

RETROSPECTIVE ANALYSIS OF RENAL INJURIES – INSTITUTIONAL EXPERIENCE

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ABSTRACT

Introduction: Trauma is a major cause of morbidity and mortality. Decision making on management of renal injuries due to blunt abdominal trauma has changed over time. Conservative management of blunt renal trauma was first proposed and the resultant benefits shifted managing increasingly severe blunt renal trauma with a conservative approach. This has replaced the past tendency toward aggressive renorrhaphy and an absolute indication for surgical exploration is life threatening haemodynamic instability due to renal haemorrhage. **Materials and methods:** This study is a retrospective analysis of records of patients admitted over a period of 24 months. Computed tomography pictures were reviewed and the severity of renal injury was graded according to the American Association for the Surgery of Trauma (AAST) classification. Demographic data, mechanism and grade of renal trauma, management and outcome were analysed. **Results:** Present study includes 30 patients 15 of which had grade I and 6 had grade II injuries which were managed conservatively. 6 cases with grade III renal injuries underwent minimally invasive procedures with DJ stenting in three cases and DJ stenting with PCD in another three cases. 3 cases with grade IV and grade V renal injuries needed operative management, partial nephrectomy in two cases and nephrectomy in one case. Discussion: Decision making on management of blunt renal injuries has changed over time. More number of patients are managed conservatively but criteria for identifying who will be suitable for this approach remains controversial. Present study formed a basis for managing more cases conservatively. **Conclusion:** The support for conservative or expectant management has increased, even in the most seriously injured kidneys, replacing the past tendency toward aggressive renorrhaphy. Minimally invasive procedures like DJ stenting and percutaneous drainage play a major role in downgrading morbidity and mortality. More renal units can be saved by conservative management

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INTRODUCTION

Trauma is a major cause of morbidity and mortality. Decision making on management of renal injuries has changed over time. 1940 is the year when conservative management of blunt renal trauma was first proposed and its benefits are reduction in nephrectomy rate, complications, and hospital stay. The result is a paradigm shift towards managing increasingly severe blunt renal trauma with a conservative approach. This has replaced the past tendency toward aggressive renorrhaphy and an absolute indication for surgical exploration is life threatening haemodynamic instability due to renal haemorrhage.

MATERIALS AND METHODS

The study is a retrospective analysis of records of patients admitted to our institution as renal trauma over a period of 24 months from Jan 2015 to Dec 2016.

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Majority of them were road traffic accident with blunt abdominal trauma. After initial supportive measures, patients were evaluated with CBC, abdominal USG and CECT abdomen. For all cases with renal trauma patient record and imaging studies were reviewed. Computed tomography pictures were reviewed and the severity of renal injury was graded according to the American Association for the Surgery of Trauma (AAST) classification. Demographic data, mechanism and grade of renal trauma, management and outcome were analysed.

RESULTS

Present study included 30 cases with 28 cases (93.3%) due to motor vehicle accident and 2 cases (6.6%) due to fall from a height. Among these 26 (86.6%) were male and 4 (13.3%) were female with male : female ratio of 6.5:1. 12 cases (40%) were less than 30 years, 8 cases (26.6%) were between 31 to 40 years, 6 cases (20%) were in the group 41 to 50 years and 4 cases (13.3%) were in the age group above 50 years.



Fig. 1 Grade III

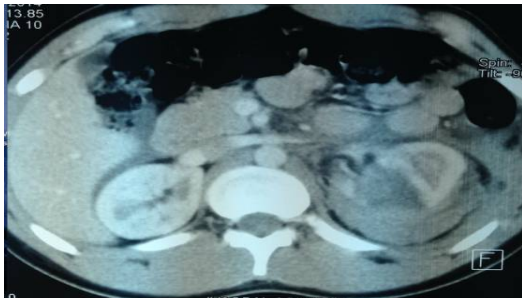


Fig 2 Grade IV

Out of 30 cases 15 (50%) had grade I injury and 6 (20%) had grade II injury, which were managed conservatively. 6 cases (20%) with grade III renal injuries underwent minimally invasive procedures with DJ stenting in three cases and DJ stenting with PCD in three cases. 3 cases (10%) with grade IV and grade V renal injuries needed open surgical management – partial nephrectomy in two cases (6.6%) and nephrectomy in one case (3.3%).

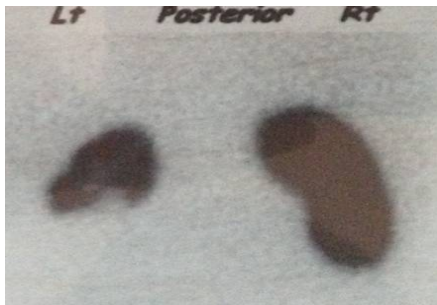


Fig 3 Post op isotope scan Mnagemant



Fig 4: Partial nephrectomy specimen



Fig 5 Nephrectomy specimen

Table 1 Clinical presentation

Hemodynamically unstable	3 cases	10.0%
Anemia Hb% < 10 gm	5 cases	16.66%
Hematuria	5 cases	16.66%
Guarding	30 cases	100%
Loin tenderness	30 cases	100%

Table 2 Management

Conservative management	Grade I and II	15 cases	50%
DJ stenting	Grade III	3 case	10%
DJ stenting + PCD	Grade III	3 case	10%
Partial nephrectomy	Grade IV	2 case	6.66%
Nephrectomy	Grade V	1 case	3.33%

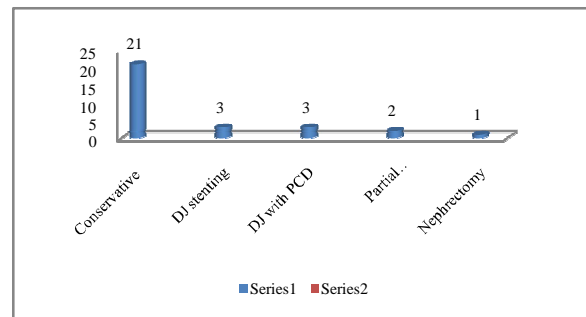


Chart 1 Management

DISCUSSION

Trauma is a major cause of morbidity and mortality. Renal trauma occurs in 1%-5% of any trauma and contributes to 8%-10% of blunt or penetrating abdominal trauma. Blunt renal trauma is more common and 80% to 95% of blunt renal trauma are due to motor vehicle collisions and fall from heights. 25 to 35 years young male contribute to the maximum incidence. Decision making on management of renal injuries has changed over time from aggressive exploration and renorrhaphy to conservative management. Conservative management for blunt renal trauma was first proposed in the year 1940. The benefits were reduction in nephrectomy rate, complications, and hospital stay. The result is shift towards management of increasing number of blunt renal trauma cases by conservative management with extension into managing more severe blunt renal trauma cases conservatively. This has replaced the past tendency toward aggressive renorrhaphy and an absolute indication for surgical

exploration is life threatening haemodynamic instability due to renal haemorrhage. More number of patients are managed conservatively but criteria for identifying patients who are suitable for this approach remains controversial. Two groups are there, first group taking decision based on injury grade or radiological findings and the second group rely more on assessment of the patients clinical status Life threatening hemorrhage, renal pedicle avulsion and presence of large pulsatile expanding hematoma are absolute contra indication for conservative management. Low grade injuries can be managed conservatively, while decision making in grade IV injury is difficult. Minimally invasive techniques such as stenting, PCD, embolisation can be considered. Present study of 30 cases had majority of the injuries sustained due to road traffic accident 28 cases (93.3%) and only 2 cases (6.6%) were due to fall from height. This goes well with other studies which also had road traffic accidents as the major cause of blunt renal trauma. Out of 30 cases in this series 27 cases (90%) were managed conservatively without surgical intervention and minimally invasive techniques - DJ stenting in 3 cases (10%) and DJ stenting with percutaneous drainage in 3 cases (10%). 3 cases (10%) in group IV and V needed surgical intervention – partial nephrectomy in 2 cases (6.66%) and nephrectomy in 1 case (3.33%). This result very well shows the role of minimally invasive surgery in preserving renal units which otherwise resulted in open surgical management and loss of functioning renal units.

CONCLUSION

Approach to management of renal injuries has changed over time the support for conservative or expectant management has increased, even in the most seriously injured kidneys, replacing the past tendency toward aggressive renorrhaphy. Advances in imaging technologies and minimally invasive techniques have been the basic reason for such gross changes in the treatment modality for blunt renal trauma. Goals of conservative management of blunt renal injury are to identify, manage, and limit associated complications - including urinary extravasation, urinoma, infection, bleeding, and, most importantly, loss of renal function and renal salvage as the main aim.

Take home message: Blunt renal trauma management has changed from radical to more conservative management even in severely damaged kidneys. Minimally invasive procedures, DJ stenting and PCD play a major role in downgrading morbidity and mortality. More renal units can be saved by conservative management

Reference

1. Miller KS, McAninch JW. Radiographic assessment of renal trauma: our 15-year experience. *J Urol.* 1995 Aug. 154(2 Pt 1):352-5
2. Gill B, Palmer LS, Reda E, et al. Optimal renal preservation with timely percutaneous intervention: a changing concept in the management of blunt renal trauma in children in the 1990s. *Br J Urol.* 1994 Sep. 74(3):370-4.
3. Broghammer JA, Fisher MB, Santucci RA. Conservative management of renal trauma: a review. *Urology.* 2007 Oct. 70(4):623-9.
4. Santucci RA. 2015 William Hunter Harridge lecture: how did we go from operating on nearly all injured kidneys to operating on almost none of them?. *Am J Surg.* 2016 Mar. 211 (3):501-5.
5. Wang HL, Xu CY, Wang HH, Xu W. Emergency Transcatheter Arterial Embolization for Acute Renal Hemorrhage. *Medicine(Baltimore).* 2015 Oct. 94 (42):e1667.
6. Chiron P, Hornez E, Boddaert G, Dusaud M, Bayoud Y, Molimard B, et al. Grade IV renal trauma management. A revision of the AAST renal injury grading scale is mandatory. *Eur J Trauma Emerg Surg.* 2015 May 19.

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