# CHOLECYSTECTOMY IN ACUTE CHOLECYSTITIS

Pages with reference to book, From 112 To 115

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## ABSTRACT

Of 130 patients admitted with acute cholecystitis, 100 were selected for a prospective study comparing the risks and benefits of early cholecystectomy versus initial conservative management followed by elective surgery. Comparative evaluation was carried out regarding operative difficulties and mishaps, postoperative complications, duration of hospitalization and compliance for surgery. Early cholecystectomy has advantage in terms of quick definitive treatment, completion of therapy in one hospital admission and salvage from serious complications of acute cholecystitis. Operative difficulties and mishaps and postoperative complications are comparable with delayed surgery. It obviates the danger of non-compliance by not reporting on the scheduled appointment. But it should be undertaken by an experienced surgeon and antibiotics should be administered prophylactically and following surgery to decrease the chances of septic complications. With these provisions it can be recommended as a treatment of choice for acute cholecystitis if the diagnosis can be established with confidence (JPMA42:1 12,1992).

## INTRODUCTION

Acute cholecystitis has been traditionally managed conservatively by LV. fluids, gut rest by keeping the patient nil by mouth, combined with nasogastric Suction in severe cases, analgesics and antibiotics[1]. This usually resolves the acute inflammation but may be followed by another attack. Elective cholecystectomy is advised during the quiescent phase. Advocates of this delayed approach believe that surgery during the quiescent phase is without diagnostic pitfalls, less hazardous and has lesser postoperative morbidity and mortality[2]. This leaves a proportion of patients in whom the acute attack does not subside and leads to serious and possibly life threatening complications necessitating urgent surgical intervention[3]. This regimen entails at least two hospital admissions with their associated socioeconomic drawbacks[4]. Moreover, some patients may not turn up for elective surgery and will report only when another attack ensues or some complication takes place. During the past few decades a more aggressive approach towards acute cholecystitis has been adopted by the surgeons in an effort to overcome the drawbacks of orthodox delayed surgical approach[5]. A comparative study was undertaken in East Surgical Ward to compare the risks and benefits of early cholecystectomy versus initial conservative management followed by elective surgery on patients admitted with the problem of acute cholecystitis.

## PATIENTS, METHODS AND RESULTS

One hundred and thirty patients were admitted with the diagnosis of acute cholecystitis between April, 1990 and September, 1991 (18 months) in East Surgical Ward, Mayo Hospital, Lahore. Of these, 19 patients were excluded either because of symptoms lasting for over 7 days, non-compliance, diffuse peritonitis, were unfit for surgery or had haemorrhagic pancreatitis. The remaining 111 patients were allocated at random into early (52 patients) and delayed (59 patients) surgery group. Two patients from the former group refused surgery and nine patients from the latter group did not turn up on the scheduled appointment. Out of 100 patients (50 in each group) eighty-two were admitted through

emergency and 18 through the out patients department. There were 9 males and 41 females in early surgery group and 10 males and 40 females in delayed surgery group. Overall male to female ratio was 1:4.3 with majority in 41-50 years age group. The diagnosis in all patients was clinical, confirmed by ultrasonography which revealed cholelithiasis in all. Patients in early surgery group were operated within 48-72 hours of admission i.e., on the first elective list while those of delayed surgery group were managed conservatively and discharged after subsiding of acute symptoms to report back after 8-12 weeks for elective surgery. They were also advised to report early if another attack ensued or a complication developed. Preoperative management was similar in both groups and consisted of I.V. fluids, analgesics, antibiotics and gut rest. Only two antibiotics i.e., ampicillin or cephradine were used to reduce the number of variables in the trial. Surgery was performed by one of the consultant surgeons to ensure a minimum standard of competence. Duration between the onset of symptoms and operation for the early surgery group varied between 2-7 days with majority (43) having symptoms for 4-7 days. Important features pertaining to surgery for the two groups are given in

**Table I. Salient features pertaining to surgery in the two groups.**

| No. | Features | Early surgery No. | (%) | Delayed surgery No. | (%) |
|---|---|---|---|---|---|
| 1. | Incisions | | | | |
| | i. Rt. subcostal | 44 | (88) | 47 | (94) |
| | ii. Rt. paramedian | 6 | (21) | 3 | (6) |
| 2. | Method of dissection | | | | |
| | i. Retrograde | 45 | (90) | 48 | (96) |
| | ii Antegrade | 5 | (10) | 2 | (4) |
| 3. | Operative findings | | | | |
| | i. Cholelithiasis | 50 | (100) | 50 | (100) |
| | ii. Acute cholecystitis | 27 | (54) | - | |
| | iii. Acute or chronic cholecystitis | 8 | (16) | 8 | (16) |
| | iv. Chronic cholecystitis | - | | 39 | (78) |
| | v. Empyema G.B. | 7 | (14) | 3 | (6) |
| | vi. Patchy gangrene of the wall | 4 | (8) | - | |
| | vii. Localized perforation | 3 | (6) | - | |
| | viii. Carcinoma G.B. with acute cholecystitis | 1 | (2) | - | |
| 4. | Stone C.B.D. | 3 | (6) | 4 | (6) |
| 5. | Subjective assessment of the surgeons | | | | |
| | i. Easy | 36 | (72) | 33 | (66) |
| | ii. Moderately difficult | 11 | (22) | 10 | (20) |
| | iii. Very difficult | 3 | (6) | 7 | (14) |
| 6. | Operative mishaps | | | | |
| | i. C.B.D. injury | - | | 2 | (4) |
| | ii. Duodenal injury | 1 | (2) | - | |

Table I and postoperative events are summarised in Table II.

**Table II. Post-operative complications in the two groups.**

| No. | Features | Early surgery No. | (%) | Delayed surgery Nó. | (%) |
|---|---|---|---|---|---|
| 1. | Post-operative complications | | | | |
| | i. Wound infection | 6 | (12) | 4 | (8) |
| | ii. Respiratory tract infection | 3 | (6) | 3 | (6) |
| | iii. Prolonged ileus | 1 | (2) | 1 | (2) |
| | iv. Hyperpyrexia | - | | 1( | 2) |
| | v. Subphrenic collection | 1 | (2) | | |
| 2. | Follow-up | | | | |
| | i. Dyspepsia | 1 | (2) | 3 | (6) |
| | ii. Scar pain | 3 | (6) | 2 | (4) |
| | iii. Recurrence of symptoms | - | | 1 | (2) |
| 3. | Mortality | 1 | (2) | 2 | (4) |

The operative criteria for diagnosis of acute cholecystitis included swelling, oedema of the gallbladder wall, acute haemorrhages on the serosal surface and thin flakes of adhesions with the surrounding structures, patchy gangrene, perforation or an empyema. All galibladders removed were subjected to histopathological examination and the findings of the pathologist were co-related with the clinical impression of the surgeon about the nature of pathology. In cases of disparity, reliance was made on the report of histopathologist which arose in 7 patients from the early surgery group and 5 patients from the delayed surgery group. All patients from the early surgery group were admitted only once while 39 patients from the delayed surgery group were admitted twice, 9 patients thrice and 2 patients four times. The duration of hospitalization for both groups is given in Table III.

**Table III. Duration of hospitalization.**

| No. | Days | Early surgery | Delayed surgery | |
|---|---|---|---|---|
| | | | 1st admission | Operative admission |
| 1. | 5 days | - | 26 | 3 |
| 2. | 6-10 days | 37 | 22 | 36 |
| 3. | 11-15 days | 6 | 2 | 5 |
| 4. | 16-20 days | 5 | - | 4 |
| 5. | More than 20 days | 2 | - | 2 |
| | Total | 50 | 50 | 50 |
| | Mean | 10 days | 6 days | 9 days |

For the purpose of clarity only the stay during surgery for both groups and stay during 1st admission of delayed surgery group are shown. Overall there were three deaths in 100 patients, one in early and two

in delayed surgery group. The patient in early surgery group had subphrenic collection which was drained but the patient expired on the third post-operative day following re-exploration. Out of two patients from delayed surgery group, one had myocardial infarction on the second post-operative day and the other had marked cirrhosis of liver, developed haematemesis and went into hepatic coma which proved fatal. The comparative benefits of the two regimens are summarized in Table IV.

**Table IV. Advantages of early and delayed surgical regimens for acute cholecystitis.**

| | Early surgery | | Delayed surgery |
|---|---|---|---|
| 1. | Avoids complications of acute infection like gangrene, perforation and peritonitis. | 1. | Major procedure under best of circumstances in a stable patient |
| 2. | Quick definitive treatment | 2. | No diagnostic pitfalls |
| 3. | Shorter hospital stay | 3. | Technically easy? |
| 4. | Higher compliance | 4. | Low incidence of wound infection |

## DISCUSSION

The concept of early cholecystectomy for acute cholecystitis is rather new. Majority of surgeons advocated initial conservative management followed by an elective cholecystectomy till the recent past. Urgent surgical intervention was reserved for patients who did not respond to this conservative management[6]. Although Aird described the benefits of early cholecystectomy in acute cholecystitis as early as 1958[7] but the first clinical trial comparing the benefits and risks of early surgical intervention over delayed operation was reported by van der Linden and Sunzel in 1970 which favoured early surgery although not unequivocally[8]. Early cholecystectomy must be differentiated fzom urgent cholecystectomy which is usually carried out'on the day of admission or within next 24 hours as an emergency procedure[9]. An early cholecystectomy is a planned surgery carried out 24-72 hours after admission, on the first regular list, thus allowing time for confirmation of diagnosis, partial control of symptoms and correction of fluid and electrolyte imbalance[10]. Patients with duration of symptoms for more than 7 days were excluded for reasons that bacterial contamination and risk of septic complications increases after this period[11] and that acute phase becomes subacute with formation of abscesses and necrosis in the wall of gallbladder which leads to operative difficulties[12]. There are no standard criteria laid down in the literature about the ease or difficulties of technique during cholecystectomy. Indirect criteria may be used to decide the ease of operation[13]. Criteria used during this study were the method of dissection, nature of local pathology, post-operative complications and duration of hospitalization. Direct assessment was made by the opinion of the surgeon immediately after surgery and by operative mishaps It is generally agreed that cholecystectomy should be performed by retrograde or neck first method[15]. Adoption of antegrade or fundus first method is taken as an inability to identify the structures in the Calot's triangle[15]. As more patients (10%) from early surgery group and less patients (4%) from the delayed surgery group were operated upon by fundus first method, it can be concluded that dissection was easy in the quiescent phase. But as in no patient cholecystectomy was technically impossible, the problems faced during dissection were not

unsurmountable. Even then in operations for acute cholecystitis the need for surgical expertise is to be emphasized[16]. Analysis of operative findings in patients of early surgery for acute cholecystitis revealed that in 14 (28%) patients the inflammatory process had progressed to the stage of irreversibility i.e., (patchy gangrene 4, localized perforation 3 and empyema 7) which would have not responded to conservative measures and had been potential candidates for urgent surgery. By adopting the policy of early surgery for acute cholecystitis these patients were operated upon in time and pathological process did not extend to the stage of peritonitis due to gangrene of the gall-bladder or a free perforation into the peritoneal cavity. Surgery at such a stage is technically difficult and fraught with high morbidity and mortality[17]. Opinions are widely divergent about the technical difficulties of operation during the acute phase and quiescent stage. Molholland for instance believes that careful dissection is more difficult in the acute stage[18] whereas Ellison postulates that operation is technically easier due to the development of a cleavage plane between the gallbladder and the surrounding structures facilitating its enucleation[19]. In this series subjective assessment of the surgeons revealed that 72% patients from the early surgery group and 66% patients from the delayed surgery group had "easy" operation while 6% patients from the former group and 14% from the latter group had "very difficult" surgery. This is also reflected by analysis of operative mishaps in which one patient had injury to the duodenum from the early surgery group and two patients, to the C.B.D. from the delayed surgery group. The former patient had carcinoma which had infiltrated the surrounding tissues. Delaying surgery and subjecting the patient to repeated attacks induces fibrosis adding to the technical difficulties of the operation[20]. Waiting for 8-10 weeks does not necessarily lead to complete resolution of infection as 8 patients had acute chronic cholecystitis and. 3 had empyema from the delayed surgery group. Wound infection was more common in the early surgery group. The only patient of subphrenic collection also belonged to this group. These complications are reflected in the marginally prolonged hospital stay in the early surgery group (average 10 days) than delayed surgery group (average 9 days) during surgery. Patients while waiting for surgery may suffer from repeated attacks as 9 patients (18%) needed one additional and two patients (4%) needed two additional hospital admissions before they were subjected to surgery. This additional morbidity can be avoided by adopting an early surgery regimen[21,22]. Follow-up revealed that more patients had symptomatic relief following early surgical intervention than by those operated upon by delayed regimen. One argument against early surgery in acute cholecystitis is the possibility of erroneous diagnosis[23]. In this series only patients with cholelithiasis onultrasonography and acute pain in RHC were selected for study and this aspect was not investigated specifically, although it is now possible by latest diagnostic modalities to reduce the number of missed diagnosis to as low as 2.2.9%[24,25]. One disadvantage of delaying surgery observed during this study was a high percentage (18%) of non-compliance by the patients to report for surgery on the scheduled date. Similar non-compliance has also been reported by other workers[26].

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