterocutaneous), prolonged ileus, or renal failure secondary to bilateral obstruction (10%),<sup>5</sup> Thus high degree of suspicion is warranted keeping in mind the site, mode and presentation of external trauma.

#### **CASE REPORT**

A 41 year old male presented to emergency services with history of homicidal stab injury of left flank region. Patient was conscious oriented, complained of pain in hematuria. Examination revealed abdomen and tenderness of left lumbar region and distension of abdomen and local examination revealed protrusion of omentum through wound. Per urethral catherization was done and urine was clear. CECT whole abdomen revealed nonvisualisation of left distal ureter in excretory phase and delayed excretory phase revealed extravasation of contrast from left renal pelvis at L3 vertebral level into retroperitoneum with trickling of contrast along left paracolic gutter and extension into the peritoneal cavity with, suggestive of left renal pelvis injury (Figure 1).

Chest X-ray revealed left side pleural effusion. Routine blood investigations were within normal limits. Patient underwent exploration and found to have small tear in peritoneum and left diaphragm which were subsequently repaired. There was no solid organ injury. Urinary leak was noted from a 1 cm long laceration on the anterior aspect of left renal pelvis involving >50% circumference (Grade 3 injury) with no associated hematuria. Attempt at primary repair failed due to fragile margin which necessitating harvest two thompson's renal capsular flap which were transposed anteriorly and posteriorly at renal pelvis injury over a 6 Fr double J stent (Figure 2 and Figure 3). The patient had uneventful recovery.



Figure 1: Axial a coronal CECT finding revealed non visualisation of left distal ureter in excretory phase and on delayed excretory phase, extravasation of contrast from left upper ureter trickling of contrast along left paracolic gutter and extension into the peritoneal cavity with, suggestive of left upper ureteric injury.

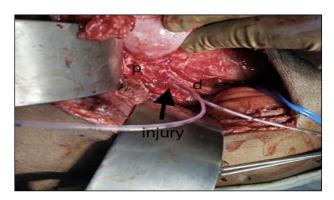


Figure 2: Left upper (arrow) ureteric grade 3 injury with (feeding tube inserted into cut ends, p- ureter proximal to injury, d- ureter distal to injury).

#### **DISCUSSION**

Managing renal pelvis/ureteral injuries is dictated by multiple factors like mode of injury, location, extent, time of presentation, other associated problems and very importantly hemodynamic status of the patient. With patients in shock, staged repair is the best choice. 6 CECT remains the main stay for diagnosis in an acute setting of blunt or penetrating trauma abdomen where other organ systems are to be evaluated simultaneously. 6 Contrast enhanced delayed films at 10-15 mins are highly sensitive. 6 Intravenous pyelography (IVP) and MR urography (MRU) are other options. 7 For our patient with a 1 cm laceration and necrosed margins, thompson's flap repair over DJ stent was sufficient. 8 In cases of more

extensive tissue loss, ureteropyelostomy is a better choice specially when the defect is more than 3 cm. Extravasation of urine in perirenal and periureteral space leads to fibrosis. To avoid this, it is mandatory to achieve watertight closure of renal pelvis and ureter.9 This further reduces chances of fistula formation. Renal pelvis rupture is a known entity in a dilated pelvi-calyceal system.<sup>5</sup> Isolated ureteric laceration in a previously non dilated system is a rare occurrence. 10 The American Association for the Surgery of Trauma (AAST) classification of ureteral injuries helps in planning the repair technique.<sup>9</sup> There are no straight forward directives for isolated renal pelvis or ureteric laceration. 10,11 Although in such cases, simple suturing may appear to be the appropriate management considerations of other injuries, need for diversion or drainage of the affected renal system, hemodynamic status. Wherever possible laparoscopic intervention brings its own set of advantages and should be employed as frequently as possible. 12 Our case is unique as the patient had an isolated left renal pelvic laceration with no other associated visceral injury.

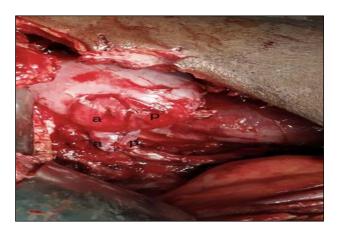


Figure 3: Repaired ureteric injury with transposed two Thompson's renal capsular flap (a- anterior flap, p- posterior flap).

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