

Endoscopic management of bile leaks after laparoscopic cholecystectomy

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Abstrak

Kebocoran empedu didapatkan pada sebelas dari 16 pasien dengan komplikasi bilier pasca kolesistektomi laparoskopik. Kebocoran terjadi di duktus sistikus pada 9 pasien dan di duktus koledokus pada 2 pasien. Kesebelas pasien ini diobati dengan berbagai metode endoskopi. Terapi endoskopik meliputi pemasangan stent saja pada 5 pasien, stent dengan sfingterotomi pada 3 pasien, dan pemasangan kateter nasobilier untuk drainase pada 3 pasien. Penyembuhan kebocoran permanen didapatkan pada 100% kasus tanpa komplikasi bermakna dari prosedur tersebut. Endoskopi terapeutik adalah aman dan bermanfaat untuk memperbaiki kebocoran empedu pasca kolesistektomi.

Abstract

Biliary leaks were detected in eleven of 16 patients with bile duct injuries following laparoscopic cholecystectomy. Leak occurred at the cystic duct in 9 patients and at the common bile duct in 2 patients. These 11 patients were treated by various endoscopic methods. Endoscopic therapy included stenting alone in 5 patients, stent placement and sphincterotomy in 3 patients, and insertion of nasobiliary tube drainage in 3 patients. Permanent healing of the leakage was obtained in 100% of cases without significant complications of the procedures. Endoscopic therapy is safe and effective for post-cholecystectomy bile leaks.

Keywords : Endoscopic therapy - biliary leaks - laparoscopic cholecystectomy

INTRODUCTION

Laparoscopic cholecystectomy (LC) is now widely accepted as the treatment of choice for symptomatic gallstones.^{1,2} The advantages of LC compared to the traditional open cholecystectomy including brief hospitalization stay, shorter recovery time, and faster return to work.

However, biliary complications after LC, noticeable bile duct leaks, is reported from 0.3% to 3.0% compared with less than 0.5% after open cholecystectomy.²⁻⁵ In Indonesia, LC has been introduced in early 1991 and after four years experience in 2201 patients, biliary injuries were reported ranging from 0.4 to 1%.⁶ The frequency of biliary complications seems to be decreasing sharply with additional experience with LC.⁷ The most common biliary injuries encountered was that of bile duct leaks, usually from the cystic duct.

Several studies have shown the effectiveness of endoscopic sphincterotomy alone or in combination with stent placement or insertion of nasobiliary tube drainage in healing biliary leaks.⁸⁻¹⁴

We report herein our experience in dealing with endoscopic management of biliary leaks following LC.

PATIENTS AND METHODS

From January 1993 to December 1997 data of sixteen patients with clinical biliary complications following LC which were referred to our department for diagnostic or therapeutic endoscopic retrograde cholangiopancreatography (ERCP), were carefully reviewed. LC was carried out for symptomatic gallbladder stones in several hospitals in Jakarta.

ERCP was performed using standard technique under intravenous sedation with duodenoscope (Olympus, Japan) type JF IT 20, JF IT 30. The time interval from LC to the ERCP procedure, clinical symptoms, and liver functions were noted.

Diagnosis of bile leaks was made at ERCP demonstrating contrast extravasation from the biliary tract. Endoscopic techniques to resolve the biliary leaks included stent placement alone or in combination with endoscopic sphincterotomy (ES) or insertion of nasobiliary tube (NTB) drainage. ES was only performed if cannulation of the common bile duct could not be achieved with a standard diagnostic catheter. There was no cer-

tain criteria in selecting the method of endoscopic interventions. A 7 Fr endoprosthesis was placed above the site of leak in all stented patients.

In general, the stent was removed after four to six weeks of placement without control cholangiogram except in one patient with big leak at the common bile duct. A tube cholangiography was performed after two weeks of insertion in patients with NBT drainage.

Ultrasound using real time scanner (Toshiba SSA-270A, Japan) and spiral CT-Scan of the abdomen (Siemens Somatom+4, Germany) were carried out in five and one patients respectively to evaluate the presence of biloma.

RESULTS

Over the study period, bile leaks were detected in eleven of 16 patients with biliary complications related to LC. In the other five patients stricture of the common hepatic duct was obtained in two and total duct obstruction in the remaining three patients. Diagnostic ERCP findings of these 16 patients were shown in table 1.

Table 1. Diagnostic ERCP findings in 16 patients with biliary complications related to LC

Bile duct injury	N	%
Biliary leaks	11	69
Stricture of common hepatic duct	2	12
Total duct obstruction	3	19
Total	16	100

The group study consisted of eleven patients; eight males and three females with an average age of 46 years (range 26 to 70 years). The mean interval of LC to the ERCP procedure was 6.3 days (range 3 to 12 days). The most common presenting symptom was abdominal pain found in 10 of 11 patients (91%), fever in 7 patients and jaundice in 2 patients.

During ERCP, biliary leaks were demonstrated in all patients. Cystic duct leak was detected in 9 patients whereas leak at the common bile duct in the other 2 patients. Therapeutic ERCP interventions were successful in all these 11 patients (table 2). Stent placement alone was performed in five of 11 patients (figure 1), ES with bilio-endoprotheses in three patients, and insertion of NBT drainage in the remaining three patients (figure 2). In one patient with big leak at the common bile duct (CBD) the stent placement was extended up to 8 weeks because control cholangiography after 4 weeks still showed extravasation of small amount of contrast.

Table 2. Therapeutic ERCP interventions in 11 patients

Endoscopic procedure	N	%
Stenting alone	5	46
Stent placement and sphincterotomy	3	27
Insertion of nasobiliary tube	3	27
Total	11	100

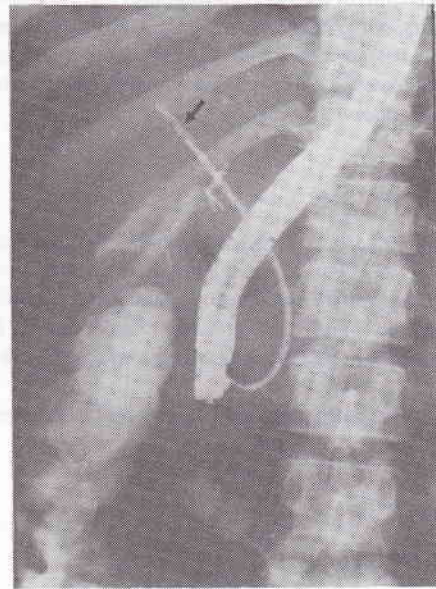


Figure 1. Endoscopic retrograde cholangiogram in a patient with cystic duct leak shows extravasation of contrast into peritoneal cavity that responded to stent placement

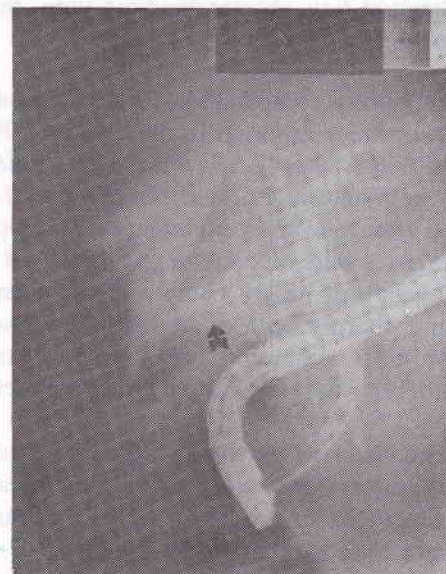


Figure 2. Cholangiogram after laparoscopic cholecystectomy demonstrates biliary leak (arrow) that successfully treated by insertion of nasobiliary tube drainage

Additional duct findings at ERCP were stones in the CBD in five patients which being extracted with a dormia basket at the same session of stent or NBT removal. Complications of endoscopic therapy occurred in three patients. Bleeding after ES occurred in two patients with CBD stones which could be managed conservatively and stent migration into the colon was detected in the remaining one patient. The stent came out spontaneously with the stool.

Ultrasound and CT-Scan of the abdomen performed in five and one patients respectively showed the presence of fluid accumulation in the peritoneal cavity and sub-hepatic area.

DISCUSSION

The reasons for ductal injury at LC include variation anatomy, technically difficult dissection due to severe inflammation, short cystic duct, and the learning curve associated with the procedure.^{2,15} In the present study cystic duct stump leak accounts for most biliary complications related to LC which is in agreement with the previous reports.^{8,9,11-14} Commonly cystic duct leak occurs when loose clips dislodge or the cystic duct remnant necroses. Our study confirms that most of the biliary injuries go unrecognized at the time of LC.^{4,14,16} Obviously, if the injury recognized during LC, the surgeon should promptly convert to an open laparotomy and perform either a primary duct repair or a hepatico-jejunostomy.

Pain, which was detected in 91% of patients, was the most common symptom at clinical presentation consistent with biliary peritonitis. The mean interval of LC to ERCP procedure in our study was longer than that the recent series.^{9,13} This discrepancy might be partly explained by the lack of therapeutic ERCP facilities in our country.

Some studies have shown that cholescintigraphy is useful for predicting bile leaks after LC.^{14,17} However, a negative result does not rule out a significant leak. While this imaging method is not available at our institution, ERCP demonstrated the presence of bile leaks in 100% patients in our series.

Therefore, we are in the opinion to perform ERCP directly to the patients with suspected bile leaks following LC, as suggested by others.^{11,18}

Our results also support the other findings that therapeutic ERCP procedures, such as stent placement

and NBT decompression, are effective methods for healing post LC biliary leaks.⁸⁻¹⁴

The presumed benefit of endoscopic therapy is the reduction of sphincter Oddi pressure. The decrease resistance across the ampulla therefore diverts bile flow into the duodenum and away from the site of injured bile duct. Although reduction of ampullary pressure is widely accepted as an important factor in resolving biliary leaks, the best endoscopic method to achieve this has not been well studied.

Some experts have claimed that NBT drainage has some potential advantages compared to stenting.^{13,19} First, NBT provides maximal and direct bile duct decompression by the application of gravity drainage, rather than simple neutralization of transpapillary pressure. Second, NBT can be removed effortlessly at bed side whereas removal of a stent requires a repeated endoscopic procedure. In our study, however, stenting is more frequent than NBT drainage (8 versus 3 patients). Stent placement is more convenient for patients and enable them to return to their activity faster compared to those who are receiving NBT.

Stenting alone or with ES have also been reported as the endoscopic therapy of choice in other series.^{10-12,14,19} In agreement with recent studies,^{9,14} stent can be left in place for 4 to 6 weeks in most of the patients. Only one patient in our series required stenting for 8 weeks because of big leak at the CBD.

In conclusion, both stent placement and nasobiliary tube drainage are safe and effective endoscopic therapy for bile leaks following laparoscopic cholecystectomy.

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