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Original Article

Single Surgeon's Experience of Laparoscopic Cholecystectomies Performed at Teaching Hospital for more Than Four Years: A Retrospective Study

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Abstract

Introduction: Laparoscopic cholecystectomy is one of the most commonly performed surgery and now this is the gold standard for the treatment of gallstone disease. With the advancement of time and sharing of the surgical experiences, its surgical outcomes are improving drastically.

Purpose: The aim of this study is to share the experience and lesson learnt from the series of this commonly performed surgery of laparoscopic cholecystectomy to improve it further in coming future.

Materials and Methods: Data from the record of all cases of laparoscopic cholecystectomies performed by the main author himself during the period from 1 November, 2011, to 30 April, 2016, has been collected and analyzed retrospectively.

Results: Out of 81 cases, the maximum number (69) of patients were female (85.18%) and 12 (14.81%) were male. Mean age of selected patients was 37.82 years (standard deviation [SD] = 12.753). Range for age was 17-72 years. Mean weight of the patients was 59.725 kg (SD = 10.659) in the range of 34-92 kg. Total percentage of both bile duct injury and bile leakage were 1.23%. The total conversion was in 5 (6.17%) cases, out of which 4.34% of female population and 16.66% of male population undergone conversion.

Conclusion: Even though laparoscopic cholecystectomy is commonly performed surgery and with time and experience its surgical outcome improving day by day, with little precaution its complications rate can be further reduced.

Key words: Acute cholecystitis, Cholelithiasis, Gallbladder surgery, Gallstone disease, Laparoscopic cholecystectomy

INTRODUCTION

Gallstone disease is a one among oldest and major surgical problem known to medical's fraternity. First time in history in 1882, a German surgeon Carl August Langerbach performed the traditional open cholecystectomy with an opinion, that rather than stones itself, it is the gallbladder which is the source of all ailments.[1] Laparoscopic cholecystectomy which revolutionized the treatment of gallstone was first performed by Prof Dr. Erich Mühe of Germany in 1985. He performed 94 such procedures before another surgeon, Phillipe Mouret of Lyon, France, reported his first laparoscopic cholecystectomy in 1987.[2]

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Nowadays, undoubtedly laparoscopic cholecystectomy has become the gold standard treatment for gallstone disease. Because of its advantages of non-invasive approach, early recovery and minimal complication, it has widely been practiced worldwide even as a day care surgery.[3] In 2006, Tokyo Guidelines now clearly recommended laparoscopic cholecystectomy as the first option for the treatment of acute cholecystitis.[4]

In spite of laparoscopic cholecystectomy is now being performed very commonly for a long time and with experience complications associated with this is also reducing in frequency but still a lot of patients require conversion to open as well as surgical complications are

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happening on regular basis.[5] Keeping in view of all this we need to keep learning from sharing our experiences to update our self for sake of patient's care and safety.

This study is aimed at updating the surgical fraternity with an individual experience of a series of cases undergone laparoscopic cholecystectomy in term of their patient's epidemiology, clinical presentation, different complications encountered at a different stage of patient care, etc.

MATERIALS AND METHODS

For this retrospective descriptive study, data from the record of all cases of laparoscopic cholecystectomies performed by the main author himself during the period from 1 November, 2011, to 30 April, 2016, has been collected. A total of 81 cases ($n = 81$) who have undergone laparoscopic cholecystectomies found to be eligible for study in term of detail availability of case record. Cases that have been converted to open surgery has also been included for this study.

Apart from demographic and clinical profile, e.g., age, sex, weight, symptoms and its duration, comorbidity, history of jaundice, history of endoscopic retrograde cholangiopancreatography (ERCP), past history of surgery; total duration of surgery (from making first incision to taking last suture), all intra- and post-operative events, e.g., Anatomy around Calot's triangle, intraabdominal adhesions, conversion to open and its reason, intra- and post-operative different complications, total number of days of hospital stay which was counted since the day of admission which is in our case 2 days before the day of surgery, follow-up period looked into and evaluated in detail.

Surgical Techniques

All cases were done as an elective case at Lady Hardinge Medical College and Smt. S.K. Hospital, New Delhi, India. For pre-operative preparation, all patients were made medically fit in term of any associated medical comorbidities, diabetes control, cessation of smoking, treatment of other associated ailments, etc. Operative techniques followed according to recommended guideline and adhered to standard protocols traditionally prescribed and based on different recommended trials.[4,6] All cases were done under general anesthesia. Strict antiseptic and aseptic protocols have been followed.

The position of the patient is kept supine and after insertions of all trocars, we tilt the patient in head up (15°) anti-Trendelenburg position. Once patient got anaesthetized and cleaned and draped, with formal palpation of abdomen we start the process of surgery by creating the pneumoperitoneum. In almost every case, it has been achieved by closed technique using Veress needle at either infra or supraumbilical incision depending on the case. We take utmost care during blind placement of Veress needle and confirming its intraperitoneal position to prevent inadvertent damage of intraperitoneal viscera.

Once desired intraperitoneal pressure reached which has been already set up at the maximum level of 14-16 mm of Hg, first blind trocar of 10-11 mm at infra or supraumbilical location inserted. Through this port, we placed the 30° camera and inspect the peritoneal cavity thoroughly for any injury or other findings if any. Once everything found to be in the proper condition we put rest of the ports which is 10-11 mm epigastric just below the liver edge, 5 mm right clavicular in subcostal area (just above the gall bladder), and another 5 mm near right anterior axillary line on the line of the second working port. All these ports inserted under direct camera vision.

In next step, we clear any adhesions carefully using electrocautery if present there to visualize and free the gall bladder. Then, an assistant retracts the gallbladder cranially toward right shoulder holding the fundus of the gall bladder with ratcheted grasper. Very tense and distended gall bladder as in a case of mucocele or empyema required aspiration of its content before it can be held. To expose the Calot's triangle, we pull the infundibulum inferior and lateral with atraumatic nonlocking grasper. Using a Maryland's forceps and judicious use of electrocautery we identify and dissect the cystic duct and artery carefully. We always follow the critical view of safety technique and never try to see the common bile duct.[7,8]

Once the cystic duct and cystic artery are identified and confirmed beyond doubt both are clipped and divided, two clips on proximal side and one clip on gall bladder side. It may not be always possible to clip cystic artery before cystic duct in such circumstances we clip and divide the cystic duct before to make further dissection easy and safe. Finally, we dissect and detach the gallbladder from its liver bed using either hook, scissors or spatula depending on situations. Then, hemostasis is secured and gallbladder is extracted most of the time through epigastric port. At the end, area around liver and its bed thoroughly washed with irrigation cannula using normal saline.

We put the drain usually of 14-16 F size only in difficult cases, when not sure about the hemostasis or if there is suspicion of injury. All trocars are removed under direct vision and simultaneously pneumoperitoneum is evacuated completely. Our indications for conversion to open surgery are unable to define the anatomy of Calot's triangle, excess

uncontrolled bleeding, bile duct or other visceral injuries and discovery of malignancy.[9-13]

RESULTS

During the mentioned period of 4 years and 5 months, 81 cases of laparoscopic cholecystectomy found to be operated by the main author. Out of 81 cases, the maximum number (69) of patients were female (85.18%) and 12 (14.81%) were male. The mean age of selected patients was 37.82 years (standard deviation [SD] = 12.753). The range for age was 17-72 years. Mean weight of the patients was 59.725 kg (SD = 10.659) in the range of 34-92 kg.

The average duration of hospital stay for the patients was 4.632 days (SD = 2.94) in range of 2-19 days. Average follow-up periods were 04.85 months (SD = 02.556) in range of 1-12 months. All patients related epidemiological information depicted in Table 1.

Among symptoms, the most common symptoms were dyspepsia followed by pain abdomen of different frequency and nature as described in Table 2. Only two patients had got past history of jaundice, but none of them was related to hepatobiliary surgical or obstructive problem. 27 patients (33.33%) who had got past history of abdominal surgery, was all female and except one patient who undergone open appendectomy, rest were having either lower segment cesarian section or hysterectomy. Four patients have got a history of ERCP (three stenting and one diagnostic). All-important related history and clinical features are listed in Table 2.

All the operative details including post-operative complications are listed in Table 3. Pertaining to special mention here is conversion to open. The total conversion was in five (6.17%) cases, out of which 4.34% of female population and 16.66% of male population undergone conversion. A major reason for conversion was severe adhesions leading to unidentified Calot's anatomy. One patient converted because of common bile duct injury detected intra-operatively. Total percentage of both bile duct injury and bile leakage were 1.23%.

Out of five converted cases, 2 (40%) were having history of ERCP. All cases who had history of ERCP took longer operative time out of more adhesions in the area of Calot's triangle. More than 3% undergone more than usual bleeding during surgery which was managed successfully with packing for few minutes. One patient with already previous history of recurrent sub-acute obstruction developed intestinal obstruction on second post-operative day which was managed conservatively only.

Table 1: Epidemiological parameters and different time durations for patients

Parameters	Range	Average/Mean	SD
Age (in years)	17-72	37.827	12.753
Sex	Female=69 (85.18%)	Male=12 (14.81%)	
Weight (in kg)	34-92	59.725	10.659
Duration of symptoms (in months)	2-24	07.087	04.047
Duration of hospital stay (in days)	2-19	04.632	02.944
Follow-up period (in months)	1-12	04.85	02.556

SD: Standard deviation

Table 2: Important history and clinical feature

Signs and symptoms and important history	Percentage
H/o: Pain abdomen	
Mild upper abdomen	48.46
Recurrent ac. colicky	37.15
Severe ac. presentation	06.69
H/o: Dyspepsia	88.46
H/o: Vomiting	24.21
H/o: Jaundice	02.46
H/o: Tenderness	18.51
H/o: Multiple ac. attack	49.38
H/o: Pain radiating to back	02.46
Past H/o: Abdominal surgery	
LSCS-8	09.87
Lap tube ligation-12	14.81
LSCS with tube ligation-2	2.46
Abdominal hysterectomy-4	4.93
Open appendicectomy-1	1.23
Past H/o: ERCP	4 (4.93)
Co-morbidities	
Hypertension – 6	7.40
Hypertension with diabetes mellitus II – 1	1.23
Diabetes mellitus Type-II – 2	2.46
Hypothyroidism – 4	4.93
Jaundice –1	1.23
COPD – 1	1.23

LSCS: Lower segment cesarean section, ERCP: Endoscopic retrograde cholangiopancreatography, COPD: Chronic obstructive pulmonary disease

DISCUSSION

Since the inception of laparoscopic cholecystectomy and with the advancement of time till date, surgeons keep adding their experiences in term of surgical outcome which ultimately improving the result of surgery tremendously. Here in this series, even though all surgeries have been performed by a single surgeon, it has been done for a longer span of time of more than 4 years and this way lot of inference can be drawn toward more precise way.

There is no surprise in getting a maximum proportion of female patient even in our series as this is the usual trend of gallstone disease.[14] Again in this series mean age was just below the 38 years which shows usual trend of occurrence of gallstone disease in relatively younger age group. Weight

Table 3: Operative details including complications

Parameters7	Average/Range/%
Operative time (in min)	Mean 53.68 min Range=25-110 min SD=18.88
Conversion to open surgery	
Total=5	Mean 06.17%.
Female=3	(04.34% of total female operated)
Male=2	(16.66% of total male operated)
Intra-operative findings	
Mucocele – 4	(4.93%)
Empyema – 3	(4.34%)
Contracted gallbladder – 2	(2.46%)
Intahepatic gallbladder – 2	(2.46%)
Severe adhesions – 6	(7.40%)
Sub hepatic drain	10 (12.34%)
Needed some local hemostatic substance (e.g., surgical)	4 (4.93%)
Complications:	
1. Intraoperative	
Bleeding (Total-3)	2 (2.46%) from liver bed 1 (1.23%) from Calot's area
Gall bladder perforation	4 (4.93%)
Bile duct injury	1 (1.23%)
Bowel injury	0
Mortality	0
2. Post-operative	
Severe and prolonged pain	6 (7.40%)
Bile leak	1 (1.23%)
Blood in drain (>50 ml)	3 (4.34%)
Required blood transfusion	2 (2.46%)
Intestinal obstruction	1 (1.23%)
Port site infection	4 (4.93%)
Jaundice	0
Mortality	0
3. Follow-up	
Required re-admission (Toatl-3)	
2 for non-specific pain and abdominal distension	(2.46%)
1 was a case of bilioma	(1.23%)

SD: Standard deviation

wise result is also not different. Major reason for a longer hospital stay of few patients was either conversion to open or complications like bile leakage and post-operative intestinal obstruction in one patient.

Dyspepsia was the most common presenting symptoms in our series followed by the mild upper abdominal and recurrent colicky pain. About little above the 6% of patients were having an acute presentation as an acute cholecystitis. This seems to be a higher percentage of occurrence of acute cholecystitis in gallstone diseased population in comparison to other studies which has got it in the range below three percent.[15] As most of the data are from western literature, we need to further confirm it through collection of data of Indian patient with gallstone disease having acute cholecystitis.

All of the patients who have got history of prior abdominal surgery were operated for lower abdominal condition, and we did not find any difficulties in these patients during laparoscopic cholecystectomies. A study reported by Akyurek *et al.* in 2005 also found the same thing that lower abdominal surgeries do not make the laparoscopic cholecystectomy difficult neither it affects the duration of surgery.[16]

About little less than 2% patients of our series had a history of ERCP in the past and in all of these patient surgeries were comparatively difficult, took longer time and half of this required conversion. Among many, recently published study in world journal of surgery also supported this result.[17]

About little more than 6% of the patients needed conversion. A report recently published this year by Rashid *et al.* found 7% of conversion rate in their series.[18]

A very popular nationwide case series reported by Adamsen *et al.* found percentage of bile duct injury, 1.3% in acute cases and below <1% in routine cases, percentage of bile leakage was 2.1%.[19] In our series, percentage of both

bile duct injury and bile leakage were 1.23% which is acceptable. A patient who developed intestinal obstruction was already a known case with the recurrent history of sub-acute obstruction in the past and was not related to lap cholecystectomy surgery.

CONCLUSION

Laparoscopic cholecystectomy is very commonly performed and safe surgery now a day and with experience, its surgical outcomes are improving day by day. After learning from past experience and taking some precautionary measure as per recommendations and guidelines, complications rate can be reduced further.

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