SCIENTIFIC ARTICLE

Retrospective analysis of a single unit experience in laparoscopic cholecystectomy in northern Sri Lanka during the Covid-19 pandemic

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Abstract

Introduction

Laparoscopic cholecystectomy is a surgical procedure that removes a diseased gallbladder for various indications. It is preferred over open cholecystectomy due to fewer complications and early recovery. However, it carries different operative and postoperative complications. In addition, the availability of resources and skillful surgeons limits its use worldwide. Analysing the experience of laparoscopic cholecystectomy will enhance the training and skills and improve the surgical outcome.

Methods

All the laparoscopic cholecystectomies done from July 2020 to July 2022 were analysed retrospectively.

Results

This study included eighty-seven surgeries with patients ages 8 to 84 years (mean 51.76 ±17.15). Male patients were 32.2% and females 67.8%. The indication for laparoscopic cholecystectomy was symptomatic gallstone disease in 72.4% acute/chronic cholecystitis in 14.9%, distal CBD stones in 5.7%, Gall bladder polyp in 3.4%, biliary colic in 18.4%, cholangitis in 1.2%, obstructive jaundice in 1.2% and pyocele in 1.2%. ERCP was performed by the surgeons of the same unit to manage 6.8% of the cases preoperatively and 2.2% post-operatively. Intra-operative difficulty or problems was seen in 24.13% of the cases, which included adhesions with adjacent organs in 14.9%, difficult identification of Calot's triangle in 3.4%, bile spillage 6.8% and abnormally distended gall bladder, adhered deep into the liver, and double gallbladder in 1.2% each. 1.2% of the cases needed conversion to open. Postoperative complications were noted in 20.68% of cases. 3.4% had Clavian Dindo grade I complications.

Conclusion

Professorial unit Teaching hospital Jaffna is performing laparoscopic cholecystectomies even in the presence of limited resources. The outcomes were comparable with the international standards published up to date.

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Introduction

Laparoscopic cholecystectomy is a minimally invasive surgical procedure to remove a diseased gallbladder [1]. It is being practised as the standard operation in managing gallstone disease. Good laparoscopic skills and advanced technology have widened its indications in most cases, including severe acute cholecystitis, chronic cholecystitis, gangrenous cholecystitis, acalculous cholecystitis, symptomatic cholelithiasis, biliary dyskinesia, gallstone pancreatitis, empyema and gallbladder masses or polyps [1,2].

Relatively less postoperative pain and discomfort, decreased postoperative ileus, earlier oral intake, decreased postoperative hospital stay, earlier return to normal activity, and improved cosmetic results are the known advantages of laparoscopic cholecystectomy over the open procedure.

However, training institutions worldwide report difficulties in completing laparoscopic cholecystectomies needing conversion or having postoperative complications. Common complications of laparoscopic cholecystectomy include bleeding, port site infection, bile leak and damage to the surrounding structure. The most severe complication is an iatrogenic injury of the common bile or hepatic duct [1-3]. Difficulty in delineating the anatomy because of the presence of fibrous tissue and scars compromises the easy identification of Calot's triangle. It is considered the major predisposing factor for common bile duct injury with severe morbidity [4]. Other complications, such as hospital-acquired chest infections and myocardial infarction, are also reported. The presence of anatomical variations and trainees with inadequate skills further makes the surgery difficult.

Auditing the difficulties and complications is necessary for a training institution to enhance the future training programme

to create skillful and safe laparoscopic surgeons.

Methodology

This is a retrospective descriptive study done at the professorial surgical unit of Teaching hospital Jaffna. In this study, we analysed the single unit experience of surgeons and trainees in performing laparoscopic cholecystectomy from July 2020 to July 2022. The professorial surgical unit of Teaching hospital Jaffna serves as a training centre for post-graduate surgical trainees in both open and laparoscopic surgeries. The study considered all the laparoscopic cholecystectomies done by surgeons and trainees, including senior registrars and registrars. Ethical clearance was obtained from the ethical review committee of the Teaching hospital, Jaffna. The data were collected retrospectively from bed head tickets and electronic health records. Collected Data was recorded in Excel and analysed the data using SPSS version 23. Collected data included demographics such as age and gender, indication for surgery, elective or emergency procedures, Intra-operative difficulties, drain placement, postoperative complications, conversion to open surgery, and procedures performed concomitantly with cholecystectomy. These data were analysed statistically and compared with published data worldwide.

Results

This study included eighty-seven laparoscopic cholecystectomies. All patients had negative pre-operative Polymerase Chain Reaction (PCR) or Rapid Antigen Test (RAT) for covid 19 infection. Patients' ages ranged from 8 to 84 years, with a mean age of 51.76 ±17.15. Male patients were 32.2% (n=28) and females 67.8% (n=59). Out of these patients, 26.4% (n=22) were Diabetic and 19.5% (n=17) were dyslipidemic.

The indication for laparoscopic cholecystectomy was symptomatic gallstone disease in 72.4% (n=63), acute/chronic cholecystitis in 14.9% (n=13), distal CBD stones in 5.7%(n=5), Gall bladder polyp in 3.4%(n=3), , cholangitis in 1.2%(n=1), obstructive jaundice in 1.2%(n=1) and pyocele in 1.2%(n=1).

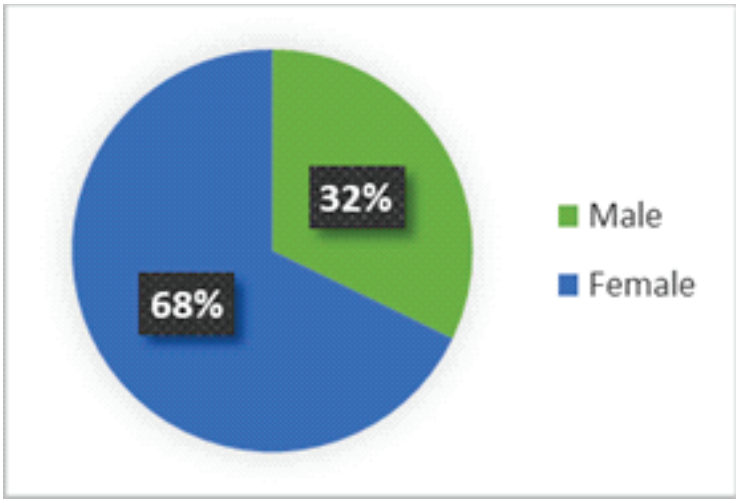

Figure 1. Gender distribution of the patients.

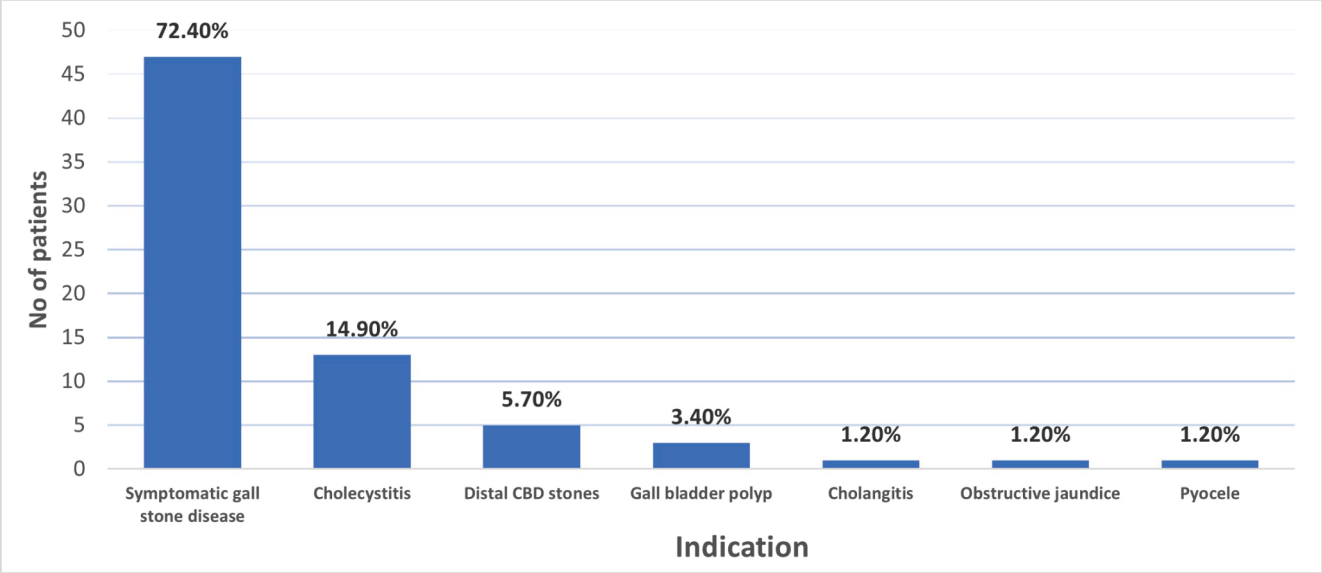

Figure 2. Indications for laparoscopic cholecystectomy

Out of the 87 cholecystectomies, one was done emergency (hot cholecystectomy) as and others were done electively.

88.5% of the cases were performed by the surgeons, and the rest, 8% by senior registrars and 3.5% by registrars under the supervision of the surgeons during their training period. ERCP was performed by the surgeons of the same unit to manage 6.8% of the cases preoperatively and 2.2% post-operatively.

Intra-operative difficulty or problems was seen in 28.7% , of the cases, which includes adhesions with adjacent organs in 14.9%, difficult identification of Calot's triangle in 3.4%, bile spillage 6.8% and abnormally distended gall bladder, intrahepatic gall bladder, and double gallbladder in 1.2% each.1.2% of the cases needed conversion to open. The drain was placed in 18.3% of the cases. None of the patients had an intraoperative CBD exploration during the primary surgery.

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Multiple stones were noted in 66.7% of the cases whereas single stones in 17.3% and gall bladder polyps in 5.7%. Open para umbilical hernia repair with mesh was done in 9.1% of the cases and Laparoscopic transabdominal preperitoneal inguinal hernia repair with mesh in 1.2% of cases.Figure 3. Intraoperative difficulties in Laparoscopic cholecystectomy

Complications were noted in 20.68% of cases, of which eight were surgical, and 10 were medical problems. Out of those 10.8% had hospital acquired chest infections, 3.6% had abdominal pain and transaminitis, 2.2% had bile leak and needed special intervention with ERCP and pigtail drainage, 2.3% had port site wound infection, 1.2% had drain site infection, and 1.2% had a myocardial infarction. None of the cases had revision surgery

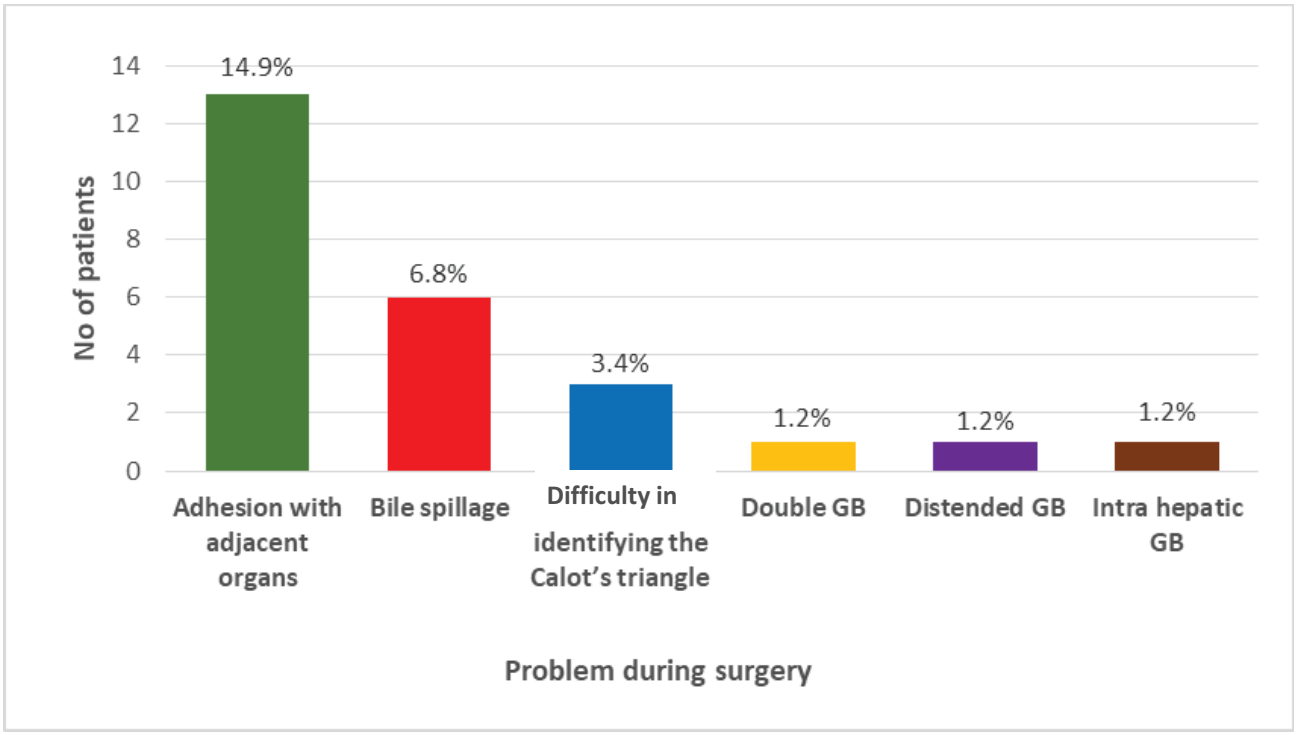

Figure 3. Intraoperative difficulties in Laparoscopic cholecystectomy.

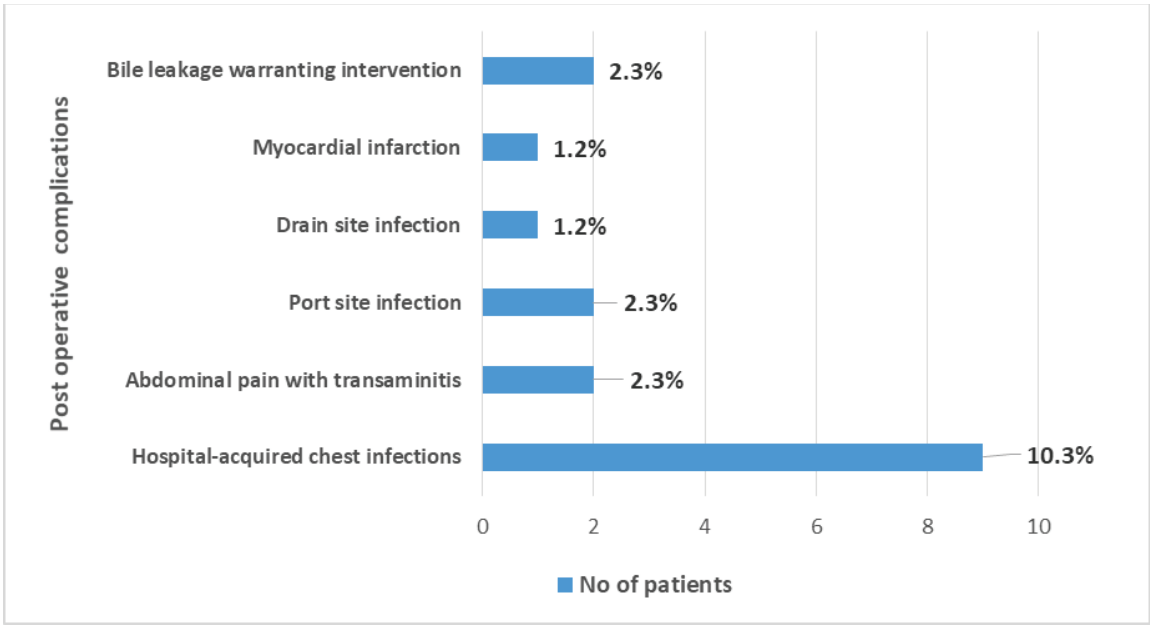

Figure 4. Post operative complications encountered in Laparoscopic cholecystectomy

Discussion

Demographics

Most of the patients operated on were females with a mean age of 51.76± 17.15. Most of the published literature also had the majority of female cases and a mean age group of more than 50 [4-6].

Indications and intraoperative difficulty

The common indication for laparoscopic cholecystectomy in this study was symptomatic gallstone disease. This pattern varies among published literature. Most literature had chronic cholecystitis as the common indication for laparoscopic cholecystectomy [6,9].

Intraoperative difficulty or problems was noted in 21 cases, out of which 16 were to adhesions and difficult Calot's triangle identification. This is described in the literature as the commonest intraoperative difficulty. It is said to be due to scaring and fibrosis due to chronic inflammation [2,4].

Conversion rate

Laparoscopic cholecystectomy warranted conversion to open surgery in certain difficult cases. One patient had a choledoco-duodenal fistula and was converted to open cholecystectomy and repair of the fistula tract. The conversion rate was 1.2%.The conversion rates in the published literature worldwide range from 1.9% to 17% [4-8]. This low conversion rates are associated with skill and experience of the laparoscopic surgeons [4]. The sample size studied in this analysis is only eighty-seven, whereas, in others, it is in multiples of a hundred.

Complications

Complications can be either surgical or medical. Surgical complications could be intra-operative or postoperative. Common operative incidents reported in the literature were haemorrhage, iatrogenic perforation of the gallbladder and common bile duct injuries. Postoperative surgical complications reported in the literature are bile leakage, bleeding, subhepatic abscess and retained bile duct stones [5]. In addition, various medical problems, such as myocardial infarction and hospital-acquired chest infections, can crop up following surgery.

The morbidity and mortality of the complications can be graded using the Clavien–Dindo classification [10]. Two patients with postoperative bile leak warranted guided drainage with pigtail, ERCP, and stenting (grade IIIb). One had a non-ST elevated myocardial infarction and was managed in the medical wards with anticoagulants and antiplatelets (grade II), nine had hospital-acquired chest infections and managed with intravenous and subsequent oral antibiotics without any intervention (grade II), one had port site infection which was managed at the ward with simple drainage and daily dressing (grade 1), Three had abdominal pain and elevated liver enzymes and was managed without any intervention (grade I), and one with drain site infection which was managed with removal of drain and wound dressing (grade I). No single mortality was encountered. The post operative complications of the unit were in line with the international standards.

Concomitant procedures

Open/laparoscopic hernia repair with mesh was done in 10.3% (n=9) of the cases, and none had any complications. Many surgeons perform laparoscopic cholecystectomy safely, along with para umbilical or inguinal hernia repair, without significant postoperative complications, such as surgical site infection warranting mesh removal. It is said that the association of symptomatic gallstone disease with a para umbilical hernia is around 10%, and it is advisable to perform mesh repair concomitantly with laparoscopic cholecystectomy [11,12].

Limitation

The small sample size is a limitation which might be the reason for the low incidence of complications. In addition, limited theatre time and resources and routine theatre closure due to the Covid pandemic further added to the low sample size.

Conclusion

Professorial unit Teaching hospital Jaffna despite its limitation can perform laparoscopic cholecystectomies for various indications meeting international standards as per the available published evidence to date. This shows that any centre anywhere in the world can perform safe laparoscopic cholecystectomy, providing proper training and guidance.

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