

# TRAUMATIC INJURIES OF THE GALLBLADDER: REPORT ON 32 CASES

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**SUMMARY:** *Over a six-year period from 1986 through 1991, 5069 patients with abdominal trauma were treated at the Department of Surgery University of São Paulo School of Medicine. Thirty two patients with gallbladder trauma were identified (0.63%) and divided in two groups according the nature of trauma: 9 due to non-penetrating injuries and 23 due to penetrating injuries. Records, including operative and pathology reports, were reviewed to study the mode and extent of gallbladder injury, associated injuries, incidence, trauma scores, treatment, morbidity, mortality rates and correlated with the nature of the trauma. The patients ranged in age from 5 to 60 years. The incidence was greater in the patients sustaining penetrating trauma ( $p < 0.05$ ). Overall mortality was 25%. Twenty four patients had lacerations, 4 patients had contusions and 4 patients had avulsions of the gallbladder. Thirty of the 32 patients (93.8%) had liver lacerations, the most commonly seen injuries. The patients with blunt abdominal trauma had significant different trauma scores ( $p < 0.05$ ) than those with penetrating trauma, indicating greater severity in this group of patients. We concluded that there is relation between severity of trauma and incidence of gallbladder injury. However in the penetrating trauma, the incidence of gallbladder trauma is correlated with the direction of the wound and there is no relation with the severity of trauma. The greater mortality seen in the patients sustaining non-penetrating injury ( $p < 0.05$ ) supports this idea.*

**DESCRIPTORS:** *Gallbladder. Injury. Abdominal trauma*

## INTRODUCTION

The gallbladder is afforded significant anatomic protection from abdominal trauma. However, this protection does not afford complete immunity to traumatic injuries, particularly from a localized forceful blow or from rapid shearing acceleration-deceleration forces. We present a review of our experience with 32 gallbladder injuries due to abdominal trauma over a 6-year period.

## MATERIALS AND METHODS

During the 6-year period from 1986 through 1991, 5069 patients underwent laparotomy for abdominal trauma at the Department of Surgery University of São Paulo School of Medicine, Brazil. Thirty two with gallbladder lesion were identified (0.63%) and divided in two groups according the nature of trauma: 9 due to non-penetrating injuries (group I) and 23 due to penetrating injuries (group II). Records, including operative and pathology

reports, were reviewed to study the mode and extent of gallbladder injury, associated injuries, incidence, trauma scores, treatment, morbidity, mortality rates and correlated with the nature of the trauma.

## RESULTS

Thirty two patients with gallbladder injuries were identified in a group of 5069 patients (0.63%) who sustained intra-abdominal trauma during a six-year period, 23 patients in a group of 2650 (0.86%) who sustained penetrating injuries and 9 in a group of 2419 who sustained blunt abdominal trauma. The patients ranged in age from 5 to 60 years with a mean age of 27.9 years; 27 of 32 patients were male. The incidence was greater ( $p < 0.05$ ) in the patients sustaining penetrating trauma (group I). The patients with blunt abdominal trauma (group II) had significant different trauma scores ( $p < 0.05$ ) than those with penetrating trauma, indicating greater severity in this group of patients (Table 1).

All patients underwent exploratory laparotomy. In all patients the diagnosis of gallbladder injury was first made during celiotomy. Twenty four patients had lacerations, 4 patients had

contusions and 4 patients had avulsions of the gallbladder. In the 32 patients, 81 intra-abdominal injuries were found or 2.5 per patient (Table 2) ; 2.2 per patient in group I and 2.7 per patient in group II ( $p>0.05$ ). Thirty of the 32 patients (93.8%) had liver lacerations, the most commonly seen injuries.

Thirty of 32 patients underwent cholecystectomy, one 5-year old patient underwent suture of the gallbladder and one died during the laparotomy. Overall mortality was 25% (Tab.1), none as a result of their gallbladder injury. The mortality was greater in the patients sustaining blunt abdominal trauma ( $p<0.05$ ).

## DISCUSSION

Because of its size and peculiar anatomic position, the gallbladder is infrequently injured. The incidence ranges between 0.5 and 8.6% of all intra-abdominal lesions, most of them is due to penetrating injury. The rupture of the gallbladder due to blunt trauma is rare. In our series this mechanism of injury accounted for 28.1% of the lesions.

Associated intra-abdominal injuries is very common in penetrating or non-penetrating injuries. The majority of the patients had liver lacerations, the most commonly seen injuries, as seen in the present series. There was no correlation between number of intra-abdominal injuries and mortality.

There are four types of injury to the gallbladder: contusion, avulsion, laceration and traumatic cholecystitis. In our series the most frequent type was laceration and there was no cases of traumatic cholecystitis. There was no correlation between the type of gallbladder injury and mortality.

Smith and Soderberg noticed three factors predisposing the gallbladder to rupture secondary to blunt trauma. First it appears that the thin-walled normal gallbladder is more prone to rupture due to blunt trauma than a diseased

gallbladder. The fibrotic thickened-wall of the chronic inflamed gallbladder probably makes it less prone to rupture. Second predisposing factor in rupture of the gallbladder is the degree of filling at the time of trauma. The third factor is alcohol ingestion because it causes an increased sphincter tone at the choledochoduodenal junction. In the penetrating trauma, the incidence of gallbladder lesion is correlated to the direction of the wound.

The gallbladder injury usually are detected at the time of laparotomy and seldom are diagnosed preoperatively. Peritoneal lavage and abdominal paracentesis, with the aspiration of bilious contents is suggestive of gallbladder laceration. However, negative taps have also been reported by Smith and Ali in cases of gallbladder rupture. Zantut has demonstrated great utility of laparoscopy in the diagnosis of choleperitoneum due to rupture of the gallbladder.

A variety of treatment options are available in the management of gallbladder injuries, including: expectant observation, drainage, cholecystorrhaphy, or extirpation of the gallbladder. Intraoperative cholangiography is extremely helpful in making the diagnosis of associated bile duct injury. Reports from the last two decades indicate that cholecystectomy is viewed as the operation of choice for traumatic injury of the gallbladder. In gallbladder ruptures in children, several authors feel that preservation of the injured organ should be attempted. Their efforts include simple suturing, as used in one of our patients (5-year old girl), or cholecystostomy.

We concluded that there is relation between severity of trauma and incidence of gallbladder injury in blunt abdominal trauma. In the penetrating trauma, the incidence of gallbladder lesion is correlated with the direction of the wound and there is no relation with the severity of trauma. The greater mortality seen in the patients sustaining non-penetrating injuries ( $p<0.05$ ) supports this idea. Cholecystectomy is a safe therapeutic option.