

A Comparative Study of Early Vs Delayed Laparoscopic Cholecystectomy

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Abstract

Background: To compare early and delayed laparoscopic cholecystectomy. **Subjects & Methods:** Eighty four patients age ranged 20-60 years of both genders with complaint of acute cholecystitis reported to the Department of General surgery at Pt. Jawahar Lal Nehru Government Medical College and Hospital Chamba from April 2019 to March 2020 were divided into 2 groups of 42 each based on lottery system. Group A was early laparoscopic cholecystectomy and group B was delayed or late laparoscopic cholecystectomy. Parameters such as operative time, conversion to open cholecystectomy, Adhesions, biliary duct injury, wound infection and hospital stay was recorded. **Results:** Common clinical features were fever seen in 20 in group A and 23 in group B, pain abdomen in all patients in both groups, vomiting in 18 in group A and 12 in group B, jaundice in 3 in group A and 1 in group B and 23 in group A and 25 in group B were febrile. A significant difference was found between both groups. Multiple GB calculi was seen in 34 in group A and 36 in group B, pericystic fluid collection 22 in group A and 28 in group B, GB wall thickening 7 in both groups, conversion to open surgery was seen in 8 in group A and 12 in group B, adhesions 5 and 11, bleeding in 4 and 16, GB perforation in 2 and 3, bile duct injury in 1 and 3 in group A and B respectively. The mean duration of surgery in group A patients was 78.2 minutes and in group B was 118.2 minutes and hospital stay was 3.1 days in group A and 6.4 days in group B. A significant difference was observed ($P < 0.05$). Post op wound infection was seen in 3 in group A and 8 in group B, post op bile leak in 2 in group A and 5 in group B and post op jaundice in 1 and 4 in group A and B respectively. A significant difference was found between both groups ($P < 0.05$). **Conclusion:** Early cholecystectomy group had better results in terms of shorter hospital stay, less conversion to open surgery, less post-operative complications and duration of surgery.

Keywords: Acute cholecystitis, GB calculi, Jaundice, wound infection

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Introduction

Acute cholecystitis is a common general surgical emergency scene in various setting from district hospital to specialized tertiary level institutions.^[1] Acute cholecystitis is due to gallstones in up to 90% of patients the reported prevalence of gallstones is up to 10% in adult Eastern population and upto 15% in adult Western population.^[2] It is estimated that 20 to 40% of individuals with gallstones will develop associated symptoms and 12% will develop after cholecystitis.^[3]

Acute cholecystitis was traditionally treated with antibiotics and supportive treatment and cholecystectomy was performed after 6 weeks of the acute episode. The potential hazard of severe complications, if surgery is performed in an area of distorted anatomy caused by acute inflammation was the major concern.^[4]

Laparoscopic cholecystectomy has now replaced open cholecystectomy as a first choice of treatment for gallstones and information of the gallbladder unless contraindications are found with the laparoscopic approach.^[5] Initially the surgeons were bit apprehensive of performing laparoscopic cholecystectomy in acute attacks because in that case callots anatomy is distorted and not clear, gall bladder is distended, oedematous, adhesions are present with adjoining structures and tissues are friable with hypervascularity and congestion.^[6]

With the development in laparoscopic skills and equipment, laparoscopic cholecystectomy has been reported to have significantly lower complication rates than open cholecystectomy.^[7] Now-a-days, laparoscopic cholecystectomy for acute cholecystitis are mainly performed after the acute episode occurs while conservative therapy, usually antibiotics, and delayed laparoscopic cholecystectomy are still common in

many centers. Laparoscopic cholecystectomy is currently the gold standard treatment. [8] It has now become the procedure of choice unless it is contraindicated for technical reason or safety. [9] Early laparoscopic cholecystectomy if done in acute cases is associated with early recovery and shorter hospital stay however it is sometimes associated with high conversion rate and serious complications. [10] The aim of the present study was to compare early and delayed laparoscopic cholecystectomy.

Subjects and Methods

Eighty four patients age ranged 20-60 years of both genders with complaint of acute cholecystitis reported to the Department of General surgery at Pt. Jawahar Lal Nehru Government Medical College and Hospital Chamba from April 2019 to March 2020 were enrolled. The duration of the study was 1 year from April 2019 to March 2020. The inclusion of the patients into the study was done after all gave their written consent to participate. Inclusion criteria was patients with acute upper abdominal pain with tenderness under the right costal margin, fever more than 37.5 C and patients with leukocytosis. Exclusion criteria was patients with acute pancreatitis, cholangitis and choledocholithiasis.

All enrolled patients' case history with information related to them such as name, age, gender etc. was recorded. Careful thorough clinical examination was performed. All underwent ultrasonography (USG) which showed presence of positive sonographic Murphy's sign, distended gallbladder, gallstones, thickened > 4mm, edematous gallbladder and pericholecystic fluid. Laboratory examination comprised of CBC, renal function test, liver function test, GRBS, serum electrolytes, urine routine and microscopy.

Patients were divided into 2 groups of 41 each based on lottery system. Group A was early laparoscopic cholecystectomy and group B was delayed or late laparoscopic cholecystectomy. The early cholecystectomy was operated on within 24-72 hours of admission (25 patients), and the delayed cholecystectomy were started on conservative treatment and were discharged after a complete relief of symptoms and were called for laparoscopic cholecystectomy after 6 or 8 weeks, when the acute episode had subsided. Parameters such as operative time, conversion to open cholecystectomy, Adhesions, biliary duct injury, wound infection and hospital stay in days was recorded. Results of the present study were subjected for statistical inferences. The level of significance was significant if p value is below 0.05 and highly significant if it is less than 0.01.

Results

Maximum cases were seen in age group 50-60 years (males- 16, females- 19) followed by 40-50 years (males- 8, females-

12), age group 30-40 years (males- 6, females- 11) and age group 20-30 years (males- 4, females- 8). [Table 1].

Common clinical features were fever seen in 20 in group A and 23 in group B, pain in abdomen in all patients in both groups, vomiting in 18 in group A and 12 in group B, jaundice in 3 in group A and 1 in group B and 23 in group A and 25 in group B were febrile. A significant difference was found between both groups ($P < 0.05$). [Table 2, Figure 1].

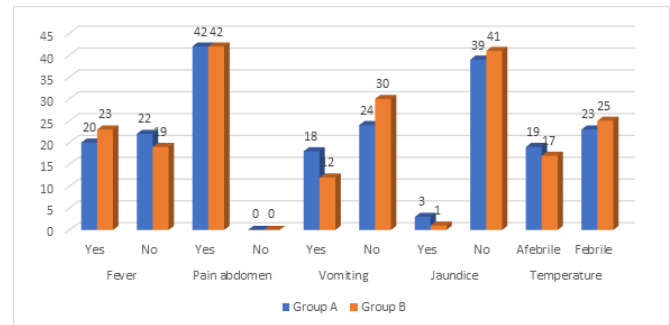


Figure 1: Comparison of clinical features

Total bilirubin was raised in 6 in group A and 5 in group B, AST 5 in group A and 2 in group B, ALT 7 in group A and 6 in group B and ALP 8 in group A and 7 in group B. A non-significant difference was found between both groups ($P > 0.05$). [Table 3].

Multiple GB calculi was seen in 34 in group A and 36 in group B, pericystic fluid collection 22 in group A and 28 in group B, GB wall thickening 7 in both groups, conversion to open surgery was seen in 8 in group A and 12 in group B, adhesions 5 and 11, bleeding in 4 and 16, GB perforation in 2 and 3, bile duct injury in 1 and 3 in group A and B respectively. Post op wound infection was seen in 3 in group A and 8 in group B, post op bile leak in 2 in group A and 5 in group B and post op jaundice in 1 and 4 in group A and B respectively. A significant difference was found between both groups ($P < 0.05$). [Table 4].

The mean duration of surgery in group A patients was 78.2 minutes and in group B was 118.2 minutes and hospital stay was 3.1 days in group A and 6.4 days in group B. A significant difference was observed ($P < 0.05$) [Figure 2].

Discussion

At the time of introduction of laparoscopic cholecystectomy, acute cholecystitis was a relative contraindication, but with increased experience, laparoscopic cholecystectomy has become the gold standard method to treat the condition. [11,12] Initially, laparoscopic cholecystectomy used to be done in selected cases, but with advances in instrumentation, better

Table 1: Age and gender distribution

Age groups (years)	Male	Female	Total
20-30	4	8	12
30-40	6	11	17
40-50	8	12	20
50-60	16	19	35
Total	34	50	84

Table 2: Comparison of clinical features

Clinical features	Parameters	Group A	Group B	P value
Fever	Yes	20	23	0.92
	No	22	19	
Pain in abdomen	Yes	42	42	1
	No	0	0	
Vomiting	Yes	18	12	0.05
	No	24	30	
Jaundice	Yes	3	1	0.02
	No	39	41	
Temperature	Afebrile	19	17	0.84
	Febrile	23	25	

Table 3: Comparison of laboratory investigations

Investigations	Parameters	Group A	Group B	P value
T. bilirubin	Normal	36	37	0.95
	Raised	6	5	
AST	Normal	37	40	0.92
	Raised	5	2	
ALT	Normal	35	36	0.83
	Raised	7	6	
ALP	Yes	34	35	0.81
	No	8	7	

Table 4: Other findings

Findings	Group A	Group B	P-value
Multiple GB calculi	34	36	0.97
Pericystic fluid collection	22	28	0.83
GB wall thickening	7	7	1
Conversion to open surgery	8	12	0.05
Adhesions	5	11	0.03
Bleeding	4	16	0.01
GB perforation	2	3	0.80
Bile duct injury	1	3	0.05
Post op wound infection	3	8	0.03
Post op Bile leak	2	5	0.04
Post op Jaundice	1	4	0.02

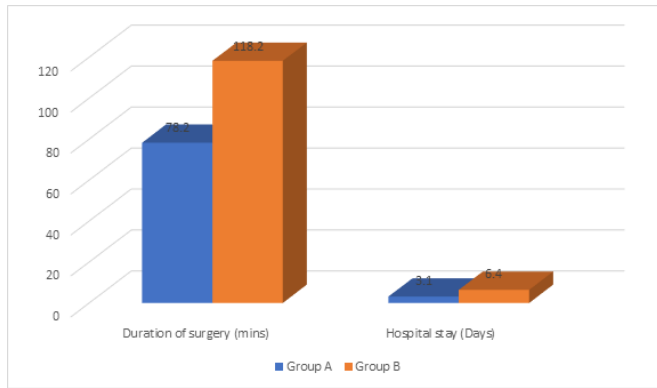


Figure 2: Comparison of duration of surgery and hospital stay

visualisation because of new generation cameras and optics, increasing knowledge about the anatomy of the hepato-biliary tree and the surrounding structures and improved surgical skills, surgeons started performing laparoscopic cholecystectomy even in acute cholecystitis, which was initially considered a relative contraindication. It is now the procedure of choice for patient presenting with acute cholecystitis unless it is contraindicated for technical reason or safety.^[13,14] The aim of the present study was to compare early and delayed laparoscopic cholecystectomy.

There were 84 patients of acute cholecystitis were divided into 2 groups, group A was early laparoscopic cholecystectomy and group B was delayed or late laparoscopic cholecystectomy. In present study maximum cases were seen in age group 50-60 years (males- 16, females- 19) and minimum in age group 20-30 years (males- 4, females- 8).

Chhajed et al,^[15] in their study on 50 acute cholecystitis patients were divided into two groups, early (less than 72 hours) and delayed (more than 72 hours up to 6 weeks) laparoscopic cholecystectomy. The result of this study revealed that conversion to open cholecystectomy and post-operative complications were significantly less in early laparoscopic cholecystectomy group in comparison to delayed laparoscopic cholecystectomy group. Mean days of hospital stay was 4.9 days in early in comparison to 7.4 days in delayed group. The mean days of return to full activities was 12.6 days in early and 16.3 days in delayed group which was statistically significant. Mean duration of surgery was significantly less in early laparoscopic surgery group as compared to delayed laparoscopic surgery group (69.3 versus 108.5 minutes).

In present study we found that common clinical features were fever, pain in abdomen, vomiting and jaundice in both groups. The difference was non- significant. Gopal et al,^[16] in their study on 50 patients of acute cholecystitis were divided into early laparoscopic cholecystectomy group, and delayed

laparoscopic cholecystectomy group. It showed that patients age varied from 8 to 75 years. The mean age of patients in group A was 42.25 ± 10.20 whereas mean age in group B was 44.60 ± 8.50 years. The mean duration of surgery in group A was 56.26 ± 7.40 minutes and in group B it was 54.30 ± 6.30 minutes. Duration of hospital stay was 5.10 ± 2.15 in group A whereas it was 9.80 ± 2.20 in group B which was statistically significant.

The results of our study showed that there was non- significant difference was found between both groups in terms of total bilirubin, AST, ALT and ALP. A study performed by Ozkerdes et al,^[17] 30 found calculi in the gallbladder on ultrasonography in all of the patients, and thickness of the anterior gallbladder wall was increased in 23 and 21 patients in the early and delayed laparoscopic cholecystectomy groups, respectively. Other ultrasonography findings were pericholecystic fluid seen in 5 patients each in early and delayed laparoscopic cholecystectomy groups.

It was seen in our study that delayed group exhibited higher multiple GB calculi, pericystic fluid collection, GB wall thickening, conversion to open surgery, adhesions, bleeding, GB perforation and bile duct injury. Post op wound infection, post op bile leak and jaundice was seen more in delayed group as compared to early group. Similarly, we observed that the mean duration of surgery was 78.2 minutes in group A patients and 118.2 minutes in group B and hospital stay was 3.1 days in group A and 6.4 days in group B patients. Uysal E et al,^[18] observed that there was no statistically significant difference in the duration of operation among the groups. A study by Chang TC et al,^[19] found that patients of early laparoscopic cholecystectomy had significantly longer operation time as compared to delayed laparoscopic cholecystectomy group (109 ± 37.59 minutes versus 77 ± 25.65 minutes, $p < 0.001$). Jarrar MS et al,^[20] reported that duration of surgery was 97 minutes in early laparoscopic cholecystectomy group and 82.17 minutes in delayed laparoscopic cholecystectomy group.

The limitation of our study was short duration and small sample size.

Conclusion

It was observed that early cholecystectomy group had better results in terms of shorter hospital stay, less conversion to open surgery, less post- operative complications and duration of surgery.

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