

# LAPAROSCOPIC CHOLECYSTECTOMY; COMMON BILE DUCT INJURY AFTER LEARNING CURVE.

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## Article Citation:

Khan JS, Hasan H, Iqbal M. Laparoscopic cholecystectomy; Common bile duct injury after learning curve. Professional Med J Mar 2010;17(3):373-378.

**ABSTRACT... Objective:** To determine the frequency of common bile duct (CBD) injury in laparoscopic cholecystectomy in our settings, in my last 500 cases, after going through the learning curve associated CBD injuries. **Design:** Descriptive study. **Place and Duration of Study:** Surgical Unit-I, Rawalpindi General Hospital and the author's Surgical Clinics from January 2003 to December 2008. **Patients and Methods:** Five hundred patients undergoing laparoscopic cholecystectomy by the same surgeon were included. The important variables included demographic data, intra operative time and findings, frequency of CBD injury and post operative hospital stay. **Results:** There were 419(83.8%) females and 81(16.2%) males with mean age  $45.04 \pm 11.03$  years. 294(58.8%) patients had chronic cholecystitis with Cholelithiasis and were admitted through Out Patient Department whereas 206(41.2%) were admitted through Accident and Emergency Department with acute cholecystitis. Abdominal ultrasound showed multiple calculi in 351(70.2%) patients and 149(29.8%) patients had single calculus preoperatively. Empyema was found in 97(19.4%) cases whereas adhesions were present in 182(36.4%) patients. In our study frequency of CBD injury was 1%. Mean operating time was 35 minutes. 96.8% of the patients were discharged within 48 hrs of operation. **Conclusion:** Laparoscopic Cholecystectomy in our set up proved to be a safe procedure, having frequency of CBD injury of only 1% and a short hospital stay 493(96.8%) being discharged in less than 2 days.

**Key words:** Laparoscopic Cholecystectomy, Calculous Cholecystitis.

## INTRODUCTION

Gallstones are the most common cause of hospitalization and the most costly digestive tract disease in United States of America, with an annual estimated overall cost of more than five billion US dollars<sup>1</sup>.

The standard treatment for symptomatic gall stones was open operation through abdominal incisions to remove the gall bladder till late 80s. Open cholecystectomy needs a five day hospital stay and a 3-6 weeks period of convalescence<sup>2</sup>. Muhe performed the first LC in 1985<sup>3</sup>. He presented his work to German Association of Surgeons, who initially ignored it although by 1986, he had accumulated 94 cases of the procedure.

The credit of the first LC goes to Mouret, a French surgeon who videotaped the operation and demonstrated the operation in videotape to surgeons in Europe and U.S.A.

The first published series was by Cuschiari and Dubois in 1991<sup>4</sup>. Today more than 80% of cholecystectomies world wide are carried out laparoscopically<sup>5</sup>. The major benefit of laparoscopy in upper gastrointestinal surgery

Article received on: 26/08/2009  
Accepted for Publication: 06/10/2009  
Received after proof reading: 09/08/2010  
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results from avoidance of an upper abdominal incision, resulting less pain and improved pulmonary function tests, are proven benefits of LC compared to small incision cholecystectomy<sup>6</sup>. Studies have shown that LC reduces hospitalization and promotes earlier recovery and return to normal activity and is not associated with post operative immuno-suppression, with a more positive post operative morbidity profile compared to open surgery<sup>7,8,9</sup>. LC is associated with low incidence of complications though incidence of bile duct injuries is increased compared with Open Cholecystectomy which can be controlled by better training and introduction of better optics<sup>10,11</sup>.

Considering all the facts mentioned so far, we can safely say that laparoscopic cholecystectomy (LC) is the GOLD STANDARD PROCEDURE for symptomatic gall stone disease<sup>12</sup>.

The purpose of conducting this study was to determine the frequency of common bile duct injury during laparoscopic surgery and to find out the factors responsible for post operative morbidity.

## METHODS

A prospective cohort of 500 patients undergoing laparoscopic cholecystectomy between January 2003 to December 2008 in Rawalpindi General Hospital and the author's surgical clinic were included in the study.

They were selected through non probability purposive sampling and were admitted through Out Patients Department and Accident and Emergency Department for elective laparoscopic cholecystectomy.

Patients with clinical diagnosis of acute and chronic cholecystitis underwent a detailed pre operative workup including history, physical examination, laboratory investigations, abdominal ultrasound and pre anesthetic evaluation.

We did not enroll the patients for elective laparoscopic cholecystectomy who had previous upper abdominal operations, ASA grade III, immunosuppressed or

receiving radiotherapy. Patients with evidence of common bile duct pathology on clinical, biochemical or ultrasonological basis, having bleeding disorders or intra hepatic gallbladder were also excluded from our study. Patients with deranged liver function tests were treated first on empirical basis and then underwent laparoscopic cholecystectomy.

Pre operative, intra operative and post operative variables were collected and analyzed.

Pre operative variables included age, gender, mode of admission, diagnosis, hemoglobin, total leukocyte count and ultrasound findings with emphasis on the number of calculi.

Operative variables included operating room (OR) time, status of gall bladder, presence of adhesions, common bile duct injury and its subsequent management.

Standard four port technique was used. The camera port was inserted through infra/transumbilical incision. The second 10 mm port was placed in the epigastrium, about 5 mm below the xiphoid, with its intra-abdominal entrance site being just to the right of the falciform ligaments. Two smaller ports for grasping instruments were then placed, one in right upper quadrant near the midclavicular line and second just medial to anterior axillary line.

A nasogastric tube was only passed to empty the stomach when stomach was distended, obstructing the vision of sub hepatic space, nasogastric tube was removed on extubation.

If there was leaking of bile in the peritoneal cavity, it was sucked up and peritoneal cavity lavage with normal saline was done at the end of procedure. Similarly in case of spillage of stones, smaller stones were sucked with the help of normal saline using 10mm sucker whereas large stones were individually picked up and removed one by one or a basket made up of surgical glove was used. In case of Empyema gall bladder, a drain was placed. Port site wounds were approximated with silk. If rectus sheath defect was enlarged to >10 mm for gall bladder removal, It

was also repaired.

Third generation Cephalosporin, 1gm was injected at the time of induction of anesthesia along with injection Metoclopramide 10mg and injection Diclofenac Acid 75mg. In last 281 cases of this series, injection Decadron 8mg was also injected at the time of induction of anesthesia to reduce the incidence of post operative nausea and vomiting. Similarly, injection Bupivacaine was instilled into the gall bladder fossa at the end of the procedure to reduce the post operative pain. Use of Harmonic Scalpel instead of clips was also used. In post operative period, 02 doses of antibiotics with antiemetics and painkillers were given. Most patients were discharged on next day except cases of Empyema or patients developing complications who needed continuation of antibiotics.

## RESULTS

Between the years 2003 to 2008, 500 patients underwent laparoscopic cholecystectomy. Amongst 500 patients, 419 (83.8%) were females and 81 (16.2%) males with female to male ratio of 5.1:1. The mean age of study participants was 45.03, years (range, 21-70).

In our study, two hundred and ninety four (58.8%) patients were admitted through Out Patient Department whereas two hundred and six (41.2%) were admitted through Accident and Emergency department. Complete Blood Count showed mean Hemoglobin of 10.88 gm/dl (range, 9.44-11.48).

Pre operative variables are summarized in table-I.

The mean operating time in our study was 35 minutes. The operating room duration, the status of gallbladder, presence of adhesions shown in table 2.

Amongst our 500 patients, 96.8% patients got discharged within 48 hours.

Five cases of CBD. Injury were recorded, two case of chronically inflamed gall bladder, whereas, there were three cases of Empyema gall bladder. Two cases were

detected preoperatively whereas remaining three

		No. of pts. (N = 500)	% age
Gender	Males	81	16.2
	Females	419	83.8
Mode of Admission	Admitted via OPD	294	58.8
	Admitted via A&E	206	41.2
Diagnosis	Chronic cholecystitis	294	58.8
	Acute cholecystitis	206	41.2
Lab values	Normal leukocyte count	231	46.2
	Raised leukocyte count	269	53.8
	USG (single calculus)	149	29.8
	USG (multiple calculi)	351	70.2

	No. of pts. (N = 500)	% age
Normal gallbladder	198	39.6
Moderately distended gallbladder	62	12.4
Severely distended gallbladder	42	8.4
Shrunken gallbladder	26	5.2
Mucocele gallbladder	74	14.88
Empyema gallbladder	98	19.6
Adhesions	158	31.6
OR time of less than 30 min	320	64
OR time between 30 & 60 min	163	32.6
OR time more than 60 min	17	3.4

diagnosed in post operative period due to high output of bile in Redivac drain.

In our study, 5 out of 500 patients (1%) had common bile

Table-III. Management of CBD Injury Cases (n=5).

Chronically Inflamed G. B (n=294)	Mode of Management	% age
One Case of CBD injury detected peri-operatively	CBD repair over T tube done	0.6%
One case of CBD injury diagnosed postoperative	Choldochojejunostomy done	
Acutely inflame D G. B (n=206)	Mode of management	
One case of CBD injury diagnosed Peroperatively	CBD repair over T tube done	1.4%
One case of CBD injury	CBD repair over T tube done	
Diagnosed Perioperatively	-	
One case of CBD injury	Choledochojejunostomy done	
Diagnosed Postoperatively	-	
Postoperatively	-	

duct injury of them, 2(0.6%) were cases of chronically inflamed GB, whereas 3(1.4%) were cases of acutely inflamed GB.

## DISCUSSION

Ever since Philips Mouret performed first video-laparoscopic cholecystectomy in Lyons, France.<sup>13</sup> This procedure is gaining popularity day by day and has become treatment of choice for symptomatic gallstones. The benefits of LC like shorter postoperative hospital stay, more rapid overall recovery time and better cosmesis have been well documented<sup>14,15</sup>.

Our surgical audit also confirms ease, efficacy and safety of this procedure.

In our study, age range was 21 years to 70 years

comparable to the data published in literature<sup>16,17</sup>.

In our study 83.8% patients were female whereas 16.2% were male with female to male ratio of 5.1: 1 higher than reported in literature<sup>16,17</sup>. We admitted 58.8% patients via Out Patient department and 41.2% through Accident & Emergency while a study done in South Australia shows 83.1% admissions through Out Patient Department and 16.8% through Accident & Emergency<sup>16</sup>.

Common bile duct injury occurred in 1.4% of cases and this complication had a higher rate compared to 0.00%, 0.35% and 0.16% reported in two studies<sup>18,19,20</sup>. but comparable to two other studies being 2.6% in one study<sup>20</sup> and 1.6% in another study<sup>22</sup>.

Critics always point out long operating time as a drawback of laparoscopic cholecystectomy but our average operating time was only 35 minutes with 64% cases were completed within 30 minutes, much shorter operating time as compared to the time published in literature<sup>16,23</sup>.

An important benefit of laparoscopic cholecystectomy is short post operative hospital stay and early return to work. In our study, 96.8% of patients being discharged within 48 hours comparable to the earlier conducted studies<sup>16,23</sup>.

## CONCLUSION

Our results clearly indicates that laparoscopic cholecystectomy in our set up has very low frequency of CBD injury, especially in chronically inflamed GB, comparable to results published in various studies.

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not a destination."**

**Ben Sweetland**