

Cholecystectomy for Gallstone: Types and Findings

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Abstract: Gall stone disease remains a common and significant cause of suffering in most parts of the world. Gallstones are the most common biliary pathology. A descriptive study covered 80 patients underwent surgical treatment for gallstone diseases. Ultrasound study and plain abdominal X-ray were done to confirm the presence of gallstone. More than half of the sample 58.8% were in the oldest age group 50-69 year. Female were 68(85%) and the remaining 12(15%) patients were male. Most of patients 60(75.0%) operated upon by open cholecystectomy, laparoscope used in 18(22.5%). The main finding on exploring the abdomen was inflammatory adhesion in 54(67.5%) of the patients, thick wall gallbladder came next in 12 (15%) patients. Many complications and clinical findings associated with gallstone, some of them are serious other are even fatal. That is why cholecystectomy is highly indicated even for silent gallstone.

Keywords: Gallstone, Jaundice, Cholecystitis, Surgery, Laparoscopy

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1. Introduction:

Gall stone disease remains a common and significant cause of suffering in most parts of the world (Balakrishnan *et al.* 2008). Gall stone has increasingly become a major cause of abdominal morbidity (Sachdeva *et al.* 2011).

The gallbladder (GB) is a pear-shaped organ, 7.5-12 cm length. It joins the common bile duct through the cystic duct at the supra-duodenal segment but there are many anatomical variations (Nagral 2005).

Bile, an aqueous solution produced and secreted by the liver, consists mainly of bile salts, phospholipids, cholesterol, conjugated bilirubin, electrolytes, and water. Bile flows into the gallbladder where it is concentrated and stored. On gallbladder contraction in response to cholecystokinin hormone, it pushing bile through the cystic duct into the common bile duct (Baiocchi *et al.* 2019).

The pathogenesis of GD is suggested to be multifactorial and probably develops from complex interactions between many genetic and environmental factors (Reshetnyak 2012). Cholesterol composes most gallstones, cholesterol crystal nucleation formation, and/or gallbladder motility dysfunctions (Al-Saad *et al.* 2018).

Gallstones are the most common biliary pathology, which can be divided into three main types: cholesterol, pigment (black, brown) or mixed stones (Singha *et al.* 2017). It may be single or multiple, large or small. Single stones are uncommon but usually consist mainly of cholesterol (Yousif 2011).

The role of infection in GS is unclear, the radiolucent center of many GS is representing a mucus plugs which formed around the bacteria. Gallbladder contractility is reduced by estrogen, pregnancy, truncal vagotomy result in bile stasis which increased incidence of GS. Hemolytic anemia increases incidence of pigmented GS (Sachdeva *et al.* 2011).

Although several studies have provided evidence supporting the role of gall bladder bile stasis in the genesis of gall stones, clear cut data on impaired gall bladder contractility have not been found consistently in gall stone patients (Cicala *et al.* 2011).

The classic presentation of symptomatic gallstones is a patient with recurrent right upper quadrant pain, sometimes, the initial presentation of gallstones may be acute cholecystitis, due to secondary infection. In some cases, the stone obstruct the common bile duct, causing cholestasis. Jaundice can develop (Al-Saad *et al.* 2018).

2. Materials and Methods:

A descriptive prospective study. The study covered 80 patients with gallstone diseases. All of them were operated upon for gall stones disease in AL-Najaf Teaching Hospital & AL-Noor hospital in the period extended from January 2002 to October 2003.

Ultrasound study was done to all the patients which confirm the presence of GS, in addition it gave information about thickness of the GB wall, its size, any stone in the biliary tree, or pancreatic pathology like malignancy. Plain radiology for abdomen were done for 40 patients to explore the rate of radio-opaque gall stone, and to confirm calcified wall of GB. Finally, liver function test and general laboratory tests for patients going to submitted to general anesthesia.

Operative methods: Cholecystectomy (open or by laparoscope) were done for the patients. In some patients, laparoscopic cholecystectomy started with then ended with open cholecystectomy. All operative finding during operation recorded for all patients for possible GS complication.

Post-operative reports: Specimen were sent for histopathological examination; five cases malignancy was

suspected macroscopically. Biochemical analysis of the removed stones from only 30 cases was performed to identify the chemical constitution of the stones. T-tube cholangiography done for (7) patients, at day tenth post-operative by injection of sodium diatrizote dye down into T-tube, before removal of T-tube to visualize the biliary tree especially common bile duct & to see any filling defect & patency of biliary tree.

3. Results

Total number of patients with gall stone disease participated in the study were 80 patients. Three patients were in the age group 18-29 year, two out of the three patients were known to had hereditary spherocytosis. In the age group 30-49 year there were 30(37.5%) patients. In the oldest age group 50-69 year we had 47 patients constituted more than half of the sample 58.8% (Table-1). Female were 68(85%) and the remaining 12(15%) patients were male, with a female: male ratio of (5.7:1).

Table 1: Distribution of sample according to age group and gender

Age group	Patients					
	Female		Male		Total	
	n	%	n	%	n	%
18-29	2	66.7	1	33.3	3	100
30-49	25	83.3	5	16.7	30	100
50-69	41	87.2	6	12.8	47	100
Total	68	85	12	15	80	100

Table 2 revealed the preoperative investigation done for the patients. Liver function test done for 7(8.7%) patients who are clinically jaundiced, all of them show abstractive jaundice (high total serum bilirubine & high direct bilirubin level with high serum alkaline phosphatase level).

plain radiology of abdomen was done for 40 patients. Rt-hypochondria radio-opaque shadow was seen in only 5(12.5%) of the cases. Two cases showed calcified GB wall.

Ultrasound study done for all patients, gallstones were present in (71) cases, while common bile duct stone was found only in (5) cases.

Table 2: Preoperative investigation

Investigation	results	n	%
Serum bilirubin (n=80)	Jaundiced	7	8.8
	Not jaundiced	73	71.2
Plain abdomen X-ray (n=40)	Radio-opaque shadow	5	12.5
	Calcified gallbladder wall	2	5.0
	Negative (normal)	33	82.5
Ultrasound study (n=80)	Presence gall stone	71	78.0
	Thick wall duct	8	8.8
	Dilated common bile duct	7	7.7
	Common Bile duct stone	5	5.5
	Total*	91	100

* The total is larger than sample size because of overlapping

Table 3 represented the type of surgery performed for the patients. Most of patient 60(75.0%) operated upon by open cholecystectomy. The gallstones in 18 patients (22.5%) were removed by laparoscope.

Table 3: Type of operation performed

Types of surgery	n	%
Laparoscopic Cholecystectomy	18	22.5
Open Cholecystectomy	60	75.0
Laparoscopic Cholecystectomy converted into open cholecystectomy	2	2.5

Table 4 showed the main finding on exploring the abdomen via laparoscope or open surgery. The most common finding was inflammatory adhesion in 54 patients (67.5%) of the total patients. Thick wall GB came next in 12 patients (15%). Perforated GB was the least reported, only one patient (1.3%).

Table-4: Findings associated with or complicated gall stones disease according to the operative finding

Types of complications	n	%
Inflammatory adhesion	54	67.5
Thick wall gallstone	12	15
Gangrenous gallstone	4	5.0
Empyema of gallstone	6	7.5
Perforation of gallstone	1	1.3
Very hard & adherent gallstone	4	5.0
Obstructed common bile duct by stone	7	8.7
Silent gallstone disease	14	17.5
Total*	102	

* The total is larger than sample size because of overlapping

4. Discussion

Gall stones disease are common problem in our country. If not operated upon at proper time they end with complications (Balakrishnan *et al.* 2008).

Traditionary obese, older, females with multiple pregnancies, have a higher risk of developing gallstones (Al-Saad *et al.* 2018). In this study there were some change in this trend of GS disease to a high incidence in non-obese female less than 50 years old 32.3% this could be attributed to the expansion in the use of contraceptive pills in some female, this agreed with Gupta study, also to multiple pregnancies in others (Gupta *et al.* 2008). Our study showed the rate of GS in female aged more than 50 years was (51.3%) which is again comparable to the results of Gupta *et al.* 2008. There has also been a remarkable shift in the trend of gall-stone disease from middle aged, fertile, fat females to young asthenic females in their twenties (Sachdeva *et al.* 2011). There has been a significant increase in the incidence of gallstones in patient under 30s of age in the past 10 years also there is a change toward asthenic female (Abdul Hassan 2011).

The female to male ratio in our study was (5.7:1) which was higher than Gupta study where it was (4:1) (Gupta *et al.* 2008).

A higher prevalence of GS among females, observed in the current study, has been agreed with several studies (Farzaneh Sheikh Ahmad *et al.* 2007, Sun *et al.* 2009). Pregnancy and sex hormones are believed to be a causes for a higher risk, and this had been supported by several epidemiologic studies (Friedman *et al.* 1966, Barbara *et al.* 1987). The clinical relevance found by Agrusa *et al.* (2014) is further broadened by the fact that the prevalence of gallstone disease increases with age.

In this study about (9) cases (11.3%) pre-operative presented with acute cholecystitis, and (3) cases (3.7%) with acute cholangitis biliary jaundice & fever Charcot's triad. Silent gallstones were 14 cases (17.4%). Abraham *et al.* (2014) stated that gallstones are often discovered incidentally during ultrasonography or computed tomography of the abdomen. Only 10% to 20% of asymptomatic patients will eventually become symptomatic within five to 20 years of diagnosis.

Pain in abdomen, dyspepsia and jaundice were common presentation of patients in many studies (Pimpale *et al.* 2019).

According to the guideline forwarded by Pisano, laparoscopic cholecystectomy should be considered for all; the age, on its own, is not a contraindication for surgery (Pisano *et al.* 2019). While Nassar in his study found that age of the patient is a significant factor determining the likelihood of death and the length of hospital stay after any type of procedure of gallstones removal (Nassar & Richter 2019). Laparoscopic and open cholecystectomy were used for our patients in this study, with a conversion from laparoscopic to open procedure at a rate of 2.5%. this was less than the rate in Shrestha *et al.* (2014) study where it was (11.1%), and less than the conversion rate of Pimpale *et al.* (2014) study (6.57%).

Open method still common procedure done for our patients in current study this is probably due to lack in instruments and in some to low experience. This agree with Shrestha *et al.* (2014) study, who also reported several possible factors responsible for this conversion. These include age, sex, obesity, diabetes mellitus, acute cholecystitis, history of biliary diseases such as jaundice, cholangitis, history of pancreatitis (Shrestha *et al.* 2014).

Conversion to open surgery from laparoscopic cholecystectomy was encountered because of recurrent management of multiple episodes of acute cholecystitis and avoiding definitive surgery because of associated comorbidities. The conversion decision is considered as a sound judgment to avoid complications and reduce morbidity (Hussain *et al.* 2017).

5. Conclusion

Gallstones in our patients were more in female than male, there were some changes in the traditional presentation of patients toward less obese and younger age group. Many complications and clinical pictures associated with

GS, some of them are serious other are even fatal. That is why cholecystectomy is highly indicated even for silent one.

Conflict of interest: None of interest

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