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## RESEARCH ARTICLE

### LAPAROSCOPIC CHOLECYSTECTOMY OUTCOMES AT A TERTIARY LEVEL: A RETROSPECTIVE STUDY

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#### ABSTRACT

**Background:** Laparoscopic cholecystectomy (LC) is the gold standard treatment for Cholelithiasis and is the most commonly performed operation of the digestive tract. **Methods:** Data of 860 patients who underwent LC at SMVD Superspeciality Hospital Katra from 1<sup>st</sup> May 2016 to 30<sup>th</sup> April 2018 was analyzed retrospectively for comorbidities, Calots anatomy, conversion to open cholecystectomy, operative time, intra operative and postoperative complications and hospital stay. **Results:** Out of 860 patients, 697 (81.04%) were females and 163 (18.96%) males. The mean age of the patients was 49.5 years. Mean operative time was 65 min. 18 (2.09%) patients were converted to open surgery, 11 due to difficult dissection in Calot's triangle (1.27%), one by bleeding from liver bed (0.12%), two patients (0.23%) had biliary leakage, one (0.12%) due to partial tear in common bile duct, one (0.12%) patient had bowel perforation at umbilical port, one patient (0.12%) was converted to open for suspicion of malignancy while one of the patients (0.12%) developed biliary peritonitis due to slippage of clips from cystic duct. Mean hospital stay was 3±1.5 days. Fifteen (1.7%) developed wound infection. There was no mortality recorded in this study. **Conclusion:** Laparoscopic cholecystectomy is a gold standard for management of gallstone disease that can be performed with acceptable morbidity.

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## INTRODUCTION

Gallstone disease is one of the most prevalent gastrointestinal diseases, with a substantial burden to health care system (Sun *et al.*, 2009). Laparoscopic cholecystectomy (LC) represents a significant change in the management of gallbladder disease and it is the most commonly performed operation of the digestive tract (Karimian *et al.*, 2008). Prof Dr Erich Muhe of Germany performed first LC but in several instances, the literature gives French Surgeon Phillipe Mouret the credit for developing the laparoscopic cholecystectomy procedure (Walker Reynolds, 2001). Despite many modified methods, LC is still the gold standard for symptomatic gallstone disease (Archer *et al.*, 2001). Although the LC is gold standard for treatment of cholelithiasis, the main risk associated with the LC appears to be a higher incidence of bile duct injury than open cholecystectomy, 0.3-0.8% (Kreimer *et al.*, 2016). In addition, there are also risks to other complications such as major vascular injuries, injury to intestine, clips migration, biliary leak, cautery injuries and complications from lost gallstones (Strasberg, 2008; Taylor *et al.*, 1994; Zhang *et al.*, 2008). The aim of this study was to assess the outcomes of LC, to study complications, morbidity and mortality in a tertiary care hospital.

## METHODS

Data of all patients who underwent LC from 1<sup>st</sup> May 2016 to 30<sup>th</sup> April 2018 at SMVD SSH Katra were analysed. A written and informed consent was taken from all the patients included in the study. The protocol of the study was approved by the local ethical committee. The following data were reviewed; patient's demographics (age, gender), comorbidities, preoperative investigations (routine in all patients CBC, INR, liver function tests, renal function tests, Ultrasound findings), systemic diseases (diabetes mellitus, hypertension, hypothyroidism, renal, lung diseases, obesity and cardiac problems), intra-operative findings (calots anatomy, Gall bladder wall thickness, duration of operation, amount of blood loss and iatrogenic injuries), conversion from laparoscopic to open cholecystectomy and reason for conversion, postoperative complications, early (hemorrhage, bile leak, wound infection) and hospital stay and mortality were reviewed from the data. All patients with features of acute cholecystitis or choledocholithiasis were excluded from the study. LC was performed using the standard four port technique and pneumoperitoneum was created using Veress needle technique.

## RESULTS

A total of 860 patients underwent LC during this study period; out of them, 697 (81.04%) were females and 163 (18.96%) males (female/male ratio of 4.2:1) (Table 1). The mean age of the patients was 49.5 years (Table 2).

**Table 1. Sex Distributions**

Sex	No of patients	(%)
Male	697	81.04
Female	163	18.96
Total	860	100

**Table 3. Age Distribution**

Age	No of patients	(%)
<40 years	103	11.9
40-49 years	395	45.9
50-59 years	232	27
>60 years	130	15

**Table 3. Co morbidities**

Comorbidity	No of patients	%
Diabetes mellitus	361	42
Hypertension	301	35
Hyperthyroidism	103	12
Cardiovascular disease	26	3
Copd	94	15
Previous laparotomy	129	11
Obesity	17	2

**Table 4. Indication of surgery**

Indication of surgery	No of patients	(%)
Chroniccalculous cholecystitis	767	89
Biliary pancreatitis	45	5
Gall bladder polyp	37	4
Emphysematous cholecystitis	4	0.46
Gall bladder perforation	7	0.81

**Table 5. Postoperative complications**

Characteristics	No of patients	(%)
Bile leak	2	0.23
Hemorrhage	0	0
Wound infection	10	1.16
Portsite hernia	0	0

History of hypertension was found in 301 (35%) patients, diabetes mellitus in 361 (42%), respiratory diseases (bronchial asthma and COPD) in 94 (15%), coronary diseases (angina pectoris and myocardial infarction) in 26 (3%), patients and obesity in 17 (2%). History of previous abdominal surgery was found in 129 (11%) patients (Table 3). The indications of surgery were symptomatic chronic calculous cholecystitis in 767 (89%) patients, biliary pancreatitis in 45 (5%), gall bladder polyp in 37 (4%) patients, emphysematous cholecystitis in 4(0.46%)and gall bladder perforation in 7 (0.81%) patients (table 4). Patients with calculous obstructive jaundice were not included in this study. The mean operative time was 65min (range: 55-110 min) and intra-abdominal drain was placed in 35 (4%) patients. 18patients (2.09%) were converted to open surgery, 11 due to difficult dissection in Calot's triangle (1.27%) and one by bleeding from liver bed (0.12%), two patients (0.23%) had biliary leakage, one (0.12%) due to partial tear in common bile duct, one (0.12%) patient had bowel perforation at umbilical port, one patient (0.12%) was

converted to open for suspicion of malignancy while one of the patients (0.12%) developed biliary peritonitis due to slippage of clips from cystic duct. Only two patients were re explored postoperatively one due to postoperative bile leak and the other patient was re explored for port site bowel injury. The mean hospital stay was (3±1.5 days), whereas no mortality was recorded in our study.

## DISCUSSION

Gallstone disease is one of the most prevalent gastrointestinal disease. The incidence is 10-20% of the whole adult population, LC has now become gold standard for the treatment for gallstones, LC is performed in over 90% of elective cholecystectomies and 70% of emergency cholecystectomies making LC one of the most frequently performed operations in the world (9).In the literature, the rate of conversion from LC to open cholecystectomy varies from 2.6 to 7.7% (8). In this study, the conversion rate was 2.09%, the main causes being anatomical variations, difficult dissection in Calot's triangle and uncontrolled hemorrhage. Predictive factors of conversion to open cholecystectomy include male gender, previous abdominal surgery, acute cholecystitis, dense adhesions and fibrosis in Calots triangle, anatomical variations, comorbidity, obesity, suspicion of malignancy, and decreased surgeon experience. The reported incidence of uncontrollable bleeding in LC can be up to 2% (0.03-10%). Operative bleeding results from injury to major vessels, liver injury, rough dissection at Calot's triangle. The incidence of major vascular injuries is 0.03-0.06%. Major vascular injuries are the second most common cause of death in patients undergoing LC after anesthesia related complications (10).In this study, were encountered one case of uncontrollable intraoperative bleeding from the undersurface of liver which required conversion to open cholecystectomy. Biliary injuries continue to be a significant problem following LC; most studies showed an increase in the incidence of these injuries. With the advent of laparoscopy, the rate of serious bile duct injuries after cholecystectomy increased up to 0.8%, whilst the one related to the open route remained between 0.2-0.3% (11). Endoscopic interventions have essentially replaced surgery as first line treatment for most of the biliary injuries following LC (12). Surgical site infection is significantly lower after laparoscopic surgery compared to open surgery and patients treated with laparoscopy were 72% less likely to experience a surgical site infection (13). Were encountered 10 cases of wound infection (1.16%), which is consistent with the incidence in the literature.

## Conclusion

LC has proven to be gold standard and cost effective procedure for the treatment of symptomatic gallstones. However, it is also associated with an increased incidence of bile duct injuries. When there is a major complication a multidisciplinary approach should be performed at a tertiary hospital.

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