The THAI Journal of SURGERY 2012;33:66-69.
Official Publication of the Royal College of Surgeons of Thailand

Original Article

Does the Male Gender Affect the Conversion Rate from Laparoscopic Cholecystectomy to Open Surgery?

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Abstract

Background: **Laparoscopic cholecystectomy (LC) has become the standard treatment for symptomatic gallstone but the conversion to open surgery may be required in mostly male patients on clinical observation. Whether the male gender is the risk factor for conversion is still under debate.**

Materials and Methods: **A prospective data collection on conversion rate to open surgery in patients who underwent laparoscopic cholecystectomy during 1997-2011 by a single experienced surgeon.**

Results: **The study included 244 patients (160 females and 84 males). Among them, 12 (8 males and 4 females) were converted to open surgery. The conversion rate in males and females were 9.52% and 2.5% respectively (P<0.05). The causes of conversion were due to inflammation and dense adhesion with consequent anatomical distortion.**

Conclusions: **The conversion rate was significantly higher among males compared to female patients. This was probably attributable to delayed surgical decision and treatment.**

Keywords: **laparoscopic cholecystectomy, male gender, conversion rate**

Introduction

For the treatment of symptomatic gallstone, laparoscopic cholecystectomy has become standard. However, minority of cases could not succeed by laparoscopic techniques. The conversion rate to open surgery has been found to occur 3%- 10%[1].

Risk factors for conversion include massive fibrosis, difficult anatomies, inflammation, intraoperative complications (bleeding, internal organ injury), old age, sex, history of previous upper abdominal surgery and lack of appropriate laparoscopic instruments[2-4]. Inability to delineate the anatomy secondary to adhesion or inflammation, unexpected operative findings and iatrogenic injuries are the most common criteria for conversion to an open procedure[2]. Based on clinical observation and the research literature, the conversion to open cholecystectomy was more prevalent in males than in females[4,5,6].

Author aims to study in a cohort of patients who underwent LC in the department of surgery to determine whether male gender is a risk factor for conversion from LC to open surgery.

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Materials and Methods

A personal prospective clinicopathologic data record was designed to collect data of patients who underwent laparoscopic cholecystectomy (LC) since 1991 until now. During 1991- 1997, author operated as assistant for 166 cases and as a surgeon for 150 cases. The 244 patients were studied between October 1997 and October 2011 (160 females and 84 males). Twelve attempted LCs were converted to open surgery. The patients operated as an emergency case were excluded from the study. Techniques of procedure is 4-port operation, 12- mm. Hassan's trocar at umbilicus, 5 or 12- mm trocar at epigastrium and two 5-mm trocar at right subcostal margin. Gallbladder and gallstones were removed through the epigastrium or umbilical port. The study variants were age, sex, weight, associated diseases, incidence of previous abdominal surgery, procedure duration, length of hospitalization, failure cases, complicated cases, history of inflammation, characteristic of stones and analgesic administration. The data were analyzed using SPSS 17.0.

Significant difference was examined using Student t's test and the chi square test. Results were considered to be significant when p value was less than 0.05.

Results

Two hundred and forty four attempted laparoscopic cholecystectomies were performed on 160 females and 84 males. Table 1 showed the demographic data. Table 2 presented the female-to-male ratio of successful LCs and conversion to open cholecystectomies (OCs). Table 3 showed the correlation between conversion and clinical parameters. On demographic data, male genders were higher in average ages, weights, associated diseases (HT, DM, IHD), procedure duration, length of hospitalization, conversion, and intraoperative inflammation than female genders. Meanwhile, female genders had more previous abdominal surgery and complications than male genders. The incidence of conversion to OC among males was 3.8 folds higher than females (p= 0.026) as shown in Table II. The causes of conversion of LC to OC were inflammation which developed

Table 1 Demographic data

	Males	Females
Number of patients	84	160
Age (years)	59.39±13.69	57.00±12.42
Weight (kilograms)	68.97±12.76	60.51±10.95
Hypertension (HT) (%)	32 (38.1)	42 (26.2)
Diabetes (DM) (%)	27 (32.1)	20 (12.5)
Ischemic heart disease (IHD) (%)	10 (11.9)	5 (3.1)
Previous abdominal surgery (%)	15 (17.85)	88 (55.0)
Procedure duration (mins)	66.11±18.91	62.56±19.32
Length of hospitalization (days)	2.32±0.98	2.05±0.76
Complications (%)	3 (3.57)	11 (6.87)
Conversions (%)	8 (9.52)	4 (2.5)
History of inflammation (%)	19(22.62)	15 (9.37)
Intraoperative inflammation (%)	26(30.95)	27 (16.87)
Characteristic of stones (%)		
Multiple stones	56(66.7)	110 (68.8)
Single stone	25(29.8)	45 (28.1)
Cholesterosis	2 (2.4)	2 (1.25)
Polyp	-	1 (0.62)
No stone	1 (1.2)	2 (1.25)
Analgesic administration (%)		
Morphine / Pethidine	29(38.1)	69 (44.2)
Paracetamol	20(26.3)	46 (29.5)
None	22(28.9)	37 (23.7)
Other analgesics	5 (6.6)	4 (2.6)

Table 2 Female-to-male ratio of successful LCs and conversion

	Number	Female/ male ratio	p value
Attempted LCs	244	1.9 : 1	
Successful LCs	232	2.0 : 1	
Conversion	12	1 : 3.8	0.026

Table 3 Correlation between conversion and clinical parameters

Age / Inflammation / Conversion	Male	Female	p value
Age range (yrs)	51-85	52-72	
Age average (yrs)	65.6	64.25	
History of inflammation	19/84	15/160	0.042
Intraoperative inflammation	26/84	27/160	
Conversion caused inflammation	7	3	0.035
Conversion caused other reasons*	1	1	

*cirrhosis with bleeding in male, bowel injury in female

surgical difficulties and obstacles in anatomical identification and significantly more frequent among males (p=0.035). Male genders have more history of inflammation than female genders significantly (p=0.042). The converted cases of both genders had an average age of more than 60 years (Table 3).

Discussion

This study demonstrated the conversion rate of 4.9% within the range of 3-10% as previously reported by Sanabria JR[1] . Collet D et al.[7] reported the indications for conversion were pathology in subhepatic space in 75% of cases and complications due to laparoscopy itself in 25%. Others reported on acute inflammation, adhesions and bleeding causing difficulty in dissecting the gallbladder or cystic duct and technical failure of the laparoscopic setup[8,9,10,11,12]. Preoperative ultrasonographic evaluation of the gallbladder was not a good predictor for conversion[8]. The study concluded that conversion of LC to OC was more prevalent among males(P=0.026) and was attributable to a greater incidence of anatomic difficulties due to gallbladder inflammation (P=0.035) and average age of more than 60 years. Morrow et al.[13] found the clinical presentation of men >60 with acute cholecystitis deceptively benign : more than one third of these patients afebrile, more than one third had a leukocyte count <10,000, and more than one fourth had no abdominal tenderness. Thirty-eight of 39 patients failed medical therapy and required surgery during hospital admission. Wilson et al.[14] found the initial vital signs, physical findings, leukocyte counts, and other laboratory studies were not reliable to identify patients with gangrenous change at the time of surgery. A retrospective study by Kanaan et al.[15] found severe inflammation and male sex to be risk factors for conversion from laparoscopic to open cholecystectomy and the pericholecystic tissue of inflammed gallbladder showed more severe fibrosis in male patients and this was associated with difficult dissection and a higher rate of conversion to open surgery. Margiotta et al.[16] stated that acute cholecystitis was often more fulminant in men than women and speculate that the higher mortality may reflect an unwillingness of male patients to seek medical attention until their disease was well advanced. Sanabria et al.[1] commented that the surgeons in their series were often surprised by the severity of disease encountered at the time of surgery in male patients. They speculated that men may seek or follow medical advice (referral to surgery) less often than women, or that there may be a difference in the disease pattern in men. Presumably, preoperative history, physical examination and laboratory studies were less reliable in predicting severity of disease in men than in women. Women use all forms of health services, including hospital services, more frequently than men[17]. An excess of total biliary complications identify in women compared to men in an HMO population study was interpreted by the investigators as possibly indicating a greater willingness of women to seek medical attention for mild biliary symptoms[18]. These are similar as this study, men have more history of inflammation than women and they ignore their symptom and medical advice.

Conclusion

Male gender is one of the risk factor for conversion from laparoscopic cholecystectomy to open surgery. The incidence of conversion to OC among males is 3.8 folds higher than females (p = 0.026). Gallbladder inflammation is the most common cause for conversion. Male genders have more history of inflammation than female genders significantly (p=0.042). Thus surgeons should be aware and inform each patient prior surgery, to consider the conversion, which is probably higher in males than in females.

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