

Bile duct injury of laparoscopic cholecystectomy

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ABSTRACT

Aim: To assess the complications of bile duct injury in laparoscopic cholecystectomy in Loghman medical center, Tehran.

Background: The incidence of complications of laparoscopic cholecystectomy has increased dramatically since the introduction and widespread use of laparoscopic cholecystectomy.

Patients and methods: From January 1998 to January 2002, a total of 155 laparoscopic cholecystectomies were performed at the Loghman medical center. A retrospective analysis of complications including major bile duct injuries, cystic duct leakage, and bile duct strictures, was carried out.

Results: Of 155 patients with cholelithiasis, conversion to open cholecystectomy was required in 20 patients (13%). There were 3 (2.22 %) major bile duct injury in laparoscopic cholecystectomy that required reconstructive operations at later stage.

Conclusion: Laparoscopic cholecystectomy is an operation associated with low morbidity and mortality rate, but bile duct injury is still a major problem. Clear demonstration of anatomy is the cornerstone of safe, successful laparoscopic cholecystectomy.

Keywords: *Bile duct injury, Complications, laparoscopic cholecystectomy.*

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INTRODUCTION

The introduction and widespread use of laparoscopic cholecystectomy (LC) in the 1990s have resulted in an increased frequency of biliary injuries and associated bile duct strictures (1).

The laparoscopic method has reduced hospital stay and patients' pain, but iatrogenic injuries of the biliary tract are increased (2). The estimated incidence of major bile duct injuries, which was 0.1% to 0.3% during the open cholecystectomy (OC) has risen to an estimated 0.4% to 0.6% (2, 3).

The injury of extra hepatic bile ducts remains a dangerous and potentially life-threatening complication of cholecystectomy, irrespective of the operative technique applied (4, 5).

There was unequivocal evidence that the incidence of complication is directly related to the training and experience of the surgeon (6), applicability of basic principles of gallbladder and common duct surgery, and preventive measures toward iatrogenic injuries in gallbladder surgery for LC (7). Despite the hope that surgeons would undergo a "learning curve" with the new procedure and that the incidence would decline, the rate of bile duct complications with LC appears to be stable (8, 9).

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In the present study, the records of laparoscopic cholecystectomies carried out in the Loghman hospital were assessed in order to depict an overview of associated bile duct injuries.

PATIENTS and METHODS

The study has retrospectively evaluated 155 consecutive patients with acute and chronic cholecystitis who had undergone laparoscopic cholecystectomy between 1998 and 2002 in Loghman Medical Center and had been followed up for a mean period of one year.

For study purposes, cholelithiasis patients whose requirement of cholecystectomy was confirmed by ultrasound were considered. Conservative treatment was considered only in asymptomatic or minimally symptomatic patients, but the following information of all patients was recorded: age, gender, bile duct injury and they were followed for at least one year for signs and symptoms of bile duct injury.

RESULTS

There were 155 patients. Conversion to open cholecystectomy was required in 20 patients (13%) because of unexpected intraoperative findings such as inflammation, adhesions, aberrant anatomy, and technical difficulty or unclear biliary anatomy. There were 8(40%) female patients and 12 (60 %) males. No complication was seen in this group.

Successful laparoscopic cholecystectomy was performed in 135 patients. In this group there were 110 (78 %) female patients and 25 (22 %) males. Their ages ranged from 22 to 75 years (mean 39 years).

Common bile duct was damaged in 3 patients (2.22 %). These lesions included: two sectioning and the resection of the main stem of bile duct and one post-operative stricture. In one patient, the lesions were diagnosed intraoperatively and the conversion was performed. Reconstructive operations

consisted of Roux-en-Y, hepaticojejunostomy with the transhepatic stent placement through the anastomosis. There was one cystic duct leak (slipped clip) that underwent repair with cystic duct stump over a T tube. One patient had common bile duct stricture which was diagnosed two-months after operation. Diagnosis was made with ERCP and reconstructive surgery comprised common bile duct resection and anastomosis over a T-tube. Reconstructive operations yielded good results in all patients. There were no lethal outcomes.

DISCUSSION

The data demonstrate that in laparoscopic cholecystectomy bile duct injury is still a major problem. Complications of laparoscopic cholecystectomy can be minimized by improving operative procedure and conversion to open cholecystectomy.

Mortality of LC (0 - 0.38%) is reported to be less than OC (10, 11). In a review of 39,238 cases from China, an overall related mortality of 0.04% was reported (12). In our series, we had no mortality.

The only downside to LC is a two-to threefold increase in common bile duct (CBD) injuries compared with OC (13). Conversion to laparotomy should not be looked at as complication but as a safety net (14). Unclear anatomy remains the second most common reason for conversion after inflammation (15). In our series we had not any bile duct injuries in conversion group. In LC group the bile duct injury consisted of two transections and one stricture of common bile duct (2.22 %).

In literature review, bile duct injury varies between 0.3% - 10% in LC (7, 16). The incidence rate of bile duct injuries has reached a steady-state at least double the rate observed with open cholecystectomy (17, 18, 19). It is generally believed that bile duct injuries result from misidentification of anatomy (20). The risk of

conversion of the laparoscopic cholecystectomy increases significantly in males, the elderly, obese patients, and when inflammation is present (19). Hunter proposed a series of maneuvers designed to optimize exposure and identification of the anatomy during LC. These included routine use of a 30° telescope, firm cephalic traction on the gallbladder funds, lateral traction on the gallbladder infundibulum, dissection of the cystic duct at the gallbladder infundibulum, and threshold for conversion to OC when the surgeon is uncomfortable with the anatomy (13).

In some problem cases, edema, fibrosis, and adhesions make the identifications of the gallbladder-cystic duct junction very difficult.

In this group the rate of bile duct injury increases (19, 21).

Clear demonstration of anatomy is the cornerstone of safe, successful laparoscopic cholecystectomy.

Laparoscopic cholecystectomy is an operation associated with low morbidity and mortality rate, but bile duct injury is still a major problem. Conversion to laparotomy remains a wise option in cases of technical difficulty or doubtful bile duct anatomy.

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