

A Study to Evaluate Role of Gender in Difficult Laparoscopic Cholecystectomy

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Abstract

Introduction: Though laparoscopic cholecystectomy provides for a faster recovery, there have been reports of intra operative difficulties in the laparoscopic technique, often necessitating the conversion to open procedure. A number of factors influencing this has been studied but the role of gender on the intra operative difficulties and post-operative complications is unclear. This study was an attempt to understand the role of gender in the intra and post-operative complications following laparoscopic cholecystectomy.

Methodology: This was a prospective observational study conducted among 100 patients undergoing laparoscopic cholecystectomy in Victoria Hospital. Patient details such as age, sex, BMI, intra operative details such as duration of surgery, CBD injury, biliary leak and conversion to open surgery, post-operative complications such as jaundice and pancreatitis, and duration of hospital stay were noted down. This data was analyzed using student *t*-test and chi-square test.

Results: Of the 100 patients, 68% were females and 32% were males. The mean operative time for male patients was 75.31 ± 37.95 minutes while that for female patients was 56.76 ± 29.36 minutes. Of the 32 male patients, 1 (3.125%) patient had CBD injury while 4 (12.5%) patients had conversion to open procedure. 4 (5.8%) of the surgeries were converted to open

procedures among female patients, with no CBD injury noted. The mean post-operative hospital stay in male patients was 5.0 ± 2.52 days while that in female patients was 3.64 ± 1.40 days ($p < 0.05$). Post-operative jaundice was observed among one male patient while it was not observed among female patients. Post-operative biliary leak was observed among 2 male patients and 1 female patient.

Conclusion: The intra operative and post-operative morbidity was comparable among males and females undergoing laparoscopic cholecystectomy, with the male gender having a longer duration of surgery and a higher duration of hospital stay.

Keywords: Male gender; Laparoscopic cholecystectomy; Post-operative complications; Difficult laparoscopic cholecystectomy.

Introduction

Laparoscopic cholecystectomy is one of the most widely performed surgeries in recent times.

It has been accepted as the treatment of choice for patients with symptomatic cholelithiasis, by the National Institute of Health.¹

Although the advantages of laparoscopic surgery over the open technique in terms of early post-operative recovery have been established, there are still reports of intra operative difficulties in the laparoscopic technique, often necessitating the conversion to open procedure.^{2,3}

Conversion rate and iatrogenic injuries during laparoscopic cholecystectomy are still high despite significant improvement. Hussain A et

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al. reported that, depending on the technique of cholecystectomy, the degree of gall bladder inflammation, patient comorbidities, and surgical experience, the conversion rate was reported between 0.18% and 30%, whereas the incidence of iatrogenic injuries was from 0% to 0.6%.⁴

The factors influencing these difficulties have been widely studied. Risk factors for difficulty were increased age, acute and thick wall chronic cholecystitis, wide and short cystic duct, cholecystodigestive fistula, previous upper abdominal surgery, obesity, liver cirrhosis, anatomic variation, cholangiocarcinoma, and low surgeon's caseload.⁴

Although the female sex has been established as a risk factor for the development of cholelithiasis,⁵ the role of sex in the intra operative difficulty of laparoscopic cholecystectomy has been ambiguous.^{4,6,7}

This study was an attempt to understand the influence of gender on the level of difficulty of laparoscopic cholecystectomy in our institution.

Materials and Methods

This was a prospective observational study conducted among patients diagnosed with symptomatic cholelithiasis undergoing laparoscopic cholecystectomy in Victoria hospital between the months of May to August 2019.

Inclusion criteria

- Patients above 18 years of age
- Patients diagnosed with symptomatic cholelithiasis undergoing elective cholecystectomy

Exclusion criteria

- Patients below 18 years of age
- Patients undergoing cholecystectomy as a part of another procedure
- Patients with ASA grade III and above
- Patients not consenting for participation in the study

Hundred patients fulfilling the above criteria were chosen and included in the study after obtaining verbal consent.

Patient details such as age, sex, BMI were noted. Intra operative details such as duration of surgery from skin incision to skin closure, CBD injury, biliary leak and conversion to open surgery were noted down.

The patients were followed up till discharge and were observed for the development of post-operative jaundice and pancreatitis. The duration of hospital stay was also noted.

The above details were tabulated and analyzed. SPSS v26 was used for the statistical Analyzis. The data was described in terms of mean and standard deviation. Student *t*-test and chi-square test was used to test the difference of significance between the two groups. A *p*-value of less than 0.05 was considered statistically significant.

Results

A total of 100 patients undergoing elective laparoscopic cholecystectomy for symptomatic cholelithiasis were included in the study.

Of the 100 patients, 68% were females and 32% were males (Fig. 1).

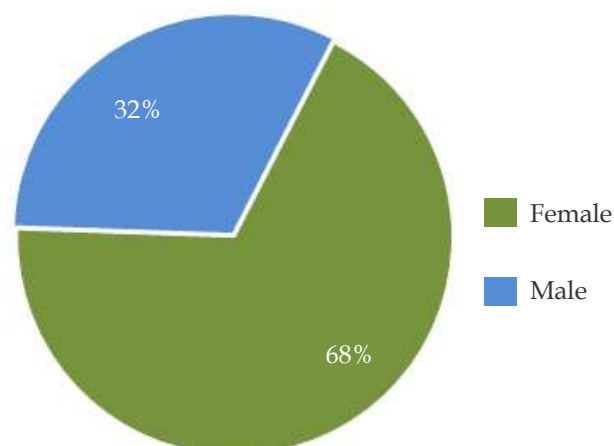


Fig. 1: Sex distribution of patients.

The mean age of the patients was 37.96 ± 10.49 years. The mean age of female patients was 37.73 ± 9.24 years while that of male patients was 38.43 ± 13.04 years. The mean BMI of female patients was 25.88 ± 3.56 kg/m² while that of male patients was 26.08 ± 3.59 kg/m². There was no statistically significant difference between the two groups in terms of age and BMI ($p > 0.05$).

On comparison of the intra operative morbidity, it was found that the mean operative time for male patients 75.31 ± 37.95 minutes while that for female patients was 56.76 ± 29.36 minutes. This difference

was found to be statistically significant ($p = 0.009$). Of the 32 males patients, 1 (3.125%) patient had CBD injury while 4 (12.5%) patients had conversion to open procedure. Of the 4 patients who underwent conversion to open procedure, 1 was due to bile duct injury, two due to arterial injury and one due to bile duct and stone spillage. Of the 68 female patients who underwent laparoscopic cholecystectomy, 4 (5.8%) of the surgeries were converted to open procedures in view of arterial injury. There was no CBD injury observed among the female patients. These results were not statistically significant (Table 1).

Table 1: Comparison of intra operative morbidity

Parameter	Males	Females	p-Value
Operative time in minutes	75.31 ± 37.95	56.76 ± 29.36	0.009
CBD Injury	1	0	0.32
Conversion to open procedure	4	4	0.26

On comparison of the post-operative morbidity, it was found that the mean post-operative hospital stay in male patients was 5.0 ± 2.52 days while that in female patients was 3.64 ± 1.40 days (statistically significant with $p = 0.001$). Post-operative jaundice was observed among one male patient while it

was not observed among female patients. Post-operative biliary leak was observed among 2 male patients and 1 female patient. Post-operative pancreatitis was not observed among any of the patients. These differences were not statistically significant (Table 2).

Table 2: Comparison of post-operative morbidity

Parameter	Males	Females	p-Value
Hospital Stay	5.0 ± 2.52	3.64 ± 1.40	0.001
Post-operative Jaundice	1	0	0.32
Post-operative Biliary Leak	2	1	0.23

Discussion

The effect of gender in the difficulties faced in laparoscopic cholecystectomy were analyzed in this study. There was a statistically difference between males and females in terms of duration of surgery and duration of hospital stay while no such difference was observed in terms of intra and post-operative complications such as CBD injury, conversion to open procedure, post-operative jaundice, biliary leak and pancreatitis.

Slightly varied results were encountered by Bazoua G et al. who reported a significantly higher duration of surgery in male patients as compared to females.⁶ Such a statistical difference was not observed in terms duration of hospital stay, conversion to open surgery and post-operative morbidity.

Rakan Alqahtani et al. reported similar results as our study with respect to a statistically significant difference between the genders in terms of duration of surgery and duration of hospital stay. However they also reported a significant difference among the genders in terms of rate of conversion to open surgery also, with male gender having a higher conversion rate. But the post-operative morbidity observed was comparable among both the genders.⁸

Saurabh Kumar et also concluded that gender has little role as far as overall morbidity and conversion to open surgery are concerned in patients undergoing laparoscopic cholecystectomy.⁹

However Peter C Ambe et al. concluded that the male gender was an independent risk factor for complication in patients undergoing laparoscopic cholecystectomy for acute cholecystitis.¹⁰ The difference could be due to the exclusion of emergency surgeries in our study.

Conclusion

Though the number of male patients undergoing laparoscopic cholecystectomy are fewer than females, the intra operative and post-operative morbidity was comparable among males and females, with the male gender having a longer duration of surgery and a higher duration of hospital stay.

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