

To Find Out the Incidence Extra-Biliary Complications during Laparoscopic Cholecystectomy and Their Management

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Abstract: The objective of this study is to find out the incidence extra-biliary complications during laparoscopic cholecystectomy and their management. This study is a prospective analysis of extra-biliary complications which occurred during laparoscopic cholecystectomy done in the dept. of surgery in JAH, Gwalior. The study population included patients with Gall stones in whom laparoscopic cholecystectomy was performed. The extra-biliary complications were divided into two distinct categories: (i) Procedure related and (ii) Access related. The proportion of Extrabiliary complications during LC was 18.18%, biliary complications was 2.27% and conversion rate to open procedure was 12.73%. Among access related complications, port site bleeding occurred in 3 patients (1.36%), subcutaneous emphysema in 1 patient (0.45%), port site sepsis in 4 patients (1.81% - most common) while no patient had small bowel laceration or ascending colon laceration while among procedure related complications visceral injuries occurred in 6 patients (2.72%) all of which demanded a conversion, vascular injuries that include bleeding through gall bladder bed and cystic artery in 11 patients (5%) and gall stone or biliary spillage in 21 patients (9.54%) most of which were managed conservatively. Extra-biliary complications are much more frequent than biliary complications and can be life-threatening. An early diagnosis and high degree of suspicion with good clinical judgment is critical to avoid a significant morbidity and mortality in these patients.

Keywords: Laparoscopic cholecystectomy, extra-biliary complications.

INTRODUCTION

Gallstones constitute a significant health problem in developed societies, affecting 10% to 15% of the adult population [1]. Gallstones are the most common cause of emergency hospital admission for people with abdominal pain worldwide [2]. The treatment modalities include laparoscopic or open cholecystectomy, ERCP (Endoscopic Retrograde Cholangiopancreatography), Endoscopic sphincterotomy and new investigational procedure called Natural Orifice Translumenal Endoscopic Surgery (NOTES). During the past 20 years, laparoscopic cholecystectomy (LC) has become the procedure of choice in the surgical treatment of symptomatic biliary lithiasis [3]. The operation is not completely risk-free, some incidents and complications being more frequent than with open cholecystectomy (OC). In fact, a complicated.

LC is considered to be one of the most difficult laparoscopic procedures worldwide. Biliary complications have been reported more commonly in most of the studies. The extra-biliary complications do occur with almost the same frequency and severity but

tend to be under-reported in the literature [5]. Although these complications are not as common as they were in the past, but are still a major source of morbidity associated with laparoscopic cholecystectomy [7]. The extra-biliary complications [9] can be divided into access-related [10] or procedure-related. In our study, we will try to ascertain the incidence of these complication in our setup, study the factors affecting their occurrence and management options available for these complications and their outcome.

PATIENTS AND METHODS

The present study entitled "study of factors extra-biliary complications of laparoscopic cholecystectomy and their management" was conducted on 220 patients of biliary lithiasis in the Department of Surgery, JA Group of Hospitals and GR Medical College, Gwalior (MP) during September 2015 to August 2016 after getting written informed consent from the patients. The study population included all patients with symptomatic gall stones who were PAC (Pre-anesthetic checkup) fit regardless of their age and

gender. The patients were operated by four-port technique and pneumo was created by verres needle.

All preoperative, intra operative and post-operative details were recorded on a proforma and results were subsequently analyzed by SPSS 23.

RESULTS

The study sample had 59 males and 161 females among the patients showing female preponderance of cholelithiasis. Out of 220 cases in the current study, 40 (18.2%) patients had extrabiliary complications and 5 (2.27%) patients had biliary complications respectively clearly showing extrabiliary complications occur much more frequently than biliary complications. Out of the 40 cases in which extrabiliary complications were encountered, 14 patients had the procedure converted to open cholecystectomy with a conversion rate of 35% and out of 180 cases who had no extrabiliary complications, 14 patients had the procedure converted to open cholecystectomy with a conversion rate of 3.05% with an overall conversion rate of 12.73%. Incidence and

nature of various complications encountered are shown in table 1 and table 2. Among access related complications, port site bleeding occurred in 3 patients (1.36%), subcutaneous emphysema in 1 patient (0.45%), port site sepsis in 4 patients (1.81%) while no patient had small bowel laceration or ascending colon laceration while among procedure related complications visceral injuries occurred in 6 patients (2.72%), vascular injuries that include bleeding through gall bladder bed and cystic artery in 11 patients (5%) and gall stone or biliary spillage in 21 patients(9.54%). Most common access-related complications were port-site sepsis and port site bleeding. Direct trauma to superior epigastric vessels can lead to uncontrollable bleeding and ultimate conversion. Among Procedure-related complications were gall stone spillage due to GB perforation. Visceral injuries were another serious procedure-related complication and occurred in 6 patients, all of which were converted. Hemorrhage was caused by tangential side lesions of the cystic artery (8 cases) and, more rarely, by its total sectioning (1 cases). A low threshold for conversion can prevent significant morbidity and mortality as seen in this study (Fig-1).

Table 1: Showing Frequency of Procedure related (n=38*) extra biliary complications

Intraoperative findings which made the procedure difficult	Frequency of occurrence	Percentage of occurrence	conversion
Visceral injury	6	2.72%	6
Stone/biliary spillage	21	9.54%	8
Vascular injury/significant bleeding	11	5%	5
Port site bleeding	3	1.36%	
Total	41	18.63%	

*some patients 1 or more procedure related complications

Table 2: Showing incidence of access related complications (n=8) during LC

Complication	No of cases	%age	conversion
Bleeding from port site	3	1.36%	-
Small bowel laceration	0	0	-
Subcutaneous emphysema	1	0.45%	-
Port sepsis due to retained stones	4	1.81%	-
Ascending colon laceration	0	0	-

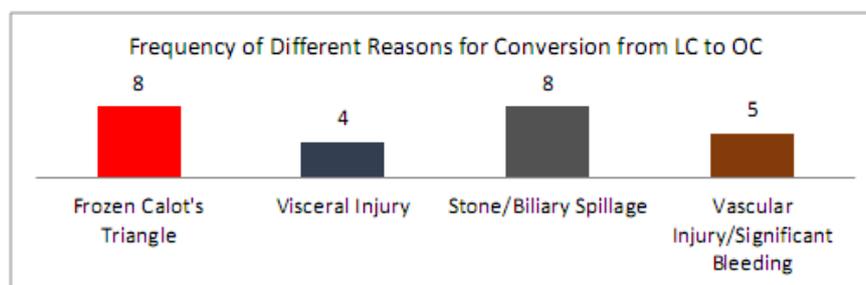


Fig-1: Showing frequency of different reasons for conversion to OC

DISCUSSION

The complications reported during this study were broadly classified into two distinct categories: access related and procedure related. Lap cholecystectomy accounts for a significant workflow in gastrointestinal surgery and emergency care.

Optimizing care and care pathways requires an understanding of the underlying disease. Not only can the natural history of gallbladder disease vary with patient cohorts but surgical findings can be surprising, with somewhat unexpected degrees of surgical difficulty (or ease).

Gaining access by closed technique has a complication rate in the range of 0.2–0.3% as reported by Loffler and Pent [9]. 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. Trocar insertion under vision through avascular planes and a thorough inspection of the ports before deflation of the abdomen can reduce port site bleeding. Undue thrusting force during first trocar insertion is likely to cause bowel injury. Mayo *et al* [11] have made a similar recommendation in their study. Adequate manual lifting of the abdominal wall during insertion is very helpful and gives good safety. Illuminating the abdominal wall by telescope may display the vessels and secondary ports may be created safely. Subcutaneous emphysema usually occurs due to leakage of gas from the site of trocar insertion and is likely when patient is obese and gas is insufflated through a misdirected Veress needle. This may require manual pressure on abdominal wall to evacuate the gas. This is consistent with other similar studies. We also report 17.27% overall procedure-related problems in this series of which 14 (6.37%) were serious enough to demand conversion to open procedure. Procedure-related complications are more likely to occur when there is history of repeated attacks of acute cholecystitis leading to distortion of anatomy of Calot's triangle. Most common among them were gall stone spillage due to GB perforation. Visceral injuries were another serious procedure-related complication and occurred in 6 patients, all of which were converted. These procedural injuries to gastrointestinal tract are associated with a high mortality rate as indicated by various studies. The duodenal injuries in our study were caused during difficult dissection in the Calot's triangle. This is consistent with other reports and usually results when dissection is continued in a totally obscured field. Patience, displaying of anatomy and identification of structures before cutting or applying clips are vital to safe outcome. Hemorrhage was caused by tangential side lesions of the cystic artery (8 cases) and, more rarely, by its total sectioning (1 cases). In most cases, laparoscopic hemostasis was achieved by clipping the artery between the lesion and its origin.

Only one case required conversion to an open operation for hemostasis. Bleeding from the gallbladder bed (2 cases) was noted especially in those patients with acute cholecystitis or cirrhosis. In these 2 patient's hemostasis was achieved by using a direct application of electro-cautery on liver bed. Perforation of the gallbladder during dissection or extraction was recorded in 21 (9.54%) patients. The incident is more troublesome than serious, especially when grasping and extraction of lost gallstones in the peritoneal cavity is necessary; this maneuver prolongs the operation and was similar to findings in a study done by S Duca *et al* [12]. Port site sepsis was the most common complication found in the post-operative period in 4 cases (1.81%) which was very similar to study

conducted by Prakash K Sasmal, Tushar S Mishra *et al* [13]. Port site infection (PSI), although infrequent, is one of the bothersome complications which undermine the benefits of minimal invasive surgery. PSIs were treated non-surgically, with early identification and appropriate management by antibiotic coverage. Hence Forbearance, clear anatomy and good identification during the procedure are key to safe outcome and thus preventing any sort of morbidity and mortality to the patient.

CONCLUSION

Extra-biliary complications are much more frequent than biliary complications and can be life-threatening. An early diagnosis and high degree of suspicion with good clinical judgement is critical to avoid a significant morbidity and mortality in these patients.

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