

AAEM Clinical Practice Committee Statement

Timing of Acute Cholecystectomy in the Emergency Department Patient with Acute Cholecystitis (1/27/2015)

Chair: Steven Rosenbaum

Author: Arasi Thangavelu, MD FAAEM

Reviewers: Eric Bruno, MD FAAEM

Lisa Mills, MD FAAEM

Robert Sherwin, MD FAAEM

Reviewed and approved by the AAEM Board of Directors (1/27/2015).

POSITION STATEMENT

Current evidence suggests that patients with acute cholecystitis who are under 70 years of age and without risk factors should undergo early cholecystectomy during their initial hospital stay, preferably within 24-48 hours after onset of symptoms.

DISCUSSION

Acute cholecystitis (AC) is an acute inflammation of the gallbladder. In the US, gallstones are present in over 90% of cases of AC. In the remaining 5-10% of cases, gallstones are not identified, and hence referred to as "acalculous cholecystitis". (1). Choledocholithiasis is defined as the presence of gallstones in the bile duct. In these cases, an ERCP (Endoscopic Retrograde Cholangiopancreatography) is performed to cut the sphincter connecting the common bile duct to the duodenum, to allow the stone to pass into the intestine, relieving the obstruction. Cholecystectomy currently remains the standard treatment for AC. There has been a lot of controversy about the timing of cholecystectomy. This paper addresses previous recommendations, and the most current recommendations.

AC is caused by obstruction to gallbladder drainage leading to an increase in intraluminal pressure, gallbladder distention, and wall edema that may progress to venous and lymphatic obstruction, ischemia, necrosis, and perforation (1). Persistent obstruction causes a mediating chemical inflammatory response that may result in bacterial contamination, causing AC, ascending cholangitis and possibly pancreatitis. However, neither symptoms nor lab values have been found to be very specific or sensitive for the diagnosis of acute cholecystitis. Hepatobiliary ultrasound is the initial diagnostic study of choice (20). Biliary Scintigraphy is the gold standard for diagnosis of acute cystic duct obstruction. However, this has reduced specificity in patients with hepatic impairment, patients' on parenteral nutrition, in a fasting state and can be positive in patients with chronic cholecystitis. (1).

In the early years of laparoscopic surgery, AC was regarded as a relative contraindication for laparoscopic cholecystectomy. Recent studies have shown it to be a feasible and safe procedure. (4). In about 20-30% of

cases, the procedure may be complicated and unsafe demanding conversion to open cholecystectomy. Patients who undergo an open cholecystectomy have a higher post-operative complication rate and require a longer sick leave compared to patients with laparoscopic cholecystectomy (5). Postoperative hospital stay in the laparoscopic group was 5.1 days as compared to 10.5 days in the open group. (6). Reasons for conversion to open cholecystectomy include severe inflammation and adhesions around Calot's triangle (the region in the liver bed bounded by the cystic artery, cystic duct and common hepatic duct), which can obscure its anatomy and plane of dissection, and uncontrolled bleeding. (7). Current standard of care for patients with AC is laparoscopic cholecystectomy, which is performed in 80% of cases. (8, 9, 10).

There has been a great deal of controversy over the optimal timing of laparoscopic cholecystectomy for AC. There are many articles comparing early vs delayed cholecystectomy. Early laparoscopic cholecystectomy (ELC) is defined as surgery being performed within 24-48 hours after the onset of symptoms, and in some articles even up to 7 days after onset. Definition of delayed laparoscopic cholecystectomy (DLC) varies in articles ranging from 3 days post symptoms and up to 6-12 weeks. In one study, ELC for AC was superior to DLC as it results in an overall better quality of life such as waiting period for surgery, shorter hospital stay (4 vs 7 days), without any significant difference in perioperative mortality and morbidity. Patients who are eligible for laparoscopic cholecystectomy presenting with symptoms less than 7 day duration, should have ELC (11) done preferably within 48 hours of admission. This will limit formation of dense inflammatory adhesions around the gallbladder and porta hepatis, decreasing risk of conversion to open cholecystectomy. (12, 4). The insurance payment for loss of working capacity was also lower in patients with ELC (13). In five various trials, 18.3% of patients who underwent DLC, had non-resolution of symptoms before their planned surgery and had to undergo emergency laparoscopic cholecystectomy. 45% of these cases required conversion to open cholecystectomy (8). Apart from a shorter operating time, treating patients with DLC does not offer additional benefit (11). A randomized trial (ACDC study) concluded that morbidity rates were significantly lower in the ELC than DLC. Mean length of hospital stay and total hospital cost were significantly lower in ELC. (21). Patients assigned to early cholecystectomy (that is surgery within 24 hours of presentation to the hospital) had one-third the morbidity, markedly shorter hospital length of stay, and correspondingly lower hospital costs, compared to patients who underwent surgery on day 7-45. Morbidity included cholangitis, pancreatitis, biliary leak, stroke, myocardial infarction, abscess, bleeding, peritonitis, infection, and renal failure. (22). One in five patients failed the elective cholecystectomy pathway after ED discharge, leading to additional patient distress and use of resources. (23). A new [Mayo Clinic](#) study found that 1 in 5 patients who went to the emergency department with gallbladder pain and were sent home to schedule surgery returned to the ER within 30 days needing emergency cholecystectomy. Research suggests that the surgical complication rate rises with the time lag before surgery. (24). However, it is important to understand that "all the trials were at high risk of bias. This was mainly due to lack of blinding which is difficult or impossible to achieve". (7).

Cholecystectomy remains the reference standard for the treatment of AC in patients under the age of 70. However, in patients over 70, with risk factors, a conservative initial management might be recommended. This is due to higher perioperative mortality rates (up to 19%) in the elderly or critically ill due to increased co-morbidities, making this population less suitable candidates for general anesthesia (14). Percutaneous cholecystostomy (with an 80% improvement within 5 days of placement), or intravenous antibiotics may be chosen as initial management (15).

The controversy surrounding timing of laparoscopic cholecystectomy continues. Delayed cholecystectomy in the US is a result of lack of operating room availability or in situations where conservative management fails (18). It was initially thought that conservative management with interval elective surgery would avoid severe complications and higher conversion rates in the setting of acute inflammation. However, current evidence suggests that patients with AC who are under 70 years of age and without risk factors should undergo early cholecystectomy during their initial hospital stay, preferably within 24-48 hours after onset of symptoms.

Acknowledgement

The author would like to thank Drs. Devi Thangavelu and Steven Rosenbaum for their wonderful help in completing this paper.