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Original Article

Extra Biliary Complications Of Laparoscopic Cholecystectomy: A Prospective Analysis Of 100 Cases

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ABSTRACT

Background: Various complications of laparoscopic cholecystectomy are – complications associated with creation of pneumoperitoneum (veress needle/ trocar related injuries), hemorrhage, bile duct injury , overlooked common bile duct stones, bile leaks, perihepatic collections and gall-bladder perforations. In the era of minimal invasive surgery, the spectrum of complications has changed. Aim of present study was to study the extabiliary complications of laparoscopic cholecystectomy along with morbidity and mortality associated with these complications **Material and Methods:** One hundred patients of symptomatic gall stones satisfying the selection and exclusion criteria and with documented gall stones on ultrasonography and who underwent lapaoscopic cholecystectomy done by experienced surgeons ,were included in the study. Patients with any medical illness, jaundice, acute cholecystitis, acute pancreatitis, pregnancy, CBD stones, CBD more than 10mm, gall bladder mass, severe coagulopathy, peritonitis, or any previous upper abdominal operations were excluded from the study. **Result:** Majority of the patients were females (85%) . Mean age of the females in this study was 42.31+/-11.69 years and in male patients it was 46.53+/- 14.69 years. The overall mean age was 42.95 +/- 12.19 years. Approximately 95% of patients presented with right upper abdominal pain and equal percent with dyspepsia. Whereas (58%) presented with vomiting. All patients had chronic symptoms. Mean range of duration of symptoms was 15.37+/- 15.06 months. 29 patients were with previous lower abdominal surgery. **Conclusion:** It is concluded that the thorough knowledge of anatomy. Starting dissection close to neck of gall bladder, meticulous dissection of the Calot's triangle to achieve good view with a wide window, confirming gall bladder neck and cystic duct junction and releasing traction on the gall bladder before applying clips and cutting, using minimal cautery in Calot's triangle, ensuring that no non targeted tissue is cauterized, are essentials to safe laparoscopic cholecystectomy

Keyword: Laparoscopic Cholecystectomy; Complication

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INTRODUCTION

Complications of laparoscopic cholecystectomy are the complications, which occur with the performance of laparoscopy. In addition, there are complications which are specifically associated with cholecystectomy. Various complications of laparoscopic cholecystectomy are – complications associated with creation of pneumoperitoneum (veress needle/ trocar related injuries), hemorrhage, bile duct injury , overlooked common bile duct stones, bile leaks, perihepatic collections and gall-bladder perforations. In the era of minimal invasive surgery, the spectrum of complications has changed. Broadly they can be divided into biliary and extra-biliary complications. The extra-biliary complications of laparoscopic cholecystectomy can be further divided into access related complications and procedure –related complications. The major extrahepatic complications are due to unclear anatomy,retained stoned in common bile duct, bile leak, cystic duct leakage, and bleeding. The minor complications include costochondritis, persistent pain, wound infection, fever, prolonged ileus, umbilical port site hernia, fluid collection, prolonged hospital stay, urinary tract infection and bleeding from port site. Aim of present study was to study the extabiliary complications of laparoscopic cholecystectomy along with morbidity and mortality associated with these complications.

MATERIALS AND METHODS

One hundred patients of symptomatic gall stones satisfying the selection and exclusion criteria and with documented gall stones on ultrasonography and who underwent lapaoscopic cholecystectomy done by experienced surgeons ,were included in the study. Patients with any medical illness, jaundice, acute cholecystitis, acute pancreatitis, pregnancy, CBD stones, CBD more than 10mm, gall bladder mass, severe coagulopathy, peritonitis, or any previous upper abdominal operations were excluded from the study. During the procedure careful note was made of operative time and technique. The intra-operative difficulties and complications were analyzed as :-

1) Complications related to creation of pneumoperitoneum. 2) Complications related to operative technique. 3) Post operative complications. 3) Follow up up to 3 months for any delayed complications.

OBSERVATION AND ANALYSIS

This prospective study was conducted to study the extra-biliary complications, the morbidity and mortality associated with laparoscopic cholecystectomy. The observations thus made were analyzed and recorded as follows:

Majority of the patients were females (85%) . Mean age of the females in this study was 42.31+/-11.69 years and in male patients it was 46.53+/- 14.69 years. The overall mean age was 42.95 +/- 12.19 years. Approximately 95% of patients presented with right upper abdominal pain and equal percent with dyspepsia. Whereas (58%) presented with vomiting. All patients had chronic symptoms. Mean range of duration of symptoms was 15.37+/- 15.06 months. 29 patients were with previous lower abdominal surgery. 72% of the patients had multiple stones on ultrasound whereas 28% had single stone on ultrasound. 82% had GB stone less than 1 cm in size and 1 patient had stone greater than 3 cm. The gallbladder wall thickness in 94 patients was between 2-3mm; only 2 patients had wall thickness of more than 4mm. All patients had their biological tests within normal range prior to surgery.

Per-operatively 42 (42%) patients had simple gallbladder i.e. with no adhesions. 22 (22%) patients had adhesions in calot's triangle. 12 (12%) had contracted gallbladder with adhesions. Whereas severe dense adhesions with unclear anatomy were seen in 2 patients. Mucocoele was present in 5 patients while empyma of gall bladder was seen in 2 patients. Cystic artery was anterior to cystic duct in 9(9%) of cases, wide cystic duct in 6(6%) of cases and sessile gallbladder in 2(2%) of cases. Regarding operative complications there was no veress needle injury. There was one trocar related injury to aorta while inserting the fist safety trocar. There was no pneumoperitoneum related complication. There was cystic artery injury in 3% of the patient which was minor and was controlled by monopolar cautery. Gallbladder bed bleeding was noted in 4 patients which was controlled by diathermy. Visceral organ injury occurred in one case while separating adhesions; however it was mild and controlled spontaneously. There was no bowel or diaphragmatic injury. Rupture of gallbladder occurred in 27% of patients. There was gallbladder perforation with spillage of bile in 15% patients and gallbladder perforation with stone spillage along with bile in 12% of patients. In almost all the patients all the stones were retrieved but in two patients one or two stones could not be retrieved as they spilled to inaccessible areas. No conversion was done to retrieve the stones. There was no thermal injury to surrounding viscera. Complications occurred in 3 cases while removing gall bladder through port. The common complications were the rupture of thin walled gallbladder while extracting the specimen through port site. There was a technical problem in one case due to fault in electricity connections of operation theatre. So conversion to open procedure was done in this case. Out of 100 cases, 5% of the patients had to be converted to open cholecystectomy. Various reasons for conversion of procedure to open were dense adhesions and obscure anatomy in 2 patients, shrunken and sessile gall bladder with dense adhesions in 1 patient, injury to aorta (major vessel) in 1 case. The decision to convert the case was taken in the interest of patient's safety. Excluding the cases which were converted, the mean operative time of rest of the cases was 44.0 minutes with range being 20-145 minutes. Regarding post-operative pain after excluding cases which were converted to open procedure, nearly 65% of the patients had mild pain on the day of surgery, while 83.16% had no pain on first post-operative day. Nearly 96% of the patients were pain free by the end of second post-operative day. All patients were given one intramuscular injection of 3 ml Diclofenac sodium (75mg) in the recovery room. All patients were given first dose of anti-emetic in the recovery room. There was no nausea and vomiting in 82.11% of the patients. Whereas 17.89% of patients had nausea and vomiting of different severity. Rescue dose of anti-emetic was required by all these patients. Sub-hepatic drain was used selectively in 24(25.26%) patients. Out of 24 patients in which drain was put, in most of the cases the drain was removed on 2nd (37.5%) and 3rd (33.33%) post-operative day. 78% of the patients were discharged by 2nd post-operative day. Regarding post-operative complications, epigastric port site pain was found in 3(3.16%) of the patients, 2(2.16%) had fever, 2(2.11%) had ileus and chest infection was observed in 2(2.11%) of the patients. Post-operative fever was because of respiratory infection. It was resolved with antibiotics. None of the patients had bleeding from port site. Post-operative complication noted during 1st week follow-up was port site infection in two cases which were treated successfully with antibiotics. Another complication in follow-up period was in 2nd week where one patient presented with severe upper abdominal pain. On upper GI endoscopy it was found to be gastritis and was managed conservatively. So overall there was one major complication where procedure was converted to open and

the complication was dealt with successfully and 12 minor complications which were treated accordingly.

DISCUSSION

Present study was undertaken to study the extra-biliay complications of laparoscopic cholecystectomy, their subsequent management and to formulate some guidelines to prevent these complications. Average age in the study was 42.95 years which is comparable to other series reported earlier. No patient was operated in acute stage as rate of complication increases with such venture.

In present study there was no veress needle injury but a trocar insertion injury occurred to aorta in a very lean and thin patient. It was converted to open procedure and aortic laceration was repaired immediately. The incidence of such injury is 0.1% to 0.4%. The incidence reported by other series is as, Bailey et al 0%, Peters et al 0% , Go et al 0.15% , scott et al 6% while in present study it is 1%. Bleeding can occur at trocar insertion site and dripping into operative field, blunt dissection of adhesions from gallbladder and liver can result in sudden and pulsatile bleeding and bleeding from gallbladder fossa during separation. Other series reporting bleeding are Cuschieri et al 0.9%, southern surgeon's club 0.3%, Vagenas et al 1.55%, while in Present study it is 1%. Bleeding was observed in 8 patients but it was easily controlled. Basic principles followed to control bleeding were ; no panic reaction, no panic cautery, compression for 5 minutes with gall bladder or sponge piece, irrigation or aspiration of the bleeding area then catching the bleeding vessels. Only after precise isolation of the bleeding vessels and visualization, vessels were coagulated or the clip was applied. If bleeding site was not clearly identified after repeated above maneuvers then the procedure was converted to open. Trocar site bleeding can be controlled by angling trocar against the abdominal wall. Gall bladder perforation is also a common intra-operative event. Incidence ranges from 12-40%. Various other studies reported this incidence as Cuschieri 16%, Philips et al 30%, kok et al 12%. Stones left in peritoneal cavity were initially considered harmless but presently there is strong recommendation that spilled stones should be removed and every attempt should be made to prevent the spread of bile and calculi if gall bladder is accidently perforated. The principal mechanisms of gallbladder perforation during laparoscopic cholecystectomy are injury to the gall bladder during diathermy dissection from the hepatic fossa and traction injury to Hartmann's pouch. Less frequent causes include slippage of endoclips and tearing of gallbladder as it is removed through the port site. Significant risk factors for complications due to peritoneal gallstones include acute cholecystitis with infected bile, Spillage of pigmented stones, multiple stones >15, stone size > 1.5cms and elderly patients. The most frequent complication of intra-peritoneal gall stone is abcess formation in the sub-hepatic and sub-phrenic spaces. Less-frequently there may be a symptomatic inflammatory mass or a sterile collection with a gallstone in the base of it. Second most important complication from spilled stones includes early and late port site abcess formation. Inflammatory masses and even a late abcess mimic a port site metastasis. Intra-operative laparoscopic techniques for managing the spilled stones include, minimizing further spillage by closing the defect in gallbladder by repositioning the grasper, with an endoloop or clip, placing the gallbladder and loose stones into an endobag and removing it out. The retrieval of free intra-peritoneal gall stone should be done with laparoscopic spoon, grasper or with suction device. After retrieving the stone extensive peritoneal lavage is done with normal saline and prophylactic antibiotics are given in post operative period. Unretrieved gallstones are a source of infrequent but potentially serious complication. Every reasonable effort must be made to retrieve as many gallstones as possible followed by vigorous lavage and antibiotic coverage. In the present study gall bladder perforation occurred in 27% of the patients. All the above recommended measures were undertaken, no case has reported with any of the delayed complication till date. Bowel injuries commonly are unrecognized at the time of laparoscopic cholecystectomy and are diagnosed later when patient presents with septic peritonitis, intra abdominal abcess or enterocutaneous or colocutaneous fistula. Measures that may prevent bowel injury include the liberal use of open laparoscopy or alternative needle puncture sites in patients with prior abdominal surgery, assurance of an adequate pneumoperitoneum, gastric tube decompression, atraumatic retraction, and judicious application of monopolar current. There was no bowel injury in our series. Liver injury can result from excessive traction, as well as cutting and burning. In liver injury bleeding is immediate and obvious. Management is directed at obtaining haemostasis. In our study there was one case of liver injury by hook cautry. The bleeding was controlled spontaneously. Our conversion rate is comparable to most of other series reported. There were 4% elective conversions and 1% forced conversion. Elective conversions were due to dense adhesions and forced conversion was due to electricity failure. Conversion rates of 5-10% do not reflect the surgeon's endoscopic inability but rather his sound judgment. Wound infection occurred in only 2% of cases. It was comparable with other studies and was managed conservatively. Apart from all the above, there were certain minor post operative complications like nausea and vomiting, fever, abdominal discomfort, ileus , sore throat. All were there for one or two days and were managed conservatively. Overall there was 0% mortality and 13% morbidity. The higher incidence of morbidity was due to small size of our series.

CONCLUSIONS

It is concluded that the thorough knowledge of anatomy. Starting dissection close to neck of gall bladder, meticulous dissection of the Calot's triangle to achieve good view with a wide window, confirming gall bladder neck and cystic

duct junction and releasing traction on the gall bladder before applying clips and cutting, using minimal cautery in Calot's triangle, ensuring that no non targeted tissue is cauterized, are essentials to safe laparoscopic cholecystectomy. Extra-biliary complications can prove lethal if not identified and managed during operation. Patience and low threshold for conversion in difficult cases can substantially decrease morbidity and mortality.

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