

Single-stage laparoscopic management of acute gallstone pancreatitis: outcomes at different timings

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BACKGROUND: Definitive therapy for gallstone pancreatitis requires eradication of gallstones with cholecystectomy and common bile duct (CBD) clearance. Current guidelines recommend this be done within the same admission and preferably by laparoscopic cholecystectomy and CBD exploration. We report our experience of laparoscopic single-stage management with cholecystectomy and intraoperative cholangiogram followed by laparoscopic bile duct exploration (LBDE) when necessary performed at three different stages.

METHODS: From January 1998 to December 2012, 134 patients (100 females and 34 males) underwent single-stage laparoscopic management of gallstone pancreatitis. Patients were classified according to the timing of surgery: “A”, ≤7 days from symptom onset ($n=27$); “B”, 8 to 30 days ($n=58$) and “C”, >30 days ($n=49$).

RESULTS: LBDE was performed in 30 patients with a success rate of 100%. CBD stones were found in 25 patients (A: 22.2%, B: 22.4%, C: 12.2%). CBD stones were more common in patients undergoing surgery within 30 days of presentation than after this time point ($P=0.35$). Multiple choledocholithiasis

was more frequent in patients treated within 7 days ($P=0.04$). The 30-day mortality after surgery was 0, with no conversion to an open approach. Overall complication rate was 11.9%, which did not differ significantly between patients treated within 7 days or after this time point ($P=0.83$).

CONCLUSIONS: This study demonstrated the feasibility and reproducibility of single-stage laparoscopic management of acute gallstone pancreatitis, which has a low complication rate at any stage. Patients undergoing early treatment have a higher incidence of choledocholithiasis and multiple stones than those treated after 30 days, supporting the passage of stones with time.

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KEY WORDS: bile duct;
cholecystectomy;
pancreatitis

Introduction

Gallstone disease is among the commonest causes of emergency surgical admission and it is the etiological factor of acute pancreatitis in 30%-50% of cases.^[1] The definitive therapy for eradication of gallstones and prevention of recurrence in these patients is cholecystectomy and clearance of the common bile duct (CBD) after being imaged. The optimal timing of intervention is considered to be during the same admission but only after recovery from the acute episode, and to prevent recurrence and potentially life-threatening biliary complications.^[2, 3] It is also mandatory to image the CBD during inpatient admission to ensure the absence of lithiasis,^[4] most commonly by means of magnetic resonance cholangiopancreatography (MRCP). Endoscopic retrograde cholangiopancreatography (ERCP)^[5] is commonly reserved for interventional purposes to clear the duct prior to cholecystectomy when on table surgical

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imaging and clearance is not available, or in case of unfit patients for cholecystectomy. Endoscopic ultrasound (EUS) is becoming more popular not only for the diagnosis of microlithiasis but also for excluding the presence of stones within the CBD.

Since 1998 we have offered single-stage laparoscopic management for acute gallstone pancreatitis with excellent results.^[6] In this study, we present our institutional results to-date, assessing its feasibility, the impact of the timing of intervention on the incidence of choledocholithiasis found, and major morbidity and mortality at the different stages.

Methods

The data from 134 patients admitted between January 1998 and December 2012 fulfilling our inclusion criteria included: (1) Diagnosis of pancreatitis (scored by the modified Glasgow Scoring System);^[7] (2) Diagnosis of gallstones confirmed by abdominal ultrasound scan (USS) or EUS in late stage patients; and (3) Medically fit for surgical intervention. The data were prospectively collected and retrospectively reviewed. Patients presenting with acute cholangitis were excluded from the study and referred for ERCP and sphincterotomy.

The diagnosis of gallstone pancreatitis was established through clinical evaluation of the patient's presenting signs and symptoms, elevation of serum amylase above three times the normal level, radiological demonstration of gallstones, and absence of other trigger factors of pancreatitis. All patients were admitted to the surgical department and treated conservatively in the acute phase. An urgent abdominal USS was also performed in all patients in order to determine the presence of gallstones. Those patients with negative abdominal USS underwent EUS as an outpatient examination and consequently most of them were operated on after 30 days.

We favored definitive treatment for acute gallstone pancreatitis in a single surgical procedure. Patients included in the study underwent single-stage laparoscopic

management associated with cholecystectomy and imaging of the duct obtained by an intra-operative cholangiography (IOC), followed by concomitant laparoscopic bile duct exploration (LBDE) if choledocholithiasis was present. This is the recommended approach for the management of CBD stones in the latest the National Institute for Health and Care Excellence (NICE) guidelines for gallstones disease.^[8] All patients were consented according to the national UK guidelines (General Medical Council) before undergoing surgery and all patient information was anonymized before subsequent data analysis of our series.

Since 1998, our method of access to the CBD has evolved according to our experience and technique-related complications.^[9-11] Choledochotomy and closure over a T-tube was performed in the first 6 patients. This was changed in 2002 to choledochorrhaphy over an antero-grade biliary endoprosthesis^[9,10] in the subsequent 15 patients. However, this technique was later abandoned due to the incidence of stent-related pancreatitis (6 patients). For the remaining cases, primary closure of the CBD was performed using a running 5/0 polyglactin suture. This remains the preferred technique when we perform choledochotomy^[9] but we are currently experiencing an increased use of the transcystic route in almost 40% of patients due to its safety (unpublished data).

In order to compare the outcome of the technique and the incidence of choledocholithiasis according to the timing of the surgical procedure, our patients were classified in three groups: (I) Group A (patients operated on within 7 days), same admission; (II) Group B (patients operated on between 8 and 30 days); and (III) Group C (patients surgically treated after 30 days). The characteristics of these groups are shown in Table 1. Patients from group A were considered as "early treated". Patients in groups B and C ("delayed treatment" groups) were those in whom clinical signs and biochemical values were slow to normalize and thus an optimization period was required, those selecting a delayed procedure for medical or personal reasons, those in whom there was an administrative error (i.e. clinical notes not found during

Table 1. Surgical procedures and findings based on the timing of treatment (n, %)

Variables	Group A ≤7 days (n=27)	Group B 8-30 days (n=58)	Group C >30 days (n=49)	Total	P value
Age (yr)	46.63 (22-75)	52.93 (23-83)	56.31 (20-82)	53 (20-83)	
Gender (Male/Female)	8/19	14/44	12/37	34/100	
LC+IOC	19 (70.4)	45 (77.6)	40 (81.6)	104 (77.6)	0.51
LC+IOC+LBDE	8 (29.6)	13 (22.4)	9 (18.4)	30 (22.4)	0.53
Choledocholithiasis	6 (22.2)	13 (22.4)	6 (12.2)	25 (18.7)	0.35
Multiple choledocholithiasis	5 (18.5)	5 (8.6)	3 (6.1)	13 (9.7)	0.04

LC: laparoscopic cholecystectomy; IOC: intra-operative cholangiography; LBDE: laparoscopic bile duct exploration.

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