Research Paper

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Early Laproscopic Cholecystectomy as a Fruitful Tool For Acute Cholecystitis in The Patients of Lower Socioeconomic Domain

Medical Science

KEYWORDS : Acute cholecystitis(AC), Open cholecystectomy(OC), Laproscopic cholecystectomy(LC)

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ABSTRACT

Cholecystectomy in acute attack has been a subject of debate in recent past due to fear of increased morbidity. The need of early lap. Cholecystectomy in acute cholecystitis becomes more obvious particularly in the patients of lower socioeconomic domain, as once they are treated conservatively for acute attack they do not return till another attack or any complication develops. If gall bladder can be removed in acute attack these complications as well as major burden on the health care system can be reduced.The Aims and Objectives of the study was to compare the outcome of early vs delayed cholecystectomy in acute cholecystitis and to assess the feasibility of Laparoscopic cholecystectomy as a preferential method over open cholecystectomy particularly in the patients of lower socioeconomic domain. The study was done in 104 patients of lower socioeconomic status(class 5 of b.kuppuswamy 1971) between 2010 – 2013. Two groups were made. Patients of early group were operated early with in 96 hrs of onset of symptomes in same hospitalization, half by open and half by laparoscopic method. While patients of delayed surgery group were first managed conservatively and then operated after 6 weeks as interval cholecystectomy, half by open and half by laparoscopic method.There was no significant difference in operative time (71.55min. early vs 67.54min. delayed) and post operative complication ,with open cholecystectomy taking more time than lap. Cholecystectomy in both the group. There was a significant increase in the post op. hospital stay of 1.50 days (5.24days early vs 3.74 days delayed) in early surgery group, But the total mean hospital stay of early surgery group was significantly lower(7.34days early vs 11.32 delayed). Dropout rate of patients who didn't come for interval cholecystectomy on advised time was 46%. Most of these patients came back with another attack or some other complication. Average total cost of treatment was 32% less in early group. Conversion rate from open to lap was a little higher in early group(7.6% early vs 3.8% delayed) probably because relaxing criteria of early cholecystectomy from 72 hrs to 96 hrs. we concluded that whenever possible early surgical intervention should be tried in patients of lower socioeconomic domain suffering from AC, even up to 96 hrs after onset of symptoms . It gives the advantage of less overall hospital stay, less overall economical burden to the patient, reduces the work load of health care system, reduces the chances of recurrent episodes of cholecystitis and other gallstone related complications. LC is a safe, valid alternative to OC in these patients , providing all the advantages of minimal invasive surgery .

Introduction

Laparoscopic surgery has become the preferred method for performing cholecystectomy. But there is a considerable controversy regarding the timing of cholecystectomy in acute cholecystitis. During the recent past the preferred treatment for acute cholecystitis was conservative therapy followed by a delayed surgery after 6 weeks because of the fear of higher morbidity. Gall stone related problems forms a larger proportion of the patients admitted in most of the govt. institution. Most of these patients belong to lower socioeconomic domain. They are not so health conscious that once they are cured of acute attack they do not come to hospital, till another attack comes or complication develops. If gall bladder can be removed in acute attack many complications like biliary pancreatitis, choledocholithiasis ,gangrenous cholecystitis, empyema or perforation of gall bladder can be prevented, as well as major burden on the health care system can be reduced. Initial studies, however have shown that early lap cholecystectomy can be done in acute cholecystitis. [1,2,3] The Aims and Objectives of the study was to compare the outcome of early vs delayed cholecystectomy in acute cholecystitis and to assess the feasibility of Laparoscopic cholecystectomy as a preferential method over open cholecystectomy in acute cholecystitis particularly in the patients of lower socioeconomic domain.

Methods: The study was done in patients of lower socioeconomic status (class 5 according to B.kuppuswamy 1971),of either sex and all ages admitted with symptoms of Acute cholecystitis(AC) in The Department of Surgery, Sardar Patel Medical College Bikaner between 2010 – 2013. Study protocols were approved by hospital ethical committee. Total no. of patients in the study was 104. The patients were assigned to one of the two groups each consisting of 52 patients allocated randomly. The study was prospective and randomized. Randomization was done by using the table of randome numbers.

Group I (Early surgery group): All the patients of this group were operated early(with in 96 hrs of onset of symptomes) in same hospitalization as early cholecystectomy, half by open and half by laparoscopic method.

Group II (Delayed surgery group): All the patients of this group were first managed conservatively and then operated after 6 weeks as interval cholecystectomy, half by open and half by laparoscopic method.

Diagnosis of AC was based on combination of classical clinical findings and laboratory investigations, USG findings(gall stones with thickened and edematous GB with pericholecystic fluid collection),intraoperative findings and histopathological features revealing the presence of AC .The result of two groups was compared. In the intraoperative period following parameters were compared: duration of surgery, CBD injury , difficulty in dissection, conversion to open cholecystectomy(OC), Requirement of drains. In the post operative period the following parameters were compared: Analgesic requirement,duration of postoperative stay,Wound related complications. In the Interval period: recurrent episodes of cholecystitis, pancreatitis, obstructive jaundice, gangrenous cholecystitis. Besides that Coast effectiveness and Mean total hospital stay which includes total day spent in the hospital during the first admission in early surgery group and total days during first admission, intercurrent admission for recurrent attack and second admission for elective surgery in delayed group. Laproscopic cholecystectomy (LC) was done using universal four port technique and OC by using traditional right sub costal incision. Statistical analysis was done using paired t-test and chi-square test.p value less than 0.05 was considered significant.

Results: Average age for patient presenting with acute calculus cholecystitis was 42 yrs. AC was more common in 31-40 yrs age. The average ratio for female to male is 5.25: 1. The commonest presenting symptom was pain in right upper quadrant followed by Nausea and Vomiting. Ultrasonography was diagnostic modality of choice with sensitivity of almost 100 for detecting cholelithiasis. 73 % of patients had leucocytosis. The average no. of acute attacks before the patient reaches to the tertiary level of health care was 2.10. The drop out rate of the group 2 patients who didn't came on prescribed time was 46 % . Average time between symptoms onset and admission was 52 hrs. Average time between admission and operation was 36 hrs. The most common intraoperative pathology for early surgery group was edematous and inflamed GB with omental adhesions around the GB. Five patients had thickened GB wall making grasping and manipulation of GB difficult. Two patient had GB lump made up of thickened and edematous GB densely adherent to surrounding structures like omentum, colon, duodenum etc in which fundus first method was used. 3 patients had pericholecystic collection ,thorough peritoneal lavage and irrigation was done with saline. Slightly turbid bile was present in 3 patients of early group indicating impending empyema. Two patients had empyema GB with infected bile. One patient had gangrenous GB with friable wall. The most common intraoperative finding in delayed surgery group was simple GB followed by mild grade omental adhesions around the GB. So dissection was easy without much difficulty. Out of 26 cases operated by LC in early group, in 2 cases LC has to be converted in to OC (conversion rate 7.6 %). Only one patient in the delayed group required conversion(3.8%). 3 patients in early group and 1 patient in delayed group required cholecystectomy by fundus first method. There was no significant difference in operative time (71.55min. early vs 67.54min. delayed) and post operative complication ,with open cholecystectomy taking more time than lap. Cholecystectomy in both the group. (see table no. 1).

Table no. 1- Average Operating time

Procedure	Early Group	Delayed Group
Open Chole.	74.92 min	70.80 min
Lap Chole.	68.18 min	64.28 min
Average Operating time (in minutes)	71.55 min.(SD ± 12.128)	67.54 min (SD ± 11.178)

Student's T value – 1.861 ,P value - 0.066 (>0.05)(non significant)

The only intra operative complication we observed in our series was injury to liver in the form of minute superficial lacerations and stone spillage (10% in early vs 4% delayed) (Chi square $\chi 2$ value – 2.837, P value - > 0.05 non significant. The only postoperative complication occurred in our series was superficial wound infection and postoperative bile leak in the sub hepatic drain(14% in early vs 8% in delayed)(Chi square $\chi 2$ value – 0.0919 ,P value - > 0.05 (0.338) statistically non significant. Early group needed the intraabdominal drain a little more in comparison to delayed group due to more oozing and more aggressive dissection. There was a significant increase in the post op. hospital stay of 1.50 days (5.24days early vs 3.74 days delayed) in early surgery group (see table no. 2) But the total mean hospital stay of early surgery group was significantly lower(7.34days early vs 11.32 delayed) (see table 3).

Table 2 – Average Post Operative Hopital Stay

Procedure	Early Groutp	Delayed Group
Open Chole.	5.72 days	4.64 days
Lap Chole.	4.8 days	2.84 days
Average Post Operative Hopital Stay (in Days)	5.24 (SD ± 1.685)	3.74 (SD ± 1.840)

Student's T test value – 4.253 P value - < 0.001(significant)

Table 3 – Mean Total Hopital Stay

Procedure	Early Group(Admitted and Operated in single admission)	Delayed Group(Admitted in first and Operated in second admission)
Open Chole.	7.80 days	12.60 days
Lap Chole.	6.88 days	10.40 days
Average Mean Total Hopital Stay(in Days)	7.34 days (SD ± 2.066)	11.32 days(SD ± 3.353)

Student's T test value – 7.145 .P value - <0.001(significant)

Discussion : Data obtained here shows that most of the patient didn't come to the tertiary level of health care until they have suffered 2-3 attack of acute cholecystitis. The delay in hospital admission was mainly due to local socioeconomic conditions, low education level as well as less awareness about health in the population. Also most of these people once discharged after settling of acute episode, do not come at mentioned time for interval cholecystectomy or even for follow up until they develop any complication or next episode of cholecystitis. And If they comes, they are generally very late in the course of disease. The cause of this delay was that most of these peripheral region peoples try their home remedies or consult to local doctor or quakes. Due to patients late reporting, criteria for early cholecystectomy was relaxed from 72 to 96 hrs.[4] All the patient of early group were tried to operate as soon as possible in the constraint of hospital administration. During operation the odd findings which we found was mostly seen in patients who comes late or who was having recurrent attack of AC. So by doing Early cholecystectomy in these patients on their very first attack, these conditions creating some difficulty during procedure can be prevented. Conversion rate from Lap. to open was a little higher in early group.[5,6,7] The reason was dense adhesion and inflammation at the Calot's and around the gall bladder obscuring the anatomy of Calot's and making the dissection difficult. [8] However it depends on surgeon's experience as well as on the time when patient undergone surgery after onset of symptoms. Patients who are operated in their very first attack and early in the course of disease(even up to 96 hrs after attack) are more likely to complete their procedure laparoscopicaly. Due to presence of pericholecystic inflammation and adhesions , the tissue were more friable and the oozing at the operative site was more in early surgery group in comparison to delayed group. At early stage of disease inflammation and tissue edema was widespread and amount of adhesion and necrosis was less. Despite the presence of cholecystic and pericholecystic inflammation, cleavage plains were easily available without much technical difficulty in dissection. In most of the acute cases GB wall was thickened and edematous, and this outer wall edema provided the plain the plane for cleavage between the liver and the GB facilitating enucleation and making cholecystectomy less difficult during early period. At the later stage there is induration, necrosis, abscesses formation an dense fibrous adhesions making dissection difficult.In early group the adhesions became more dense in patient who operated later in comparison to those who operated earlier after onset of the attack.There was no significant difference in operative time and intra operative complication, with open cholecystectomy taking more time than laparoscopic cholecystectomy in both the group due to ligation of cystic artery and ducts by liga clips and less time in closure. The average post operative hospital stay was significantly higher in Early group due to the difference between preoperative conditions of the patient between both the groups, more prolong ileus in early group due to presence of inflammation, more prolong proce-

dure, more amount of dissection. In both the group laparoscopicaly operated patient had less postoperative stay. Total hospital stay includes day spent in the hospital during the first admission in early surgery group. In delayed group it includes total days during first admission , intercurrent admission for recurrent attack and second admission for elective surgery. Six patients in the delayed group developed intercurrent attack of cholecystitis in the interval period which needed hospitalization for an average 5 days, further increasing their hospital day and economical burden. Two patients developed choledocholithiasis in the interval period due to the passage of stone in to CBD. One patient developd Billiary pancreatitis. One patient developed cholecystoduodenal fistula which was diagnosed intraoperatively and treated accordingly. Decreased total length of hospitalization is one of the biggest gain in early surgery group. In was 7.34 days in early group and 11.32 days for delayed group. So over all there is gain of 3.98 days of hospitalization in early group. In both the group laparoscopicaly operated patient had less mean total hospital stay in comparison to patient who operated by open method. This shows that early intervention significantly decrease the total hospital stay of the patient. This decrease length of hospitalization ultimately results in cost effectiveness of early surgery group over delayed surgery group due to early returns to work and productivity in early surgery group as well as decrease work load on health care system. On an average total cost of treatment is 32 % less expensive in early surgery group in comparison to delayed surgery group. Also this increased hospital stay in delayed group delays in return to work further increasing the economical loss to the patient. Overall comparison of both the group can be seen in table below (See table 4)

Table 4 : Comparison between Early and Delayed Surgery Group

S.N	Criteria	Early Surgery Group	Delayed Surgery Group
1.	Rate of Intra operative complication	10%	4%
2.	Conversion rate from LC to OC	7.6%	3.8%
3.	Average operative time (min.)	71.55 (SD ± 12.128)	67.54 (SD ± 11.178)
4.	Post op. complication rate	14%	6%
5.	Intraabdominal drain placement	28%	18%
6.	Average postoperative hospital stay (in days)	5.24	3.74
7.	Mean total hospital stay (in days)	7.34 (SD ± 2.066)	11.32 (SD ± 3.353)
8.	Average cost of treatment	32% less	

Conclusion

So, with these findings observed during our study we concluded that AC is a disease that affects the people for their productivity and ultimately economically due to its recurrent nature. Operative intervention in Acute calculus cholecystitis should be performed as early as possible after onset of the symptoms even up to 96 hrs ,in their very first episode. This early intervention is associated with reduced total hospital stay, reduced chances of recurrent cholecystitis and gall stone related other problems, reduced morbidity, more cost effectiveness and reduced workload on health care system compared to delayed surgery .Laparoscopic cholecystectomy clearly has its advantage over Open cholecystectomy in acute cholecystitis in the form of less post operative morbidity, more patient compliance ,and early post operative recovery .

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