Percutaneous cholangioscopy with the novel short cholangioscope for the management of biliary disease

Mili Parikh, MD[1], Zachary Jenner, MD[1], Rex Pillai, MD[1], Sooraj Tejaswi, MD[1]

1. University of California, Davis Medical Center

Introduction

Cholangioscopy is now a well-established modality for the diagnosis and treatment of bile duct disease such as strictures and complex stones.[1] Cholangioscopy is preceded by an ERCP and consequently performed by endoscopists. However, it is challenging to perform this procedure in patients with surgically altered anatomy or gastric outlet obstruction. The novel short cholangioscope (SpyGlass Discover, Boston Scientific, Natick, MA) is a promising tool which can specifically overcome such limitations. Moreover, both interventional endoscopists and interventional radiologists can use this tool. Its performance for these indications is yet to be studied systematically, and the existing literature is limited to case reports.[2,3]

Methods

We performed a retrospective review of all percutaneous cholangioscopies performed at the UC Davis Medical Center between January 2021 and February 2022. The primary endpoint was procedural success defined as differentiation of the etiology of biliary stricture and clearance of choledocholithiasis. We collected the following data - age, sex, BMI, procedure indication, procedure setting, reason for preclusion or failure of ERCP, pre-procedure imaging findings, the number of percutaneous biliary drains and cholangioscopes used, procedure duration, complications, and overall clinical impact.

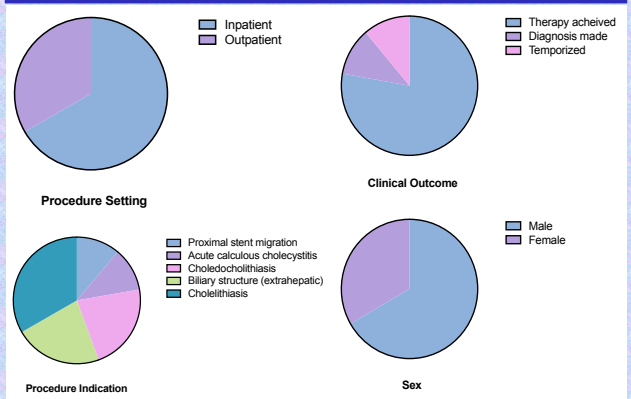
Results

Nine patients underwent percutaneous cholangioscopy. Average age was 57.1 years, and 6 were male. The primary indications were proximal stent migration (1), acute calculous cholecystitis (1), choledocholithiasis (2), extrahepatic biliary stricture (2), and cholelithiasis (3).

Results (continued)

ERCP was precluded in 3 patients due to perforated cholecystitis (with choledocholithiasis), necrotizing pancreatitis in a patient with a large paraesophageal hernia (with extrahepatic biliary stricture), and duodenal switch bariatric surgery (with biliary stricture). ERCP failed in 2 patients due to stent migration proximal to an iatrogenic biliary stricture, and roux-en-Y gastric bypass surgery. Four patients needed 2 cholangioscopies, and 5 needed one. The average number of drains was 4.1 (1.2 pre- and 2.6 post-procedure). The average procedure duration was 52.6 minutes (range 19.5 - 120 min). Stone clearance was achieved in 2/3 cases with cholelithiasis, and 2/2 with choledocholithiasis. The etiology of biliary stricture was established in 2/2 cases (1 malignant, 1 benign). Post-op complications included post procedure leak (1) and skin site infection (1), without procedure related mortality.

Data



Discussion

Patients typically undergo an ERCP prior to cholangioscopy, yet patients with altered anatomy, gastric outlet obstruction, or previously failed ERCPs are often unable to undergo this procedure. In addition, ERCP is usually performed by an endoscopist. The data collected from our patient panel suggests that the novel short cholangioscope can overcome ERCP limitations, and a cholangioscopy with this tool can be performed by both interventional endoscopists and interventional radiologists. Percutaneous cholangioscopy using the novel short cholangioscope successfully and safely managed choledocholithiasis and biliary strictures in patients with surgically altered anatomy that precluded ERCP or rendered it unsuccessful, and helped avoid long-term percutaneous cholecystostomy drains by treating cholelithiasis in patients not deemed safe to undergo cholecystectomy. Larger multi-center studies are awaited.

Next Steps

We hope to expand our project to a multi-center study to study how other institutions have implemented the use of a short cholangioscope. At this time, we are in discussion with other academic centers that have worked with SpyGlass Discover (or other similar novel cholangioscopes). We aim to expand our sample size with data from multiple centers in order to increase the power of our study.

References

1. Yan SL, Tejaswi S. Clinical impact of digital cholangioscopy in management of indeterminate biliary strictures and complex biliary stones: a single center study. Therap Adv Gastroenterol 2019; 12:1-11
2. Tejaswi S, et al. Disposable digital percutaneous cholangioscope-aided retrieval of a plastic biliary stent after failed retrieval at ERCP. VideoGIE *(in press)*
3. Tejaswi S, et al. Cholangiocarcinoma obscured by a large paraesophageal hernia causing traction-compression of the common hepatic duct ultimately diagnosed with percutaneous cholangioscopy. VideoGIE *(in press)*