ORIGINAL ARTICLE

Comparison of Early Versus Delayed Laparoscopic Cholecystectomy: Choosing the Best

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ABSTRACT

Aims: To compare early and interval laparoscopic cholecystectomy for postoperative conversion rate to open cholecystectomy and complications.
Study design: It was a multi center randomized controlled trial.
Duration: From 1-1-2010 to 31-12-12011.
Material and method: A total of 50 patients (25 in each group) with acute Cholecystitis from Surgical Operation theatre of at Surgical Units Nishtar Hospital Multan /Ali Shirazi Hospital Sahiwal / D.H.Q. Chiniot, selected for Laparoscopic Cholecystectomy were included in this study. Two Groups (A&B) were created, Group-A was allotted to the early cholecystectomy and Group-B was allocated to delayed cholecystectomy patients.
Results: Majority of the patients i.e., 8(32%) in Group-A and 10(40%) in Group-B were recorded between 41-50 years of age, 11(44%) in Group-A and 15(60%) in Group-B were females patients, post operative complications of laparoscopic cholecystectomy in both groups reveal that in Group-A, Injury to the biliary tree was found in 24%(n=6), wound infection in 8(32%), haematoma in 4(16%) and seroma in 7(28%) while in Group-B, these values were found as Injury to the biliary in 17(68%), wound infection in 19(76%), haematoma in 10(40%) and seroma in 16(64%), which shows a significant difference in all complications while conversion to open cholecystectomy In Group-A was found in 4(16%) and 12(48%) in Group-B while 21(84%) in Group-A and 13(52%) in Group-B were not converted for O.C..
Conclusion: We conclude significantly higher advantages of early LC (under 72 hours from the onset of the symptoms) over delayed LC for AC regarding conversion rate, complications rate, and operative time. Early LC represents the optimal timing for AC treatment, the delays in AC treatment being unjustified, and generating lesser results.
Keywords: Cholecystitis, laparoscopic cholecystectomy(LC)Open cholecystectomy(OC)

INTRODUCTION

Approximately 25 million adults in the United States have gallstones[1]. Increasing age, obesity, hyperalimentation, rapid weight reduction, ileal disease or resection, and certain ethnicity (e.g., Pima Indians) are risk factors for developing gallstones[2]. Most (70–80%) gallstones in Western countries are cholesterol stones and the remainder (20–30%) are pigment stones, which occur most frequently in patients with chronic hemolytic disorders[1,3,4].

Approximately 80% of patients with gallstones are asymptomatic and 20% have symptomatic biliary colic[4]. About 1% to 2% of patients per year with asymptomatic gallstones develop biliary symptoms and once symptomatic these individuals have a 50% chance of having their next attack within 1 year[4]. They also have a 1-2% per year risk of developing acute cholecystitis or other complication[5,6].

Laparoscopic cholecystectomy (LC) has been the gold standard for symptomatic gallstones for 15 years. However, there are 2 problems that are more frequent in LC than in open cholecystectomy: (1) injury to the common bile duct and (2) complications from lost gallstones. Over the last 15 years, the rate of common bile duct injuries in LC has declined as laparoscopic surgeons have become more experienced; unfortunately, the incidence of lost gallstones has been unchanged[7]. The optimal timing of surgery for cholecystectomy is controversial. Early studies involving open cholecystectomy have suggested that performing surgery without initial conservative treatment with antibiotics (within the first 3 days of symptom onset) reduced the length of hospital stay and recovery time without increasing postoperative mortality or complications[8,9]. Since being shown to be safe and effective, laparoscopic cholecystectomy has emerged as the treatment of choice for patients with symptomatic cholelithiasis[10] and acute cholecystitis[11].

The traditional practice for surgeons caring for patients with acute symptoms is to perform surgery within 72 hours of the onset of symptoms or to allow the acute inflammation to resolve and perform an

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interval cholecystectomy at least 5 weeks later. Prior studies with laparoscopic cholecystectomy agree that it is best to intervene earlier rather than later[12-15]. There is no clear consensus about the exact cut-off time of the golden acute period. The widespread use of laparoscopic cholecystectomy and the delayed presentation frequently encountered in a large urban hospital has therefore resulted in many surgeries performed within the period of subacute inflammation.

MATERIAL AND METHODS

A total of 50 patients between 20-60 years of both gender selected fulfilling the inclusion/exclusion criteria were recruited from the Out Patient Department, their informed consent was taken. Patients of acute cholecystitis diagnosed on the basis of history (pain right hypochondrium radiating towards back or tip of left shoulder, vomiting and fever) clinical examination (tenderness and guarding in the right hypochondrium), and investigations (leukocytosis and ultrasonography) were included in the study while Acute pancreatitis, ASA score III or more and history of diabetes mellitus, chronic liver disease, cholangiocarcinoma, pancreatic carcinoma were excluded.

These patients were randomly allocated in two groups by using random number table, 25 patients in each group. Early laparoscopic cholecystectomy was performed in Group A and interval laparoscopic cholecystectomy was done in Group-B. Both groups were followed up after 24, 48 hours and first week for complications (injury to billiary tree, wound infection haematoma, seroma) and conversion to open cholecystectomy was noted in both cases.

The collected data was entered and analyzed in computer software SPSS version 15. Frequency and percentage was calculated for gender, mean and standard deviation was calculated for age of the patients. Post operative hospital stay, conversion to open cholecystectomy and complications (injury to the biliary tree, wound infection, Haematoma, Seroma) were the variables of the study. Postop hospital stay and post operative complications were computed and t-test was applied to compare post operative hospital stay and chi square test was used to compare frequency of complications and conversion rate to open cholecystectomy. P value ≤0.05 was considered statistical significant.

RESULTS

During the study period, in table 1 distribution of the patients according to their age group was done, majority of the patients i.e., 8(32%) in Group-A and 10(40%) in Group-B were recorded between 41-50 years of age, 4(16%) in Group-A and 3(12%) in Group-B were between 20-30 years, 6(24%) in Group-A and 7(28%) in Group-B were between 31-40 years, 7(28%) in Group-A and 5(20%) in Group-B were between 51-60 years of age, mean and sd was calculated as 40.21±3.33 in Group-A and 42.87±4.54 years in Group-B.

Gender distribution shows 11(44%) in Group-A and 15(60%) in Group-B females patients while 14(56%) in Group-A and 10(40%) in Group-B were male patients (Table 2).

In table 3, we recorded the post operative complications of laparoscopic cholecystectomy in both the groups, in Group-A, Injury to the biliary tree was found in 6(24%), wound infection in 8(32%), haematoma in 4(16%) and seroma in7(28%) while in Group-B, these values were found as Injury to the biliary in 17(68%), wound infection in 19(76%), haematoma in 10(40%) and seroma in 16(64%), which shows a significant difference in all complications.

Table 1: Age distribution of the subjects

Age(in years)	Group-A (n=25)	Group-B (n=25)
20-30	4(16%)	3(12%)
31-40	6(24%)	7(28%)
41-50	8(32%)	10(40%)
51-60	7(28%)	5(20%)
Mean± sd	40.21±3.33	42.87±4.54

Table 2: Gender of the subjects

Gender	Group-A(n=25)	Group-B (n=25)
Male	11(44%)	15(60%)
Female	14(56%)	10(40%)

In Group-B, we found maximum duration in 15(50%) i.e., 5-6 days, 8(26.66%) stayed for >6 days, 5(16.67%) for 3-4 days and only 2(6.67%) stayed for 1-2 days at hospital, mean duration was found as 6.53±1.05 (Table 4). Conversion to open cholecystectomy In Group-A was found in 4(16%) and 12(48%) in Group-B while 21(84%) in Group-A and 13(52%) in Group-B were not converted for O.C, this analysis shows a significant difference in both groups (Table 4)

Table 3: Operative Complications

Post Operative complications	Group-A (n=25)	Group-B (n=25)	P value
Injury to the biliary tree	6(24%)	17(68%)	0.01
Wound infection	8(32%)	19(76%)	0.00
Haematoma	4(16%)	10(40%)	0.00
Seroma	7(28%)	16(64%)	0.00

Table 4: Comparison of conversion to open cholecystectomy in both groups

Conversion to OC	Group-A (n=25)	Group-B (n=25)	P value
Yes	4(16%)	12(48%)	0.00
No	21(84%)	13(52%)	0.001

DISCUSSION

The first laparoscopic cholecystectomy (LC) was achieved by Mühe, another German surgeon, in 1985[16] and by 1988, Dubois had started to perform LC regularly[17]. Since then, LC, owing to its perceived efficacy in both rapid recovery and cosmesis, has rapidly become the treatment of choice for symptomatic gallstones in industrialized nations[18-20]. Today, the considerable experience acquired in minimal invasive surgery has led to LC's being the treatment of choice for AC[21-22].

Our findings regarding age is in agreement with a study conducted by Sher Mohammad, Thakur Hinduja, Saira Fatima at Larkana[23] who found 45.62 years as the mean age of the patients of acute cholycystitis and confirms that cholycystitis is common in elderly age group.

In our study, we analyzed gender distribution and found majority of the patients as females. These findings are also closely related to same study[23] mentioned above. In this study also, females were found in majority which clarifies that acute cholecystitis is common in females. Another local study conducted by Maratab Ali and colleagues[24] also found an increase incidence of females in acute cholecystitis.

Sorinel Lunca[25] elaborates that 15% patients developed complications in patients underwent early LC as compare to 30.76% patients with delayed/interval LC. Our results are comparable with this study, as we found delayed/interval LC with a significant higher risk of complications i.e. Injury to the biliary tree 24% versus 68%, wound infection in 32% versus 76%, haematoma in 16% versus 40% and seroma in 28% versus 64%.

Another meta-analysis of randomized controlled trials on the safety and effectiveness of early versus delayed laparoscopic cholecystectomy for acute cholecystitis by Gurusamy K, Samraj K, Gluud C, Wilson E, Davidson BR[26] describes that the total hospital stay was shorter by 4 days for ELC (mean difference -4.12(95%) i.e.,-5.22 to -3.03 days), though we did not include postoperative hospital stay in our study being the limitation of this study but the significant postoperative complications are the indication of longer hospital stay.

An average conversion rate of between 11% and 30% has been reported in several published prospective and retrospective series[27-30]. However, higher rates of conversion, up to 75%, must be expected in patients with gangrenous cholecystitis or gallbladder empyema.[31] Although the conversion rate for AC is high when compared with elective LC (4.5%–5.0%)[32,33]. It is far lower than in early series of patients with AC (35%–45%)[34,35].

Several factors and conditions associated with an increased risk for conversion to open surgery can be identified. Delayed surgical intervention after the first 96h of symptom onset is associated with a significant increased risk for conversion (23%–32%) when compared with early LC[36]. Furthermore, higher conversion rate is expected in elderly age group[27].

We summarized that the conversion rate and morbidity of laparoscopic cholecystectomy for patients with acute cholecystitis are not reduced by a period of initial confine conservative treatment. Early operation may be safer and has a definite socioeconomic benefit. For surgeons with adequate experience, the golden time of laparoscopic cholecystectomy for definitive treatment of acute cholecystitis is as soon after diagnosis as possible, within 72 hours of admission, and we believe that it may be a standard procedure in future.

However, we conclude that the advantages of early LC (under 72 hours from the onset of the symptoms) over delayed LC for AC regarding conversion rate, complications rate, and operative time. Early LC represents the optimal timing for AC treatment, the delays in AC treatment being unjustified, and generating lesser results.

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