

GENDER DIFFERENCE IN ELECTIVE LAPAROSCOPIC CHOLECYSTECTOMY FOR CHRONIC CHOLECYSTITIS

Hiwa Omer Ahmed

Assistant Professor in general surgery, CABS, FABMS, Eu.LD, MEAES, M. ALS (GB & I) M. EATS, Consultant, Founder and Manager of Hatwan Hospital. City-College of Medicine, University of Al-Sulaimania, IRAQ.

Correspondence to: drhiwaomer@hatwan.com, hatwan@gmail.com

Abstract

Laparoscopic cholecystectomy is now considered as a treatment of choice for symptomatic gall stones. Although the difference in the outcome, including conversion rate, operation time, hospital stay, complications and the effect of gender, is emphasized, but no enough data could be found in the literature regarding the effect of gender on the outcome of elective laparoscopic cholecystectomy for chronic cholecystitis.

This study aimed to define the effect of gender on the laparoscopic cholecystectomy for Chronic Cholecystitis.

A randomized, coherent and prospective clinical trial was carried out at Hatwan Private Hospital for Endoscopic Surgery and Al Sulaimania Teaching Hospital to evaluate the sex difference as predictor for difficult laparoscopic cholecystectomy. From a total number of 712 patients, who were underwent laparoscopic cholecystectomy for Chronic Cholecystitis from 1st June 2002 to 1st of January 2011) three hundred and eighty eight patients were excluded according to exclusion criteria and the remaining 313 patients were included.

All the operation were done by the same team and by the same surgeon, Standard four-port technique through a 'closed' method, was used, with first entry port in the periumbilical region. Anesthetic technique and peri-operative management were not modified during the study period.

Patients who were candidates for elective cholecystectomy, were mostly females with (F:M ratio= 3/1), mean age 28 years (range 20-50 years) with mean age of 34 years (range 20-49 years) for the females, 37 years (range 20-50 years) for the males. There were more difficult cholecystectomies in males in comparison to female patients for chronic cholecystitis.

In conclusion, male gender is a predictor for difficult laparoscopy for symptomatic gallstones presented as chronic cholecystitis.

Introduction

Laparoscopic cholecystectomy is considered as a treatment of choice of symptomatic gall stones¹⁻⁹. Although the difference in the outcome, including conversion rates, operation time, hospital stay, complications and the effect of gender, is emphasized, but the definition of difficult laparoscopic cholecystectomy (LC) is inconsistent¹⁰, at the same time some authors tried to describe these difficulties, as cholecystectomy "that places the patient at significant risk"⁷. Also may be described on basis of time as

difficult LC needs (>120 minutes) or conversion to open surgery¹¹. Yet with all these potential risks; laparoscopy "is the preferred method for cholecystectomy even in difficult cases"², and laparoscopic management of difficult gallbladder problems is safe and effective⁵.

Most detailed description of difficult laparoscopic cholecystectomy was done by (Kuldip Singh) as laparoscopic cholecystectomy whenever "there are (dense adhesions at the triangle of Calot, contracted and fibrotic gallbladder,

gangrenous gallbladder, acutely inflamed gallbladder, empyema gallbladder (including Mirrizi syndrome Type II), and cholecystogastric or cholecystoduodenal fistula, previous abdominal surgery, those patients who need conversion rate to open surgery⁷, also difficulties in accessing the peritoneal cavity, creating a pneumoperitoneum, dissecting the gall bladder (GB), or extracting the excised GB¹².

Preoperative identification of difficult Laparoscopic cholecystectomy (DLC) and helps in better preparation of the patient, detailed discussion in the consent with the patients, regarding potential difficulties and possibility of conversion, longer hospital stay, morbidity and mortality^{6,12-15}, gender, age in clinical features and investigations and ultrasonography may help in the prediction of the difficulties^{13,14} and referral of these patients for more experience surgeons and or specific centers of laparoscopic surgery^{15,16}.

There are very few reports which have discussed the effect of gender on the course of LC in AC and CC^{1,9,12,13}, but no literature was found concerning sex difference in elective (LC) for chronic cholecystitis (CC), It is reported that 'this relationship remains unclear'¹⁷.

The present work is a trail to define the effect of gender on the LC for CC

Patients & methods

A randomized, coherent and prospective clinical trial was carried out at Hatwan Private Hospital for Endoscopic Surgery and Al Sulaimania Teaching Hospital to evaluate the sex difference as predictor for difficult laparoscopic cholecystectomy. From a total number of 712 patients, who underwent laparoscopic cholecystectomy (LC) for chronic cholecystitis (CC) from 1st June 2002 to 1st of January 2011) three hundred and eighty eight patients were excluded according to exclusion

criteria and the remaining 313 patients were included.

All the operations were done by the same team and by the same surgeon, Standard four-port technique through a 'closed' method, was used, with first entry port in the periumbilical region. Anesthetic technique and peri-operative management were not modified during the study period: According to gender, the patients were categorized in to two groups.

Group A; 88 patients, were male.

Group B; 243 patients, were females.

Exclusion criteria: to eliminate other variables which may affect difficulty of LC for CC, we excluded those turned out to have gallbladder carcinoma, or were not reported for reevaluation in the follow up as well as the following groups of patients ((morbid obesity, previous surgery, Diabetes Mellitus (DM), previous acute pancreatitis, cholecystitis, previous history of acute cholecystitis, multiple attacks (ten or more), who were jaundiced, Fever, palpable gall bladder, white blood cells account (WBC), liver function test. ultrasonographic signs of contracted gall bladder, gall bladder wall thickness more than 3mm, inflammation, shrunken or acute cholecystitis and who had common bile duct (CBD) stones, or cancer, Age above 50 years^{6,8,14,15,18,19}, Any intra-operative finding regarding acute cholecystitis, CBD stones, those turned to be cancer were also excluded

This work was approved by the ethic committee of Medical College in the University of Al Sulaimania.

Data were analyzed by SPSS version 16; a P value was less than 0.05 and was considered significant

Results

Patients were mostly females with (F:M ratio= 3/1), mean age 28 years (range 20-50 years) with mean age of 34 years (range 20-49 years) for the females, 37 years (range 20-50 years) for males (Table I).

Table I: Age and Gender of the patients.

Age groups (years)	Female Patients (No. & %)	Males Patients (No. & %)
20-29	72 (29.62%)	37 (42.08%)
30-39	83 (34.15%)	23 (26.13%)
40-50	84 (36.22%)	28 (31.82%)

Mean follow up period was (30 days), the most common difficulties we faced were severe adhesions of the omentum to the gall bladder and the liver at the site of gall bladder in five males (5.68%) and one female patient (0.41%), the next difficulty was in a group who experienced intra-

operative bleeding from cystic duct, puncture of gall bladder, bile spoiling of peritoneum, fall of gall stones and the need to extend the port site occurred in the same frequency in three males (3.40%) and in one female patient each (0.41%), as shown in (Table II).

Table II: The rate of difficulties during surgery

Difficulties	Male Patients (n=88)	Female Patients (n=243)	T-Statistic	Standard Error	P value
Conversion to open	3 (3.40%)	1 (0.41%)	5.87209	0.29802	0.00026
Intra-operative bleeding	3 (3.40%)	1 (0.41%)			
CBD injury	2 (2.26%)	0 (0.00%)			
Abdominal wall injury	2 (2.26%)	0(0.00%)			
Puncture of gall bladder	3 (3.40%)	1 (0.41%)			
Bile Spoiling of peritoneum	3 (3.40%)	1 (0.41%)			
Fall of gall stones	3 (3.40%)	1 (0.41%)			
Collateral visceral injuries	(0.00%) 0	0 (0.00%)			
Extension of the port site	3 (3.40%)	1 (0.41%)			
Partially intra-hepatic gall bladder	1(1.13%)	0 (0.00%)			
Omental adhesion to the gall bladder and liver	5 (5.68%)	1 (0.41%)			
Bile leakage due to a loose clip on the cystic duct	1 (1.13%)	0 (0.00%)			
Total intra-operative incidents and accidents	29 (32.90%)	7 (2.90%)			

Test of Hypotheses by Confidence Interval: There are statistically significant differences between the frequency of various difficulties faced during LC, which were more frequent in male versus female patients (P value =0.0004). Male patients needed longer time in minutes for dissection of the gallbladder from its bed with overall longer operative time (Table III). Test of Hypotheses by Confidence Interval: There is very strong evidence against the null hypothesis (P value =0.0004), which was assuming that there is no difference between the time needed

in each gender for dissection of the gallbladder or average all operation time.

Discussion

As the experience of the surgeon will affect the conversion rates and complications in laparoscopic cholecystectomy, we selected the laparoscopies done by the same surgeon and team after completing his learning curve (his first 50 laparoscopy)¹⁸⁻²⁰.

Conversion rate was necessary in three male (3.4%) and one female patient (0.4%), with overall conversion rates of 4

Table III: Comparing the time of gallbladder dissection and overall time of the operations in males versus female patients.

	Male Patients (n=88)	Female Patients (n=243)	T-Statistic	Standard Error	P value
Time needed for dissection of the bed of gallbladder (minutes)	17±4	7±3	5.67902	5.405861	0.0004
Operative time (minutes)	49±10	35±7			

(1.2%) in four patients, which was less than the results reported by Takegami et al.²¹, he reported 13% conversion rates in LC performed by general surgeons and (2%) in LC performed by specialized surgeons.

As Kanaan et al. reported that the age of the patient will affect difficulty of LC and it is more difficult in those with mean age of more than 50 years, while Gurkan Yektin et al. considered age above 70 years as age limit for difficult LC²¹⁻²³, for this reason we excluded patients above age of 50 years, to avoid age bias.

In this paper the incidence of intra-operative incidents and accidents were (32.9%) in male and (2.9%) in female patients and overall incidence was (11.5%), while other studies reported 19.9% (177 cases) in difficult cholecystectomies, in comparison to intra-operative incidents and accidents rate in "easy" laparoscopic cholecystectomy which was 15.5% (251 cases from 1616 patients)²⁴. This may be because other studies were about difficult cholecystectomies in both acute and chronic cholecystitis, while present paper is about chronic cholecystitis alone.

Conversion rates of this paper is comparable with literature as in males^{1,9,14,22}, which was difficult the rate was (3.4 %) and in females which was easy the rate was (0.41 %) in comparison to the literature, in which reported 6.1% (55 patients) in difficult laparoscopic cholecystectomy and (3.2%) in "easy" cholecystectomy²⁴. Since surgeons are reluctant to publish their own rate of

complications, and since the complications of LC are treated in tertiary care centers, the precise magnitude of the problem remains uncertain¹⁸ regarding gender difference, there are different ideas in the literature; i.e.: Gronroos et al., reported that women were at a higher risk for severe bile duct injuries during LC²². While other authors have opposite ideas, most are claiming that gender is not a risk factor in the difficulty of LC or conversion^{21,23}, only preoperative diagnosis correlating significantly with LC difficulty^{2,22}.

In mean time there are papers which insist on the effect of gender on the difficulty of the LC^{4,6,21}, in the point view of difficulty and time consuming, and conversion to open surgery⁶ which is more in men than in women⁹.

The results of the current study are comparable with the last group, as we found more difficulties in male patients (table 2), who need longer time for dissection of the bed of the gallbladder (17±4 minutes) for males and (7±3) minutes for female patients, and overall operative time of (49±10) minutes and (35±7) minutes for male and female patients respectively. Which is relatively comparable with a literature, as the mean time in a study was longer in men than women (80.3 vs. 70.4 min)²². There are many speculations and explanations; why it is more common in males?

On one hand male patients were delayed in seeking medical advice¹, has a longer duration of symptoms before consultation⁶, by the time these patients

seek treatment the stage has been set for a difficult laparoscopic cholecystectomy⁹. On the other hand there are more extensive inflammation and fibrosis that occur in men than in women⁹, there is higher amount of hydroxyproline (collagen component) and macrophages, mast cells, and eosinophilic granulocytes

in the connective tissues of the gallbladder wall and in the pericholecystic tissues than women^{6,16,17}.

Conclusion

Male gender is a predictor for difficult laparoscopy for symptomatic gallstones presented as chronic cholecystitis.

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