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ORIGINAL ARTICLE

Can the timing of laparoscopic cholecystectomy after biliary pancreatitis change the conversion rate to open surgery?

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KEYWORDS

conversion to open surgery;
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Summary *Background:* Biliary pancreatitis (BP) constitutes 30–55% of all cases of acute pancreatitis. Laparoscopic cholecystectomy (LC) has become the gold standard for the surgical treatment of gallbladder disease. We aimed to compare and evaluate the relation between the timing of LC and the rates and reasons of conversion to open surgery (OS) after BP.

Methods: Data were collected of patients who presented for the first time with acute BP and underwent LC. The patients were divided into two groups: early cholecystectomy (Group 1), patients who underwent cholecystectomy during the first pancreatitis attack upon admission and before discharge from hospital (1–3 days); and late cholecystectomy (Group 2), patients who received medical treatment during their first pancreatitis episode and underwent surgery after 4–10 weeks. Sex, Ranson scores, American Society of Anesthesiology scores, and conversion reasons were compared.

Results: Group 1 and Group 2 included 75 patients (20 men, 55 women) and 87 patients (25 men, 62 women), respectively. The mean age was 44.7 years (range, 21–82 years). Obscure anatomy with adhesions was detected in 16 patients (5 in Group 1, 11 in Group 2) as the leading cause of conversion to OS, but it was not statistically significant ($p = 0.054$). Acute inflammation with empyema and peripancreatic liquid collection was observed in 14 patients (12 in Group 1, 2 in Group 2), and conversion to OS was statistically significantly higher in Group 1 ($p = 0.016$).

Conclusion: Timing of LC does not influence the conversion rates to OS after BP.

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1. Introduction

Acute pancreatitis is the third most common gastrointestinal cause of acute hospital admission, with a mortality rate of 5%.^{1,2} Biliary pancreatitis (BP) is caused by gallstones or sludge and constitutes approximately 30–55% of all cases.^{3,4} The incidence of BP is increasing worldwide, possibly due to an increased risk of gallstone disease associated with nutritional and lifestyle change, and obesity.⁵ The initial treatment of BP may either be medical or surgical. Recurrence is reported to range from 29% to 63% in patients with BP. Besides recurrence, gall stone-related complications in untreated BP such as acute pancreatitis, cholecystitis, cholangitis, or gallstone colics can also be seen. As such, surgery is highly recommended.^{4,6–8} Over the past 2 decades, laparoscopic cholecystectomy (LC) has become the gold standard for the surgical treatment of gallbladder disease.⁹

The optimal time for performing cholecystectomy in acute BP is controversial. Nowadays, guidelines recommend performing early cholecystectomy (EC) after mild BP and advise delaying cholecystectomy (DC) until all signs of inflammation have resolved in severe pancreatitis. However, most surgeons may prefer DC several weeks after hospital discharge in routine practice due to the potential of high complications and mortality rates after EC.^{10–12} Furthermore, there remains a strong potential for conversion to open surgery (OS) related with anatomic distortions of the perihepatic area due to acute inflammation. In this study, we aimed to compare and evaluate the relation between the timing of LC and the rates and reasons for conversion to OS after BP. In this respect, it is different from other studies in the literature.

2. Materials and methods

In this retrospective study, the data of patients with acute BP who presented for the first time to the Department of General Surgery at Goztepe Education and Research Hospital (Istanbul, Turkey) were collected during the period of January 2004 to December 2014. Among them, patients who were planned for LC were included. The study was approved by the ethics committee and written informed consent was obtained from each patient. The following parameters were evaluated: age, sex, current illness, medical history, vital signs, laboratory results, Ranson score (RS), American Society of Anesthesiology (ASA) score, and reasons for conversion from laparoscopy to laparotomy.

The diagnosis of acute BP was based on acute abdominal pain, tenderness, amylase, and lipase levels increased by up to three times the normal limit, and detection of gallstones on ultrasonography. Presentation of increased gallbladder wall thickness or presence of pericholecystic fluid in the investigations were accepted as concomitant acute cholecystitis. Severity of acute pancreatitis was assessed using the RS at the first hospitalization in both groups. The patients with $RS \leq 3$ were named as mild and $RS > 3$ (max 6) as moderate pancreatitis.

Patients were divided into two groups in accordance with resident surgeon's choice according to the time elapsed from the episode of acute BP to the operation.

Group 1 included patients who underwent EC during the first pancreatitis attack upon admission and before discharge from the hospital (within 1–3 days). The RS is not adequate to estimate the severity of pancreatitis alone. Therefore, the surgical indication was approved in this group when clinical and laboratory improvements of abdominal pain, nausea, vomiting, decreasing course of aspartate transaminase, alanine transaminase, leukocyte, and amylase levels were observed. Group 2 included the patients who received medical treatment during their first pancreatitis episode and had an elective DC later with an interval between 4–10 weeks. All operations were performed by a total of 14 resident surgeons. Both groups were compared according to sex, RS, ASA, and conversion reasons. Patients in both groups who underwent conversion were also compared in terms of sex, RS, ASA, and conversion reasons.

Patients with jaundice, severe BP ($RS > 6$), previous malignancy, any abdominal surgery history, concomitant choledocholithiasis and endoscopic sphincterotomy (ES), previous acute cholecystitis and pancreatitis attacks, and patients who were taking anticoagulant medications or had acalculous cholecystitis were excluded from the study. Unclear obscure anatomy, acute inflammation with empyema, common bile duct injury, friable edematous tissue around Calot's triangle, uncontrolled bleeding, spillage of gallstones, bowel injury, technical problems, and duodenal injury are reported causes for conversion to OS. The decision for either LC/OS or conversion during surgery was approved by the resident surgeon. The experience of the surgeons ranged between 2 years and 14 years.

Preoperatively, first-generation cephalosporin was administered intravenously within 1 hour of the incision time in all patients. The same open and laparoscopic surgical techniques were used in all operations, subcostal incision in open surgery, and a four-trocar (2×5 mm, 2×10 mm) technique in laparoscopic surgery with insufflation of the abdominal cavity at 12–15 mmHg. Following discharge, patient follow-up was conducted in the outpatient clinic or by the referring surgeon.

2.1. Statistical analysis

Number Cruncher Statistical System (2007; NCSS, Kaysville, Utah, USA) software was used for statistical analysis. Descriptive statistical methods (mean, standard deviation, frequency) as well as the Fisher–Freeman–Halton test, Fisher exact test, and Yates continuity correction test were used for the comparison of qualitative data between groups. Results were evaluated at a significance set at $p < 0.01$ and $p < 0.05$.

3. Results

In total, 162 patients (45 men, 117 women) were included in the study. The mean age was 44.7 years (range, 21–82 years). Group 1 included 75 patients (20 men, 55 women), and Group 2 included 87 patients (25 men, 62 women), respectively. The mean waiting time for surgery was 42 hours (range, 24–72 hours) in Group 1, and 6.4 weeks (range, 4–10 weeks) in Group 2. In terms of RS, 65 (86.7%)

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