ORIGINAL RESEARCH PAPER

Urology

KEY WORDS: Renal trauma, Hematuria, AAST renal injury scale grade V, Renal avulsion

GRADE 5 RENAL TRAUMA IN A 21-YEAR OLD MALE, MANAGED CONSERVATIVELY

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ABSTRACT

Kidney is the organ most commonly associated with urological trauma, resulting in significant morbidity and mortality particularly in Grade V injuries. Renal trauma may present with a spectrum of severity, from Grade I to Grade V, and thus management options may vary. Patients may present with pain in flanks, hematuria, and hemodynamic instability, based on the severity of their injury. High index of clinical suspicion can aid in early diagnosis and prompt treatment. This is a case report 21 year old male patient presented with complain of abdominal pain after road traffic accident. He was diagnosed as grade V injury on computed tomography scan, but decided to managed conservatively.

INTRODUCTION

The kidney is the organ most commonly associated with urological trauma and is involved in 1–20% of trauma cases [1–3]. Renal trauma is a significant health issue, and can result from both blunt and penetrating mechanisms. The severity of renal injury is graded using the American Association for the Surgery of Trauma (AAST) renal injury scale, which ranges from Grade I to Grade V. Grade V injuries are the most severe, involving total avulsion of the renal pedicle, and are associated with a high risk of morbidity and mortality [4]. The choice of management strategy based on their renal injury scale and hemodynamic stability.

Conservative approach is favoured now, even in high grade injuries due to improvements in imaging and advancement in interventional radiology. This is a case report of a 21 -year old male, with AAST renal injury scale grade V, managed conservatively.

Case Report:

A 21-year old male was brought to the Emergency department, following a fall from a motor cycle. On evaluation, the patient complained of left flank pain, and two episodes of vomiting. There was no history of loss of consciousness, or seizures. No significant past medical or surgical history. Patient was not on any medication, and had no history of known drug allergies.

On physical examination: The patient was conscious, oriented to time, place, and person. GCS: 15/15, pulse rate: 100/min, BP: 110/70 mm hg, SP02: 100%. Respiratory sounds were clear, with bilaterally equal air entry. Per abdomen: mild tenderness in left lumbar region, with guarding, but no rigidity, bowel sounds were present. On local examination: A lacerated wound over the left eyebrow, and a superficial abrasion over the left flank.

Foley's catheterisation revealed gross hematuria. Blood investigations on admission are as follows :

PARAMETER	VALUE
Hemoglobin	10.6 gm/dl
Total counts	7460/cumm
Sodium	136 meq/l
Potassium	4.0 meq/l
Creatinine	0.8 mg/dl
Random blood sugar	207 mg/dl

Ultrasonography of abdomen and pelvis showed perinephric fluid around the left kidney. Contrast enhanced Computed tomography (CECT) scan of the abdomen and pelvis showed a through and through fracture of the left kidney, traversing just inferior to the equator, and a large perinephric hematoma (376cc), with good contrast excretion by the two fragments of left kidney, the collecting system of left kidney was well preserved with no extravasation of contrast into the perirenal space, and no active bleeding (AAST renal injury scale grade V). No other injuries were identified. (figure 1-3)

Figure 1: 3D reconstruction image of CT scan of kidney showing through and through fracture of left kidney

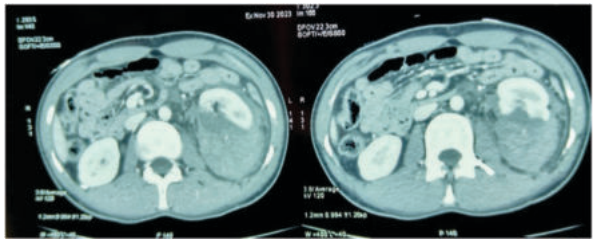

Figure 2: CECT scan of abdomen showing Grade V left renal injury

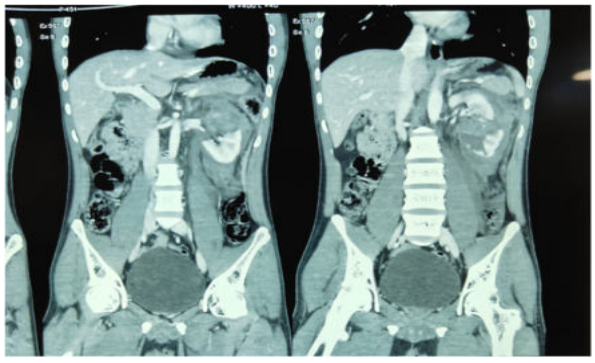

Figure 3: Coronal view of CECT showing Grade V left renal injury

As the CECT scan suggested no active bleeding, and the

patient was hemodynamically stable, it was decided to follow a conservative approach. The patient was closely monitored in the ICU. Daily CBC and Creatinine readings showed no significant drop in hemoglobin, or rise in serum creatinine levels. Urine output was adequately maintained. As the patient remained vitally stable, and showed no clinical signs of deterioration, he was shifted to the ward after 4 days. Hematuria improved. A repeat CECT scan of the abdomen and pelvis after 12 days, showed complete transverse transection of the left renal parenchyma, dividing the kidney into a larger upper fragment, and a smaller lower fragment, with a separation of approximately 20mm, a large perinephric organised hematoma, with focal extravasation of urine extending into the perinephric hematoma, and excreted contrast extravasation seen. (AAST renal injury scale grade V). A Cystoscopy with left RGP done the next day, revealed urine extravasation, and a DJ stent was placed in the upper calyx. The patient was discharged in stable condition, after 20 days of hospitalisation, with a Foley's catheter and DJ stent in situ. On OPD follow up, patient had no hematuria, Hb level was 10.6. A CECT scan repeated 2 months after discharge, showed complete resolution of the hematoma, with no extravasation of urine(figure 4). The Foley's catheter and DJ stent were subsequently removed(figure 5).

Figure 4 : Coronal view of CECT 2 months after discharge showing resolution of hematoma

Figure 5: Cystoscopy with RGP with stent removal of patient 4 months after injury

DISCUSSION:

Renal avulsion is a serious form of renal trauma that can result in complete disruption of the renal artery and vein, leading to significant bleeding and potentially life-threatening hemorrhagic shock. In this case, the patient suffered AAST renal injury grade V, resulting in complete transection of the left kidney, with a perinephric hematoma. The formation of a perinephric hematoma may provide a tamponade effect, compressing the bleeding vessels, thus reducing the blood flow, and helping to control bleeding [5]. Grade V renal injury usually necessitates surgical intervention, but in this case, a trial of conservative management was successful in salvaging the kidney. This approach aims to avoid the potential morbidity and mortality associated with surgical intervention, while allowing for natural healing of the renal parenchyma. Close monitoring, and prompt intervention in case of deterioration, are essential components of conservative management. This case underscores the successful outcome achievable with conservative management, in appropriately selected cases of renal trauma.

CONCLUSION:

In selected cases of renal trauma, conservative management can be a safe and effective approach, especially in hemodynamically stable patients. Severe renal injuries, particularly Grade V, require prompt intervention and a multidisciplinary approach, involving general surgeons, urologists and vascular surgeons. Advances in critical care management improved outcomes. These injuries carry high morbidity and mortality rates, so close monitoring is crucial to ensure timely surgical intervention, if needed.

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