

COMPLICATIONS OF LAPAROSCOPIC CHOLECYSTECTOMY AT ISRA UNIVERSITY HOSPITAL, HYDERABAD

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ABSTRACT

Objective: The main objective was to determine the complications of laparoscopic cholecystectomy (LC) and its causes at Isra University Hospital, Hyderabad.

Methodology: This was a retrospective study carried out from July 2005 to June 2007. Data of all patients undergoing laparoscopic cholecystectomy during the study period and fulfilling the selection criteria was collected and analyzed retrospectively.

Results: A total of 216 patients underwent laparoscopic cholecystectomy with an overwhelming majority of females. The overall complication rate was 5%. The complications included bleeding (4/216, 1.8%) from cystic artery and gall bladder bed, port site infection (4/216, 1.8%), bile duct injury (2/216, 0.9%) and colonic injury (1/216, 0.4%). The common causes of these complications were accidental injury to cystic artery, gross spillage of infected bile and erroneous clipping of common bile duct.

Conclusions: Bleeding and Port site infections were the commonest complications followed by common bile duct and colonic injuries. The commonest cause of bleeding was cystic artery injury whereas the commonest cause of port site infection was gross spillage of infected bile.

KEY WORDS: Laparoscopic cholecystectomy, Gall stones, Complications.

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INTRODUCTION

Gall stones are major health problem worldwide. Phillip Mouret performed the first video-assisted laparoscopic cholecystectomy in Lyon, France.¹ Laparoscopic Cholecystectomy (LC) has caught the imagination of surgical community and we have moved from a position of skepticism to the point where the instrument makers are unable to keep pace with the surgical demand.² Laparoscopic cholecystectomy has been generally accepted as the gold standard treatment for symptomatic gallstones disease. Several studies have shown the efficacy and safety of the procedure as well as the advantages such as reduced hospital stay, earlier recovery, less intra-abdominal adhe-

sions and a better cosmetic outcome.³ LC can also be performed safely as a day care procedure.⁴ Unfortunately, this minimally invasive technique is associated with a higher incidence of complications.^{5,6} Formerly limited to uncomplicated cholelithiasis horizon of indications has progressively extended and at present, very few patients require the conventional 'open approach'. The operation usually requires general anesthesia and is subject to same risks and complications as an open cholecystectomy, in addition to some complications specific to laparoscopic procedure like vascular or visceral injuries, bleeding, common bile duct (CBD) injury etc. The overall frequency of major complications is less than 5%.⁷ However, the incidence of complications is strongly related to the experience and recently a decrease in complication rate has been reported.^{8,9}

The main aim of this study was to determine the complications of LC and their causes at Isra University Hospital, Hyderabad.

METHODOLOGY

Medical records of all patients who underwent LC at Isra University Hospital, Hyderabad from July 2005 to June 2007 were reviewed retrospectively. Data recorded included demographic information, past medical history, indication for operation, duration of operation, operative findings and reason for conversion, peroperative complications and postoperative complications. Patients having history of jaundice, common bile duct dilatation (>8 mm in diameter on ultrasound), choledocholithiasis, pancreatitis, bleeding disorders, positive hepatitis B and hepatitis C viruses, sepsis, or malignancy were excluded from the study.

Preoperative work up included a complete blood count, blood urea, blood sugar, electrolytes, liver function tests, hepatitis profile, X-ray chest and ultrasound of abdomen. All patients were properly assessed by the anaesthetists preoperatively. All patients scheduled for elective cholecystectomy were admitted one day prior to surgery. Informed consent was taken and patients were fully

informed about the nature of procedure, possible risks and complications and possibility of conversion to open procedure depending upon the operative findings. The operation was performed with standard four port technique, using carbon dioxide for peritoneal cavity insufflation. The Veress technique was used to create pneumoperitoneum. Cystic artery and cystic duct were skeletonized and clamped with metallic clips separately. The gall bladder was then dissected from its liver bed and removed through the epigastric port. Irrigation and suction was done in cases of bleeding and bile leakage from gall bladder perforation. Drain was placed in subhepatic space. After decompression of pneumoperitoneum abdominal closure was done with vicryl 2/0 for a rectus sheath and fine prolene suture for skin closure. Conversion to open procedure was carried out either due to complication or operative difficulty. Antibiotic prophylaxis was ensured with three intravenous first generation cephalosporin. Resected gall bladder specimens were sent for histopathological examination. Postoperative analgesia was achieved with intramuscular diclofenac sodium 75mg twice a day. All patients had oral liquids in the evening after operation and were encouraged to proceed with food, provided there was no nausea and vomiting. Any peroperative complications and post operative complications were noted. Drain was removed after 24 hours of operation, if there was no significant collection. Patients were discharged on next day if there was no problem. Skin sutures were removed on 8th postoperative day. Follow up examination in surgical OPD was performed at one week, one month and three months intervals. The complications found during the follow up period were investigated and managed accordingly. The collected data was analyzed with especial reference to the frequencies of the complications and their causes.

RESULTS

This study included 216 patients comprising of 183 women and 33 men with female to male ratio of 5.5:1. The mean age was about 35 years

with range of 20-70 years. Indications for Laproscopic Cholecystectomy (LC) included acute cholecystitis 42 (20%) and symptomatic gallstones 174 (80%). The overall complication rate was 5% whereas the mortality rate was 0%. Bleeding was the most frequent complication observed in 4 (1.8%) patients undergoing LC. Bleeding resulted from accidental injury to cystic artery in three patients and from gall bladder bed during removal of gall bladder in one patient. The bleeding from gall bladder bed was controlled by electrocautery laparoscopically and cystic artery injury in one patient was controlled by clipping of cystic artery laparoscopically. In remaining two patients with cystic artery injury, bleeding could not be controlled laparoscopically and required conversion to open procedure to control bleeding from damaged cystic artery. Four (1.8%) patients developed surgical port site infection. Out of these one patient had wound infection of the umbilical port and two had wound infection of the epigastric port. The patient having umbilical port infection was obese and two patients having epigastric port infection, had gross spillage of infected bile during extraction of gall bladder. All these patients were managed by antibiotics and local dressings. The fourth patient with port site infection had umbilical stitch sinus which was managed with opening of the wound, removal of subcutaneous stitch and appropriate antibiotics. Two patients (0.9%) had CBD injury and in both cases, the CBD was clipped as it was erroneously believed to be the cystic duct. This mistake went unrecognized intraoperatively and it was only suspected after three days when patients started to develop obstructive jaundice. Patients were re-operated, clips were removed, CBD exploration was done and T

tube was placed in the CBD. In both of these patients, the post operative recovery was smooth and uneventful. After two weeks, T-tube cholangiogram was done showing free flow of contrast in duodenum with normal CBD caliber and then the T-tube was removed. One patient had colonic injury which was identified during the procedure requiring conversion to open method and the injured colonic wall was repaired primarily.

DISCUSSION

Complications from LC fall into two categories. Those directly resulting from the laparoscopic intervention like injury from Veress needle, trocar injuries etc and those associated with the operation itself like bile duct injury etc. The rates of complications in LC were much higher during the initial era of laparoscopy, technical limitation being the main reason. Complications can be seen during the creation of pneumoperitoneum especially with Veress needle. The incidence of major visceral or vascular injury is rare; but literature does report such injuries. Deziel et al³ reported 13 cases of aortic injuries in a study of about 77604 operations. These insertional complications can be further minimized by using open technique for creating pneumoperitoneum.

The incidence of CBD injury is strongly related to experience and a decrease in CBD injury has been reported.^{9,10} Despite the knowledge on mechanism of injury and many reports which stress the value of preventive measures such as intraoperative cholangiography, the reported incidence still varies between 0-1%.¹¹⁻¹³ In this study, the CBD injury was observed in two (0.9%) patients. In both of these patients, CBD was clipped and problem was

Table-I: Comparison of complications

Type of complications	Dholia KM ²² (%)	Lim SH ²³ (%)	Vecchio R ²⁴ (%)	Tan JT ²⁵ (%)	This study (%)
CBD Injury	4	0.2	0.5	1.48	0.9
Bleeding	–	11.8	0.47	0.49	1.8
Colonic injury	1	3.9	0.1	–	0.4
Port site infection	8	–	0.45	–	1.8

identified postoperatively. Patients were explored again, clips were removed and T - tube was placed after exploration of CBD. These injuries can be prevented by adequate surgical experience, careful dissection and proper case selection. However, as surgeon obtains more experience, the frequency of this complication should decrease.

The visceral injury can occur during introduction of Veress needle or trocar injuries as well as over judicious dissection of adhesions. Visceral damage may be evident peroperatively or remain unrecognized during operation and later manifest as peritonitis, abscesses or sepsis. In this study, one patient had colonic injury which was identified peroperatively and the primary repair was done. The overall incidence of serious visceral injuries during LC is reported to be 0-5% in the published literature.^{3,7,9}

Bleeding is a frequently encountered and dangerous complication of laparoscopic cholecystectomy. The bleeding may occur during Veress needle insertion, dissection of gall bladder, slippage of clip from cystic artery or injury to cystic duct. In our study, four patients had bleeding. Only two patients needed conversion to open procedure as bleeding was not controlled laparoscopically. Minor bleeding can be controlled by pressure and application of suture or diathermy. Factors contributing to operative site bleeding may include inadequate exposure, acute inflammation, portal hypertension, adhesion, coagulopathy and rough technique.^{8,9,14,15} Local study¹⁶ has reported bleeding in about 3.18% of the patients whereas another study by Usal et al¹⁷ reported major vessel injury (aorta, portal vein & inferior vena cava) in about 0.11% of the patients.

Wound infection, usually involving the umbilical cannulation site through which the gall bladder is extracted, occurs in 0.3% -1% of cases.¹⁸⁻²⁰ In this study, four patients (1.8%) developed surgical port site infections, which were managed by simple dressings and oral antibiotics. One of these patients had umbilical stitch sinus which was managed by opening of the wound, removing subcutaneous

stitch and appropriate antibiotics. Wound infection was more common in obese patients. The hospital infection committee was informed about all these cases and necessary actions were taken. The reported incidence of surgical port site infection varies between 0.5 to 1%.¹⁸⁻²¹ The comparison of complications observed in this study with those observed in literature is mentioned in Table-I.

CONCLUSION

The overall complication rate was 5% and these include bleeding and port site infection as the commonest complications followed by CBD and colonic injuries. The commonest cause of bleeding was cystic artery injury. The causes of port site infection were gross spillage of infected bile, obesity and umbilical stitch sinus.

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