



Laparoscopic Cholecystectomy – 10 years experience.

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ABSTRACT

The first successful cholecystectomy was performed by Langenbuch in 1882, setting the path for therapeutic intervention in cholelithiasis. With the advent of laparoscopic cholecystectomy in the 1980s, the standard approach has changed such that cholecystectomy is now routinely performed laparoscopically.

This study is an analysis of laparoscopic cholecystectomy by a single surgeon over a span of 10 years. The study includes 516 cases of elective laparoscopic cholecystectomy and an attempt has been made to compare the outcome of surgery with a few other similar studies.

Female patients outnumbered male patients in this study, which is true for almost all other such studies around the globe. The conversion rate is 8.14% which is slightly in the higher side of the spectra of accepted limit. But other-hand, complication rates are found to be on the lower side of accepted limit with zero mortality.

Abbreviations: UK: United Kingdom, CBD: Common Bile Duct, NA: Not Available, LC: Laparoscopic Cholecystectomy.

KEYWORDS : Cholecystectomy, laparoscopic, elective, conversion, complications, mortality.

INTRODUCTION

The incidence of gallstones in adult population is 10-20 %.^[1] In developed countries like U.K. 90% of cholecystectomies are performed laparoscopically.^[2] Now a days, laparoscopic cholecystectomy is considered as the gold standard for surgical treatment of gall stone diseases, because it results in less post operative pain, better cosmesis, shorter hospital stay and less disability when compared with open cholecystectomy.^[3]

Patients with gallstones are asymptomatic in majority of cases (>80%). Approximately 1–2 % of asymptomatic patients will develop symptoms requiring surgery per year, making cholecystectomy one of the most common operations performed by general surgeons. Most consider that it is safe to observe patients with asymptomatic gallstones, with cholecystectomy reserved for patients who develop symptoms or complications. However prophylactic cholecystectomy may be considered for diabetic patients, those with congenital haemolytic anaemias and those patients who are undergoing bariatric surgery for morbid obesity as it has been found in those groups that the risk of developing symptoms is increased.^[4]

REVIEW OF LITERATURE

Gallbladder disease has plagued humanity since antiquity and stones have been found in Egyptian mummies dating from more than 2000 years ago.^[5]

Carl Langenbuch of Berlin performed the first elective cholecystectomy in 1882 on a patient who had been suffering from symptomatic cholelithiasis for more than 10 years. Langenbuch's open cholecystectomy remained the "gold standard" for over a century. The only major change in the operation was the introduction of operative cholangiogram for detection of common bile duct stone by Mirizzi over 60 years ago.^[6]

Since the performance of the first laparoscopic cholecystectomy by Prof. Dr. Med Erich Muhe of Boblengen, Germany in 1985, this procedure overtook open cholecystectomy as the treatment of choice in cholelithiasis.^[7]

By the 1980's, the rates of morbidity and mortality for elective cholecystectomy were quite acceptable. In published reports of large series taken from population based studies or from single institutions, mortality rate ranged from 0.1- 0.6 % and overall morbidity was 10-15 % with bile duct injuries occurring in 0.1-0.2 % of patients. Post operative hospital stay for open cholecystectomy varies widely, but most of the elective cases were discharged within 4 days of operation.^[8]

The operative mortality for laparoscopic cholecystectomy is less than 1%. The factors increasing the risk for post operative mortality include advanced age, co-morbid conditions and acute presentation. Complications can occur in 10-15 % of cases. Serious complications fall into two major areas: access complications and bile duct injuries. The later are rare occurring in 0.5% of cases. Biliary injury results from poor dissection and failure to adequately define the surgical anatomy.^[4]

The outcome of laparoscopic cholecystectomy is influenced greatly by the training, experience, skill and judgement of the surgeon performing the operation.^[9] Numerous reports were published concerning the causes of bile duct injury during laparoscopic cholecystectomy and the means by which these injuries could be minimized, including dissecting 'the critical view of safety' before clipping or dividing the cystic structures.^[10]

MATERIALS & METHODS

This study is a single surgeon's experience over a span of 10 years, from January 2006 to December 2015. Cases were selected for inclusion in the study from two Govt. Medical Colleges of Assam, India ("Assam Medical College & Hospital" and "Jorhat Medical College & Hospital") and a few other hospitals of adjacent region. Analysis was done retrospectively with the emphasis to see the outcome including all complications after elective cholecystectomy.

All cases of chronic cholecystitis of both sexes and all age groups were included where as the emergency cases were excluded from this study. Choledocholithiasis cases were also excluded from the study.

All diagnosed cases of symptomatic cholecystitis were prepared for laparoscopic cholecystectomy. Cases were taken up for surgery after optimizing his/her investigation parameters and obtaining written consent for operation under general anaesthesia.

A minimum of 8 hours fasting rule prior to surgery was followed in all cases. Classical four port laparoscopic cholecystectomy was initiated in all cases with conversion to open surgery whenever necessary.

All patients were monitored closely till discharge and minimum of one post operative follow up was done in all cases. The average hospital stay was three days. The usual first post operative follow up was in 2 weeks after surgery and in case of any complication; the patients were either readmitted or followed up at regular intervals till full recovery.

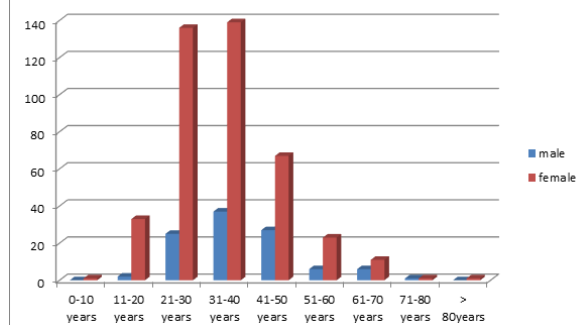
RESULTS AND OBSERVATIONS

In this study a total of 516 cases were included during 10 years period i.e. from Jan'06 to Dec'15. The total number of male patients was 104, whereas female patients was 412(M:F = 1:4). The youngest patient was 10 years old (F) and oldest was 82 years (F). The highest number of patients was detected in 31 – 40 years age group and it holds true for both male & female patients.

TABLE 1 shows age and sex distribution of the cases

Age group	Male(n=104)	Female(n=412)	Total(n=516)
0 – 10 years	0	1(10 years)	1
11 – 20 years	2	33	35
21 – 30 years	25	136	161
31 – 40 years	37	139	176
41 – 50 years	27	67	94
51 – 60 years	6	23	29
61-70 years	6	11	17
71 – 80 years	1(75 years)	1(80 years)	2
80 years +	0	1(82 years)	1

Figure 1 - histogram showing age and sex distribution of cases



All patients had mild to moderate symptoms. Usual symptoms were pain in upper abdomen, nausea, vomiting & dyspepsia. Seven patients (m=3, f=4) had icterus (Bilirubin level in between 2.5mg% to 5mg %) at the time of presentation and on investigation they were diagnosed to be having hemolytic anemia(Hb E disease/trait). There were two cases (m=1, f=1) of acalculus cholecystitis and two cases of pregnancy in the study. Pregnancy cases were operated in the second trimester of pregnancy.

Out of 516 patients, 65 had co-morbidities as shown in table2. Cardiac ailments and diabetes mellitus head the list of co-morbidities.

Table 2 shows co-morbidities conditions

Co-morbidities	Male(n=15)	Female(n=50)	Total(n=65)
Diabetes Mellitus	6	13	19
Cardiac including Hypertension	4	21	25
Rec. Appendicitis	2	9	11
COAD/ Pulmonary Disease	3	7	10

All the patients were carefully prepared for elective laparoscopic cholecystectomy. Out of 516 cases, 42 cases (male-14, female-28) had to be converted to open cholecystectomy; the conversion rate being 8.14% (male%- 13.46, female%- 6.79). Table 3 shows the number of male and female patients in different age groups who needed conversion to open surgery due to various reasons.

Table 3 shows conversion number in the study

Age group (years)	Male	Female	Total
0-10	00	01	01
11-20	01	01	02
21-30	04	03	07
31-40	04	14	18

41-50	04	06	10
51-60	01	01	02
61-70	00	02	02
71 and above	00	00	00
Total conversion	14	28	42

In majority of the cases, conversion was due to unclear anatomy and frozen Callot's area. Table 4 shows the various reasons of conversion from laparoscopic to open surgery. In five cases, conversion was due to bleeding from cystic artery and liver bed, whereas in one case it was due to CBD injury. In another case, conversion was due to suspected malignancy, which later on proved to be adenocarcinoma on histopathological examination. Although all the operative specimens (both lap & open) were subjected to histopathological examination, only one case of adenocarcinoma was detected as mentioned above. That patient later on developed malignant ascitis and multiple liver metastases and expired 10 months after surgical intervention.

Table 4 shows reasons for conversion

Reason for conversion	Male	Female	Total
Unclear anatomy with dense adhesion	06	08	14
Frozen Callot	04	06	10
Uncontrolled bleeding	01	04	05
CBD stone	00	03	03
Cirrhosis	01	01	02
Malignancy	00	01	01
CBD injury	00	01	01
Stone spillage	02	01	03
Cholecysto-enteric fistula	00	01	01
Instrument failure	00	01	01
Technical difficulty(situs inversus)	00	01	01
Total	14	28	42

There was no mortality in this study and only few complications were encountered following laparoscopic procedure.

Table 5 shows various complications encountered in this study.

Complications	Male	Female	Total
CBD injury	00	01	01
Bowel injury	01	00	01
Bile leakage	00	01	01
Jaundice (retained stone in CBD)	00	01	01
Port site infection	05	10	15
Total complications	06	13	19

There was one CBD injury (complete transection) which was diagnosed intra-operatively and managed by conversion with repair by hepatico-jejunostomy. The case with small bowel injury was at the time of umbilical port placement by Hasson method, and was detected and repaired immediately by enlarging the port size to 2cm. Laparoscopic cholecystectomy was continued and completed with uneventful recovery. In the bile leakage case, bile leakage was stopped spontaneously within a week whereas the retained CBD stone case had to undergo open choledocholithotomy operation after two months. Port site infections were mostly due to Staphylococcus aureus & controlled with appropriate antibiotic therapy within 3 to 6 weeks period. One case of atypical mycobacterial infection was encountered which needed full course anti-tubercular therapy.

DISCUSSION

In this study, female patients outnumbered male patients with the ratio of 4: 1. In similar type of other studies too, female patients were found to be always on the higher side.

Table 6 shows comparison of female-male ratio with other studies.

Study	Female pt.	Male pt.	Ratio
A Rahman S. et al ⁽¹¹⁾	823(85%)	145(15%)	5.7 : 1
P Bhattacharjee ⁽¹²⁾	713(75%)	237(25%)	3 : 1
Present series	412(80%)	104(20%)	4 : 1

The outcome of laparoscopic cholecystectomy is influenced greatly by the training, experience, skill and judgement of the surgeon performing the operation.⁽⁹⁾

In this study, the conversion rate of laparoscopic cholecystectomy is comparable with most of the published articles globally. Table 7 shows the comparison of conversion rate of similar studies in and around our sub-continent. Except the study of A Rahman S. et al where the conversion rate is very low, in all other studies it is found to be between 6-12%.

Table 7 shows the comparison of conversion rate of similar studies.

Study	Total number of pt.	Conversion number	Conversion %
A.Rahman S.	968	5	0.52%
Ajay Anand ⁽¹³⁾	176	21	11.93%
P. Bhattacharjee	950	57	6%
Present study	516	42	8.14%

The operative mortality for laparoscopic cholecystectomy is less than 1%. The factors increasing the risk for post operative mortality include advanced age, co-morbid conditions and acute presentation. Complications can occur in 10% to 15% of cases. Serious complications fall into two major areas: access complications and bile duct injuries.

In the present study, there was no mortality with few complications. The major complications encountered in this study were at par with most of the published articles. Table 8 shows a comparative analysis of the major complications with other similar studies.

Table 8 shows a comparative analysis of the major complications with other similar studies.

Study	CBD injury	Bowel injury	Significant bleeding with conversion	Postoperative bile leak	Wound infection
ARahman S	NA	NA	NA	3(0.31%)	39(4.03%)
P Bhattacharjee	3(0.32)	NA	3(0.32%)	2(0.21%)	NA
Ajay Anand	1(0.57%)	NA	NA	NA	NA
Present study	1(0.19%)	1(0.19%)	5(0.97%)	1(0.97%)	15(2.91%)

CONCLUSION

Laparoscopic cholecystectomy is now considered as the gold standard for surgical treatment of gall stone disease. The risk and complications of LC must be neither over rated nor under rated. Contrary to initial reports of an increased complication rates, recent data show that LC entails lower morbidity than open operations.[14] Present study report is one of the reflection of this statement.

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