



# LIVER INJURIES; EXPERIENCE OF CONSERVATIVE MANAGEMENT OF LIVER INJURIES IN BLUNT ABDOMINAL TRAUMA AT A UNIVERSITY HOSPITAL

Habib ur Rehman Khan Toor<sup>1</sup>, Gulshan Ali Memon<sup>2</sup>, Shahnawaz Leghari<sup>3</sup>

1. MBBS, FCPS  
Associate Professor  
Department of Surgery  
Peoples University of Medical &  
Health Sciences Nawabshah.
2. MBBS, MS, FRCS  
Dean & Professor  
Department of Surgery  
Peoples University of Medical &  
Health Sciences Nawabshah.
3. MBBS, FCPS  
Senior Registrar  
Department of Surgery  
Peoples University of Medical &  
Health Sciences Nawabshah.

**Correspondence Address:**  
Dr. Habib ur Rehman Khan Toor  
Toor House, Toor Colony, Tandoadam,  
dr\_habibtoor@yahoo.com

**Article received on:**  
26/02/2018

**Accepted for publication:**  
15/08/2018

**Received after proof reading:**  
03/12/2018

**ABSTRACT... Objectives:** To determine the role (frequency) of non-operative conservative management in liver injuries in blunt abdominal trauma. **Methodology:.. Study Design:** Descriptive study. **Setting:** Department of surgery Peoples University of Medical & Health Sciences Nawabshah. **Period:** 36 months extending from august 2014 to July 2017. **Patients & Methods:** All Patients with abdominal blunt trauma underwent ABCD evaluation, primary survey, secondary survey and initial management/resuscitation as per needed. History, clinical examination, plain radiographs, ultrasound (FAST) and computerized tomography were used as diagnostic tools. Patients with isolated liver injuries in blunt abdominal trauma were selected for the present study. Selected cases with hemodynamic instability, even after initial vigorous resuscitation had to undergoes immediate surgical abdominal exploration while the rest of the selected cases were hospitalized and kept under strict monitoring. The decisions of late surgical intervention were then made on deterioration of hemodynamic stability and rapid progression of liver injuries from lower grades to higher grades. Percentages of the cases managed conservatively and rest of others who required surgical interventions were noted. Data was analyzed on SPSS-21. **Results:** 78 cases were selected with mean age of 38 years & SD± 7. Male to female ratio was 5:1. 11% of the cases with hemodynamic unstability underwent immediate surgical intervention. 8% of the case underwent late surgical operative management after initial course of non operative conservative management. 81% cases were managed with successful non operative conservative approach. **Conclusion:** Most of the liver injuries in blunt abdominal trauma require non-operative conservative management. The decision of operative management should be taken on the basis of the hemodynamic status and not merely on the grade of the hepatic injury.

**Key words:** Blunt Abdominal Trauma, Liver Injuries, Non-operative Management of Liver Injuries.

**Article Citation:** Toor H, Memon GA, Leghari S. Liver injuries; experience of conservative management of liver injuries in blunt abdominal trauma at a university hospital. Professional Med J 2018; 25(12):1819-1822.  
**DOI:** 10.29309/TPMJ/18.4752

## INTRODUCTION

Among all age groups, blunt abdominal trauma is the leading cause of morbidity and mortality.<sup>1</sup> Abdominal blunt trauma usually caused by a sudden (deceleration fall from a height, vehicle crash), impact with an object (fall on bicycle handlebars) or direct blow (kick). Injuries can involve abdominal wall, hollow viscus (stomach, small intestine, colon, ureters, bladder), solid organs (liver, spleen, pancreas, kidneys), mesenteries and vasculatures. Among solid organ liver is the largest solid abdominal organ which is not freely mobile making it more prone to injury. Spleen is the most commonly injured organ followed by liver in blunt abdominal trauma

but mortality ratio is higher in case of isolated blunt liver injury as compare to that of spleen. Almost all hollow visceral injuries require surgical interventions but many of the solid visceral injuries are suitable for conservative management.<sup>2,3</sup> For the solid organ American Association for the Surgery of trauma (AAST) has classified the visceral injuries in to Grade I to IV.<sup>4,5</sup> According to AAST grade I-III hepatic injuries do not require surgical interventions while hepatic injuries higher than grade IV need surgical treatment.<sup>5</sup> For the diagnostic evaluation in blunt abdominal trauma plain radiograph has a limited role as it can detect only major diaphragmatic injury pneumoperitoneum, metallic foreign bodies

and gross organ displacement.<sup>6</sup> Abdominal Ultrasonograms can detect a number of blunt traumatic hepatic lesions, such as contusions, hematomas, bilomas, and hemoperitoneum.<sup>7,8</sup> To determine any surgical intervention in blunt abdominal trauma the role of CT scan is now very well established.<sup>9-12</sup> In hemodynamically stable patients of blunt hepatic injuries nonoperative management is the treatment modality of choice in current surgical practice, irrespective of the grade of injury or patient age. The nonsurgical conservative management of blunt liver trauma should only be practiced in a surgical environment that is capable of monitoring, serial clinical evaluations, and facilities of urgent interventions. In hemodynamically unstable and peritonitis an emergent surgical intervention is still warrant.<sup>13</sup> Blunt abdominal trauma with liver injuries is a common challenge in almost every discipline of surgical management and demands a continuous close insight review, therefore, this descriptive study was conducted to determine the frequency of conservative management in blunt traumatic liver injuries.

## MATERIAL & METHODS

This 36 months study was conducted in surgical unit 1 of People University of Medical and Health Sciences for Women Nawabshah from august 2014 to July 2017. All Patients with abdominal blunt trauma underwent ABCD evaluation, primary survey, secondary survey and initial management/resuscitation as per needed. History, clinical examination, plain radiographs, ultrasound (FAST) and computerized tomography were used as diagnostic tools. Patients with isolated liver injuries in blunt abdominal trauma were selected for the present study. Cases of liver injuries with associated diahpragmic, mesenteric, hollow viscus and other solid organ injuries were excluded. Patients with associated head injuries and bony fractures were also not considered for the present study. Selected cases with hemodynamic instability even after initial vigorous resuscitation had to undergo immediate surgical abdominal exploration while rest of the selected cases were hospitalized and kept under strict monitoring to observe the hemodynamic stability. Progressive course of the liver injuries were serially followed by

ultrasonograms and CT scans. Liver injuries were graded as grade I to IV according to American Association for the Surgery of trauma (AAST). The decisions of surgical intervention were made on deterioration of hemodynamic stability and rapid progression of liver injuries from lower grades to higher grades. Percentages of the cases managed conservatively and rest of others who required surgical interventions were noted. Data was analyzed on SPSS-21.

## RESULTS

This descriptive study was extended up to 36 months. 78 cases were selected according to inclusion and exclusion criteria's. 65 were male and 13 were females with male to female ratio of 5:1. Mean age of the cases was 38 years,  $SD \pm 7$  and range of 11 to 80 years. 9(11.5 %) cases had grade 1 injury, 22(28.2%) cases had grade 2 injuries, 30(38.5%) had grade 3 injuries, 8(10.3%) cases had grade 4 injuries, 9(11.5%) had grade 5 injuries. 9(11.5%) cases were underwent immediate surgical exploration, 5 of them had grade 5 injuries, 3 of them had grade 4 injuries and 1 patient had grade 3 hepatic injury. Remaining 69 cases were initially started with non-operative conservative management with strict monitoring but 6 out of them had to undergo surgical intervention because of hemodynamic instability. 62 cases managed conservatively. Collectively among 78 cases of blunt trauma abdomen with isolated liver injury 15(19%) cases required surgical intervention while 62(81%) were managed conservatively.

## DISCUSSION

Majority of the hepatic injuries are caused by road traffic accidents.<sup>14</sup> Most of the hepatic injuries of grade I to III are successfully managed with non operative conservative management and almost two-thirds of grades IV to VI hepatic injuries require surgical operative management.<sup>15</sup> For the last few decades the improvement in the diagnostic and therapeutic tools has greatly changed the management approach in blunt hepatic injuries.<sup>16-18</sup> The decisions of operative management has been relying more on the clinical conditions of the injured patients rather the grade of hepatic injury. In the current study the

number of cases is not too large because most of the cases of the blunt abdominal trauma had involved more than one organ injuries. Mean age is 38 years that is compare able to Mukhopadhyay M study (35 years).<sup>19</sup> This mean age is reflecting the fact that young and middle aged part of the population is the main user of automobiles for traveling and the leading working segment of the society, become more prone to trauma. Similarly the male gender predominates in exertional socio-economic activities in our part of the world as male to female ratio was 5:1 in the current study that is similar to Richard et al.<sup>20</sup> 9(11.5%) of the cases underwent immediate surgical intervention as 5 of them had grade 5 injuries, 3 of them had grade 4 injuries and 1 patient had grade 3 hepatic injury, although supporting the general prevailing surgical approach of higher the grade, higher the chances of surgical interventions but the stronger deciding factors were hemodynamic instability rather the grade of the hepatic injury. After the initial course conservative non-operating management 6(8%) underwent surgical intervention because of deterioration in hemodynamic stability. Total 15(19%) of the cases had needed surgical interventions in the form of laparotomies while 63(81%) were successfully managed with non-operative conservative management that is within the range of worldwide data.<sup>21-25</sup> These results strongly advocates the effective role of non-operative conservative management in most of the liver injuries in blunt abdominal trauma and hemodynamic stability of the injured cases is the key role in deciding between operative and non operative management.

## CONCLUSION

Most of the liver injuries in blunt abdominal trauma require non-operative conservative management. The decision of operative management should be taken on the basis of the hemodynamic status and not merely on the grade of the hepatic injury.

Copyright© 15 Aug, 2018.

## REFERENCES

1. Sule AZ, Kidmas AT, Awani K, Uba F, Misauno M. **Gastrointestinal perforation following blunt abdominal trauma.** East Afr Med J. 2007; 84: 429- 33.
2. Mohamed AA, Mahran KM, Zaazou MM. **Blunt abdominal trauma requiring laparotomy in polytraumatized patients.** Saudi Med J 2010; 31(1):43-48.
3. Crookes BA, Shackford SR, Gratton J, Khaleel M, Ratliff J, Osler T. **'Never be wrong': the morbidity of negative and delayed laparotomies after blunt trauma.** J Trauma 2010; 69(6):1386-1391.
4. Coccolini F, Catena F, Moore EE, Ivatury R, Biffi W, Peitzman A, et al. **WSES classification and guidelines for liver trauma.** World J Emerg Surg. 2016 Oct 10. 11:50.
5. Timofte D, Hutanu I, Livadariu RM, Soroceanu RP, Munteanu I, Diaconu C, et al. **Management of traumatic liver lesions.** Rev Med Chir Soc Med Nat Iasi. 2015 Apr-Jun. 119 (2):431-6.
6. Walter KD. **Radiographic evaluation of the patient with sport-related abdominal trauma.** Curr Sports Med Rep. 2007 Apr. 6(2):115-9.
7. Richards JR, McGahan JP, Pali MJ, et al. **Sonographic detection of blunt hepatic trauma: hemoperitoneum and parenchymal patterns of injury.** J Trauma. 1999 Dec. 47(6):1092-7.
8. Ma OJ, Kefer MP. **Ultrasound detection of free intraperitoneal fluid associated with hepatic and splenic injuries.** South Med J. 2001 Jan. 94(1):54-7.
9. Brasel KJ, Olson CJ, Stafford RE, Johnson TJ. **Incidence and significance of free fluid on abdominal computed tomographic scan in blunt trauma.** J Trauma. 1998 May. 44(5):889-92.
10. Holmes JF, Offerman SR, Chang CH, Randel BE, Hahn DD, Frankovsky MJ, et al. **Performance of helical computed tomography without oral contrast for the detection of gastrointestinal injuries.** Ann Emerg Med. 2004 Jan. 43(1):120-8.
11. Christiano JG, Tummers M, Kennedy A. **Clinical significance of isolated intraperitoneal fluid on computed tomography in pediatric blunt abdominal trauma.** J Pediatr Surg. 2009 Jun. 44(6):1242-8.
12. Shanmuganathan K. **Multi-detector row CT imaging of blunt abdominal trauma.** Semin Ultrasound CT MR. 2004 Apr. 25(2):180-204.
13. Stassen NA, Bhullar I, Cheng JD, et al. **Nonoperative management of blunt hepatic injury: An Eastern Association for the Surgery of Trauma practice management guideline.** J Trauma Acute Care Surg. 2012 Nov. 73(5 Suppl 4):S288-93.
14. Badger SA, Barclay R, Campbell P, Mole DJ, Diamond

- T. **Management of liver trauma.** World J Surg. 2009; 33:2522–37.
15. Piper G, Peitzman AB. **Current management of hepatic trauma.** Surg Clin N Am. 2010; 90:775–85.
16. Bouras AF, Truant S, Pruvot FR. **Management of blunt hepatic trauma.** J Visc Surg. 2010; 147(6):e351–8.
17. Badger SA, Barclay R, Campbell P, Mole DJ, Diamond T. **Management of liver trauma.** World J Surg. 2009; 33:2522–37.
18. Peitzman AB, Richardson JD. **Surgical treatment of injuries to the solid abdominal organs. A 50-years perspective from the Journal of Trauma.** J Trauma. 2010; 69:10.11–21.
19. Mukhopadhyay M. **Intestinal Injury from Blunt Abdominal Trauma.** Oman Medical Journal 2009, Volume 24, Issue 4, October 2009.
20. Richard R. W. Brady, Mark Bandari, Jan J. **Kerssens. Splenic Trauma in Scotland: Demographics and Outcomes.** World Journal of Surgery, 2007, Vol 31, No 11, P 2111-6.
21. Jennings GR, Poole GV, Yates NL, et al. **Has nonoperative management of solid visceral injuries adversely affected resident operative experience?.** Am Surg. 2001 Jun. 67(6):597-600.
22. Kirby RM, Braithwaite M. **Management of liver trauma.** Br J Surg. 2000 Dec. 87(12):1732.
23. Ingram MC, Siddharthan RV, Morris AD, Hill SJ, Travers CD, McCracken CE, et al. **Hepatic and splenic blush on computed tomography in children following blunt abdominal trauma: Is intervention necessary?.** J Trauma Acute Care Surg. 2016 Aug. 81 (2):266-70.
24. Timofte D, Hutanu I, Livadariu RM, Soroceanu RP, Munteanu I, Diaconu C, et al. **Management of traumatic liver lesions.** Rev Med Chir Soc Med Nat Iasi. 2015 Apr-Jun. 119 (2):431-6.
25. Van As AB, Millar AJ. **Management of paediatric liver trauma.** Pediatr Surg Int. 2017 Apr. 33 (4):445-453.



“

*Fake love is worse than real hate.*

– Unknown –

”

#### AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author-s Full Name	Contribution to the paper	Author=s Signature
1	Habib ur Rehman Khan Toor	Data collection, data analysis & discussion.	
2	Gulshan Ali Memon	Introduction & result writing.	
3	Shahnawaz Leghari	Refrence work.	