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A Study of Conservative Management of Liver Injury in Blunt Abdominal Trauma

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Abstract

The Present study was conducted to evaluate the various modes of injury causing the blunt abdominal trauma and to further evaluate the various diagnostic methods and techniques available in the management of blunt abdominal trauma.

Keywords: Liver, Liver injury, Management of liver injury

Introduction

The liver is the most commonly injured intraabdominal organ with an incidence of 30% to 40%. The overwhelming majority of liver injuries, however, are minor, with spontaneous cessation of hemorrhage almost always the rule, and operative intervention is rarely required. On the other hand, complex hepatic injuries continue to challenge even the most experienced trauma surgeons. Hepatic injuries have been a fascinating topic since the publication of "Notes on the Arrest of Hepatic Hemorrhage Due to Trauma" in 1908 by J. Hogarth Pringle of the Glasgow Royal Infirmaries who provided the first published scientific foray into the management of severe hepatic trauma and describes one of the operative maneuvers that remains a mainstay in hepatic hemorrhage control to this day. Perhaps the single greatest advance in the management of hepatic trauma over the past two decades has been advancement and remarkable success of on operative management of blunt hepatic injuries. Other advances include the combination of portal triad occlusion, finger fracture technique (hepatotomy) and omental packing for complex hepatic injuries, and perihepatic packing with planned reexploration in trauma patients demonstrating signs of the "triad of death" (acidosis, coagulopathy, and hypothermia) as well as evolving transfusion strategies stressing 1:1:1 ratio of packed red blood cells (PRBCs), fresh frozen plasma (FFP), and platelets with the goal of prevention of intraoperative coagulopathy. In the new millennium, a "multidisciplinary approach" concept has evolved as the standard of care in the treatment of complex hepatic trauma. In addition to prompt surgical intervention, when

indicated, adjunctive interventional techniques such as hepatic angiography, endoscopic retrograde cholangiopancreatography (ERCP), biliary stenting, and percutaneous computed tomography (CT)– guided drainage have become a part of the trauma surgeon's armamentarium.

Aim of the study

1. To study the sex and age distribution of liver injury in blunt abdominal trauma.
2. To evaluate the morbidity and mortality due to severity of the injury.
3. To evaluate the various modes of injury causing the blunt abdominal trauma.
4. To evaluate the various diagnostic methods and techniques available in the management of blunt abdominal trauma.

Materials and methodology: 50 consecutive cases which are admitted in the Govt. Stanley medical college and hospital during the period of April - September 2019 are studied. It is a prospective observational study.

Methods of collection of data: study was collected by

1. Detailed history of the patient either directly or from the patient relatives
2. Clinical examination
3. Diagnostic investigations made to the patients

Patients admitted in the emergency surgical ward are thoroughy examined from head to foot. Patients with clinical findings of abdomen tenderness, guarding are initially resuscitated and then shifted to investigations of ultrasonography, CECT abdomen. Head, chest and orthopaedic injuries are excluded. Operative and non operative management mainly depends on the haemodynamical stability, clinical examination , radiological investigation CECT abdomen and pelvis

Conservative management included of strict bed rest, i.v fluids , npo depends on abdomen examination, i.v antibiotics,Analgesics. Hemodynamically unstable patients despite the adequate fluid resuscitation and blood transfusions are shifted to operation theatre for emergency laparotomy. laparotomy findings are included.complications , outcome and duration of stay are recorded.

Result

Table 1: SEX distribution

Gender			
		Frequency	Percent
	Female	10	20.0
	Male	40	80.0
	Total	50	100.0

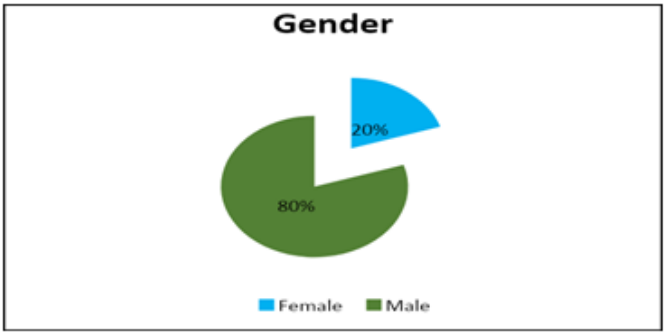


Table 2: Age distribution

	Frequency	Percent
Up to 20 yrs	8	16.0
21 - 30 yrs	13	26.0
31 - 40 yrs	11	22.0
41 - 50 yrs	8	16.0
51 - 60 yrs	4	8.0
Above 60 yrs	6	12.0
Total	50	100.0

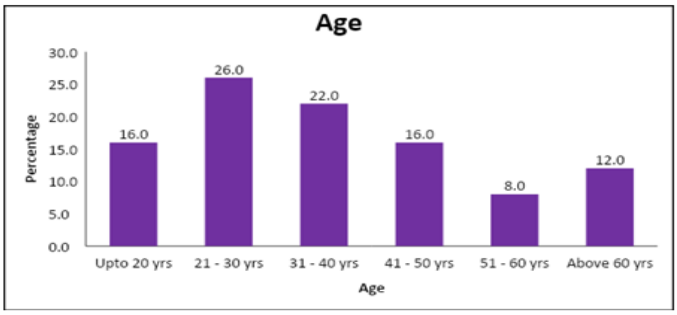


Table 3: Mode of injury

	Frequency	Percent
BWB	13	26.0
FALL	14	28.0
RTA	23	46.0
Total	50	100.0

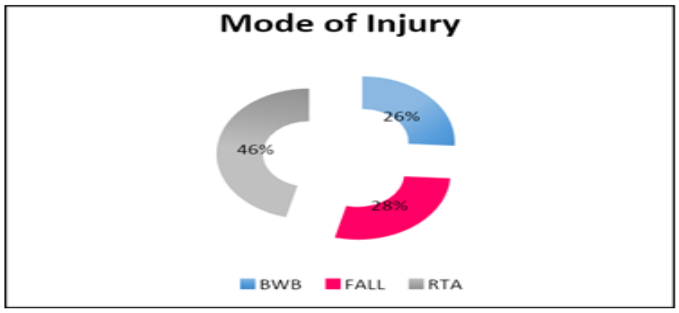


Table: 4, 5, 6-Clinical presentation

Pain

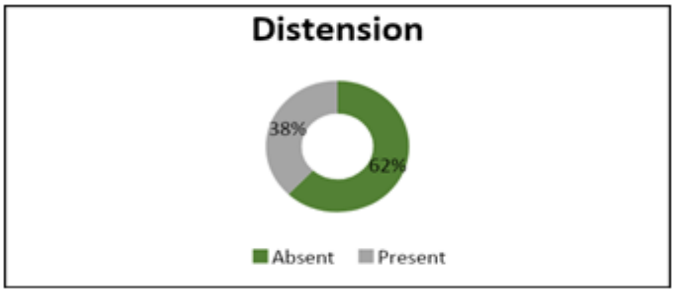
	Frequency	Percent
Present	50	100.0

Distension

		Percent
Absent	31	62.0
Present	19	38.0
Total	20	100

Vomiting

		Percent
Absent	47	94.0
Present	3	6.0
Total	50	100



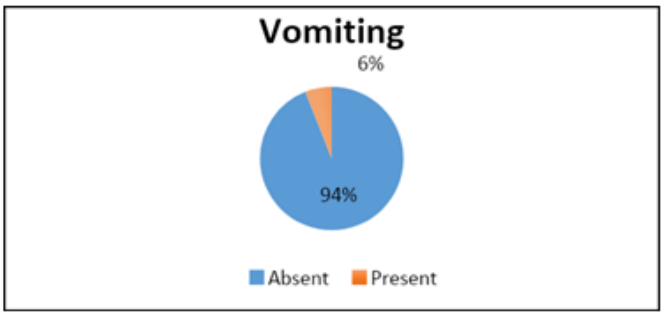


Table7: Latent Period

	Frequency	Percent
0 – 4	14	28.0
> 4 – 8	19	38.0
> 8 – 16	16	32.0
> 14 – 24	1	2.0
Total	50	100.0

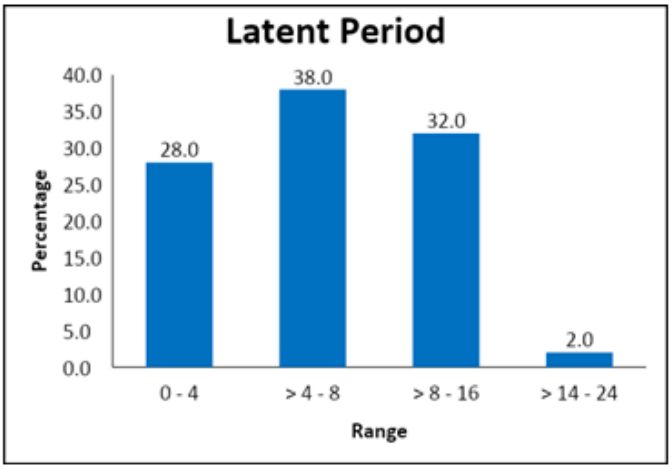


Table 8,9,10

Tenderness

	Frequency	Percent
Present	50	100.0

Guarding

	Frequency	Percent
Absent	24	48.0
Present	26	52.0
Total	50	100.0

Rigidity

	Frequency	Percent
Absent	43	86.0
Present	7	14.0
Total	50	100.0

Table 11: Shock

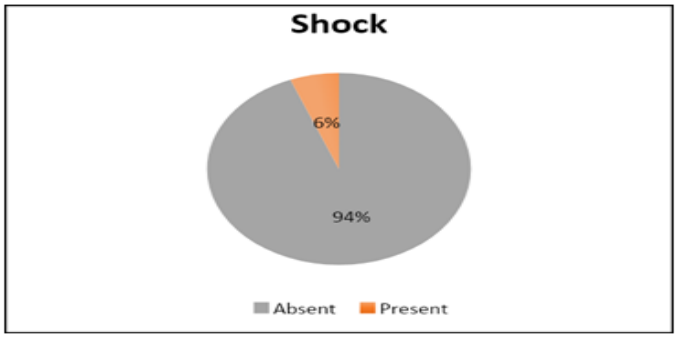


Table 12: USG

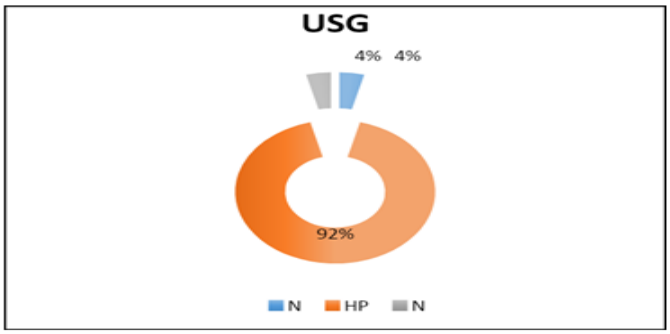


Table – 13 Grade of injury

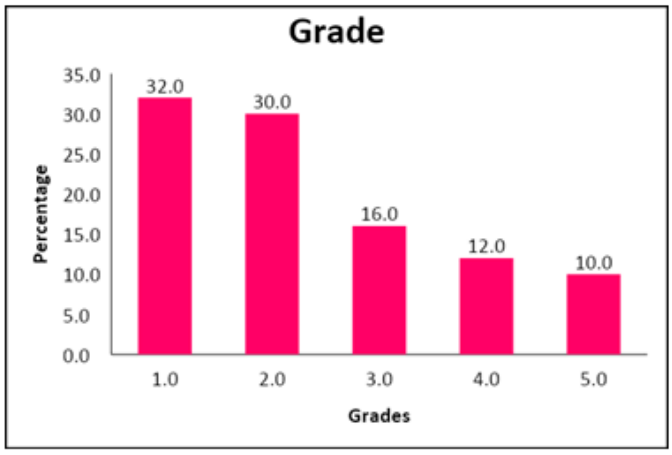


Table 14: Management

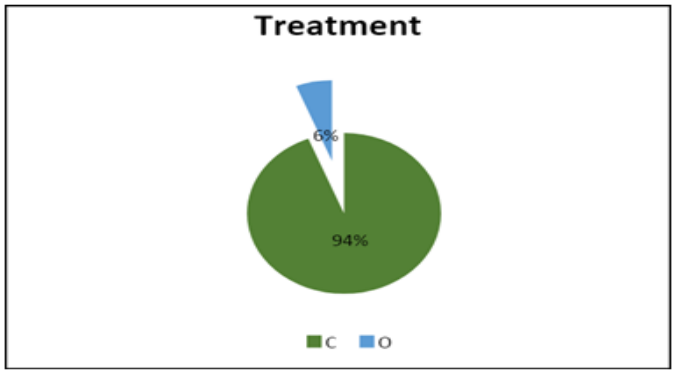


Table 15: Complications

	Frequency	Percent
Liver abscess	1	2.0
Nil	49	98.0
Total	50	100.0

Table 16: Outcome

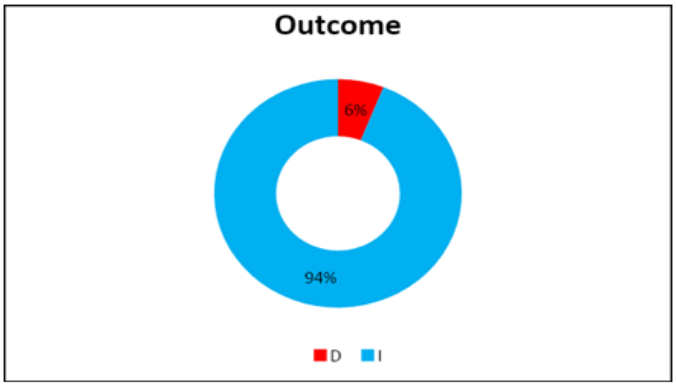


Table -17 Alcoholics

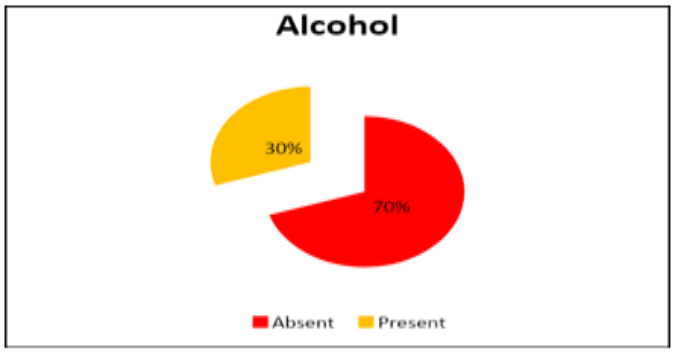


Table -18 Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Age	50	12.0	80.0	37.180	16.5439
latent period	50	2.0	22.0	7.700	4.2390
Pulse	50	82.0	128.0	106.560	10.5447
SBP	50	80.0	130.0	108.600	10.8816
DBP	50	60.0	80.0	69.400	4.2426
Hb%	50	6.0	13.2	9.942	1.5182
Duration of Stay	50	1	18	9.58	3.704
Valid N (list wise)	50				

Discussion

The above mentioned findings were collected from the patients who admitted in govt. Stanley medical college which is a prospective study done between April 20 September 2019.

The distribution of gender showing that the males (80%) outnumbered females (20%) . Most common group of age affected are between 21-30 yrs and the less common between 50-60 yrs. The latent period in our study < 16hrs was 98%.

The most common mode of injury was the Road traffic accidents, least with blow with blunt objects. 30% of the alcoholics were affected and more prone to injury in our study.

Majority of the patients presented with pain(100 %).most of them had tenderness over abdomen. Guarding was present in 52% whereas Rigidity in 14%.

6% of them presented with shock , with polytrauma even though resuscitation made could not be saved due to increased latent period.

36% of the patients presented with the other associated injuries . Ultrasonography was used in all patients, showing the sensitivitiy of 92% in detecting the hemoperitoneum in our study. X ray, CECT was taken in all the patients in our study.

However CECT forms the superiority than usg, any other investigations in detecting the free fluid and solid organ injury.

The most common grade of liver injury was grade 1 liver laceration(32%), least being grade 5 (10%).Grade 6 was the rarest not visualised a case.

94% of the patients were **conservatively** managed. Only 6 % were taken for laparotomy associated with other organ injuries like spleen. Even grade 5 liver injury had been managed conservatively according to the vitals, Hb , haematocrit were constantly recorded with the serial abdominal examinations. Usg was taken after 1 week.

2% presented later with liver abscess with the one recovered from grade 5 liver laceration. The hospital duration is also increased for the grade 5 liver injury patients.

Conclusion

Nonoperative management can be used to successfully manage most blunt hepatic trauma patients and a select group of penetrating hepatic trauma patients. The cornerstone of nonoperative management is hemodynamic stability. An active “blush” on contrastenhanced CT mandates immediate angiography, irrespective of CT grade of injury. Successful embolization of the lesion usually permits continued nonoperative management. Should the patient under observation become hemodynamically unstable or

develop peritoneal signs, operative intervention should be undertaken without the slightest hesitation. Grade 5 liver injuries are managed conservatively nowadays

When the liver injury requires operative intervention, four essential maneuvers should be kept in mind: (1) manual compression of the injury, (2) resuscitation, (3) assessment of the injury, and (4) the Pringle maneuver (inflow occlusion). These maneuvers can be lifesaving, even in the hands of those with limited experience in this area.

Complex hepatic injuries (grades IV and V) continue to challenge trauma surgeons and tax the resources of trauma centers. Most of these patients are hemodynamically unstable, have multiple associated injuries, require massive blood transfusions, and have a significant mortality rate.

There is general agreement that postobservational scanning in patients with grades I and II injuries contributes little to the clinical management of asymptomatic patients. In patients with grades III to V injuries, repeat CT scan or ultrasound, showing resolution of the injury, can serve as an invaluable guide in identifying patients for whom critical care monitoring may no longer be necessary. The optimal time frame for follow-up CT scan in these patients, if necessary, is 7 to 10 days after the original injury.

The overall liver-related mortality rate in most large series of nonoperatively managed blunt hepatic injuries is 6%. When blunt hepatic injuries are stratified by severity, it is clear that with the exception of grades IV and V injuries, it is the associated organ injuries, specifically brain and cardiopulmonary injury, which ultimately affect mortality rates. In most large series of blunt hepatic injuries, associated brain injuries account for most (60% to 70%) of the deaths.

Most liver-related fatalities result from complex hepatic trauma (grades IV and V), especially juxtahepatic venous injuries and portal triad injuries, which often result in prohibitively high mortality rates.

Over the past 2 decades, the mortality rate of complex hepatic injuries has decreased, predominantly because of a reduction in deaths from liver hemorrhage. Responsible contributing factors include prolonged inflow occlusion times, hepatotomy with selective vascular ligation, early packing and reexploration, and adjunctive interventional procedures, especially hepatic artery AE. Although surgical managements are applicable, liver injuries are always managed conservatively unless there is the deteroriation of patients that needs surgical intervention

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