COMPLICATIONS OF LAPAROSCOPIC CHOLECYSTECTOMY IN SYMPTOMATIC CHOLELITHIASIS PATIENTS: EARLY EXPERIENCE AT TERTIARY CARE HOSPITAL

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ABSTRACT

Objective: To enlist the per-operative and early postoperative complications of laparoscopic cholecystectomy.

Study Design: Cross-sectional descriptive study.

Setting: Surgical "C" Unit Govt. Lady Reading Hospital, Peshawar.

Material and Methods: 100 cases of symptomatic cholelithiasis, admitted through out patients or Emergency department of either sex, with ages ranging between 20 and 70 years, were included in this study for laparoscopic cholecystectomy. After written informed consent, procedure was performed and per-operative and early postoperative complications were noted and data was analysed.

Results: Among complications of access, difficulty in identification of anatomy in 12% cases. Among procedure complications; vascular injury was seen in 08% cases. Injury to common bile duct in 04% cases was recorded. Bile duct injury was noted in 02% cases. Dropped stones in peritoneal cavity in 10% cases were seen. Perforation of gallbladder was recorded in 08% cases. Postoperative complications on first day after operation i.e. bile leak in drain in 06% cases, fever in 04% cases were noted. Postoperative complications on first follow up visit i.e. wound infection in 06% cases were recorded. Sub-hepatic collection in 06% cases was seen. Mean hospital stay was 41.96 hours in these patients.

Conclusions: We conclude that laparoscopic cholecystectomy is a safe procedure, although it is associated with some serious complications. Proper laparoscopic training and equipment will minimize a potentially devastating outcome.

Key Words: Cholecystectomy, Laparoscopic, Complications.

INTRODUCTION

Laparoscopic surgery has replaced conventional open cholecystectomy for benign gall bladder disease.[1,2,3] Minimal access surgery has many advantages, among others, the trauma of access and exposure is reduced.[4] The laparoscopic approach is preferred in elective cholecystectomy. The minimal invasive technique has proven to be effective, gentle and safe. The main benefits are evident within the initial post operative days.[5]

The first report of laparoscopic cholecystectomy using keyhole approach was by Prof. Mouret of Lyon, France in 1987. Prof. Jacques Perissat of France presented the first paper of laparoscopic cholecystectomy in USA during SAGES congress in 1988. This report created a great enthusiasm among the surgeons of America for the keyhole surgery. Dr. Eddie Reddick reported 100 cases of laparoscopic cholecystectomy in 1989. The four port technique of laparoscopic cholecystectomy as described by Reddick became the most widely adopted technique. In fact, in 1985, Prof Erich Muhe of Boblingen, Germany had carried out the first laparoscopic cholecystectomy. He presented his technique at the congress of the German Surgical Society.[6]

Biliary complications following laparoscopic cholecystectomy include bile ductal obstruction, bile leak with bile duct injury, dropped stones in the peritoneal cavity,[7] ligation of right hepatic duct, retained CBD stones,[8] sub hepatic collection,[9] wound infection,[8,9] hemorrhages,[9,10] subcutaneous emphysema,[10] necrotizing soft tissue infection,[11,12] nausea, vomiting, atelectasis, chest infection and prolonged ileus.[13]

Data from large adult experiences indicate that the risk of bile duct injury, although small, is greater with laparoscopic cholecystectomy than open cholecystectomy.[14]

Laparoscopic cholecystectomy should be performed by an experienced and well-trained team to successfully overcome the problems which arise during laparoscopic cholecystectomy.[15]

Other advantages of laparoscopic cholecystectomy are decreased postoperative pain, hospital stay and morbidity leading to early mobilization and early

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return to diet and work with cosmetically small scar.[16]

The most frequent elective surgery performed in the female in surgical department of our hospital is cholecystectomy. This prompted us to assess usefulness of minimally invasive surgery for gall bladder stones i.e. laparoscopic cholecystectomy and to enlist its morbidity during the procedure and in the early post-operative period.

MATERIAL AND METHODS

This descriptive prospective study was conducted in Surgical "C" unit, Govt. Lady Reading Hospital, Peshawar for one year from January to December 2010. A total of 100 patients of symptomatic cholelithiasis, admitted through out patients or Emergency department of either sex, with ages ranging between 20 and 70 years, were included in this study. All those patients with any co-morbidity, such as Diabetes Mellitus, Hypertension or patients with clinical jaundice, acute pancreatitis, right upper abdominal lump, common bile duct stones and suspicion of gall bladder malignancy and all patients with previous abdominal surgery were excluded.

All those patients who attended the out patients or emergency department with complaints of right hypochondrium pain, fever, nausea and vomiting of acute onset or with history of such complaints were scrutinized by taking history and performing thorough physical examination and investigations such as abdominal ultrasound to determine whether they are suffering from cholelithiasis. All such patients were then admitted. Permission was taken from hospital ethical committee to conduct the study and informed written consent was obtained from patients. Their demographic details were recorded on a pre structured proforma. The relevant findings on history and clinical examination were also noted. Appropriate investigations were performed including, routine investigations such as, full blood count, blood urea, random blood sugar, chest x-rays, ECG and serum electrolytes and specific investigations such as Liver functions tests, Serum amylase, abdominal ultrasound etc. The patients were then subjected to laparoscopic cholecystectomy after taking well informed consent by non-probability sampling technique.

Per operative complications were recorded in the pre-structured proforma at the end of each operation. The patients were regularly followed up daily to detect any early post-operative complications. After discharge, the patients were called one week after surgery and again thoroughly examined, and investigated by laboratory investigations and abdominal ultrasound where appropriate, and any complication if detected was recorded in the proforma. Strictly inclusion and exclusion criteria was followed and all the observations were made by the researcher himself so that to exclude any bias in this study.

Data was entered and analyzed in computer based software SPSS 16. Mean ± SD was calculated for the continuous variables like age, mobilization after operation, hospital stay after operation. Frequency and percentage was calculated for categorical variable like sex, postoperative complications, postoperative complications on first day, postoperative complications on first follow up visit after ten days.

RESULTS

A total of 100 patients underwent laparoscopic cholecystectomy. There were 92 (92%) female and 08 (08%) male with female to male ratio of 11.5:01. Age was ranged from 24 years to 70 years with mean age of 43.22 + S.D 12.159 years. Majority 18 (36%) were also in the age range of 41-50 years as shown in Table 1. Peroperative complications are shown in Table 2. Postoperative complications on first day of operation and on first follow up visit are showed in Table 3 and 4. Mobilization after operation showed that mean time (in hours) of mobilisation was 05.62 + 01.88. Discharge after operation (hospital stay) showed that mean stay

Table 1: Age incidence of the patients (n=100)

Age ranges	No. of cases	Percentage
20 – 30 years	24	24%
31 – 40 years	18	18%
41 – 50 years	36	36%
51 – 60 years	18	18%
61 – 70 years	04	04%
Total	100	100%

Table 2: Complications of procedure (n=100)

Complications	No. of cases	Percentage
Difficulty in identification of anatomy	12	12%
Bleeding from trocar site	0	0%
Vascular injury	08	08%
Injury to CBD	04	04%
Bile duct injury	02	02%
Dropped stones in peritoneal cavity	10	10%
Perforation of gallbladder	08	08%

Table 3: Postoperative complications on first day (n=100)

Complications	No. of cases	Percentage
Bile leak in drain	06	06%
Fever	04	04%
Jaundice	0	0%
Deep vein thrombosis	0	0%
Pain at incision site	0	0%
Total	100	100%

Table 4: Complications on first follow up visit (n=100)

Complications	No. of cases	Percentage
Wound infection	06	06%
Sub hepatic collection	06	06%
Sub phrenic collection	02	02%
Chest infection	0	0%
Wound dehiscence	0	0%
Pancreatitis	02	02%

(in hours) of 41.96 + 27.99.

DISCUSSION

Cholecystectomy is the procedure of choice for symptomatic gallstones. The traditional open cholecystectomy has been replaced by Laparoscopic cholecystectomy which has revolutionized the treatment of gallbladder disease and is now the gold standard for the treatment of gallstones and the commonest operation performed laparoscopically worldwide.[17]

The surgical management of patients presenting with acute cholecystitis remains controversial. Emergency laparoscopic cholecystectomy for the management of acute cholecystitis is considered to be associated with more complications and increased risk of common bile duct injury. But, some surgeons have recommended laparoscopic cholecystectomy as preferred treatment of acute cholecystitis.[18]

In a local study out of 100, 80 patients were females while 20 were males. Majority of the patients were in their fourth and fifth decades of life.[19]

In another local study 100 patients with symptomatic gallstones (84 females and 16 males) underwent laparoscopic cholecystectomy. The mean age was 43 years (range 18-75 years) with highest incidence in the age group 35-45 years.[20]

Same findings have also been reported in our study, which showed that there were 92% female. Reasons for the high incidence in females may be due to increasing awareness in females for getting medical attention, more facilities to reach hospitals in time, increased population in Pakistan, frequent use of oral contraceptives, and intake of poor quality of fat.[21] In many local and international studies female dominance has also been reported with varying frequencies.[16,18-25]

Regarding age distribution our study's results showed that majority of patients were in the age range of 41-50 years with mean age of 43 years. Our findings are also in agreement with local and international studies.[19-25]

In one local study[3] in which the two groups i.e. Laparoscopic and open cholecystectomy were almost similar in their biological characteristics yet only one patient (2%) in the laparoscopic group developed wound infection. A local study has shown a similar low occurrence of infectious complications in laparoscopic procedures as compared to open surgery.[27] In patients undergoing laparoscopic cholecystectomy the frequency of wound infection has been reported from 0.1 to 07% in the literature.[3,8,9,28]

Gold-Deutch et al[27] studied the incidence of septic complications in a series of 247 laparoscopic cholecystectomies. They obtained samples of bile for micro-biological analysis and in 13% of cases cultures were positive, yet only two patients developed umbilical port infections (0.8%).

In our study complications of access were detected in 12% cases and complications of procedure were seen in 16% cases. This may be due to the surgeons being in early phase of their learning curve of experience with laparoscopic cholecystectomy or may be due to patients factors like delayed presentation for cholecystectomy and encountering difficulty in dissection.

In one study[19] per-operative findings included mainly adhesion of gall bladder with surrounding structure (Calot's triangle, stomach, colon and omentum in 47.1% cases) while bile duct injury was seen in 4.71% cases. While in another study by Hammazaki,[29] major complications were seen in 3 cases with bile duct injury (2%) and bleeding encountered during operation and controlled easily under laparoscopy. Per-operative complications in the aforesaid study[28] included bleeding in 11 (10.3%) cases, CBD injury in 5 (4.71%), minor injury to liver in 5 (4.71%) and distorted anatomy of Calot's triangle in 10 (9.43%) cases respectively. Meanwhile, in Cheema's study,[30] 3 bile duct injuries have been reported among 482 cases. However, early recognition and prompt repair gives good results. Male gender and age >60 are liable for more complications. More complications were also seen in male patients. In the aforesaid study,[30] except one case all the CBD injury patients were controlled promptly. There was no significant difference found in conversion rate in emergency laparoscopic cholecystectomy (21%) versus delayed group (24%). However, conversion rate is higher which may be due to dense adhesion obscuring Calot's triangle. In one study,[19] 6 (5.7%) patients suffered from paralytic ileus, 5 (4.8%) patients biliary leakage while the superficial wound infection in infraumbilical port was seen in 11 (10.6%) cases. Mortality and morbidity associated with acute cholecystitis remains relatively high and this seems to be determined by the degree of acute and chronic illness present at the time of diagnosis. No mortality was seen in any study, however, Ludwig et al[31] have reported 9% fatal outcomes among 895 patients.

Hashizume and Sugimachi[32] have reported trocar injuries to bowel and major blood vessels to be as high as 1% and most of them have occurred during the insertion of the first trocar. Schafer et al[33] in their study report a similar result. Blind trocar insertion and access

by Veress needle remain the important causes of complications as reported by many authors.[32,33] On the other hand, open technique of trocar insertion has promising results and seems to have reduced the access-related major vessel injury and mortality rate. Adequate manual lifting of the abdominal wall during insertion is very helpful and gives good safety. They recorded only 3 minor port site infections which responded to daily dressing, without the use of antibiotics.[34]

On first postoperative day in our study more complications like bile leakage, fever, jaundice, deep vein thrombosis and pain at port site was encountered in few cases.

In a study[19] problems encountered during laparoscopy were adhesions of gall bladder with surrounding structures, which included adhesions with stomach in 12 patients, adhesions with colon in 12 cases, adhesions with omentum in 10 cases and adhesions with common bile duct (CBD) in 6 cases. Bleeding was seen in 11 cases and minor injury of the liver occurred in 5 cases. Minor injury to CBD was also seen in 5 cases while Calot's triangle distorted in 10 cases. However, remaining cases had no specific complications.

Post-operative complications encountered in the aforesaid study19 were paralytic ileus in 6 (5.7%) patients and biliary leakage in 5 (4.8%) while superficial wound infection was seen in 11 (10.4%) cases; all involving the infra umbilical port. Postoperative hospital stay in majority of patients (85) was 2 days while 16 patients were discharged after 3 days.

In a study[23] a total of 624 patients were evaluated during the study period. Regarding per operative complications, uneventful surgery was observed in 98.1%, bile duct injury (0.8%), haemorrhage occurred in 5 (0.8%), which however, was controlled laparoscopically in 3. Two (0.3%) patients presented after about a week of surgery with faeculent discharge from epigastric port and were managed conservatively. Conversion was 18 (2.8%). Damage to bile duct necessitated conversion in 5 (0.8%), adhesions and inflammation led to difficulty in dissection in 10 (1.6%) and in one patient dilated cystic duct containing stones led to clipping failure. Due to uncontrolled haemorrhage in 2 patients, conversion was necessitated. Post operative bile leakage was encountered in 2 (0.3%) patients which gradually subsided and disappeared uneventfully. Absence of gut sounds for more than 12 hours was noted in 36 (5.7%) patients and more than 5 vomiting in 42 (6.7%), patients, 10 (1.6%) patients suffered wound infection, umbilical port site was infected in 4, one of whom presented with incisional postoperative hernia afterwards. There was no mortality during the study period in elective laparoscopic surgery.[23]

Regarding post operative hospital stay, in one study, 248 (39.7%) patients were discharged within first 24 hours of operation, (30.8%) 192 with in 24 to 36 hours and 124 (19.9%) within 36 to 48 hours, so 90.4%(564) patient were discharged within 48 hours of operation. The remaining 9.6% (6) patients had a more prolonged duration of hospital stay.[23]

In our study most patients stayed in hospital with mean stay of 41.96 hours after laparoscopic surgery, which are similar to various studies.

In one study,19 majority of cases were discharged within 24-48 hours but Serralia study35 suggests 5 days postoperative stay in early laparoscopic cholecystectomy, while other studies[20,21] report hospital stay ranging from 3 to 7 days.

CONCLUSIONS

We conclude that laparoscopic cholecystectomy is a safe procedure, although it is associated with some serious complications. The most usual complication during laparoscopic cholecystectomy is anatomical dissection and bile leakage, which remains a significant cause of morbidity. Proper laparoscopic training and equipments are the area of concern. Early identification and management of these complications will minimize a potentially devastating outcome.

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