

COMPLICATIONS OF LAPAROSCOPIC CHOLECYSTECTOMY

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*Department of General Surgery, Baqai Medical University, Karachi**Department of Surgery, Dow University of Health Sciences, Karachi****ABSTRACT:****Objective:** To assess the complications of Laparoscopic Cholecystectomy in our setting.**Design & Duration:** A prospective observational study from Nov. 1997 to Oct. 2004.**Setting:** Surgical Unit I, Civil Hospital, Karachi.**Patients:** All patients who underwent Laparoscopic Cholecystectomy for gall stone disease between Nov. 1997 and Oct. 1999 were included in the study, whereas cases with acute cholecystitis, bile duct calculi, obstructive jaundice, cholangitis, acute pancreatitis, portal hypertension, gall bladder malignancy, sepsis, and severe cardiopulmonary or other medical diseases were excluded from the study.**Methodology:** The data of all the patients who underwent Laparoscopic Cholecystectomy for gall stone disease was entered on a standardized proforma and analyzed for age, sex, symptomatology, examination findings, investigations, operative findings, post-operative complication and the outcome. The patients were followed-up for five years i.e. the last patient operated in Oct. 1999 was followed-up till Oct. 2004.**Results:** Amongst the 160 patients that were included, there were 138 females and 22 males, with ages ranging from 17-82 years. Laparoscopic cholecystectomy was successfully completed in 144 (90%) cases with a conversion rate of 10%. Major complications were seen in eight (5%) patients including common bile duct (CBD) injury in three and cystic duct injury, bleeding from gall bladder bed, duodenal injury, colonic injury and retained CBD stone in one case each. There was no mortality in this series.**Conclusion:** Laparoscopic Cholecystectomy is a safe procedure with minimal complications.**KEY WORDS:** Cholelithiasis, Gall Stones, Cholecystectomy, Laparoscopy, Minimal Access Surgery, Complications**INTRODUCTION**

With the advent of Laparoscopic Cholecystectomy (LC) in France in 1987, as the gateway into the field of interventional laparoscopy, the management of biliary disease has dramatically changed. At present laparoscopic cholecystectomy is considered the "Gold Standard" for the treatment of cholelithiasis as it offers unquestionable advantages in comparison to the conventional approaches. Reduced trauma, minimal post-operative pain and dramatic shortening of post-operative hospital stay are the main reasons for its popularity¹. The enthusiasm

brought about by laparoscopic cholecystectomy is almost unprecedented, and is emphasised by the fact that it is often the patient who specifically requests this technique.

The indications for LC include all patients with symptomatic cholelithiasis and/or acute cholecystitis. Body morphology, age, and previous abdominal surgical intervention are no longer contraindications. Formerly limited to uncomplicated cholelithiasis, the horizon of indications has progressively extended and, at present, very few patients require the conventional 'open' approach. Most surgeons can perform this procedure quickly with a minimal conversion rate.

During the initial phase of the use of this technique, the complication rate is much higher than the standard procedure of open cholecystectomy. This is attributed largely to technical limitations. Monitors are two dimensional and instruments lack the tactile feedback, making complex manoeuvres like suturing difficult. Rigid ports fixed in the abdominal wall restrict range of the motion, whereas visualisation of structures replaces palpation for the detection of abnormalities².

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Complications of LC are sometimes related to intraperitoneal access, and at other times to a specific step of the procedure. The reported complications include intraoperative bile spillage, infectious complications secondary to calculi left in the abdominal cavity, injury to the duodenum and transverse colon, postoperative bile leaks, postoperative persistent right upper quadrant pain, missed or retained stone in the common bile duct, post-operative diarrhoea, postoperative ileus, and port site problems.

The majority of iatrogenic injuries can be successfully avoided by appreciating the limitations and pitfalls of laparoscopic surgery, and by carefully dissecting the Calot's triangle before dividing any structure. Early identification and management of complications will minimise potentially devastating complications of small, unrecognised injuries. The overall mortality after laparoscopic cholecystectomy ranges from 0-1%, and the frequency of major complications is less than 5%².

PATIENTS & METHODS

This prospective and descriptive study was carried out on 160 patients who underwent laparoscopic cholecystectomy for symptomatic gall stones at Surgical Unit I of Civil Hospital, Karachi between Nov. 1997 to Oct. 1999. As no new case was included after Oct. 1999 and the patients were followed-up for five years, hence the study continued till Oct. 2004.

The inclusion criteria were patients of all ages and both sexes with symptomatic gall stone disease, having normal blood counts and liver function tests (LFTs), and ultrasound abdomen clearly demonstrating gall stone disease, with absence of any signs suggesting acute cholecystitis.

Patients with history, physical examination, ultrasound abdomen and laboratoring investigations suggesting acute cholecystitis, bile duct calculi, obstructive jaundice, cholangitis, acute pancreatitis, portal hypertension, gall bladder malignancy, sepsis, and severe cardiopulmonary or other medical diseases were excluded from the study.

A thorough history taking and clinical examination was carried out; findings that were recorded included the demographic data, body weight, presenting complaints, past history of jaundice or any abdominal surgery, associated medical diseases, drug history, vital signs, anemia, jaundice and abdominal tenderness. Routine laboratory investigations performed included blood CP, blood sugar and urea, serum creatinine and electrolytes (UCE), LFTs, serum amylase, X-ray chest and ultrasound abdomen. Further investigations were done as and when

required like the CT scan, magnetic resonance cholangiopancreatography (MRCP), percutaneous transhepatic cholangiography (PTC) and endoscopic retrograde cholangiopancreatography (ERCP). We have no facility of intraoperative cholangiography or choledochoscopy.

ECG and cardiac assessment was done if the patient was over 40 years. A medical opinion was obtained in cases of significant medical problems like hypertension or diabetes mellitus; these were first treated and stabilized before proceeding for LC. All patients were preoperatively assessed by an anesthetist. Informed consent was taken and the patients were fully explained about the nature of the procedure, the risks involved and the likely need of conversion to open cholecystectomy.

Peri-operative antibiotic prophylaxis was given to all the patients, as ceforanide (precef) 1gm intravenously at the time of induction, followed by one or two doses post-operatively at 12 hourly interval. The antibiotics were continued longer in cases of complications. All patients were operated under general anaesthesia with endotracheal intubation. A nasogastric tube was passed intraoperatively to decompress the stomach and reduce the risk of visceral puncture at the time of the creation of the pneumo-peritoneum. The patient was operated upon in the supine position with the table tilted 20° up (reversed Trendelenberg). The surgeon, camera man and the scrub nurse stood on the left and the assistant on the right side of the patient. The insufflator, suction/irrigation system, camera, electrocautery unit and xenon light source were placed on the right of the patient and the instrument trolley on the left side. The video monitor, linked to the endovideo camera, was placed on the right side of the patient such that the assistant could clearly visualise the progress of the operation. Before beginning the procedure the entire electronic equipment was checked to ensure proper functioning. Skin was prepared with a chlorhexidine-alcohol antiseptic solution and standard towelling done.

For creating the pneumo-peritoneum, we routinely used the open technique through a one cm vertical incision below umbilicus. After insufflation with CO₂, the remaining three ports (10 cm epigastric port, 5 mm port in mid-clavicular line between first two ports and another 5 mm port in anterior axillary line at the level of umbilicus) were inserted under direct vision. The fundus of the GB was grasped, retracted in a cephalad direction and the GB pulled away from liver by applying infero-lateral traction on the Hartmann's pouch. This helped in identification of the cystic and common bile ducts by pulling them out of alignment. The cystic duct was usually the first tubular structure to present itself;

it was dissected, clipped and divided followed by the cystic artery. The GB was then dissected free from the liver and removed through the epigastric port. In cases of bleeding or GB perforation, irrigation and suction was performed. Finally a drain was placed in the sub-hepatic area.

The pneumo-peritoneum was decompressed by disconnecting the tubing from the insufflator and by opening the valve on the cannulas allowing the gas to escape. The cannulas were then removed and the port-sites closed with interrupted silk sutures (2/0), followed by aseptic dressings. Conversion to the open cholecystectomy was carried out due to complication or operative findings that were difficult to deal with LC. The operative findings at LC, duration of operation and the pathological findings of the GB were recorded in all the cases.

Post-operatively regular analgesics (diclofenac sodium) and antiemetics (metoclopramide) were given. In cases of postoperative fever, tachycardia, severe pain, jaundice or continuous collection in the drain bag, urgent investigations were done including Blood CP, LFTs and ultrasound abdomen. If bile duct leakage was suspected then MRCP, ERCP or PTC was done. In cases of doubt laparotomy was performed early rather than late.

Oral fluids were started as soon as the patient's bowel sounds returned, and the nasogastric tube was removed as soon as the patient tolerated oral fluids and was free of nausea and vomiting. Patients were encouraged to get out of bed as soon as they have recovered from the anaesthesia. The drain was removed 24 hours after the operation, if there was no significant collection. In the absence of any problems, the patient was discharged within 24-48 hours with the advice to return if anything goes wrong. Skin sutures were removed on the eighth postoperative day. Every case was followed weekly during the 1st month, monthly for next five months, and then yearly for the next five years. During the follow-up if a patient developed any complication, then appropriate investigations were done and the patient managed accordingly.

RESULTS

Amongst the 160 patients that underwent Laparoscopic Cholecystectomy, there were 138 (86.25%) females and 22 (13.75%) males with a sex ratio of one male: 6.27 females. The age of the patients ranged from 17-82 years, with maximum number (31.25%) seen in the 30s i.e. the 4th decade). The mean weight of the patients was 64 Kg, the range varying from 40-125 Kg. There were 11 female patients who weighed more than 110 Kg, and were classified as morbidly obese. Based on

the symptoms we classified the patients into three groups as follows:

- Group-I: Patients (135 - 84.38%) with biliary colic defined as intermittent episodes of right upper quadrant and epigastric pain.
- Group-II: Patients (22 - 13.75%) with symptoms associated with gall stones such as fatty food intolerance, dyspepsia, flatulence and postprandial nausea/vomiting.
- Group-III: Patients (3 - 1.88%) with right iliac fossa(2) or substernal pain (1).

Ultrasonography showed cholelithiasis with chronic cholecystitis in 151 (94.38%) patients, cholelithiasis with acute cholecystitis in seven (4.38%) and chronic acalculous cholecystitis in two (1.25%) patients. The seven patients with acute cholecystitis were those patients who developed recurrent attack during the six weeks interval period, when it was decided to operate so as to prevent further recurrences.

Thirty-five (21.88%) cases presented with one or more co-morbid diseases including 19 with diabetes mellitus, 15 with hypertension, two with ischaemic heart disease, four with chronic pulmonary disease and eight with peptic ulcer disease. Seven patients had past history of jaundice and eleven patients surgery: six had Caesarean section through lower midline incision (two with incisional hernia) two had appendicectomy, and one each had hysterectomy, left inguinal herniorrhaphy and open prostatectomy. In one patient with pregnancy (second trimester) LC was safely performed.

Out of 160 cases Laparoscopic Cholecystectomy was successfully completed in 144 (90%) cases. The remaining 16 (10%) patients had to be converted; in three cases there were major complications, while in 13 cases it was due to disturbed anatomy at Calot's triangle (5), wide cystic duct (2), choledocholithiasis (2), dense adhesions between gall bladder and stomach (2), bilio-digestive fistula (1) and instrument malfunction (1).

Our criteria for major complications were any unexpected happening which required another major surgical intervention during the course of LC (i.e. conversion to open cholecystectomy) or re-operation postoperatively, and/or which caused the patient to stay for more than seven days postoperatively. Eight (5%) patients experienced major complications either preoperatively or in early postoperative period (Table I): three had CBD injury, while one each had cystic duct injury, bleeding from gall bladder bed, duodenal injury, colonic injury and retained CBD stone. Forty-five patients (28.13%) had minor complications either preoperatively or in the

