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Urology

CONSERVATIVE MANAGEMENT OF GRADE 4 RENAL INJURIES - SINGLE CENTRE EXPERIENCE

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ABSTRACT

Introduction: Grade 4 renal injuries are difficult to manage conservatively. Here we present our institutional experience in managing grade 4 renal injuries conservatively.

Aim: As per review and literature, only 25% grade 4 renal injuries are manged conservatively. This case series highlights the outcome of grade 4 renal injuries being managed conservatively in our institution.

Materials and Methods: This is prospective study of trauma cases categorized as grade4 renal injuries, which had been managed conservatively in our trauma department. This case series includes 15 cases of grade 4 renal injuries admitted in our trauma department. All these cases were due to blunt trauma and presented with hematuria initial resuscitation with iv fluids ,nasal o2, blood transfusion and higher antibiotics done and strict bed rest advised. CECT is the primary modality of investigation. 2 of the cases subjected to CT angiography too. Out 15 cases 8 cases were managed efficiently with above said conservative approach. 4 cases underwent nephrectomy. 2 cases expired due to associated poly trauma. 1 case renorraphy was done. All these 8 cases were followed up with serial CT scan and discharged in stable condition.

Conclusion: Though it is very difficult to manage grade 4 renal injuries conservatively, proper resuscitation and strict bed rest yields better results with more conservative approach.

Results: More than 50% of the grade 4 renal injuries could be managed conservatively if proper initial resuscitation and monitoring are done.

KEYWORDS : Blunt trauma, grade 4 renal injury,non-operative management.

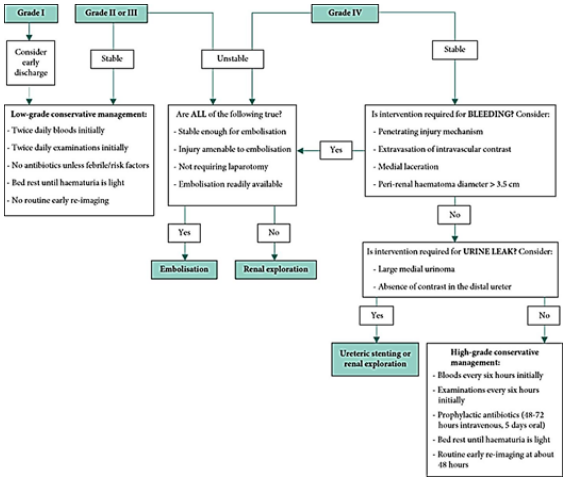
Introduction:

The conservative management of blunt renal trauma was first proposed in the 1940s . Since then the benefits of this approach have become increasingly apparent with reductions in nephrectomy rate, complications, and hospital stay all being reported . This has resulted in a paradigm shift towards managing increasingly severe blunt renal trauma with a conservative approach . This evolution in the management of renal trauma has been made possible by advances in both imaging and minimally invasive techniques . The widespread availability of CT allows clinicians to be much more informed about the injuries they are treating However, while several studies have shown a conservativeapproach to be successful, very few have addressed what specifically this conservative approach should entail. Here we present our institutional experience in managing grade 4 renal injuries conservatively.

The American Association for the Surgery of Trauma (AAST) kidney injury severity scale

GRADE	LOCATION	INJURY DEFINITION
I	Parenchyma Collecting system	Subcapsular hematoma and / or contusion No injury
II	Parenchyma Collecting system	Laceration <1cm in depth and into cortex, small hematoma contained within Gerota's fascia No injury
III	Parenchyma Collecting system	Lacteration >1cm in depth and into medulla, hematoma contained within Gerota's fascia No injury
IV	Parenchyma Collecting system	Laceration through the parenchyma into the urinary collection system Vascular segmental vein or artery injury Laceration, one or more into the collecting system with urinary extravasation Renal pelvis laceration and/or complete ureteral pelvic disruption
V	Vascular	Main renal artery or vein laceration or avulsion main renal artery or vein thrombosis

ALGORITHM OF MANAGEMANT BLUNT RENAL TRAUMA



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Materials and Methods:

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Results:
More than 50% of the grade 4 renal injuries could be managed conservatively if proper initial resuscitation and monitoring are done.

Conclusion:
Though it is very difficult to manage grade 4 renal injuries conservatively, proper resuscitation and strict bed rest yields better results with more conservative approach.

Discussion:
While increasing numbers of patients are being managed conservatively for renal trauma, criteria for identifying patients who are suitable for this approach remains controversial . Some appear to base treatment decisions largely on injury grade or radiological findings , whereas others appear to rely more heavily on assessment of the patients clinical status. Nonetheless, absolute contraindications for initiation of conservative management include life-threatening bleeding, renal pedicle avulsion, and the presence of a large, expanding, pulsatile haematoma . Additionally, the threshold for intervention may be lower in cases of a solitary functioning kidney or bilateral injuries.

The recently released AUA guideline recommends initiation of conservative management in all patients as long as they are haemodynamically stable . Whereas low-grade injuries rarely require intervention and grade V injuries usually require exploration, the management of patients with grade IV injuries can be particularly challenging . Not only does a difficult decision need to be made between renal exploration and conservative management, but the use and timing of other interventions, e.g. ureteric stenting, percutaneous drainage, and embolisation, must also be considered. In one study, even when grade IV injuries were initially managed non-operatively 11% of patients ultimately required renal exploration, 27% required ureteric stenting, and 25% required embolisation.

Decision-making for these injuries can be approached in a sequential manner. While it is common practice to admit all patients sustaining renal trauma for a period of observation, discharge from the emergency department may be considered for patients with grade I injuries without visible haematuria . Routine admission of patients with high-grade injuries to the intensive care unit (ICU) is rarely described for adults; however, appears more common for children . This practice has been questioned in view of the reductions in ICU admissions that have been safely achieved in paediatric hepatosplenic trauma , when these patients are considered to have a higher risk of uncontrollable haemorrhage than those with renal trauma .Monitoring of paediatric patients sustaining renal trauma on surgical wards is thought to be an under-reported phenomenon .Monitoring should include regular observations, blood tests and clinical examinations.

Prescribing bed rest after renal trauma dates back to an era before CT; the original paper advocating it is from 1968 and recommends 3 weeks of bed rest, with the first of these occurring in hospita]. Yet despite the advent of CT, meaning that we now know much more about the injuries we manage, assigning bed rest is still very common practice . Most of those who advocate bed rest recommend continuing it until the resolution of visible haematuria ; however, this policy has been challenged for two reasons .

Firstly, the degree of haematuria does not appear to correlate with either symptom improvement or mobility . Secondly, it leads to prolonged admissions with the associated risks of VTE and hospital-acquired infections of this. Reports of average lengths of stay of >1 week in low-grade trauma are probably a consequence of this policy, and do seem excessive. This is particularly so when other studies report safely achieving an average length of stay of <4 days in isolated renal injuries across all trauma grades, using a more
liberal policy on mobilisation.

Prophylactic antibiotics are often advocated after renal trauma ; however, it is agreed that there is minimal evidence to support this practice . The most suitable agents and duration of treatment have yet to be defined, and few specific recommendations exist. Equally, it is not clear whether all patients require antibiotics; some have suggested limiting their use to injuries involving the collecting system , or those with an associated large haematoma .

Recommendations on return to activity.
1. Long-haul travel and return to remote areas is not recommended for 2 weeks after renal trauma.
2. Patients should be allowed to return to normal everyday activities, such as school and work, as tolerated after discharge.
3. Patients should be advised against sports for at least 6 weeks after grade I injuries, and at least 3 months after injuries of grade ≥II. Radiological resolution should also be confirmed before permitting return to sports, in all but grade I injuries.
4. Patients should be counselled about the risks of different sporting activities after renal trauma, particularly if they have a residual poorly- or non-functioning kidney. However, advising against ongoing participation in sports for patients with residual poorly- or non-functioning kidneys does not appear warranted

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