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# SERIAL MONITORING OF SODIUM A HELPFUL INDICATOR TO PREDICT ANASTOMOTIC LEAKAGE.

General Surgery

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## ABSTRACT

Pericholecystic collection has long been linked to difficult cholecystectomy and high conversion rates. In this study using a preoperative ultrasonography findings to detect pericholecystic fluid, we have assessed conversion to open in the patients to see whether a relationship is present between pericholecystic fluid and difficult cholecystectomies. It was found that a statistically highly significant association was present between pericholecystic collection and conversion to open surgery ($p < 0.001$). Patients with significant pericholecystic fluid had a much higher conversion rate (50%) compared to those with little or no collection. This showcased that the presence of pericholecystic collection leads to difficult cholecystectomies and worse patient outcomes.

## KEYWORDS

cholecystectomy, ultasonography, conversion to open, pericholecystic collection

## INTRODUCTION

Cholelithiasis is among the most frequently encountered digestive disorders and was traditionally managed through conventional laparoscopic or open cholecystectomy. Laparoscopic cholecystectomy (LC) has revolutionized surgical management by introducing minimally invasive techniques as a standard approach. Historically, the first open cholecystectomy for gallstone disease was carried out by Karl Langenbuch in 1882. Laparoscopic cholecystectomy (LC) has emerged as the procedure of choice for managing cholelithiasis, replacing the traditional open cholecystectomy in most cases. This minimally invasive technique is now used in over 80% of cholecystectomy procedures worldwide, reflecting its widespread acceptance and success in clinical practice.

Ultrasonography remains the preferred imaging modality for patients undergoing laparoscopic cholecystectomy for various gallbladder conditions. It is cost-effective, noninvasive, free from radiation exposure, and widely accessible. Ultrasound can accurately measure gallbladder wall thickness to within 1 mm in approximately 93% of cases. It also offers important insights into the presence of pericholecystic fluid, the state of intrahepatic bile ducts, and the morphology of the common bile duct. It may also raise preoperative suspicion of malignancy based on abnormal wall thickening. In this study, we assessed pericholecystic collection in patients undergoing laparoscopic cholecystectomy to evaluate its role in conversion to open cholecystectomy.

### Aim

To evaluate the association of pericholecystic collection with conversion to open cholecystectomy

## METHODS

### Ethics

The study was approved by the Institutional Review Board and Research Ethics Committee of Mahatma Gandhi Hospital, Jaipur. As this was a retrospective analysis utilising anonymised data routinely collected during clinical care, the requirement for informed consent from patients was waived.

### Patient Data

This retrospective study analysed patients who underwent colorectal surgery at Mahatma Gandhi Hospital, Jaipur, between January 2024 and December 2024. The inclusion criteria included patients exhibiting clinical features suggestive of cholelithiasis and confirmed through abdominal ultrasonography who underwent laparoscopic cholecystectomy. The exclusion criteria included patients with a history of prior abdominal operations; patients with common bile duct calculus; patients with suspicion of ca gall bladder or showing features of obstructive jaundice.

Clinical and demographic data collected included age, sex, type of surgery, findings of the preoperative ultrasonography followed by intraoperative time, presence of any bile duct or artery injury or any stone spillage or bile spillage along with the presence of conversion of laparoscopic to open.

## RESULTS

A total of 146 patients were included in the study. Among these, 10 cases were converted to open due to various difficulties, conversion rate of the entire study population was found to be 6.85%.

Among the study population 16 cases had a presence of pericholecystic collection in their preoperative USG. There was a statistically highly significant association between pericholecystic collection and conversion to open surgery ($p < 0.001$). Patients with significant pericholecystic fluid had a much higher conversion rate (50%) compared to those with little or no collection.

The mean operative time of the group with presence of pericholecystic fluid was found to be 119.06 minutes while the mean operative time of the group without any pericholecystic fluid was found to be 63.84 minutes. There is a strong positive correlation (**r = 0.71**) between the Pericholecystic Collection and the Mean Operative Time. This suggests that pericholecystic collection is generally associated with longer operative times.

Bile spillage or stone spillage meanwhile occured in 75% of cases with pericholecystic collection. In the group without pericholecystic collection, the rate was much lower at 14.06%. A highly statistically significant association was noted between pericholecystic collection and bile spillage.

Bile duct and arterial injuries occurred only in 2 cases both of which had the presence of pericholecystic collection. The association between pericholecystic fluid score and bile duct or artery injury is statistically significant, with a p-value of **0.000034**.

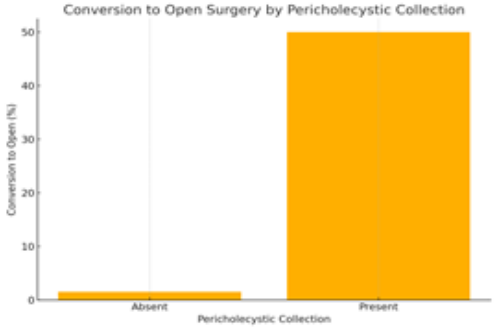


**Figure.1:** Conversion to Open Surgery among the 2 groups

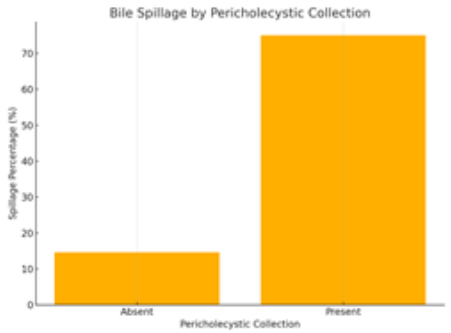


**Figure 2 :** Presence of Bile Spillage or Stone Spillage according to presence of pericholecystic collection

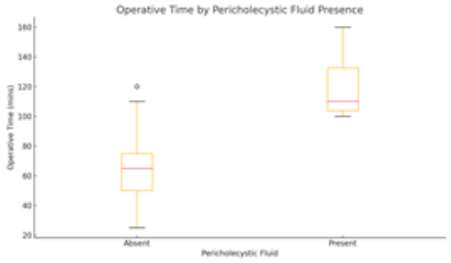


**Figure 3 :** Mean Operative Times by Pericholecystic Fluid Collection

## CONCLUSIONS

This study highlights the significant association between the presence of pericholecystic fluid and increased operative difficulty in patients undergoing laparoscopic cholecystectomy. Patients with pericholecystic fluid demonstrated markedly longer operative times, higher rates of bile spillage, greater incidence of bile duct or arterial injury, and a significantly increased likelihood of conversion to open surgery.

The correlation between pericholecystic fluid score and operative time was strong ($r = 0.71$), and moderate for bile spillage ($r = 0.46$), both statistically significant. Furthermore, bile duct or artery injuries were significantly more common in patients with fluid collection ($p = 0.000034$), aligning with the increased technical challenges posed by acute inflammation.

These findings are consistent with existing literature, including studies by Gurusamy et al.[1], Koc et al[2]., and the Tokyo Guidelines,[3] all of which underscore pericholecystic fluid as a marker of advanced disease and surgical complexity. Recognizing this radiological sign preoperatively can aid in risk stratification, operative planning, and informed surgical decision-making to mitigate complications.

Incorporating pericholecystic fluid assessment into preoperative evaluation may enhance patient outcomes by anticipating technical difficulties and guiding early surgical intervention in selected cases.

## REFERENCES:

1. Gurusamy KS, Koti R, Davidson BR. Routine abdominal drainage versus no abdominal drainage for uncomplicated laparoscopic cholecystectomy. Cochrane Database Syst Rev. 2013;9:CD006004.
2. Koc M, Zulfikaroglu B, Kece C, Ozalp N. Predictive factors for conversion of laparoscopic cholecystectomy. Surg Laparosc Endosc Percutan Tech. 2007;17(6):406-408. doi:10.1097/SLE.0b013e318051b19a.
3. Yokoe M, Takada T, Strasberg SM, et al. TG13 diagnostic criteria and severity grading of acute cholecystitis (with videos). J Hepatobiliary Pancreat Sci. 2013;20(1):35-46. doi:10.1007/s00534-012-0568-9.