Intraoperative Endoscopic Sphincterotomy Using Rendezvous Technique for Choledocholithiasis with Peripapillary Duodenal Diverticula: A Case Report

Akira Umemura, Akira Sasaki, Jun Nakajima, Hiroyuki Nitta and Go Wakabayashi
Department of Surgery, Iwate Medical University

Abstract
We performed intraoperative endoscopic sphincterotomy (EST) using rendezvous technique (RT) during laparoscopic cholecystectomy (LC). The case was a 62-year-old woman who visited our clinic for complaints of abdominal pain and vomiting. She was admitted based on a diagnosis of acute cholangitis and secondary acalculous cholecystitis caused by cholestasis. Since hepatic function impairment and exacerbation of inflammatory findings were getting worse the day after admission, she was judged to have moderate acute cholangitis unresponsive to initial treatment and endoscopic retrograde cholangiopancreatography (ERCP) was performed. The presence of peripapillary duodenal diverticula made it difficult to employ a selective approach to the CBD even after a total of two implementations of ERCP. Then we performed LC and intraoperative EST using RT in order to perform endoscopic biliary drainage and cholecystectomy simultaneously. RT is a well-established procedure as a single-stage therapy using an antegrade approach for the treatment of choledocholithiasis, and is able to reduce the incidences of complications. Since RT has some disadvantages such as requiring special operating room equipments and numerous specialists, it is therefore necessary to examine the usefulness of RT in combination with LC as a single-stage surgical treatment for choledocholithiasis.

Key words: endoscopic sphincterotomy, laparoscopic cholecystectomy, rendezvous technique

Introduction
Endoscopic sphincterotomy (EST) is a useful endoscopic treatment for cholangitis attributable to cholecystolithiasis and choledocholithiasis. However, there are cases in which a selective approach to the common bile duct (CBD) during endoscopic retrograde cholangiopancreatography (ERCP) may be difficult due to anatomical abnormalities. We report here a case who presented with choledocholithiasis complicated with acute moderate cholangitis and secondary acalculous cholecystitis accompanying peripapillary duodenal diverticula for whom it was difficult to perform EST during ERCP, and who underwent intraoperative EST using the “rendezvous” technique (RT) during laparoscopic cholecystectomy (LC) at an early stage of the disease.

Case Report
A 62-year-old woman visited our clinic with the chief complaints of abdominal pain and vomiting. She had been examined at our clinic one year earlier with similar symptoms, and although she had been diagnosed with gallstone attack at that time, she had not visited the clinic since then. At the time of her most recent visit, although tenderness was observed primarily in the upper abdominal region, peritoneal irritation was not observed. Analysis of blood biochemistry revealed AST of 271 IU/L, ALT of 135 IU/L, γ-GTP of 128 IU/L, LDH of 473 IU/L, ALP of 426 IU/L and T-Bil of 2.3 mg/dL, indicated hepatic function impairment and jaundice. Mild inflammatory findings were observed as indicated by CRP of

Received: September 9, 2010/Accepted: May 29, 2011
Correspondence to: Akira Umemura
Department of Surgery, Iwate Medical University, 19-1 Uchimaru, Morioka 020-8505, Japan
0.01 mg/dL and WBC of 9670/μL. Contrast-enhanced CT of the abdomen revealed enlargement of the gallbladder and edema of the liver bed. Diameter of the CBD was 9 mm, and a structure thought to be a CBD stone was observed in the lower CBD (Fig. 1). On the basis of these findings, she was diagnosed with moderate acute cholangitis caused by CBD stone and secondary acalculous cholecystitis caused by cholestasis, and hospitalized at which time conservative therapy was performed. However, since analysis of blood chemistry on the following day revealed AST of 583 IU/L, ALT of 496 IU/L, γ-GTP of 197 IU/L, LDH of 648 IU/L, ALP of 645 IU/L, T-Bil of 27 mg/dL, CRP of 5.5 mg/dL and WBC of 8820/μL, thus indicating progression of hepatic function impairment and exacerbation of inflammatory findings. She was judged to have moderate acute cholangitis unresponsive to initial treatment and ERCP was performed. The presence of peripapillary duodenal diverticula as observed endoscopically made it difficult to successfully employ a selective approach to the CBD even after a total of two implementations of ERCP. She required biliary drainage due to moderate acute cholangitis, and was complicated with secondary acalculous cholecystitis due to cholestasis. Since she did not respond to initial treatment and endoscopic drainage was difficult, and in consideration of the fact that less than 72 hours had elapsed since onset, it was decided to perform LC and intraoperative EST using RT in order to perform endoscopic biliary drainage and cholecystectomy simultaneously.

LC was performed using a four-trocar technique. After clipping the distal side of the cystic duct, an incision was made in the cystic duct and a cholangiographic catheter was inserted to confirm remnants of a CBD stone by intraoperative cholangiography (Fig. 2, 3). A guide wire was first inserted through the cystic duct and guided to the duodenum (Fig. 4). Next, a side-view endoscope was positioned in the duodenum, and a cutting knife was selectively inserted into the CBD through the transcystically positioned guide wire. Intraoperative EST was then performed using RT (Fig. 5), the CBD stone was removed using basket forceps, and the procedure was finished by positioning an endoscopic retrograde biliary drainage (ERBD) tube in the CBD. Postoperative course was satisfactory, the patient was discharged on postoperative day 4, and
the ERBD tube was removed one month later after confirming the absence of CBD stones.

**Discussion**

Guidelines for the diagnosis and treatment of acute cholangitis and cholecystitis have been first announced in Japan in 2005, furthermore Tokyo guidelines for the management of the acute cholangitis and cholecystitis have been also published in English in 2007 and these conditions are able to be treated on the basis previously accumulated evidence. In the case reported here, although conservative therapy consisting of initial treatment of moderate acute cholangitis was performed at the time of hospitalization, since improvement was not observed, endoscopic biliary drainage was attempted. However, since a selective approach to the CBD was difficult due to the presence of peripapillary duodenal diverticula, surgical treatment in the acute phase after onset was considered.

RT in combination with LC was reported by Cavina et al. for the treatment of choledocholithiasis in 1998, and it was indicated that there were no differences between this procedure and laparotomy or a combination of LC and EST in terms of removal rates of CBD stones and incidence of complications. In addition, some reports have also indicated that this procedure is associated with lower incidences of complications in the form of bleeding and acute pancreatitis, and is useful in shortening hospital stay and reducing medical costs. In Japan, however, since laparotomy and laparoscopic choledocholithotomy also enable early discharge, and since this procedure has disadvantages such as requiring special operating room equipment and numerous specialists, there are only a small number of medical institutions that perform RT for treatment of choledocholithiasis. In addition, since the various types of endoscopic devices required for RT are not covered by insurance, disadvantages in terms of medical costs are also thought to be responsible for the lack of proliferation of this procedure.

In the case reported here, due to the presence of moderate acute cholangitis that was unresponsive to initial treatment and since endoscopic biliary drainage was difficult, surgical biliary drainage was considered. Laparotomic or laparoscopic choledocholithotomy is typically selected for surgical treatment, and transcystic lithotomy has been reported to be useful in avoiding the risk of CBD injury. Since laparoscopic choledocholithotomy was associated with risks such as biliary stricture and had the potential for requiring an excessively extensive surgical procedure in this case, while transcystic lithotomy also has the potential for requiring a complex procedure without dilating the cystic duct, it was decided to not perform these procedures. In addition to surgical biliary drainage in the acute phase, a single-stage procedure consisting of combining RT...
with LC was ultimately selected.

RT is a well-established procedure as a single-stage therapy using an antegrade approach for the treatment of choledocholithiasis, and is able to reduce the incidences of complications relating to EST that occur when using conventional techniques. On the other hand, it is also fact that this procedure has not become established as a treatment for the numerous cases of choledocholithiasis or its accompanying acute cholangitis, and it is therefore thought to be necessary to examine the usefulness of RT in combination with LC as a single-stage surgical treatment for choledocholithiasis, including aspects of medical costs, safety and treatment results.

References