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LAPAROSCOPIC SURGERY;

INCIDENCE OF INTRA OPERATIVE AND EARLY POST OPERATIVE COMPLICATIONS

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ABSTRACT... Objective: To observe the rate of complications during elective laparoscopic cholecystectomies. **Design and study duration:** It was a prospective study and was carried out from July 2011 to June 2012. **Setting:** The study was conducted at PAF Hospital Islamabad. **Patients:** 105 patients with gall stone disease who underwent elective laparoscopic cholecystectomy. **Material and Methods:** 105 patients ranging in age from 23yrs to 81yrs were operated. 12 were males and 93 were females. History, clinical examination and ultrasonography were used to diagnose the presence of gall stones. Patients with acute symptoms were excluded from the study. **Results:** The main complications encountered were iatrogenic perforation of the gall bladder (8), haemorrhage (7), post-operative bile leakage (4), and large gut injury (1). Conversion to open surgery was done in three cases due to difficulty in identifying anatomy and in case of large gut injury. There was one death. **Conclusions:** Laparoscopic cholecystectomy (LC) has become the preferred method of treatment in surgery for gall stone disease. A sound knowledge of the complications and their management makes this a safe procedure.

Key words: Gall stones, laparoscopic cholecystectomy, complication, outcome.

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INTRODUCTION

Laparoscopic surgery has become the procedure of choice for cholelithiasis and is now considered the gold standard[1]. As people are becoming aware of its benefits more patients are demanding it even in peripheral hospitals. Intraoperative complications occur more frequently than in open cholecystectomy[2] especially during the early learning period. A surgeon trained for open surgery has a learning curve and requires supervised training and experience before becoming proficient in laparascopic surgery. It is important to identify the complications occurring during LC because they are a significant cause of morbidity and if not treated timely can result in undue mortality. There are some complications which occur more frequently than in open surgery[2]. This study analyses the intra-operative and early post-operative complications encountered in laparoscopic cholecystectomy.

MATERIALS AND METHODS

The study was carried out after approval from Hospital ethics committee from July 2011 and June 2012.

Inclusion criterion included adult patients of both sexes with ASA status grade I and grade II only. Exclusion criterion included patient refusal, existing co-morbid conditions like Hypertension and bronchial asthma, ASA grade III or higher, BMI > 35, Hepatitis B & C positive cases and patients with extensive previous abdominal surgery. Ultrasonography was perfomed by consultant radiologist to diagnose cholelithiasis and patients with duct stones were excluded.

Patient data was collected on a specialized proforma designed for the study attached as Annexure “A”. The patient data details included demographic details, history, clinical examination, clinical investigations, operative procedure

details, complications and their follow up as well.

General Anaesthesia was administered to all patients. Four port procedure was used. A 10mm port was placed below umbilicus for the camera, a 10 mm second port was placed in the epigastrium, a 5 mm third port in the mid clavicular line and the fourth port was placed in mid axillary lines. Drain was placed in all cases through the fourth port. Patients were mobilized and started on oral sips in the evening of the surgery. Majority of patients were discharged on 2nd post-operative day. Common bile duct was not explored laparoscopically and patients with duct stones discovered after surgery underwent ERCP and open surgery if extraction with ERCP was not successful.

RESULTS

Demographic data of patients (n=105)

Age	Number	%age
20 to 30 years	18	17.14
31 to 40 years	21	20.00
41 to 50 years	26	24.76
51 to 60 years	16	15.23
61 to 70 years	13	12.38
71 to 80 years	10	9.52
> 80 years	1	0.92

Table-I. Age of patients

Sex	Number	%age
Male	12	12.90
Female	93	88.57

Table-II. Gender distribution

In our study the mean age was 46 ± 15.6 years.

Difficulty was encountered in 15 (14.28%) patients who had inflammation which was not diagnosed pre-operatively by ultrasonography. These patients had thickening of the walls of gall bladder and an adherent omentum.

The Intra operative problems encountered were iatrogenic perforation of gall bladder, haemorrhage, large gut injury and conversion to open surgery.

Iatrogenic perforation of gall bladder was seen in 8 (7.61%) cases. 05 (4.76%) occurred at the site of grasping the gall bladder with the grasper and 3 (2.85%) occurred during dissection of gall bladder from the liver bed in patients with inflammation. It was dealt with by aspiration of bile and carefully picking up the stones.

Haemorrhage occurred in 7 (6.66%) patients. In 2 (1.90%) cases it was due to inadequate clip application. It was controlled by carefully picking up the ligated cystic artery and reapplying the clip. In one case it occurred from the gall bladder bed necessitating conversion to open surgery. In the other 4 (3.80%) cases hemostasis was achieved by carefully applying diathermy to the bleeding areas in the gall bladder fossa.

Injury to transverse colon occurred in 1 (0.95%) case during insertion of trocar from the umbilical port. It was identified immediately because of feculent smell on withdrawal of the trocar. Laparotomy was performed and transverse colon was found adherent to the umbilical scar. There was no history of previous surgery in this patient. The perforation was managed by debridement of margins of perforation and closure with vicryl in a single layer. Patient recovered without any further complication and was discharged on the 8th post-operative day.

Conversion to open surgery was done in 3 (2.85%) cases. These were in case of colonic injury, in uncontrolled bleeding from gall bladder bed and in a case of difficulty in identifying anatomy due to a dense fibrotic gall bladder. Histopathology in case of fibrotic gall bladder revealed adenocarcinoma of the gall bladder.

Early post-operative complications included bile leakage and infection.

Bile leakage occurred in 4 (3.80%) cases. It

persisted for 48 hrs in 03 (2.85%) cases and in one case it persisted for 5 days. In this case re-laparoscopy was done. The common bile duct was inspected and was found to be intact. Fresh clips were applied to cystic duct remnant. No further leakage was observed.

Infection of the port site occurred in 05 (4.76%) cases and was treated with dressing, antibiotics and drainage.

There was one death. This was an elderly patient who developed pneumonia post operatively, subsequently went into ARDS and died because of complications developing from ARDS.

DISCUSSION

Laparoscopic surgery has become a routine procedure now but it requires supervised training and a learning curve that is separate from conventional surgery. Due to its obvious benefits such as less post-operative pain, early recovery, decreased length of hospital stay and better cosmesis[3], its demand is increasing and it is becoming available in more and more centers.

The study aims to focus on the preoperative and early post-operative complications of laparoscopic cholecystectomy.

.The most common complication was iatrogenic perforation of the gall bladder which occurred in 8(7.61%) cases. While 5 occurred at the site of grasping the gall bladder with the grasper, 3 occurred during dissection of the gall bladder from its bed. All these cases had inflammation with thick firm walls making dissection difficult. Perforation resulted in spillage of bile and stones into the peritoneal cavity. Stones were carefully retrieved although some were lost. Conversion to open surgery was not done in these cases. None of the patients have reported with complications due to lost stones. Retrieval of lost stones greatly increases the time of surgery and every effort should be made to avoid this complication by gentle handling of gall bladder and careful dissection. The reported incidence of perforation and spillage of gallstones varies between 10% and 30%[4]. Lost stones can cause complications such as intra-abdominal abscess formation or if lost in the abdominal wall can result in increased incidence of infection or sinus formation[5].

Bleeding is a common and serious complication of LC. Intra-operative bleeding commonly occurs during port insertion, during dissection of gall bladder from the liver bed or injury to cystic artery in the calot's triangle. Less commonly it occurs from injury to the omentum, aorta, inferior vena cava , hepatic artery or portal vein. It is classified as major or minor[6]. When injury occurs to aorta, portal vein, hepatic artery, inferior vena cava or iliac vessels it is classified as a major injury. Minor injuries are said to occur when there is injury to omental, epigastric or mesenteric vessels. The reported incidence of bleeding complications is between 0.03%-10%[6,7] and the mortality rate is 0.02%-0.5%[8]. We have included those cases in which bleeding obscured the operating field and had to be controlled with pressure or by using diathermy. In our series we observed bleeding in 7 cases(6.66%). In two cases it occurred from the cystic artery remnant. In both these cases there was inflammation in the Calot's triangle making dissection difficult. Bleeding was controlled by applying pressure with a gauze and carefully applying clips to the cystic artery remnant. In five cases haemorrhage occurred from the liver bed during dissection of gall bladder. All these cases too had inflammation with increased vascularity and subsequent difficulty in lifting the gall bladder from the liver bed. Bleeding was controlled by diathermy. In one case there was uncontrolled bleeding from the liver bed which we were unable to control with diathermy and pressure with gauze. Conversion to open cholecystectomy was done in this case and bleeding was controlled with diathermy and ligating the bleeding vessels in the liver bed. We did not encounter any case with post-operative haemorrhage and there was no mortality due to haemorrhage in our series.

Bowel injury occurs usually during port insertion. Less often it occurs during adhenolysis or dissection. It is usually not detected during surgery and post operatively there are signs of

peritonitis. In a Swiss nationwide survey there were 19 cases of organ injuries among 14243 patients[9]. In our study it occurred in one case(0.95%) during insertion of the umbilical port when it went into transverse colon. The transverse colon was found adherent to the umbilical scar. Perforation was detected due to difficulty in creating pneumoperitoneum and feculent smell on withdrawal of the trocar. Laparotomy was done, the transverse colon mobilized and the perforation closed in a single layer with vicryl after debridement as injury was identified immediately and there was minimal soiling[20]. The patient made uneventful recovery and was started on oral fluids on the 5th post-operative day. The incidence of bowel injury can be decreased by port insertion and dissection under direct vision[10].

Injury to the biliary system is a serious and life threatening complication. The reported incidence varies from 0.5- 1.4%[11]. It is suspected if there is biliary leakage through the drain, if recovery is delayed or there are signs of sepsis[12]. Cases with suspected injury to the biliary system should undergo ultrasonography or CT scanning. The exact location of injury can be located with Ultrasonography, CT scan, ERCP, MRCP or PTC[13]. In our series there was bile leakage from the drain in 04 cases(3.80%). Injury to the biliary system was not suspected during surgery and was discovered due to post-operative bile leakage from the drain. In 03 cases bile leakage was less than 100 ml in 24hrs and stopped within 48 hrs. Ultrasonography done on the 2nd post-operative day did not show any collection and nothing further was done as the patients did not show any signs of sepsis. In one patient biliary leakage persisted. In this patient laparoscopic exploration was done, CBD was found to be intact and no injury to biliary system was identified. Fresh clips were applied to cystic duct remnant after which there was no further leakage of bile. The incidence of biliary tract injury can be reduced by careful dissection in calot's triangle especially in cases with inflammation, adhesions and in obese patients, while keeping variation of anatomy in mind. Bleeding should be carefully controlled and diathermy and clamping in calot's triangle should only be done under direct vision. The surgeon should not hesitate to switch over to open surgery in case he is uncertain of the anatomy or if there is uncontrolled bleeding obscuring the visual field.

Port site infection occurred in 05 (4.76%) cases. In 04 cases it occurred in the umbilical wound and in one case the epigastric port was involved. All cases occurred in patients with acute cholecystitis. The operating time in all these cases was prolonged due to the presence of inflammation. They were treated with antibiotics, dressings and debridement. All recovered in a few days with this treatment. The study of incidence of infection has shown variation in various studies. In a study done by Den Hoed PT et al in 1998, the incidence of infection was 5.3%[14]. In another study by Colizza et al in 2004 the incidence of infection was less than 2%[15]. The infection can be superficial or involve deep fascia and muscles. It is treated with debridement's, dressing and antibiotic cover. The low rate of infection as compared to open surgery is one of the benefits of laparoscopic surgery.

Conversion to open surgery was done in 03 cases. One of the cases had uncontrolled bleeding from the liver bed which we were not able to control with pressure and diathermy. Bleeding was obscuring the visual field and operation was converted to open surgery. In another case conversion was done due to the presence of inflammation and difficulty in identifying anatomy. The gall bladder was found to be shrunken and histopathology revealed carcinoma of gall bladder. Conversion was also done in a case with injury to transverse colon during insertion of umbilical port. Laparotomy was done and perforation closed with vicryl. According to National Institute of Health (NIH) conversion rate for laparoscopic cholecystectomy varies between 5% to 10%[16]. The leading reasons for conversion are presence of acute inflammation, previous history of cholecystitis, empyema and male sex[17,18].

CONCLUSIONS

From the study it can be safely concluded that laparoscopic cholecystectomy is a safe procedure

and complications encountered during after surgery can be managed effectively if the surgeon is familiar with them and follows the protocols to diagnose and treat them.

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ANNEXURE "A"
INCIDENCE OF INTRA OPERATIVE AND EARLY POST OPERATIVE COMPLICATIONS DURING LAPAROSCOPIC SURGERY.

NAME: _____
ID NO: _____
SEX: _____
AGE: _____
CONTACT: _____

POSITIVE FINDING IN HISTORY, EXAMINATION, RADIOLOGICAL & LAB WORK UP:

ASA STATUS: _____

COMPLICATION	OCCURRENCE AND DETAIL OF INJURY
Perforation of gall bladder	
Haemorrhage	
Organ injury	
Conversion to open surgery	
Bile leakage	
Infection	

MANAGEMENT OF COMPLICATIONS