

The Successful Treatment of Chronic Cholecystitis with SpyGlass Cholangioscopy-Assisted Gallbladder Drainage and Irrigation through Self-Expandable Metal Stents

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A 34-year-old female with a history of advanced pulmonary sarcoidosis and right-sided heart failure presented with chronic, postprandial right upper quadrant pain, and weight loss. Endoscopic biliary drainage was deemed to be the most appropriate therapeutic option for her chronic cholecystitis. Endoscopic retrograde cholangiopancreatography utilizing the SpyGlass cholangioscopy system allowed us to access the cystic duct through which the gallbladder was ultimately decompressed, via biliary stent placement and gallstone irrigation. This is the first report of SpyScope assisted placement of fully covered self-expandable metal biliary stents into the cystic duct enabling definitive treatment of symptomatic chronic cholecystitis and cholelithiasis without cholecystectomy. (**Gut Liver 2012;6:136-138**)

Key Words: Cholecystitis; Spyglass; Gallbladder drainage; Endoscopic retrograde cholangiopancreatography; Biliary stent

INTRODUCTION

It is estimated that 25 million American adults have gallstones at autopsy.¹ Risk factors for cholelithiasis include age, female gender, parity, obesity, rapid weight loss, hypertriglyceridemia, genetics, various medications (such as estrogens, clofibrate, and ceftriaxone), terminal ileal resection, and gallbladder hypomotility as seen in post-vagotomy and total parenteral nutrition.² Cholelithiasis can be asymptomatic or can lead to complications such as biliary colic, choledocholithiasis, and cholecystitis. The definitive treatment for symptomatic cholelithiasis and cholecystitis is surgery, with laparoscopic techniques dominating over open procedures. It has been estimated that nearly 700,000 cholecystectomies are performed yearly in the United States.¹ In rare cases when cholecystectomy is not feasible, a percutane-

ous transhepatic approach can be used to drain the gallbladder. In recent literature, a new endoscopic approach of draining the gallbladder through biliary stents has been described.^{3,4} We present a case of chronic cholecystitis treated with SpyGlass-assisted endoscopic gallbladder drainage and gallstone irrigation through biliary stents.

CASE REPORT

A 34-year-old female with a history of advanced pulmonary sarcoidosis and right-sided heart failure presented with chronic, postprandial right upper quadrant pain and weight loss. An abdominal ultrasound revealed cholelithiasis and choledocholithiasis with dilatation of the common bile duct (CBD). Endoscopic retrograde cholangiopancreatography (ERCP) revealed a distal CBD stricture with proximal dilatation of the biliary tree and several stones. The stricture was dilated with a 4 cm×30 Fr biliary balloon dilatation catheter (Hurricane™ RX; Boston Scientific, Cork, Ireland). Sphincterotomy was then performed and two CBD stones were removed with a 12/15 mm biliary retrieval balloon (Extractor™ RX; Boston Scientific, Cork, Ireland). Repeat cholangiogram showed clearance of the CBD and hepatic ducts, however, numerous stones were seen in the gallbladder. Despite the patient's young age and persistent symptoms, cholecystectomy was deemed too high risk and was not performed. Endoscopic biliary drainage was deemed to be the most appropriate therapeutic option.

Repeat ERCP utilizing the SpyGlass cholangioscopy system (SpyGlass Direct Visualization System; Microvasive Endoscopy, Boston Scientific Co., Natick, MA, USA), enabled direct visualization of the cystic duct and gallbladder, and a 0.035 in×260 cm guide wire (Hydra Jagwire™; Boston Scientific, Miami, FL, USA) was placed into the gallbladder. On fluoroscopy the cystic

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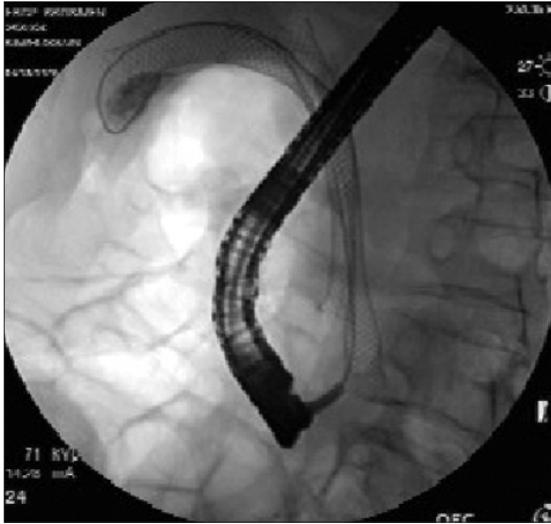


Fig. 1. A fluoroscopic image of gallbladder stents and the common bile duct stent.

duct was approximately 4 mm in diameter and the 10 Fr Spy-Glass cholangioscopy system was easily advanced into the cystic duct, without need for dilatation. Given these measurements we estimated that the cystic duct would safely accommodate the 7 Fr delivery system of the biliary self expanding metal stents (SEMS). In order to traverse the entire length of the cystic duct, two overlapping 10×80 mm fully covered self-expanding metal biliary stents (WallFlex™ Biliary; Boston Scientific, Galway, Ireland) were placed over the guide wire into the gallbladder. Subsequently, a third 10×80 mm fully covered SEMS (WallFlex™ Biliary, Boston Scientific, Galway, Ireland) was placed into the CBD (Fig. 1). The distal CBD stricture appreciated on the first ERCP had resolved post biliary balloon dilatation and the three biliary stents were easily advanced into place. Numerous small stones were noted to drain from the gallbladder after stent placement. The gallbladder was then thoroughly irrigated by advancing the SpyScope with an attached irrigation system (EndoGater™; Byrne Medical Inc., Conroe, TX, USA) resulting in clearance of additional stones (Fig. 2). Repeat cholangiogram revealed a contracted gallbladder with no filling defects in the CBD or the gallbladder. The patient was a poor surgical candidate, and in lieu of cholecystectomy, we chose fully covered metal stents to allow for the irrigation and removal of all the gallstones, as well as a longer period of drainage. Plastic biliary stents would allow for drainage, but not stone removal. The fully covered SEM biliary stents were chosen for the CBD and gallbladder in order to allow for the possibility of future removal. The stents were kept in place post irrigation to ensure continued drainage.

The patient did well post procedure and was discharged home on a regular diet several days later. An abdominal ultrasound at one month follow-up revealed a normal appearing gallbladder without evidence of stones or sludge. At 5-month follow-



Fig. 2. A gallstone exiting the biliary stent.

up the patient had no abdominal complaints and had normal liver function tests. At 1-year follow-up, the patient was pain free but the plan for stent removal was halted by her ongoing pulmonary issues.

DISCUSSION

Surgical cholecystectomy remains the gold standard for treatment of symptomatic cholelithiasis and cholecystitis. In patients considered too high risk for surgery, percutaneous transhepatic or endoscopic gallbladder drainage can be entertained. A recent systematic review by Itoi *et al.*³ revealed that endoscopic gallbladder stenting had a technical success rate of 96% and a clinical success rate of 88% which compared favorably with percutaneous transhepatic gallbladder drainage (98% and 90%, respectively). In 2008, Itoi *et al.*⁴ reported a 97% clinically favorable response in patients who underwent endoscopic transpapillary gallbladder drainage for acute cholecystitis. Endoscopic transpapillary gallbladder cannulation was first described in 1984.⁵ With the advent of SpyGlass, definitive visualization and cannulation of the cystic duct and gallbladder can occur with ease. Several cases of SpyGlass-directed cannulation of the cystic duct have been described in the literature.⁶ We describe a novel technique of SpyGlass-assisted cystic duct stenting using fully covered biliary stents, allowing for improved drainage of gallstones from the gallbladder. Using SEMSs allowed for drainage of the gallbladder and also created a conduit through which the SpyGlass scope, with the irrigation system, could be used to irrigate and successfully clear the gallbladder. This is the first report of SpyGlass-assisted placement of fully covered biliary stents into the cystic duct, enabling definitive treatment of symptomatic chronic cholecystitis and cholelithiasis without cholecystectomy.

CONFLICTS OF INTEREST

Dr. Sang Kim, MD is a consultant for Boston Scientific and Gilead Pharmaceuticals.

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