



Trauma and Reconstruction

Renal Pelvis Injury in Case of Blunt Trauma Abdomen



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ABSTRACT

Isolated renal pelvis/upper ureteric injuries are uncommon in a case of blunt abdominal trauma. These injuries are associated with fractures of transverse process of the adjoining vertebrae. We report a case of such a case in a 35 year old male involved in road traffic accident. He underwent exploration and repair of the right UPJ/Upper ureteric injury. This case presented with injury to the transverse processes on the left side, which is unusual.

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Introduction

UPJ/upper ureteric injuries are most commonly iatrogenic in origin.¹ External trauma giving rise to ureteral injuries account for less than 1% of cases of genitourinary injuries. Amongst this 1%, most of them are penetrating injuries associated with gunshot injuries or stab wounds, while blunt trauma accounts for 4%.² Needless to say blunt trauma causing UPJ/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. In these cases ureteropelvic junction 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, 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 sepsis, fistula (ureterovaginal and/or uretero-cutaneous), urinoma, prolonged ileus, or renal failure secondary to bilateral obstruction (10%),⁴ Thus high degree of suspicion is warranted keeping in mind the site, mode and presentation of external trauma.

Case report

A 35 year old male presented to emergency services with history of being run over by a vehicle. Patient was conscious oriented,

complained of pain in abdomen, not passed urine, there was no blood at meatus. Examination revealed tenderness and distension of lower abdomen. Per urethral catheterization was tried unsuccessfully. Hence supra pubic catheterization was done. He was adequately resuscitated shifted for CT scan.

CT revealed extravasation of contrast from the right renal pelvis trickling along right psoas (Fig.1). hemoperitoneum, fracture right iliac blades, diastasis of right sacroiliac joint, diastasis pubic symphysis with rami fractures, fracture of transverse processes of L1 to L5 on the left side. Fig. 2 Routine blood work came within normal limits. On exploration patient was found to have multiple left colonic serosal tears with mesenteric tear. These tears were



Figure 1. Contrast enhanced CT with delayed films showing extravasation from the right renal pelvis.

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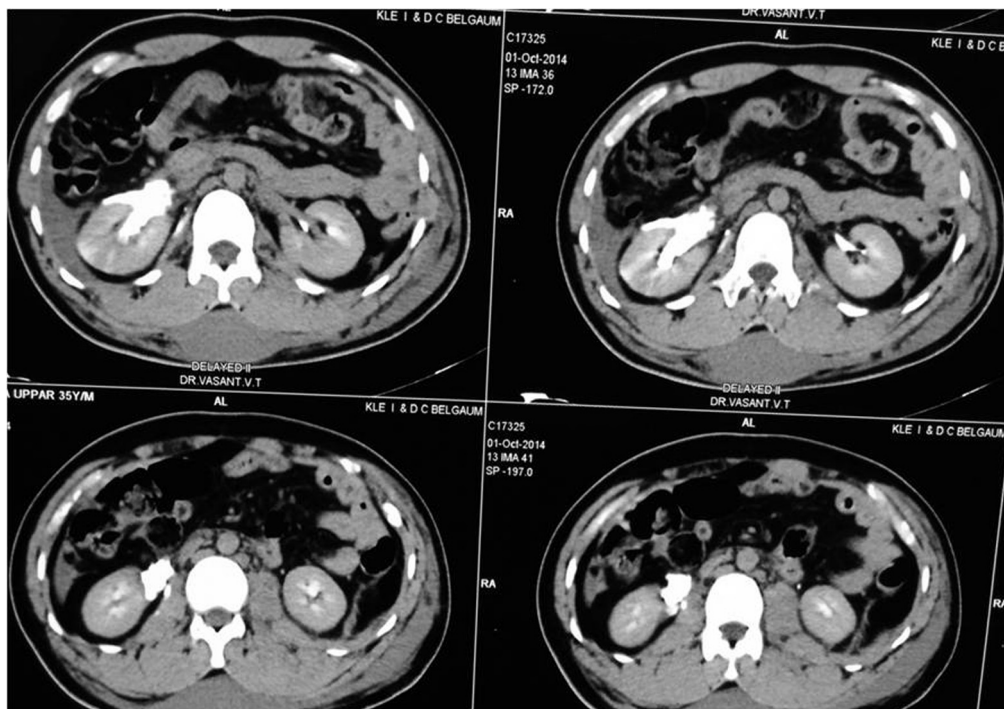


Figure 2. Contrast enhanced CT with delayed films showing the contrast tracking along the right ilio-psoas muscle and upper ureter.

repaired. There was no solid organ injury. Ureter was normal. In right hilum renal vessels were retracted caudally to expose the pelvis. Urine leak was noted from a 1 cm long laceration on the anterior aspect of pelvis extending in to the kidney. The leak was not blood stained. The laceration was sutured in an interrupted water tight fashion using 4/0 polygalactin suture over a stent. Rest of genito-urinary system was essentially normal. Orthopedic intervention was deterred till patient stabilized further. The patient had uneventful recovery.

Discussion

Managing 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. Urine can be drained percutaneously in the mean time. For our patient with 1 cm laceration simple suturing with DJ stenting was sufficient. In cases of more extensive tissue loss, uretero-oureterostomy is a better choice specially when the defect is more than 3 cm is required. CT Scan remains the main stay for diagnosis in an acute setting of blunt trauma abdomen where other organ systems are to be evaluated simultaneously. Contrast enhanced delayed films at 10–15 mins are highly sensitive.⁵ Intravenous pyelography (IVP) and MR urography (MRU) are other options with time taken and costs being prohibitive respectively.⁶ Intra-operative diagnosis of ureteral injuries is as high as 89.3%.⁷

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.⁸ This further reduces chances of fistula formation. Renal pelvis rupture is a known and studied entity in a dilated pelvi-calyceal system.⁹ Isolated pelvis laceration in a previously non-dilated system is a rare occurrence.¹⁰ The American Association for the Surgery of Trauma (AAST) classifies ureteral injuries. This grading helps in planning the repair technique. There are no straight forward directives for isolated renal pelvis laceration. 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 and presence of septicemia will compel the surgeon to think out of the box. Wherever possible laparoscopic intervention brings its own set of advantages and should be employed as frequently as possible.¹¹

Our case is unique as the patient had an isolated right renal pelvis laceration with no other renal-pelvis-bladder injury. To best of our knowledge this is a very rare case. Suturing with absorbable 4/0 material over a DJ stent gave excellent recovery.

Conflicts of interest

The authors declare they have no conflicts of interest.

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