

CASE REPORT

Successful conservative management of isolated high-grade blunt renal trauma: case report and follow up

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ABSTRACT

The management of high-grade renal trauma remains debatable in various education centers, especially the cases of patients with stable hemodynamics. This paper reports the case of a 24-year-old man with grade IV renal trauma due to blunt injury in the left waist. The patient had stable hemodynamics, and was given a conservative management followed by 3 months of post-trauma treatment. In this case, the conservative management has resulted in a satisfactory outcome, confirming that conservative management is an appropriate alternative treatment for patients with similar cases. This paper also shows the radiology test and the implementation of the conservative approach in the treatment of life-threatening renal trauma.

Key words: high-grade renal trauma, conservative management, isolated renal trauma

INTRODUCTION

Renal trauma dominates 8–10% of abdominal trauma, which 80–90% of the cause is triggered by blunt injury.^{1,2} The common mechanism of blunt trauma in renal is caused by traffic accident, falling from heights, violent crime and sport injury.² Basically, there are five grades of renal trauma, which grade is determined based on the level of damages in the cortex, medulla, blood vessels inside the renal and in the presence of any disruption in tubulus collectivus system.³ High-grade renal trauma (grade IV and V) very rarely occur with rate of incidence ranges between 1%–2% out of the total renal trauma incidence.⁴ A debate occurs in determining whether it is appropriate to run conservative management or explorative surgery management for patients with high-grade renal trauma.⁵ There are some considerations in selecting the best management, including the status of the hemodynamic and any damages in other intra-abdomen organs.^{2,6} This paper reports the evaluation of conservative management conducted to a patient with high-grade renal trauma and stable hemodynamics and was given a follow-up treatment after 3 months of post-trauma.

CASE REPORT

A 24-year-old male patient was rushed to a hospital as he experienced severe pain in the left flank. The left flank of the patient was unintentionally kicked by his friend while playing football, approximately 4 hours before the arrival time. The patient also had reddish urine 15 minutes after the incident. Patient denied the consumption of any drugs, loss of consciousness, nor the occurrences of shortness of breath, nausea and vomiting.

The early assessment in the emergency department showed that patient had stable hemodynamic. It was found in primary survey that patent airway, spontaneous breath and patients was still able talking in full sentences. Patient was completely conscious and able to follow the instructions given and showed spontaneous motion in all extremities. Ecchymoses was clearly identified in the left flank right where the patient felt the pain. The result of the head to toe examination, muscular defects were not found in the abdominal regions. In the genitourinary area, neither of blood was found in the meatus urethra externus, nor hematoma in the scrotal. Patient's urine was contaminated with bright red blood when Foley catheter sized 16 fr was applied and the reddish urine was confirmed by the urinalysis (UA) test which indicated the occurrence of hematuria. The patient had blood pressure of 110/70 mmHg, heart rate 82 beats per minute, respiratory rate 24 beats per minute, temperature of 37.5 °C, and SpO₂ 99% at room air pressure. The result of preliminary laboratory tests obtained hemo-

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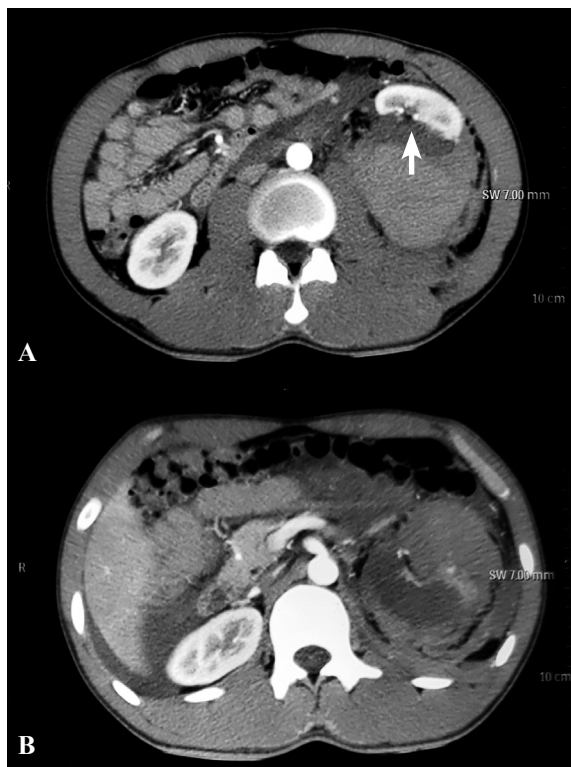


Figure 1, CT scan abdomen with contrast was immediately conducted after trauma occurred. A, The figure shows grade IV renal traumatic injury (arrow). B, The contrast enhanced in nephrographic phase, showing laceration in the lower extremity of the left renal. Meanwhile, wide perirenal hematoma is still stuck by renal capsule.

globin (Hb) 13.5 gr/dL, hematocrite 42%, leukocytes 23400 mm³, platelets 264000 cells/ mm³, urea (Ur) 53 mg/dL, and creatinine (Cr) 1.3 mg/dL. After that, the patient was examined using Computed Tomography (CT) scan abdominal with contrast. It showed the irregular-shaped enlarged left renal and nonhomogeneous parenchyma structure. A nonhomogeneous lesion with an irregular edge in the left renal left ventricle was also found. The contrast went inside the lesion up to the subcapsule part in the upper pole to the left middle renal pole. Therefore, regarding to the clinical examination and CT scan, the patient was diagnosed with grade IV renal trauma according to American Association for the Surgery Trauma (AAST) (Fig. 1).

DISCUSSION

High-grade renal trauma is such a rare case. The procedures of high-grade renal trauma management still remains a controversy among institutions. The main distinction of high-grade renal trauma therapy is that the patient is under a stable hemodynamic condition. Société Internationale d'Urologie (SIU) guidelines recommend a laparotomy exploration, while EAU guidelines suggest performing renal exploration operation if the vascular is affected. Whereas, AUA proposes conservative management in any condition.⁷⁻⁹ The management of high-grade renal trauma with stable hemodynamic is very fluctuate, as few cases need aggressive procedures due to worsening hemo-

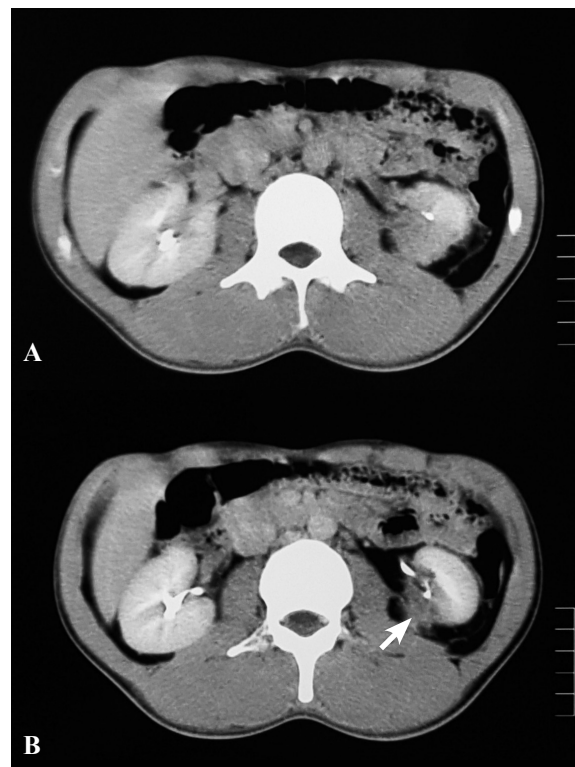


Figure 2, CT scan abdomen with contrast in three months after the trauma. A, the size of the left renal is still in good condition with regular surface. B, Hypodense is identified in the lower renal extremity which typical of parenchymal scar (arrow), while perirenal hematoma is no longer found.

dynamic condition.¹⁰ Following AUA guideline, the patient's condition in this case was considered stable (systolic BP > 90 mmHg). Hence, conservative management could be conducted under strict observation including observations of Hb level and blood pressure.

Three months after the accident CT scan abdomen with contrast was showing development of fibrous tissue. Renal anatomy formation which has end-artery blood supply with the segmental pattern has two different sides, especially in renal trauma cases. On the one hand, when trauma occurs, renal will have a laceration on its parenchymal. Hematoma that is formed due to bleeding and closed anatomic structure of retroperitoneal space will become natural pressure for leaked renal segmental artery. Whereas, as renal is an end-artery organ, oxygen supply will be obstructed when if laceration occurs, forming scars in tissues in the end of recovery process. Based on theory, the figure shows that the left renal is shrinking, while the enhancement in the lower renal pole is disappearing (Fig. 2). The development of fibrous tissue in renal trauma takes around 2-8 months, resulting in renal atrophy.¹¹ Similarly, a retrospective study was conducted by Dunfee *et al.*, which result shows medical data of six patients suffering from high-grade blunt renal trauma. The data shows that development of scar and renal atrophy occurred in all of the patients.¹² The long-term effect of this occurrence might appear

in the form of higher blood pressure and weakening renal function. To date, there has not been any research showing the decline of renal function for the same case. Meanwhile, hypertension effect as result of scar formation in patients with blunt renal trauma, specifically in middle-aged men, has been once reported in a study done by Chedid *et al.* Therefore, it is considered necessary to conduct regular follow-up treatment for this patient.¹³

CONCLUSION

Either conservative or operative procedures have each own supporters, but conservative management remains preferred. The success of conservative management in similar cases has been reported by a number of case studies and meta-analysis research.^{1,2,6} This case shows that conservative management can be an alternative procedure in handling patient with isolated high-grade blunt renal trauma with stable hemodynamics.

CONFLICT OF INTEREST

None.

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