

# Laparoscopic Management of Traumatic Hemorrhagic Cholecystitis

Timothy R. Shope, MD, Thomas L. Bass, MD, Randy S. Haluck, MD

## ABSTRACT

**Background and Objectives:** Blunt trauma to the gallbladder is a rare entity, particularly when no other organ is injured. In isolated blunt traumatic injury to the gallbladder, treatment options vary depending on the specific injury. The types of blunt trauma injuries to the gallbladder and their appropriate management are discussed. In addition, a case successfully managed with minimally invasive techniques is presented.

**Methods:** A passenger admitted after a high-speed front-end motor vehicle crash was safely managed with laparoscopic surgery for a rare case of isolated gallbladder trauma. The preoperative and operative management are discussed as well as the application of minimally invasive surgery for this rare process.

**Results:** Laparoscopic cholecystectomy was performed successfully. The patient did well postoperatively with no complications. No other injuries were identified at the time of laparoscopy.

**Conclusion:** Minimally invasive techniques may be safely applied to blunt trauma of the gallbladder in certain circumstances.

**Key Words:** Trauma, Laparoscopy, Cholecystectomy.

## INTRODUCTION

The use of laparoscopic surgical techniques to manage acute traumatic injuries is somewhat controversial. Perceived shortcomings of laparoscopy for the detection and management of traumatic injuries include inadequate visualization and altered tactile haptic feedback, which might increase the risk of missed injuries and affect patient morbidity and mortality. We report a case of traumatic gallbladder injury from blunt abdominal trauma that was diagnosed preoperatively and safely treated with laparoscopic cholecystectomy.

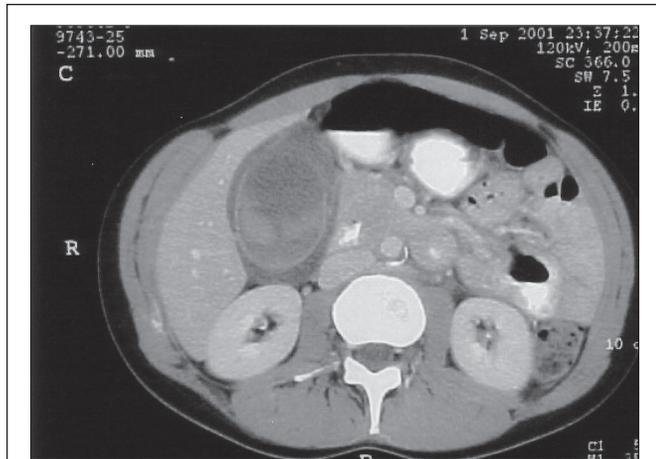
## CASE REPORT

A 35-year-old female was the restrained front-seat passenger in a high-speed motor vehicle collision. On arrival to the trauma center, she was awake and alert with a Glasgow Coma Score of 15 and complaints of right upper quadrant (RUQ) abdominal pain. She was hemodynamically stable. A physical examination of her abdomen revealed a soft, nondistended abdomen with moderate RUQ tenderness but no palpable mass or signs of peritoneal irritation. Plain radiographs of the cervical spine, chest, and pelvis showed no evidence of acute injury. Laboratory findings were within normal limits, with the exception of a hemoglobin of 10.0 mg/dL. Computerized tomography of the abdomen showed a massively dilated gallbladder with pericholecystic fluid and heterogeneous intraluminal fluid consistent with blood and thrombus (**Figure 1**). While under observation, the patient developed increasing RUQ pain and localized peritonitis. Laparoscopy revealed a massively dilated gallbladder without evidence of hepatic, duodenal, or pancreatic injury (**Figure 2**). A laparoscopic cholecystectomy was undertaken. An intraoperative cholangiogram revealed no evidence of intra- or extrahepatic bile duct injury. Gross inspection of the specimen showed a markedly enlarged gallbladder filled with thrombus without evidence of cholelithiasis (**Figure 3**). The patient made an uneventful recovery and was discharged home on postoperative day 2.

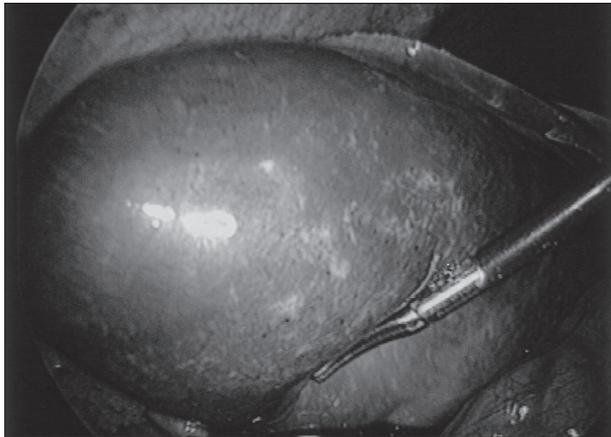
Department of Surgery, Penn State College of Medicine, Hershey, Pennsylvania, USA (all authors).

Address reprint requests to: Randy S. Haluck, MD, FACS, Department of Surgery, MC H149, PO Box 850, Penn State Milton S. Hershey Medical Center, Hershey, PA 17033, USA. Telephone: 717 531 6297, Fax: 717 531 4729, E-mail: rhaluck@psu.edu

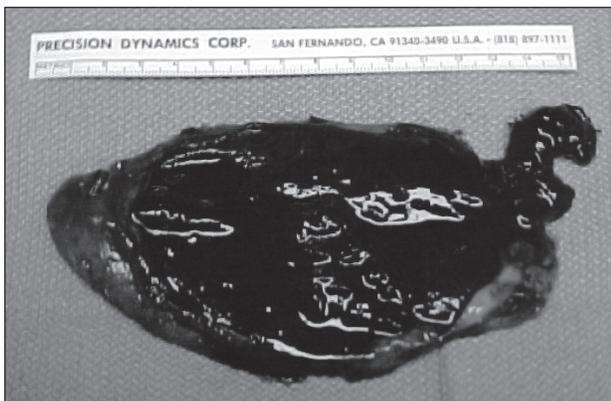
© 2004 by JSLS, *Journal of the Society of Laparoendoscopic Surgeons*. Published by the Society of Laparoendoscopic Surgeons, Inc.



**Figure 1.** Preoperative CT scan showing markedly enlarged gallbladder with intraluminal blood and thrombus.



**Figure 2.** Intraoperative photograph illustrating markedly enlarged gallbladder.



**Figure 3.** Gross photograph of the gallbladder specimen showing intraluminal thrombus.

## DISCUSSION

Although the gallbladder is the most commonly injured segment of the extrahepatic biliary tree, trauma to this organ is a rare entity, comprising only 0.5% to 0.6% of all traumatic intraabdominal injuries.<sup>1</sup> Factors believed to predispose the gallbladder to blunt injury include a thin gallbladder wall, postprandial distention, and alcohol ingestion.<sup>2</sup> In blunt trauma, associated intraabdominal injuries particularly to the liver, spleen, and duodenum are common.<sup>3</sup> An average of greater than 3 intraabdominal injuries per patient was reported in 1 series.<sup>2</sup> Fortunately, our patient had no other associated injuries.

Several classification systems have been reported in the literature to describe the spectrum of injury that may occur to the gallbladder.<sup>1,4</sup> None has gained widespread use or acceptance perhaps because of the rare nature of the injury and the lack of a clear continuum of injury as seen in the grading systems of solid organs. Rather than conceptualize a spectrum of injury to the gallbladder, it may be more appropriate to define 4 separate patterns of injury: contusion, perforation, avulsion, and traumatic hemorrhagic cholecystitis.<sup>2</sup> Gallbladder contusion represents isolated injury to the gallbladder wall and may be associated with intramural hemorrhage. The progression of an area of contusion to ischemia and necrosis with perforation has been reported, but probably represents a very rare event. Gallbladder perforation or rupture has been the most frequently reported traumatic gallbladder injury. Free perforation of the gallbladder with extravasation of bile into the peritoneal cavity is seen most commonly. A few cases of contained subserosal perforations have been reported.<sup>5</sup> Gallbladder avulsion may be partial, with some degree of attachment to the gallbladder fossa, or complete, with complete separation of the gallbladder from the liver bed. Complete separation of the gallbladder from the liver with division of the cystic duct and artery has been described as "traumatic cholecystectomy." Traumatic hemorrhagic cholecystitis, as we have described in this report, has been described previously,<sup>2</sup> and represents either direct hemorrhage into the gallbladder from injury to the wall or mucosa or hemorrhage into the biliary tree with reflux of blood into the gallbladder.

Treatment options vary from simple observation to cholecystectomy depending on the severity of injury. Most often, cholecystectomy is undertaken at the time of open laparotomy for other associated injuries. Intraoper-

ative evaluation of the biliary tree is imperative to rule out concomitant bile duct injury. We have demonstrated that laparoscopic surgical techniques may be safely used in instances where the likelihood of associated injuries is low, and definitive treatment can be rendered without increasing patient morbidity and mortality.

**References:**

1. Losanoff JE, Kjossev KT. Complete traumatic avulsion of the gallbladder. *Injury*. 1999;30:365-8.
2. Sharma O. Blunt gallbladder injuries: Presentation of twenty-two cases with review of the literature. *J Trauma*. 1995;39:576-580.
3. Chen X, Talner LB, Jurkovich GJ. Gallbladder avulsion due to blunt trauma. *Am J Roentgenol*. 2001;177:822.
4. Smith SW, Hastings TN. Traumatic rupture of the gallbladder. *Ann Surg*. 1954;139:517-520.
5. Solheim K. Blunt gallbladder injury. *Injury*. 1972;3:246-248.

---

Presented at the Eighth World Congress Hosted by the Society of American Gastrointestinal Endoscopic Surgeons, March 13-16, 2002, New York, NY, USA.