Longer holmium laser fiber allows for easier manipulation of the duodenoscope during biliary lithotripsy

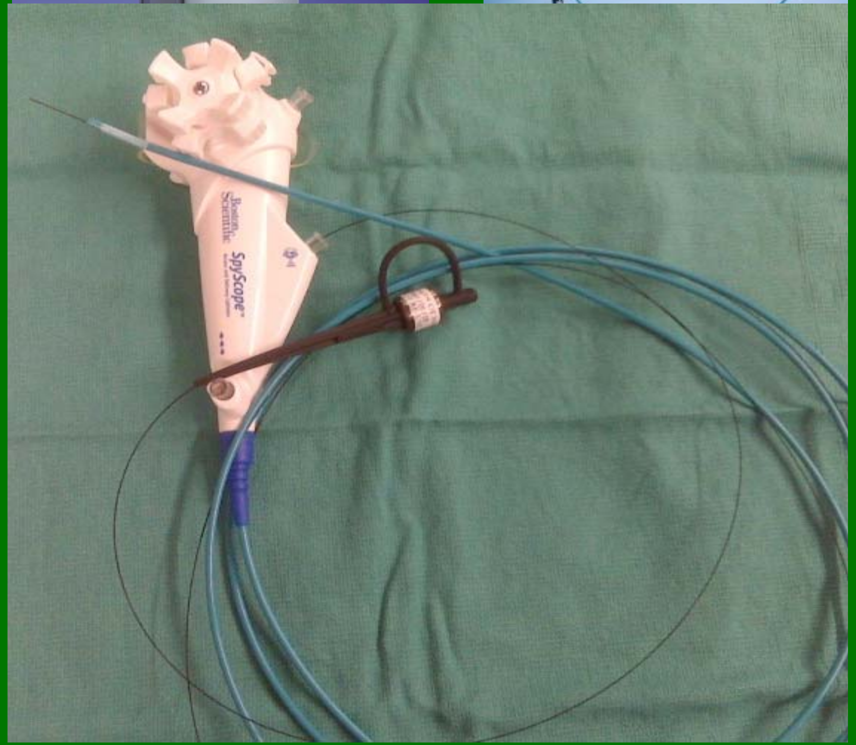
Jose M. Martinez, MD, Diya I. Alaedeen, MD, Alberto Iglesias, MD, Atul K. Madan, MD,
Div. of Laparoendoscopic and Bariatric Surgery, University of Miami, Miami, FL

OBJECTIVE

Evaluate the feasibility of a new holmium laser catheter using the SpyGlass® Direct Visualization System for biliary lithotripsy.

INTRODUCTION

Peroral choledochoscopy was first introduced in the 1970's. In 2006, the SpyGlass® Direct Visualization System was introduced as an alternative to traditional peroral choledochoscopy. With easier direct visualization of the bile ducts, large biliary stone lithotripsy has gained popularity. Large stones (>2 cm) have traditionally been difficult to remove via standard Endoscopic retrograde cholangiopancreatographic (ERCP) techniques. These stones are too large to drag with a balloon and often not captured with baskets for mechanical lithotripsy. Electrohydrolic lithotripsy (EHL) and laser lithotripsy are currently being used with a choledochoscope to perform lithotripsy under direct visualization. The major limitation with these probes is their design to be used with shorter ureteroscopes. EHL and laser probes available in the current market are too short and barely make it out of the working channel of the SpyGlass® catheter. A laser fiber specifically designed for use with a choledochoscope (SlimLine GI™ Fiber, Lumenis®, Inc.) was evaluated. The expected advantages of this probe are increase success of procedure secondary to the ability to advance into the catheter, and comfort of distance between scope and laser generator.



SpyGlass catheter with SlimLine GI laser fiber demonstrating longer length.

METHODS

A retrospective review of patients requiring biliary stone laser lithotripsy via choledochoscopy was performed. A surgical endoscopist performed 5 consecutive ERCP requiring biliary stone laser lithotripsy at our institution over a month period. In each of these cases, the Lumenis SlimLine GI (4.5 meters long, 365 um diameter) fiber was used through a SpyGlass® catheter for cholangioscopy and stone lithotripsy. Energy settings were set to 1J (joules) 12H (hertz) for a total of 12W (watts). The laser generator used was a Lumenis VersaPulse® PowerSuite™. All cases were done under general anesthesia. The cases were evaluated for ability to introduce laser fiber into bile duct under visualization, ability to perform laser guided lithotripsy, completeness of intended procedure, tolerance of procedure and complications.

RESULTS

Selective cannulation of the common bile duct with the SpyScope catheter and introduction of the laser fiber into the desired duct was accomplished in the 5 cases (100%) attempted. Stone visualization and treatment with laser lithotripsy was successful in all cases. Completeness of the intended procedure (complete stone destruction with clearance of bile duct) was accomplished in 4 of 5 cases (80%) required. The fifth patient had multiple large stones and one stone was left in place secondary to the prolonged nature of the procedure to be removed at a later date. The procedure was tolerated with no immediate or post procedure complication in the 5 patients (100%).

CONCLUSION

The Lumenis SlimLine GI Holmium Laser Fiber demonstrated to be a safe and feasible alternative when biliary stone lithotripsy is required. The advantages of this fiber when compared to conventional urological fibers is that the longer length allows for increased functional characteristics of the endoscope and choledochoscope as they are not as tethered to the laser generator.

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