

# Bile Leaks and Biliary Injuries in Laparoscopic Cholecystectomy

## Introduction

The transition from Open to Laparoscopic Cholecystectomy occurred when routine cholangiography and routine drainage of the gallbladder bed was diminishing as a common practice among surgeons. A substantial increase in Biliary Leaks and Injuries has been observed since the adoption of the laparoscopic approach. Currently, biliary leaks and injuries are the leading cause of malpractice litigation in Laparoscopy. A growing body of evidence from multiple sources suggests that Routine Cholangiography and Routine Drainage of the gallbladder bed may lead to a reduction in biliary complications and improve outcomes<sup>1-37</sup>.

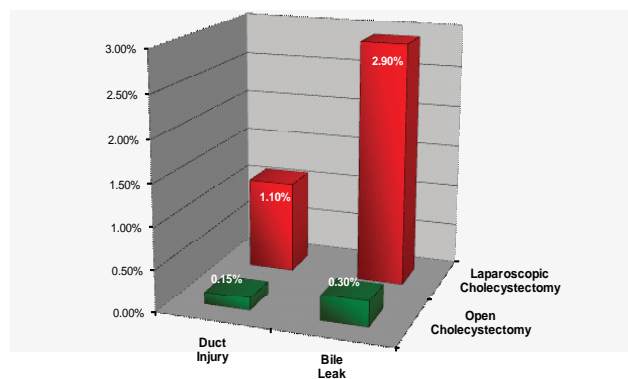
## Bile Leaks and Bile Duct Injuries

Open cholecystectomy has been associated with 0-0.5 (0.3)% incidence of bile leakage and 0-0.2 (0.15)% incidence of bile duct injury. Laparoscopic cholecystectomy is associated with 1.7-4.4 (2.9)% incidence of bile leakage and 0.3-1.8 (1.1)% incidence of bile duct injury. The majority (>75%) of leaks and injuries are not recognized at the time of surgery. Without operative cholangiography or the presence of a drain, delay in recognition, delay in management, and even death occurs<sup>1-21</sup>.

**Table 1. Incidence of Bile Leak & Bile Duct Injury Open vs Laparoscopic Cholecystectomy**

Type of Injury	Open Cholecystectomy	Laparoscopic Cholecystectomy
Bile Leak	0-0.5 (0.3)%	1.7-4.4 (2.9)%
Bile Duct Injury	0-0.2 (0.15)%	0.3-1.8 (1.1)%

**Incidence of Bile Leak and Bile Duct Injury\* Open vs Laparoscopic Cholecystectomy**



\*Summary data compiled from multiple sources Domestic and International, see Bibliography in PDF Documents. Data is cross referenced with reports from Academic Departments of Surgery, Gastroenterology, and Radiology Studies from Departments of Gastroenterology and Radiology tend to report higher observed rates of Biliary Leaks and Duct Injury

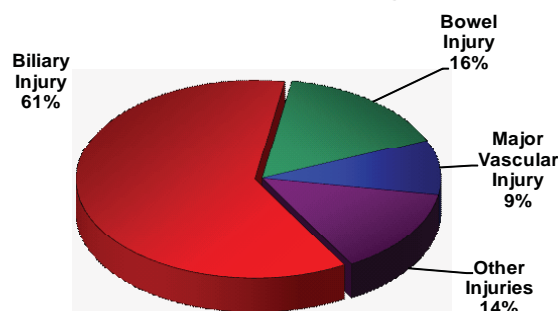
## Delayed Recognition of Biliary Injuries

Without routine cholangiography and/or drainage of the gallbladder bed, the majority (>75%) of biliary leaks and injuries are not recognized at operation. The treatment cost of managing the delay may exceed \$100,000. Plaintiff settlements and awards in malpractice litigation average \$507,000 but may exceed \$2,000,000<sup>32-36</sup>.

**Table 2. Cost of Delayed Recognition of Biliary Injuries in Laparoscopic Cholecystectomy**

Item Studied	Result
Biliary Injuries not recognized at surgery	> 75%
Cost of Management	> \$100,000
Average Plaintiff Indemnity	\$507,000
Extent of Jury Awards	> \$2,000,000

**Source of Malpractice Litigation\***

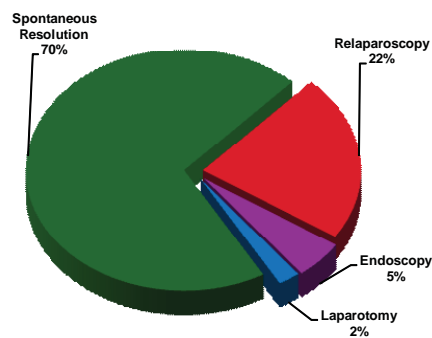


\*Medicolegal Perspectives on Injuries Associated with Laparoscopic Cholecystectomy Kern, KA, University of Connecticut School of Medicine, Farmington, CT Reported in Archives of Surgery 1997 and Surgical Clinics of North America 1994

## Routine Cholangiography and Drainage

Routine Intraoperative Cholangiography is associated with a lower incidence of Bile Duct Injury. Routine drainage detects Bile Leakage within 48 hours of surgery, alerts the surgeon, and provides a means for spontaneous resolution and/or intervention planning as required<sup>1-10,22-32</sup>.

**Outcome of Bile Leaks\***



\*Prospective Studies<sup>22-31</sup>  
Routine Cholangiography and Drainage

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