

A Prospective Analysis Of 100 Laparoscopic Cholecystectomies At Lahore General Hospital

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Laparoscopic cholecystectomy is rapidly replacing the open cholecystectomy. Within 12 months period, a total of 100 patients had laparoscopic cholecystectomy in our unit. The operation was successfully completed in 92 patients and converted to open operation in 8%. There was no death. The morbidity rate was low (total 11.0%, bleeding 4.0%, minor bile duct injury 1.0 %, bile leakage 3.0 %, wound infection 3.0 %). Mean operating time significantly improved from 1st 33 patients to last 33 patients, indicating a rapid learning curve. Direct insertion of trocar instead of using veress needle was employed in most cases thus considerably reducing the operating time without adding any morbidity. The mean hospital stay was 2 days. Laparoscopic cholecystectomy is a safe and effective procedure that can be performed with a minimal risk by surgeons familiar with biliary anatomy. Complications of laparoscopic cholecystectomy can be minimized by early elective conversion to open operation if difficulty arises.

Key Words: Laparoscopic Cholecystectomy

First cholecystectomy performed in 1882 by Langenbuch¹ is still the standard surgical treatment for dealing with the diseased gall bladder. The advent of laparoscopic cholecystectomy (Lap Chole) has been a significant advancement in the treatment of gall stone disease; the aim of which is intended to minimise the trauma of access without compromising the exposure of the surgical field². Initial reports indicate that lap chole may offer a number of advantages over open cholecystectomy for the treatment of symptomatic gall bladder disease³. These early reports have indicated substantial reduction in hospitalization and recovery periods, decreasing postoperative discomfort and improved cosmesis. This has generated vast enthusiasm from both patients and physicians.

Lap chole has readily become available in this country over the last few years and its popularity has spread widely but relatively few data on the results of the procedure have been published. This report entails our experience of 100 laparoscopic cholecystectomies done over a period of one year (Jan-Dec 1995) at a single unit of a postgraduate institution.

Materials And Methods

The clinical material reported is the work of 3 general surgeons working in one surgical unit of Postgraduate Medical Institute/ Lahore General Hospital and includes 100 laparoscopic cholecystectomies performed over a period of 12 months. All patients were operated on by the three surgeons independently at random. Initial 50 patients were restricted to elective procedures for chronic cholecystitis but after the initial experience, indications were broadened to include acute cholecystitis and empyema of gall bladder.

Known choledocholithiasis, obstructive jaundice and positive hepatitis antigen were considered as contraindications in this study population. All patients underwent routine history, physical examination, laboratory investigations and ultrasonic evaluation of the biliary tract. Lab investigations included complete blood

count, urine analysis, blood sugar and surface antigen for hepatitis. L.F.T's were only done in specific cases.

Technique: All patients were admitted a day before surgery and were operated under general anaesthesia. Nasogastric tube and Foley catheter were not used routinely. The patients were placed in supine position with a 15 to 20 degree head up and left lateral tilt. A 4 port technique was used in initial 30 cases but as study progressed 3 ports were used routinely and 4th port used only if necessary. During the early stages of study (initial 13 cases) veress needle was used to inflate the peritoneal cavity but later direct blind insertion of 10mm cannula was done through infra-umbilical incision and insufflation started through this cannula. This saved at least 15 to 20 minutes of operating time. The video-laparoscope was introduced through this cannula soon after CO₂ insufflation was started. Subsequent cannulas were introduced under video-visual control as follows; a 2nd 10mm cannula 5cm below xiphisternum, just to the right of the midline avoiding falciform ligament, 3rd 5mm cannula in right midclavicular line and 4th 5mm cannula (when used) in right anterior axillary line, both at the level of umbilicus.

The assistant standing on the the right side of the patient grasped the neck or Hartman's pouch of gall bladder and applied traction downwards and laterally while the surgeon standing on left side of the patient, after inspecting the anatomy, began dissection. Alternatively, this traction and dissection was done by the surgeon himself using two hands technique (TAS). Once cystic artery and duct were identified these were clipped. On average three clips were used, cystic artery being diathermised on gall bladder side. Subsequent dissection was done with L-hook using diathermy while applying traction to gall bladder through 5mm port. Once dissection was complete, gall bladder fossa was checked for haemostasis. The gall bladder was removed through sub-xiphisternal incision using a crocodile forceps. If difficulty in extraction of gall bladder occurred, wound was

ANALYSIS OF 100 LAPAROSCOPIC CHOLECYSTECTOMIES

enlarged. Drains were used if there was spillage of bile or excessive bleeding. CO₂ was evacuated at the end of procedure. All wounds were closed with 3/0 prolene. Sheath was sutured only if it has to be enlarged, with 2/0 vicryl.

Results

Indications for cholecystectomy and their relative prevalence are shown in Table 1. The mean age of patients was 42.16±10.18 years (range 7-70). 88 (88%) were females and 12 (12%) were males; thereby yielding a female to male ratio of 7:1.

Table 1: Indications for Lap Cholecystectomy

Indications	n ^m	%age
1 Chronic Calculus cholecystitis	85	85.0%
2 Acute/Subacute cholecystitis	7	7.0%
3 Empyema of G.B	3	3.0%
4 Mucocele of G.B	3	3.0%
5 Acalculous cholecystitis	2	2.0%

All patients had symptomatic gall bladder disease. All except two had gall stones demonstrated by sonography. Seven patients had previous surgery and had midline scar; in these patients, initial cannula was inserted away from the scar and adenolysis was needed prior to cholecystectomy.

Conversion to open cholecystectomy was necessary in 8 of 100 cases (8%). The decision was elective in 5 and enforced in 3 patients. The reasons for conversion are shown in Table 2. Perforation of gall bladder during dissection from the liver bed occurred in 16 (16%) cases and fall of stones occurred in 10 (10%) cases. However, this did not result in any additional morbidity.

Table 2: Conversion To Open Cholecystectomy

Reasons	n ^m	%age
1. Enforced conversion		
a) Bleeding	3	3.0%
2. Elective conversion		
a) Excessive fibrosis	4	4.0%
b) Anatomy not clear	1	1.0%

Operative time decreased from an average of 116 ± 49 minutes for the first 33 cases to 40 ± 19 minutes for the last 33 cases (Table 3).

Table 3: Operative Time

Cases	Mean Time	Range
1 to 33 cases (min)	116.4±49.16	45-240
34 to 67 cases(min)	61.4±26.21	30-120
68 to 100 cases(min)	41.0±19.18	15 - 90

There was no mortality and no major complication. Laparotomy in postoperative period was not needed in any patient. Minor complications during intra-operative and postoperative period are listed in table 4. Four cases of bleeding from cystic artery needed laparotomy for control of bleeding. One of these cases on laparotomy revealed a minor hole in C.B.D caused by diathermy. Tube drainage only of the subhepatic space was employed in this case.

She had no problem in postoperative period except for continued bile drainage through the tube for 7 days. Follow up sonography did not show any collection. Once drainage stopped, it was removed and patient discharged.

Table 4: Minor Complications

Complications	n ^m	%age
1 Bleeding	4	4.0%
2 Minor CBD injury (caused by diathermy)	1	1.0%
3 Bile Leakage	3	3.0%
4 Wound infection	3	3.0%

In postoperative period three patients who had successful lap chole otherwise, had unexplained bile drainage through the drains. The amount of bile drained was 150 ml in 24 hrs in one, upto 170ml / 24hrs in second and upto 200ml / 24hrs in third patient. They remained symptom free and bile leakage stopped by itself on Day 2, Day 3 and Day 6 postop., respectively. Follow up sonography in these patients showed no collection of bile. Wound infection occurred in 2 patients only.

The mean hospital stay for patients who had successful lap chole was 2.2 ± 1.3 days. Patients who had bile leakage through drains were kept in hospital longer for observation and went home on an average of 6 ± 3 days. All patients attended outpatient department for removal of stitches on 7th postoperative day. They were again seen after 6 weeks for further check up. None of the patients returned with any late complications so far.

Discussion

Laparoscopic Cholecystectomy has rapidly emerged as an established method for treatment of symptomatic gall stone disease. First performed by Mouret, Qubois and Persatt in France in 1987, it gained popularity in USA and UK in the years 1989 to 1990⁴. The years of 1992 to 1993 brought an explosion of this technique in Pakistan. Since then, anecdotal reports abound, but very little published information is coming forwards from our country.

Our experience of 100 cases of lap chole has demonstrated this procedure as an alternative to open cholecystectomy. We were successful in completing the lap chole in 92% cases thereby showing a conversion rate of 8%. This is slightly higher than that reported in literature which varies from 1.2% to 5% conversion rate^{2,3,5,10}.

No major complication and 11 minor complications speak for its safety and compare results favorably with recent studies from USA & UK^{3,5,6,7}. Reports based on analysis of large number of patients after lap chole had shown some lethal complication of major vascular injuries(0.25%), bowel injuries (0.14%)⁸. We had no such major complication in our series

Our experience of direct entry with trocar instead of using a veress needle for inflation is an uncommonly used technique and is reported infrequently. It saved at least 15-20 minutes of operative time needed for CO₂ insufflation while using veress needle. This did not entail any additional risk of major vascular or visceral injury, as no

complication was seen in our study related to trocar insertion.

Bile duct injury is a major concern of laparoscopic cholecystectomy. Traverso et al¹¹ evaluated the modern morbidity of open cholecystectomy performed for chronic cholecystitis under elective circumstances. In a series of 671 elective standard cholecystectomies, there was no death, a major complication rate of 4.5% including 3 bile duct injuries (0.2%). A morbidity rate of 8% with bile duct injuries (1%) for lap chole has been reported by Peters et al¹ in 100 patients. 0.59% of bile duct injuries in 77,604 patients is reported by Daziel et al⁴ and 0.5% of bile duct injuries in 1,518 patients is reported by Meyers et al⁹. Our study showing no mortality and 11.0 % morbidity with one minor bile duct injury (1.0%) compares favorably with these reports.

Three instances of bile leakage in postoperative period evidenced by more than 100ml of bile drainage through drains remained unexplained. All these patients remained asymptomatic, afebrile, developed no jaundice and showed no bile collection on sonography. The bile drainage stopped itself between Day 2 to Day 7 post op. ERCP in these patients might have helped to locate the particular site of bile leakage but we had no such facility available. Luscka¹² had demonstrated small biliary radicles entering directly into gall bladder bed nearly 100 years ago. Cadaver dissections demonstrated these ducts to be present in 25% to 30% of patients and that significant injury can be avoided by dissection close to gall bladder wall¹⁷. Peters¹ speculates that injury to these small ducts results from the combination of a tearing type of dissection in and around the porta hepatis, along with a dissection where it may be more difficult to maintain directly on the gall bladder wall. Our policy regarding drainage had been to use drains in cases where there is excess bile and/or blood spillage during dissection. This usually occurred in patients with excessive fibrosis or when gall bladder was found to be buried in liver.

Intra and postoperative bleeding represents a theoretical risk⁵. We had only four cases of intra-operative bleeding when clip to cystic artery slipped. No postoperative bleeding was encountered. Right shoulder pain described in gynecological literature after laparoscopy, was seen very infrequently in our study. Minor complications included three instances of wound infection in sub-xiphoid wound. There was no umbilical hernia noted in the postoperative period.

Lap chole drastically curtails the convalescence period of patient and is followed by a rapid return to full activity which far exceeds that experienced by patients

after open cholecystectomy². Most of our patients were out of bed and allowed feeding the next day. They usually went home on Day 2. In our opinion the main factor for reduced pain and early recovery is due to minimal tissue trauma and absence of traction on muscles caused by retractors in open cholecystectomy. Cosmesis is another major benefit of this procedure.

In conclusion, laparoscopic cholecystectomy is essentially a safe procedure with low morbidity and mortality rates. It can be learned easily by surgeons familiar with biliary anatomy. The advantages of early convalescence and cosmesis are obvious. Complications of lap chole can be minimized by maintaining a low threshold for elective conversion to open cholecystectomy. Our modification of direct trocar insertion can reduce the operating time without any increased risk of visceral injury.

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