

Analysis of Various Complications of Laparoscopic Cholecystectomy: An Institutional Based Study

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ABSTRACT

Background: Laparoscopic cholecystectomy represents a relatively recent advancement in surgical techniques, gaining significant traction and introducing novel anesthetic considerations. Hence; the present study was conducted for analysis of various complications of laparoscopic cholecystectomy (LC).

Materials & Methods: A total of 100 patients scheduled to undergo LC were enrolled. Complete demographic and clinical details of all the patients was obtained. Inclusion criteria included patients of 20 years or above who were scheduled for laparoscopic cholecystectomy for cholelithiasis and other benign gall bladder diseases. The laparoscopic cholecystectomy was done under adequate anaesthetic environment. Preoperative prophylactic injection Ceftriaxone 1 gm intravenously was given to all patients. Standard 4-ports entry procedure was adopted with the exception of few cases who required additional port. Postoperatively single dose of injection Ceftriaxone 1 gm intravenously was given in the next morning. Most of the patients were discharged from the hospital within 48 hours of surgery. All study subjects were monitored closely to detect any complications until discharge, then on the 7th day following discharge and finally on 30th postoperative day.

Results: Overall, complications were seen in 21 percent of the patients. These included trocar site bleeding, vascular injury,

gall bladder perforation, spilled gallstones, intraoperative bile leak, bile duct injury and port site infection was seen in 5 percent, 3 percent, 3 percent, 4 percent, 2 percent, 3 percent and 1 percent of the patients respectively.

Conclusion: Laparoscopic cholecystectomy represents a reliable and efficient method for addressing cholelithiasis, yielding positive outcomes when the surgeon judiciously and promptly opts to transition to open cholecystectomy in situations involving intraoperative complications or unclear anatomical features of Calot's triangle.


Key words: Laparoscopic Cholecystectomy, Complications.

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INTRODUCTION

Laparoscopic cholecystectomy represents a relatively recent advancement in surgical techniques, gaining significant traction and introducing novel anesthetic considerations. This procedure offers several benefits, including a reduced duration of hospital stay and a quicker resumption of daily activities, alongside diminished pain due to the smaller incisions and a lower incidence of postoperative ileus when compared to conventional open cholecystectomy.¹⁻³

The primary complications often arise from traumatic injuries incurred during the blind insertion of trocars, as well as physiological alterations linked to patient positioning and the

establishment of pneumoperitoneum. Typically, the anesthetic approach for laparoscopic cholecystectomy is predominantly general anesthesia.^{4,5} The implementation of controlled ventilation effectively mitigates the risk of hypercarbia, while the integration of antiemetics and nonsteroidal anti-inflammatory drugs within the anesthetic regimen has been shown to decrease the occurrence of postoperative nausea and vomiting.^{6,7} Peters JH et al have performed 283 consecutive laparoscopic cholecystectomies with no deaths and a morbidity rate of 5.3% (15 of 283 patients; six major complications, nine minor complications). Major complications included one bile duct injury requiring laparotomy

and t-tube insertion and two patients with retained stones. Symptomatic bile leakage occurred in three patients (1%). Two of these bile leaks were from accessory ducts entering the gallbladder bed; the third leak was secondary to a cystic duct leak. Eight patients (2.8%) required conversion to open cholecystectomy. Minor complications included three patients with subumbilical wound infections, two patients with urinary tract infections, one patient with costochondritis after operation, and three patients with prolonged hospital stays (more than 48 hrs) caused by ileus or fever. Several patients with life-threatening complications, including two patients who ultimately died, were transferred to our care from other centers. These included two patients with common duct injuries combined with duodenal perforations (one of whom died), one patient with a complete common duct transection, one patient with major common hepatic duct injury, and two patients with further instances of bile leakage. Laparoscopic cholecystectomy can be performed safely, and it can be associated with life-threatening complications. Prevention of complications is dependent on proper patient selection, meticulous technique, and an accepting attitude toward conversion to "open" cholecystectomy.⁸ Hence; the present study was conducted for analysis of various complications of laparoscopic cholecystectomy.

MATERIALS & METHODS

The present study was conducted for analysis of various complications of laparoscopic cholecystectomy. A total of 100 patients scheduled to undergo LC were enrolled. Complete

demographic and clinical details of all the patients was obtained. Inclusion criteria included patients of 20 years or above who were scheduled for laparoscopic cholecystectomy for cholelithiasis and other benign gall bladder diseases.

The laparoscopic cholecystectomy was done under adequate anaesthetic environment. Preoperative prophylactic injection Ceftriaxone 1 gm intravenously was given to all patients. Standard 4-ports entry procedure was adopted with the exception of few cases who required additional port. Postoperatively single dose of injection Ceftriaxone 1 gm intravenously was given in the next morning. Most of the patients, were discharged from the hospital within 48 hours of surgery. All study subjects were monitored closely to detect any complications until discharge, then on the 7th day following discharge and finally on 30th postoperative day. All the results were recorded in Microsoft excel sheet followed by statistical analysis using SPSS software.

RESULTS

A total of 100 patients were evaluated. The mean age of the patients was 41.5 years. 43 percent of the patients were males. 31 percent of the patients were of rural residence. The mean duration of surgery was 62.8 minutes.

Overall, complications were seen in 21 percent of the patients. These included Trocar site bleeding, Vascular injury, Gall bladder perforation, Spilled gallstones, Intraoperative bile leak, Bile duct injury and Port site infection was seen in 5 percent, 3 percent, 3 percent, 4 percent, 2 percent, 3 percent and 1 percent of the patients respectively.

Table 1: Demographic data

Demographic data	Number	Percentage
Mean age (years)		41.5
Males	43	43
Females	57	57
Rural residence	31	31
Urban residence	69	69

Graph 1: Complications

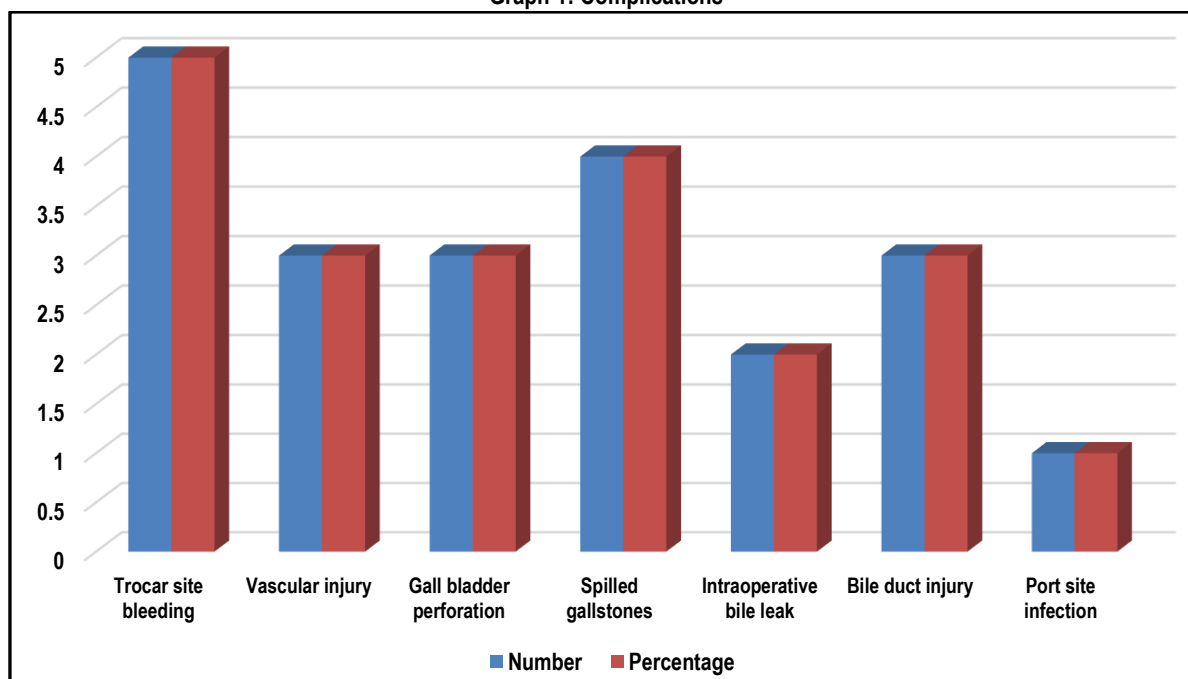


Table 2: Complications

Complications	Number	Percentage
Trocar site bleeding	5	5
Vascular injury	3	3
Gall bladder perforation	3	3
Spilled gallstones	4	4
Intraoperative bile leak	2	2
Bile duct injury	3	3
Port site infection	1	1

DISCUSSION

Laparoscopic cholecystectomy is a standard procedure for the management of gallbladder disease. As experience with laparoscopic cholecystectomy has increased, laparoscopic cholecystectomy in patients with anesthetic problems has become possible. The introduction of laparoscopy in the field of surgery in the mid-1950s revolutionised surgical techniques due to reduction in overall medical costs, reduced bleeding, less post-operative surgical and pulmonary complications, and early recovery. The gradual shift of laparoscopy to include more complicated surgical procedures resulted in modifications of existing anaesthetic techniques. The various effects of induction of pneumoperitoneum, an integral part of laparoscopy, can result in respiratory embarrassment and cardiovascular changes best managed by the use of general anaesthesia. Since the initiation of the application of laparoscopy in various day-care surgeries, a more favourable anaesthetic technique is required allowing early recovery and ambulation. The evolution of anaesthetic medicine on scientifically and clinically relevant scales has propelled innovations and initiatives for newer yet safer techniques. Advancements in anaesthesiology have been made on many fronts besides clinically relevant scales.⁸⁻¹¹

A total of 100 patients were evaluated. The mean age of the patients was 41.5 years. 43 percent of the patients were males. 31 percent of the patients were in rural residence. The mean duration of surgery was 62.8 minutes. Overall, complications were seen in 21 percent of the patients. These included Trocar site bleeding, Vascular injury, Gall bladder perforation, Spilled gallstones, Intraoperative bile leak, Bile duct injury and Port site infection was seen in 5 percent, 3 percent, 3 percent, 4 percent, 2 percent, 3 percent and 1 percent of the patients respectively. Radunovic M et al evaluated the intraoperative and postoperative complications of laparoscopic cholecystectomy, as well as the frequency of conversions. Medical records of 740 patients who had laparoscopic cholecystectomy were analysed retrospectively. They evaluated patients for the presence of potential risk factors that could predict the development of complications such as age, gender, body mass index, white blood cell counts and C-reactive protein (CRP), gallbladder ultrasonographic findings, and pathohistological analysis of removed gallbladders. The correlation between these risk factors was also analysed. There were 97 (13.1%) intraoperative complications (IOC). Iatrogenic perforations of a gallbladder were the most common complication - 39 patients (5.27%). Among the postoperative complications (POC), the most common ones were bleeding from abdominal cavity 27 (3.64%), biliary duct leaks 14 (1.89%), and infection of the surgical wound 7 patients (0.94%). There were 29 conversions (3.91%). The presence of more than one complication was more

common in males. An especially high incidence of complications was noted in patients with elevated white blood cell count, and CRP. The increased incidence of complications was noted in patients with ultrasonographic finding of gallbladder empyema and increased thickness of the gallbladder wall > 3 mm, as well as in patients with acute cholecystitis that was confirmed by pathohistological analysis. Adopting laparoscopic cholecystectomy as a new technique for treatment of cholelithiasis, introduced a new spectrum of complications. Major biliary and vascular complications are life threatening, while minor complications cause patient discomfort and prolongation of the hospital stay.¹¹ Duca S et al assessed the incidence and complications of Laparoscopic cholecystectomy. Over the last 9 years 9542 LCs have been performed at this centre, of which 13.9% were carried out for acute cholecystitis, 38.4% in obese patients and 7.6% in patients aged >65 years. The main operative incidents encountered were haemorrhage (224 cases, 2.3%), iatrogenic perforation of the gallbladder (1517 cases, 15.9%) and common bile duct (CBD) injuries (17 cases, 0.1%). Conversion to open operation was necessary in 184 patients (1.9%), usually due to obscure anatomy as a result of acute inflammation. The main postoperative complications were bile leakage (54 cases), haemorrhage (15 cases), sub-hepatic abscess (10 cases) and retained bile duct stones (11 cases). Ten deaths were recorded (0.1%). Most of the postoperative incidents (except bile duct injuries) were solved by laparoscopic means. Among patients with postoperative complications 28.9% required revisional surgery. In 42.2% of cases minimally invasive procedures were used successfully: 15 laparoscopic re-operations (for choleperitoneum, haemoperitoneum and subhepatic abscess) and 22 endoscopic sphincterotomies (for bile leakage from the subhepatic drain and for retained CBD stones soon after operation).¹²

CONCLUSION

Laparoscopic cholecystectomy represents a reliable and efficient method for addressing cholelithiasis, yielding positive outcomes when the surgeon judiciously and promptly opts to transition to open cholecystectomy in situations involving intraoperative complications or unclear anatomical features of Calot's triangle.

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