

Conservative treatment of blunt renal trauma: patient & family concerns

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Abstract— Background: The most common mechanism of renal injury is blunt trauma. Conservative management of such trauma is widely practiced all over the world. However, in our social-cultural environment, this approach leads sometimes to discussions with patients and families as it often is perceived as inactivity on the side of the surgeons. Therefore, we attempted to assess patients and patients families concerns and the acceptance of a conservative treatment approach in a group of patients with severe blunt renal trauma. Patients & method: From February 2000 to December 2018, 72 patients presented with blunt renal trauma. Mean age was 30 (range 10- 55) years. Sixty three (87.5%) were male. The study was approved by the ethical committee of Basrah College of Medicine under the approval number 0304092-2020. The initial management of all patients was adequate resuscitation in the emergency room. The patients and their families were given questionnaires at their discharge to assess their satisfaction and/ or worries about the conservative approach in managing renal trauma, and subsequently they were categorized into 3 groups according to their satisfaction: totally satisfied, partially satisfied, and not accepting the conservative approach of management. Results: Fifty five patients (76%) had blunt renal trauma following a road traffic accident, 17 (24%) had a fall from height. Sixty-six patients (92%) were hemodynamically stable while 6 patients (8%) were unstable and needed immediate surgical intervention. According to AAST grading (table 1), of those 22 had grade I injuries, 19 grades II, 15 grades III, and 10 IV, respectively. The stable patients were initially monitored with a conservative treatment approach by nil by mouth, administration of IV-fluids, broad- spectrum antibiotics (ceftriaxone), absolute bed rest, use of painkillers as paracetamol vials, and blood transfusions if required. Close observation of all patients was carried out by monitoring of vital signs and abdominal examination with two hourly chart for first 24 hour then 4 hourly chart thereafter, and daily measurement of hematocrit. However, 5 patients (8%) and their family members were so much worried about this approach that they insisted on surgical exploration despite having been made aware of the risk of nephrectomy but none of them ended with nephrectomy, 12 (18%) further patients and their family members underwent the same worries and discussions, but finally accepted the conservative approach after understanding its rationale. Two thirds of patients (n=49/ 74%) accepted the conservative approach from the start. Conclusion: Conservative treatment is the standard treatment for hemodynamically stable blunt renal traumata. However, for lay people such as patients and their family members it may be difficult to comprehend that the traumatized organ should not be explored and repaired. There is an expectation for surgical repair in one third of our patient population which has the potential to cause undue stress to the attending surgeon and may impair the impartiality of surgical decisions. Making the patients and relatives understand and be part of an informed decision making is crucial to act in the best interest of the patient.

Key words: blunt trauma; renal injury; conservative treatment; patient acceptance; patient compliance

Introduction:

The kidney is the most commonly injured genitourinary organ, followed by the urinary bladder, in both, adults and children [1-3]. Renal trauma may occur as an isolated injury, but in 80–95% of cases there are associated

injuries of other organs [4-6]. However, compared with penetrating injury, blunt renal trauma occurs more often but is less commonly associated with such injuries[7].

Men are affected more frequently with 72 -93% of cases [8, 9].

CT scan of the abdomen is the study of choice in renal injury. It should be performed in all hemodynamically stable blunt trauma patients who present with gross or microscopic hematuria and/ or hypotension (systolic blood pressure <90 mmHg) [10].

In the USA, the concept of invasive management of renal trauma has changed to conservative treatment since preservation of the kidney is more feasible [11], especially as most blunt renal injuries are of lower grade (grades I – III), and 80 to 85% of all such traumata can be managed conservatively [12]. Whereas this shift occurred based on evidence gathered over time, it can be sometimes difficult for patients and relatives of patients severely injured to understand that the best thing for the patient is to treat conservatively, which is sometimes perceived as inactivity on the part of the surgeon. A small group of patients and their relatives will not accept this approach even after extensive discussions and will push for surgical intervention even being aware of the high risk of nephrectomy.

As we have been repeatedly faced with these patients, we attempted in this paper to assess the patient and patients' relatives' acceptance for a conservative approach.

Patients & methods:

This is a prospective study including seventy-two patients who presented with blunt renal trauma from February 2000 to December 2018 in our hospital. The study was approved by the ethical committee at Basrah College of Medicine with the approval number 0304092-2020. Those with grade V injuries (n=6/ 11%) were not included in the study because they were hemodynamically unstable and underwent immediate surgical exploration. Trauma grading was done according to the renal injury scale developed by the Organ Injury Scaling Committee of the American Association for Surgery of Trauma (AAST) [13] (table 1) , following an abdominal contrast-enhanced CT scan. The initial management of all patients was adequate resuscitation with nil by mouth, administration of IV-fluids, broad-spectrum antibiotics (ceftriaxone), absolute bed rest, use of painkillers as paracetamol vials, and blood transfusions if required. Close observation of all patients was carried out by monitoring of vital signs and abdominal examination with two hourly chart for first 24 hour then 4 hourly chart thereafter, and daily measurement of hematocrit. In addition, bedside ultrasound examination of patients to follow up the size of hematoma and /or urinoma was done every other day during the period of stay at hospital. The follow up of patients continues till the patients are stable .The patients and their families were given questionnaires to assess their satisfaction and/ or worries about the conservative approach in managing their renal trauma. The questionnaires were replied by the patients and by their families if they were children and they were given the questionnaires at the end of their stay at hospital.

The responses were categorized into 3 groups: totally satisfied, partially satisfied, or not accepting the conservative approach (Fig.1).

Results:

Mean age was 30 (range 10 - 55) years. Sixty three (87.5%) were males. The mechanism of injury was blunt trauma in all patients (55 road traffic accidents and 17 falls from heights). Sixty-six patients (92%) were haemodynamically stable, thereof 22 grades I, 19 grades II, 15 grade III, and 10 grade IV, respectively. All were monitored by a conservative approach. Yet, 5 patients (8%) and their families were much worried about this approach and insisted on surgical exploration despite having been told about the risk of nephrectomy. None of them ultimately ended up with a nephrectomy though. Another 12 patients (18%) were partially accepting the conservative approach and continued with it after extensive discussions. and 49 (74%) accepted the approach from the start (Fig. 2).

Discussion:

In the last few years, the management of blunt renal trauma has changed from invasive to mainly conservative treatment [14]. Conservative management of blunt renal trauma is associated with less loss of blood and renal parenchyma, compared to surgical exploration [15]. Conservative management has become the standard of care in hemodynamically stable patients with all grades of injuries I-V [16]. However, if a grade V injury is present, immediate surgical exploration and nephrectomy remains indicated if there is uncontrollable bleeding. We had 6 patients (8%) where this was applied. These patients have not been included in our study cohort. When a surgical exploration is indicated, this ends in up to 35% with a nephrectomy [17].

Our assessment showed that two thirds of patients (n=49/ 74%) accepted the conservative approach for managing their trauma without major worries or objections from the start. One of the reasons for such acceptance may be the fact that patients were indeed counseled about the high risk of losing a kidney if surgery were to be performed. Patients who had increased objections were mostly worried about a prolonged bed rest, hospital stay, and restriction of their daily activities and bread winning. Only a small group of patients (n=5/ 8%) expressed grave worries mainly with regards to hematuria. To patients, gross hematuria can be a very frightening experience and they do not readily accept that the bleeding is controlled and in a laymen's mind the bleeding organ needs immediate surgical repair.

To our knowledge, ours is the first paper assessing the worries, concerns, objections and acceptance of patients with blunt renal trauma undergoing conservative management, and their relatives. It shows that a small but significant group of patients may need extra counseling in this stressful situation.

Ultimately, a close communication between doctors and patients and their families will achieve compliance.

As in many countries, a close family system means that patients and their relatives share decision- making even in very challenging decisions after receiving, and hopefully understanding, information about medical facts and options of treatment. There lies the challenge for the surgeons to make them understand and to establish a rapport.

Once the decision is made, patients and their families expect a positive outcome. If that does not materialize despite evidence based best practice, there may be legal or ethical claims forthcoming against the surgeon. Therefore, this assessment of patient acceptance may be a guide for surgeons handling these situations.

In conclusion, conservative management of blunt renal traumas is an established and widely accepted option. However, surgeons must be aware that in some patients, especially those with gross hematuria, there can be excessive anxiety that makes them push for surgical exploration. Careful counseling is required to avail the best possible treatment to the patients.

References:

- [1]. Bent C, Iyngkaran T, Power N, Matson M, Hajdinja T, Buchholz N, T Fotheringham. Urological injuries following trauma. *Clin Radiol* 2008; 63:1361–1371.
- [2]. Matlock KA, Tyroch AH, Kronfol ZN, McLean SF, Pirela-Cruz MA. Blunt traumatic bladder rupture: A 10-year perspective. *Am Surg* 2013; 79: 589–93. [PubMed] [GoogleScholar]
- [3]. Tyroch AH, Matlock KA. Pediatric and adult blunt traumatic bladder rupture: A comparative review.
- [4]. Panam J *Trauma Crit Care Emerg Surg* 2015; 4:11–5. [Google Scholar].
- [5]. van der Wilden, GM, Velmahos, GC, Joseph, DK. Successful nonoperative management of the most severe blunt renal injuries: a multicenter study of the research consortium of New England Centers for Trauma. *JAMA Surg* 2013; 148:924–931. Google Scholar | Medline
- [6]. Santucci, RA, McAninch, JM. Grade IV renal injuries: evaluation, treatment, and outcome. *World J Surg* 2001; 25:1565–1572. Google Scholar | Medline
- [7]. Kansas, BT, Eddy, MJ, Mydlo, JH. Incidence and management of penetrating renal trauma in patients with multiorgan injury: extended experience at an inner city trauma center. *J Urol* 2004; 172: 1355 – 1360.
- [8]. James K Kuan , Jonathan L Wright, Avery B Nathens, Frederick P Rivara, Hunter Wessells, American Association for the Surgery of Trauma. American Association for the Surgery of Trauma Organ Injury Scale for kidney injuries predicts nephrectomy, dialysis, and death in patients with blunt injury and nephrectomy for penetrating injuries. *Trauma J Trauma* 2006 ; Feb; 60(2):351-6.
- [9]. McCombie, SP, Thyer, I, Corcoran, NM. The conservative management of renal trauma: a literature review and practical clinical guideline from Australia and New Zealand. *BJU Int* 2014; 114(Suppl. 1): 13–21. Google Scholar | Medline
- [10]. Bjurlin, MA, Fantus, RJ, Villines, D. Comparison of nonoperative and surgical management of renal trauma: can we predict when nonoperative management fails? *J Trauma Acute Care Surg* 2017;82: 356–361. Google Scholar | Medline
- [11]. Morey, AF, Brandes, S, Dugi, DD. Urotrauma: AUA guideline. *J Urol* 2014 ; 192: 327 -335. Google Scholar | Medline
- [12]. Wessells H Hunter , Donald Suh, James R Porter, Frederick Rivara, Ellen J MacKenzie, Gregory J Jurkovich, Avery B Nathens . Renal injury and operative management in the United States: results of a population-based study. *J Trauma* 2003 ;54.3:423–430.
- [13]. Bozeman, C, Carver, B, Zabari, G, Caldito, G, and Venable, D. Selective operative management of major blunt renal trauma. *J Trauma* 2004 ; 57,305-9.
- [14]. Moore EE, Shackford SR, Pachter HL, McAninch JW, Browner BD, Champion HR, Flint LM, Gennarelli TA, Malangoni MA, Ramenofsky . Organ injury scaling: spleen, liver, and kidney. *ML J Trauma* 1989 Dec;29(12):1664-6. [PubMed] [Ref list]

- [15]. Hurtuk,M,Reed,RL,Esposito,TJ,Davis,KA,andLuchette,FA.Traumasurgeonspracticewhat they preach: The NTDB story on solid organ injury management. *J Trauma* 2006 ; 61,243-54.
- [16]. Danuser, H, Wille, S, Zöschner, G, and Studer, U . How to treat blunt kidney ruptures: primary open surgery or conservative treatment with deferred surgery when necessary?. *Eur Urol* 2001; 39,9-14.
- [17]. Santucci RA, Wessells H, Bartsch G, Descotes J, Heyns CF, et al. (2004) Evaluation and management of renal injuries: consensus statement of the renal trauma subcommittee. *BJU Int* 2004; 93:937-954.
- [18]. Knudson MM, Maull KI . Nonoperative management of solid organ injuries: past, present andfuture. *Surg Clin North Am* 1999 ; 79: 1357-1367. Link:<https://goo.gl/Bk2h84>



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Grade*	Type of injury	Description of injury
I	Contusion	Microscopic or gross hematuria, urologic studies normal
	Hematoma	Subcapsular, nonexpanding without parenchymal laceration
II	Hematoma	Nonexpanding perirenal hematoma confirmed to renal retroperitoneum
	Laceration	<1.0 cm parenchymal depth of renal cortex without urinary extravagation
III	Laceration	>1.0 cm parenchymal depth of renal cortex without collecting system rupture or urinary extravagation
IV	Laceration	Parenchymal laceration extending through renal cortex, medulla, and collecting system
	Vascular	Main renal artery or vein injury with contained hemorrhage
V	Laceration	Completely shattered kidney
	Vascular	Avulsion of renal hilum which devascularizes kidney

Table 1: Renal trauma classification by the American Association for the Surgery of Trauma (AAST)⁽¹³⁾

Fig.1: Questionnaire for patient and family satisfaction

	Totally yes	Partially yes	No at all
Are you satisfied with the approach of conservative management			
Do you feel worried about that approach			
Do you accept surgery if your doctor decided for that			
Do you think that complications may arise more if a conservative approach is adapted			
Do you think that a conservative approach demands a longer stay in hospital			

Fig. 2: Study flow chart

