

## Complications of Liver Trauma

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### ABSTRACT

**Objectives:** The objective of the study is to see the frequency and presentations regarding complications of Liver Trauma.

**Settings:** Study was conducted in Services Hospital Lahore and in Mayo Hospital, Lahore. All the patients who presented with liver injuries in A & E Department were included in the study.

**Subjects:** Study was conducted on 50 patients out of whom 40 were males and 10 were female. 35 male patients sustained blunt while 15 patients had penetrating injuries.

**Interventions:** Liver injuries were graded according to AAST i.e. American Association for Surgery Trauma. 44 patients under went for Laparotomy and 6 were managed conservatively.

**Results:** During 6 months of follow up period the most common complications seen in the patients were septic complication was seen in 29 patients, jaundice in 14 patients biloma formation due to Bile Leak in 8 patients biliary Fistulas in 5 patients Hemorrhage in Post Operative period in 3 patients, Hemobilia in 1 patient, Wound Sepsis in 1 patient leading to Wound Dehiscence. Mortality was seen in 4 patients in Post Operative

**Conclusion:** Liver Trauma both blunt and penetrating had high rate of complications which depends upon the operative techniques, resuscitation, the time between injury and presentation in the Hospital, the grade of Liver Injuries, associated Organ Injuries available expertise and post operative care.

**Key words:** Liver Trauma, Complications, Sepsis, Liver Abscess, Biloma, Hemorrhage, Biliary Fistula

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### INTRODUCTION

Since the introduction of modern firearm weapons and high speed automobile accidents Liver Trauma is on the rise around the world<sup>1</sup>. Liver Trauma is also frequent in Pakistan due to firearm and road traffic accidents. The frequency of liver injuries with penetrating agents is 30% and with blunt is 15% to 20% in Pakistan<sup>2</sup>. In developed countries it occurs in 20% of the patients with blunt and 30% with gunshot and 40% with stab wounds<sup>3</sup>. Liver is a well-protected organ yet it is the most commonly injured organ; associated injuries, hemorrhage and sepsis contribute to morbidity and mortality<sup>5</sup>. Complication rate in Liver Injuries is 64%<sup>4</sup>. Fifty percent of Liver Injuries are non-bleeding at the time of Laparotomy simple methods as suturing and haemostatic agents can manage Liver Injury but severe Liver Injuries are difficult to manage and carries high mortality<sup>5</sup>. Liver is the largest intra abdominal solid organ enclosed anteriorly and laterally with Rib Cage it has a Friable Parenchyma, thin capsule and relatively fix position with relation to the spine makes

the Liver prone to blunt injuries<sup>6</sup>. The management of Liver Injuries is divided a sequential phases i.e. resuscitation initial management and definite treatment<sup>7</sup>. The principle objective of Liver Trauma is early control of hemorrhage and prevention of ischaemia and sepsis<sup>8</sup>. The diagnosis of Liver Injuries and post operative complications

### MATERIALS AND MTHODS

This study carried out in Services and Mayo Hospitals, Lahore .All the patients with abdominal trauma, blunt or penetrating were admitted through A&E Departments and after diagnosis of liver trauma were included in the study data collection was done on 3 preformed proformas, which contained particulars of the patients, mode of presentation, details of examinations investigations, operative details and record of major complications in a 6 months follow up period.

**Sample size:** 50 patients were included in the study

**Duration of study:** Study was conducted for 3 years from July 2001 to July 2004 and then from July 2007 to January 2008.

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**Study design:** It is a descriptive study conducted in Services Hospital, Lahore and in Mayo Hospital, Lahore.

**RESULTS**

The study was conducted on 50 patients. Mean age for the patient in the study was 30.83 commonly in young population. More common in males 80% males and 20% were females. 70% of the patients had blunt injuries while 30% had penetrating injuries. The most common complications seen in Liver Trauma was sepsis seen in 29 patients (30%). Liver Abscess in 10 and 5 patients had Intra Abdominal Collections. Jaundice was seen in 14 patients (28%), which developed within the 1<sup>st</sup> week after injury and settled during 2<sup>nd</sup> to 3<sup>rd</sup> week. Bile Leaks leading to Biloma formation developed in 8 patients (16%). Biliary fistula was seen in 5 patients (10%). Hemorrhage was seen in 3 patients due to Coagulopathy and reactionary Hemorrhage (6%). Only one patient developed Hemobilia (2%), which manifested with GI Bleed. Jaundice and Fever. 4 patients died in the postoperative period (8%). All patients had gun shot injuries with high grade i.e. III, IV & V Liver Injuries and also associated organs injuries i.e. Pancreas, Duodenum, Colon, Stomach and Diaphragm (8%). Injuries of grade I and II carries no mortality in this study, grade III had (10%) while grade IV had (20%) and grade V had (13%) death rate.

Table 2

	=n	%age
Jaundice	14	28
Biloma	8	16
Biliary fistula	5	10
Haemorrhage	3	6
Hemobilia	1	2
Wound sepsis	1	2
Death	4	8

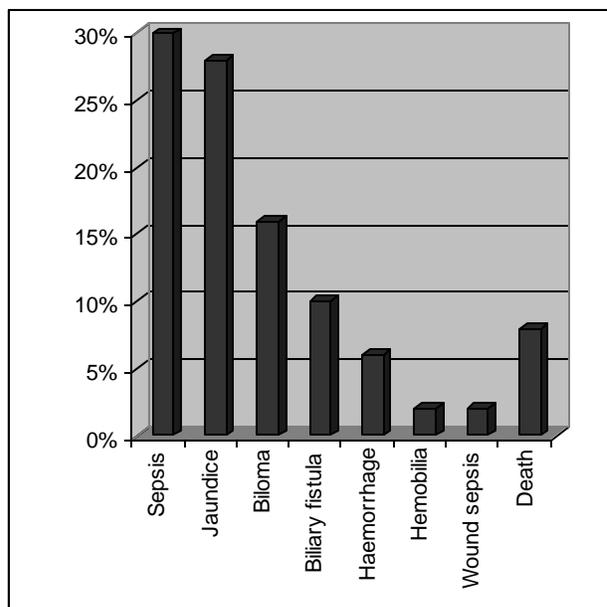


Table 1

Gender	=n	%age
Male	40	80
Female	10	20

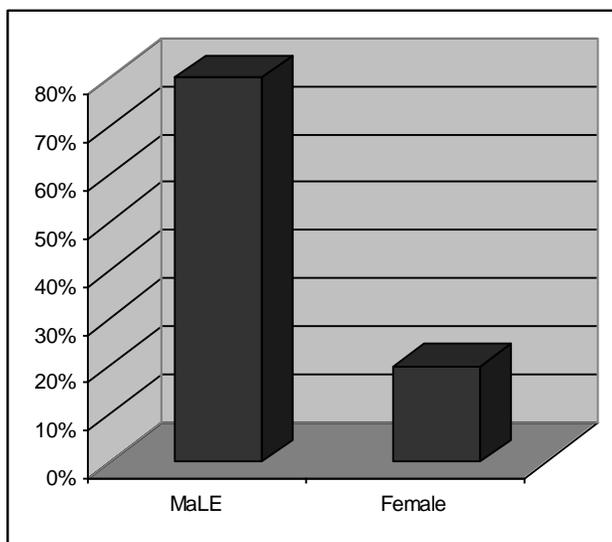
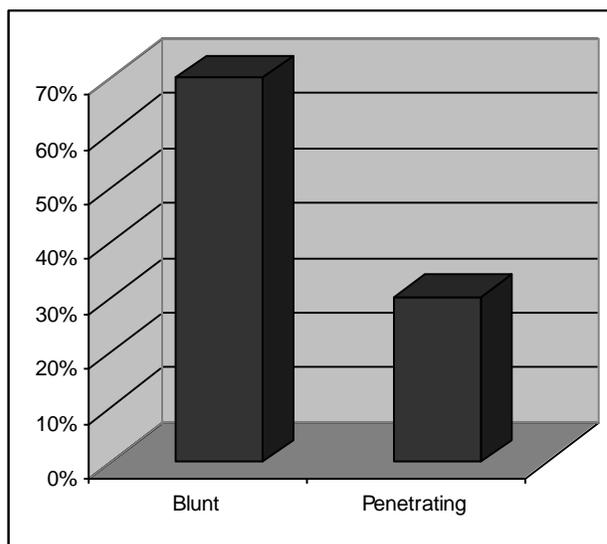


Table 3

	=n	%age
Penetrating	15	30
Blunt	35	70



## DISCUSSION

The study was conducted on 50 patients both blunt and penetrating, 6 patients were managed conservatively (12%), while 44 patients (88%) underwent laparotomies. Complications were seen in 2<sup>nd</sup> to 3<sup>rd</sup> week after the injury. The mean age was 30 years. Celebi F et al noted the same observation in his study at Attaturk University<sup>10</sup>, Zelenki J studied 174 patients and also concluded that liver trauma was more common in young population<sup>11</sup>. Liver injuries are also frequent in males (80%) than the females (20%), Shantrou et al published a paper in March 2002 and out of his 18 patients mostly were males<sup>12</sup>.

The most common complication seen after liver injuries are septic complications in form of liver abscess and intra abdominal collections. Parks RW et al studied the complications regarding the liver injuries in May 1999 his septic complications were 7-12%<sup>13</sup>. Marr JDF studied<sup>14</sup> 153 patients of liver trauma had observed (11%) of septic complication. Our complication rate was higher because majority of the patients were & managed operatively. Jaundice another complication seen in (28%) of the patients usually hepatocellular in nature due to damaged hepatocytes with the significant rise in transaminases. Parani K et al<sup>5</sup> saw jaundice in 35% of the patients in his study of 47 formation seen in (16%). Patcher HL<sup>16</sup> et al during his analysis of 495 (4%) patients with bile leak leading to biliary fistula and bile formation. Haemorrhage another important complication occurs due to missed injuries and coagulopathies in this study we observed it in 6% of the patients. Carrillo EH et al<sup>3</sup> in his study in 1998-saw hemorrhage in 4% patients. Hemobilia was seen only in one patient (2%) developed in 2<sup>nd</sup> week after injury, Carrillo EH<sup>17</sup> at university of Louisville also had the same observation. Mortality after liver injury in this study was (8%) most of the patients had high trauma score, Lin Q<sup>(18)</sup> observed death in 30% patients while Bramur et al<sup>(18)</sup> at Queen Elizabeth hospital noted 23% of mortality. Injuries of grade I and II carries no mortality in this study, grade III had (10%) while grade IV had (20%) and grade V had (13%) death rate.

## CONCLUSION

Liver trauma both blunt and penetrating are associated with high complication rate, complications can be minimized with rapid transfer of the patient to the hospital, effective resuscitation, good surgical technique, broad-spectrum antibiotics and vigilant ICU monitoring.

Mortality rate is higher in patients with complex

liver injuries i.e. grade IV and above, associated organ injuries such as pancreas; duodenum, colon, diaphragm and small bowel contribute to death. Coagulopathies after liver injuries are another contributory factor. All these factors require an aggressive surgical approach and comprehensive intensive care.

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