

Laparoscopic Cholecystectomy Risk Factors, Intra and Postoperative Complications in Al-Zahrawi Hospital, Amara, Misan, Iraq

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1. Abstract

1.1. Background: Cholecystectomy relieves pain, treats infections and in most instances prevents the re-occurrence of the disorder. However, some complications may happen which include bile leak, bile duct injury, bleeding, peritonitis, liver and intestine injuries, raised scare at the operation site, anesthesia complications and possible death. The aim of this study is to evaluate patients underwent laparoscopic cholecystectomy in terms of risk factors of gallstone, variation in presentations of patients, intra and postoperative complications.

1.2. Methods: A total of 134 patients (22 males and 112 females) were included in the present prospective study performed between September 2018 and March 2019 at Al-Zahrawi Surgical Hospital, Amara, Misan, Iraq. Investigations were made on the age of the patients, sex and occupational status. Risk factors and possible complications were observed.

1.3. Results: Most patients were females and 95% of them were above 11 years old with more concentration of the number of the cases between 21 and 40 years old which represents more than 57% of the patients. It was observed that the frequencies of disorders like hypertension, diabetes mellitus and abnormal lipid profile were 32.8%, 12.7% and 24.6%, respectively.

1.4. Conclusion: Females are more susceptible than males regarding the formation of gallstones. The second and third decades of age are expected to show high frequency of gallstones. A large population of patients is recommended to be studied to reveal the potential risk factors for gallstone formation including hypertension.

2. Keywords: Cholecystectomy; Gallstones; Surgical complications; Cholecystitis

3. Introduction

The gall bladder is located at the liver bed between the left and right lobes, its pear in shape of 7.5 - 12 cm in length and 35 - 50 ml in capacity [1]. Gall stone disease is one of the most common diseases of the gastrointestinal system; the prevalence is 7.9% in men and 16.6% in women, according to the third National Health and Nutrition Examination diseases. The majorities of the cases are asymptomatic, and around 1-2% of these patients will develop symptoms per year [2]. There are three types of gallstones; cholesterol, pigmented and mixed stones, and the most common risk factors for gall stones are: being a female, forty years old, obese, sedentary lifestyle, high fat and low fiber diet, family history of gallstone, diabetes mellitus, rapid weight loss, sickle cell disease, crohn's disease, terminal ileal resection, drugs like oral contraceptive pills, hormonal replacement therapy and thiazide diuretics [3, 4]. The presentation of gall stones mostly asymptomatic and discovered accidentally. In many patients presentation could be right upper abdominal or epigastric pain which might radiate to the back and referred to the right shoulder (biliary colic). Other presentations including dyspepsia, bloating, fatty food intolerance (flatulent dyspepsia), in addition, many patients presented as acute calculus cholecystitis in terms of pain, low grade fever and occasionally jaundice (acute cholecystitis). However, many other patients come as chronic cholecystitis or mucocele and empyema of gall bladder. In rare cases

gall stones may perforate the gall bladder wall passing to the bowel causing gall stone ileus, or present as ascending cholangitis and acute pancreatitis [5]. The golden procedure for treating symptomatic gall stone is laparoscopic cholecystectomy which was done for the first time by the prof. Dr. Med Erich Muhe of Boblingen Germany on 12th September, 1995 [6]. The complications include: port site infection, atelectasis, intra operative hemorrhage, intestinal injury and injury to the surrounding structures, bile duct injury, bile leakage and post cholecystectomy syndrome which usually present as dyspepsia, flatulence, right upper abdominal pain and epigastric pain [7]. Rarely gallbladder cancer may occur as a complication [8].

4. Patients and Methods

This prospective study was done at Al-Zahrawi Surgical Hospital in the private wards. The date of the study was from September 2018 to March 2019. Data was collected from the patients and their case sheets (surgical records) and a special formula for data collection. Our study included 134 patients who underwent laparoscopic cholecystectomy done by many surgeons. Collected data included sex, age, marital state, occupation, clinical presentations, ultrasound findings, intraoperative findings and complications, and postoperative findings, also some samples were sent for histopathology looking for any malignant changes.

5. Results

The effect of sex factor on the occurrence of the disease is shown in (Table 1). As expected 83.5% of our patients were females. The majority of the patients (97%) were married. That may be related to the ages of the patients since most of them were more than 21 years old (Table 2).

Regarding the age distribution of the patients, none of our patients was less than 11 years old. About (50%) of the patients were of 31 to 40 years old. (Table 2) shows the details of the age groups.

The mean age was 39.33 years. There were 5 patients (3.7%) in the age group (11-20 yrs), 32 (23.9%) in the age group (21-30 yrs), 45 (33.6%) in the age group (31-40 yrs), 25 (18.7%) in the age group (41-50 yrs), 14 (10.4%) in the age group (51-60 yrs), and 12 (9%) above 60 yrs.

Other associated risks for the disease including the age 55 patients were above 39 yrs (41%) and 79 patients below the mean (58%), 30 patients had occupations (22.4%), 44 has hypertension (32.8%), 17 has DM (12.7%), and 33 has abnormal lipid profile (24.6%), there was no records about drug use such as contraception or cholesterol lowering drugs and no records about family history of same disease and no records about BMI.

According to clinical presentations 2 patients were asymptomatic (1.4%), 31 presented with flatulent dyspepsia (23.1%), and 101 patients presented with biliary colic (75.3%).

By Ultrasound, 37 patients with single gallstone (27.6%), 12 with two

stones (8.9%), 84 patients with multiple stones (62.7%) and one case with polyp (0.7%).

Intraoperative macroscopical pathology showed 32 cases with adhesion (23.8%) , 14 with CBD disease (10.4%), 12 cases with empyema (9%) , 17 with mucocele (12.6%), difficult calot triangle (3.7%), chronic inflammation 51 cases (38%), 2 with polyp (1.4%), one case with cystic duct anomaly (0.7%).

Regarding intraoperative complications data was collected from surgeons one case had bowel injury (0.7%) , 3 cases had biliary leak (2.2%) , 2 were converted to open (1.4%) and 4 had bleeding (2.9%) due to lose clipping and difficult calot triangle.

There was no postoperative findings other than biliary leak 2 cases (1.4%) diagnosed by US as a collection and was treated conservatively , they were already on drain , also CBD constriction one case diagnosed by MRCP and was referred to GI center in Baghdad.

Thirty samples were sent for histopathologist looking for any malignant changes other than these cases all were negative.

6. Discussion

As expected, most the patients included in the present study were females (Table 1). Out of 134 patients included in the present study, there were 112 females and 22 males representing 83.5% and 14.1, respectively. This finding was in agreement with other reports. Tapan et al found 60% female and 40% male [9] while Kouls et al find 78% female and 22% male [10] Khan et al found 83.3% female and 16.2% male [11]. It was reported that the reason behind the susceptibility of the females is based on hormonal background. The underlying mechanism is female sex hormones; parity, oral contraceptive use and estrogen replacement therapy are established risk factors for cholesterol gallstone formation [12]. Female sex hormones adversely influence hepatic bile secretion and gallbladder function. Estrogens increase cholesterol secretion and diminish bile salt secretion, while progestins act by reducing bile salt secretion and impairing gallbladder emptying leading to stasis. A new 4th generation progestin, drospirenone, used in some oral contraceptives may further heighten the risk of gallstone disease and cholecystectomy; however, the increased risk is quite modest and not likely to be clinically meaningful [13]. Regarding the age factor, more patients were found in the age group 21-40 years (Table 2). However, more patients from various age groups may be needed for further investigations. In other studies like Tapan et al the mean age was found to be 50.4 years [9], Khan et al found that the mean age was 45.09 years [11]. Although it was reported that some risk factors exist regarding the formation of gallstones, our findings didn't show high correlation between reported risk factors like hypertension, Diabetes Mellitus or abnormal level of serum lipids. (Table 3) Carel et al showed that 19% of patients with gall stone had abnormal lipid profile. A larger population of patients may show the influence, if any, of some factors. (Table 4) shows that Most of our patients were (75.4%) presented with biliary colic while 17.9%

resented with dyspepsia. Symptomless patients were very rare (1.4%). Earlier reports showed Davide et al showed that 28.6% of cases had biliary colic and (53.8 %) had epigastric discomfort [3]. (Table 5) shows number of stones that appear on US where 37 patients had single gall stone (27.6%), 12 had two stones (8.9%) , 84 patients had multiple stones (62.7%) and 1 with polyp 0.7%. Sultan et al shows that (58.15%) with multi stones and (39.13%) having solitary one, (1.63%) having two stones.

More than third of our patients were found to suffer from chronic inflammation as found during the operation (Table 6). Twenty out of 54 patients had chronic cholecystitis a study showed by Houston et al. Disorders like adhesion 23.8%, CBD disease 10.4%, Empyema 9%, with mucocele 12.6%, difficult calot triangle 3.7%, were found in the patients. Mulhim et al found that there was adhesion in 61.5% of cases, difficult calot triangle in 4.93% of cases [14] Tayeb et al who found that 56.2% of patients had adhesion, 12.2% of patients had empyema [15]. (Table 7) shows the intraoperative complications including bowel injury, biliary leak, and conversion to open and bleeding. Such complications were reported by other surgeons. Common bile duct injury occurred in 2.7 % of patients, 7.5 % of patients converted to open surgery [15]. Tapan et al found that bleeding occurs in 3% of patients [13], Mulhim et al found that bleeding occurs in 0% of patients [14]. In this study mortality rate was 0% and it's similar for Bruce et al which is also 0% [16] and it was in contrast to Molehiro et al who find out that mortality rate equal to 2% [17] (Table 8).

Table 1: Sex distribution

No. Males (%)	No. Females (%)
22 (14.1)	112 (83.5)
Total	134 (100)

Table 2: Age distribution of patients

Age distribution	
Age group	No. of patients (%)
Up to 10 years	0
11-20 yrs	5 (3.7)
21-30 yrs	32 (23.9)
31-40 yrs	45 (33.6)
41-50 yrs	25 (18.7)
51-60 yrs	14 (10.4)
Above 60 yrs	12 (9)

Table 3: Risk factors for cholecystitis

Risk factors	No. patients (%)
Age more than 39	55 (41)
Physically active	30 (22.4)
Family history of gallstones	0
Hypertension	44 (32.8)
Diabetes mellitus	17 (12.7)
Abnormal lipid profile	33 (24.6)
Drug use	0
Hemolytic disease	0
Celiac disease	0
Liver disease	0
Total	134

Table 4: Clinical presentations of the patients

Clinical Presentation	No. of Patients (%)	Females (%)	Males (%)	Age group						
				Up to 10y	11-20y	21-30y	31-40y	41-50y	51-60y	Over61y
Asymptomatic	2 (1.4)	1 (0.7)	1 (0.7)	0	0	1 (0.7)	0	1 (0.7)	0	0
Dyspepsia	31 (23.1)	24 (17.9)	7 (5.2)	0	1 (0.7)	7 (5.2)	10 (7.4)	7 (5.2)	4 (2.9)	2 (1.4)
Biliary colic	101 (75.3)	86 (64.2)	15 (11.2)	0	4 (2.9)	25 (18.7)	34 (25.3)	20 (14.9)	11 (8.2)	7 (5.2)
Others	0	0	0	0	0	0	0	0	0	0

Table 5: Ultrasound findings

US Finding	No. of patients (%)	Females (%)	Males (%)	Age group						
				Up to 10y	11-20y	21-30y	31-40y	41-50y	51-60	Over 61y
Single stone	37 (27.6)	32 (23.9)	5 (3.7)	0	0	9 (6.7)	16 (21.44)	7 (5.2)	5 (3.7)	1 (0.7)
Two stones	12 (8.9)	11 (8.2)	1 (0.7)	0	1 (1.4)	3 (2.2)	4 (5.3)	2 (1.4)	1 (0.7)	1 (0.7)
Multiple stones	84 (62.7)	68 (50.7)	16 (11.9)	0	4 (5.3)	21 (15.6)	24 (17.9)	19 (14.2)	8 (5.9)	8 (5.9)

Table 6: Intraoperative findings

Intraoperative finding	NO. Patients (%)	FEMALE (%)	MALE (%)	Age group						
				Up to 10y	11-20y	21-30y	31-40y	41-50y	51-60y	Over 61y
Adhesion	32 (23.8)	26 (34.8)	6	0	2 (1.4)	9 (6.7)	11 (8.2)	5 (3.7)	5 (3.7)	0
CBD disease	14 (10.4)	12 (16.1)	2 (1.4)	0	2 (1.4)	3 (2.2%)	4 (2.9)	3 (2.2)	2 (1.4)	0
Empyema	12 (9%)	2 (1.4)	10 (13.4)	0	0	2 (1.4)	5 (3.7)	3 (2.2)	1 (0.7)	1 (0.7)
Mucocele	17 (12.6)	15 (11.2)	2 (1.4)	0	0	3 (2.2)	6 (4.4)	5 (3.7)	3 (2.2)	0
Difficult calot triangle	5 (3.7)	4 (2.9)	2 (1.4)	0	0	1 (0.7)	3 (2.2)	1 (0.7)	0	1 (0.7)
Chronic inflammation	51 (38)	44 (32.8)	7 (9.4)	0	1 (0.7)	12 (8.9)	17 (12.6)	10 (7.4)	4 (2.9)	7 (5.2)
Polyp	2 (1.5)	2 (1.4)	0	0	0	1 (0.7)	1 (0.7)	0	0	0
Cystic duct anomaly	1 (0.7)	0	1 (0.7)	0	0	0	0	0	0	1 (0.7)

Table 7: Intraoperative complications

INTRAOPERATIVE COMPLICATIONS	No. of patients (%)	Females (%)	Males (%)
Bowel injury	1 (0.7)	0	1 (0.7)
Conversion to open	2 (1.4)	2 (1.4)	0
Bleeding	4 (2.9)	2 (1.4)	2 (1.4)

Table 8: Postoperative complications

Postoperative complications	No. of patients (%)	Males (%)	Females (%)
Biliary leak	2 (1.4)	0	2 (1.4)
CBD constriction	1 (0.7)	1 (0.7)	0

7. Conclusion

Females are most commonly affected by gallstones and this can be due to many factors including lifestyle since most of the cases were house wives, hormonal changes and pregnancy. More than half of cases were below the age of 39 years. The study showed that risk factors consistent with some reported risks. Most common presentation is biliary colic followed by flatulent dyspepsia. Most patients with acute attacks are treated conservatively. Most common intraoperative finding regarding the disease is chronic inflammatory changes of gallbladder that resembles thickened wall of gallbladder and scarring. Ultrasound is efficient in diagnosing gallbladder polyps since 1 out of 2 cases with polyps was diagnosed by US. A common intraoperative complication is bleeding. Mortality rate is 0% so laparoscopic cholecystectomy is the safest method for removal of gallbladder until now.

7.1. Recommendations

- A large population of patients is recommended to be studied to reveal the potential risk factors for gallstone formation including hypertension.
- To be in a close contact with the patient regular visits should be arranged monthly for at least 6 months to check for any postoperative complications like port site hernias and strictures.

References

1. Baily and love's short practice of surgery, 25th edition, chapter 63, page no. 1111, 1112.
2. Nezam H Afdhal. Epidemiology of and risk factors for gall stones, 2016.
3. Kajal Jain V. Sreenivas T. Velpandian Umesh Kapil Pramod Kumar Garg. Michael Woods, Risk factors for gall stones. 2014.
4. Ansaloni L, Pisano M, Coccolini F et al. 2016 WSES guidelines on acute calculouscholecystitis. *World J Emerg Surg*. 2016; 11: 25.
5. <https://emedicine.medscape.com/article/175667-clinical>
6. Reynolds W Jr. The first laparoscopic cholecystectomy. *JSLs*. 2001; 5: 89-94.
7. Abdul Wadood M, Mathew S. Gall bladder disease. 2015.
8. <https://www.england.nhs.uk/wp-content/uploads/2019/07/Annual-Report-Full-201819.pdf>
9. Shah T, Shah P, Parmar H, Vaidya Y. Prospective single center study of 100 patients undergoing Laparoscopic cholecystectomy. *NHL Journal of Medical Sciences*. 2013; 2: 61-4.
10. Koulas SG, Tsimoyiannis J, Koutsourelakis I et al. Laparoscopic cholecystectomy performed by surgical trainees. *JSLs*. 2006; 10: 484-7.
11. <http://jkscience.org/archive/volume62/cholecyst.pdf>
12. Cirillo DJ, Wallace RB, Rodabough RJ, et al. Effect of estrogen therapy on gallbladder disease. *JAMA*. 2005; 293: 330-9.
13. Etminan M, Delaney JA, Bressler B, Brophy JM. Oral contraceptives and the risk of gallbladder disease: a comparative safety study. *CMAJ*. 2011; 183: 899-904.
14. Al-Mulhim AS, Amin TT. Outcome of laparoscopic cholecystectomy at a secondary level of care in Saudi Arabia. *Saudi J Gastroenterol*. 2011; 17: 47-52.
15. Tayeb M, Raza SA, Khan MR, Azami R. Conversion from laparoscopic to open cholecystectomy: multivariate analysis of preoperative risk factors. *J Postgrad Med*. 2005; 51: 17-22.
16. <https://www.acpjournals.org/doi/full/10.7326/m18-1468>
17. Milheiro A, Castro Sousa F, Oliveira L, Joao Matos M. Pulmonary function after laparoscopic cholecystectomy in the elderly. *Br J Surg*. 1996; 83: 1059-61.