Using Cholangioscopy to Fragment a Difficult Stone in a Patient who had 17 Previous ERCPs

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technique spotlight

Patient History

An 81-year-old Asian man with a history of recurrent choledocholithiasis requiring 17 ERCPs presented to our hospital with cholangitis. ERCP demonstrated a large stone at the bifurcation of the biliary tree (Figure 1). Attempts at mechanical lithotripsy failed to achieve complete removal, however pus, stone fragments and sludge were extracted. Placement of a 10Fr 9 cm plastic stent into the common bile duct was completed. Patient was scheduled for an elective ERCP using the SpyGlass™ DS Direct Visualization System.

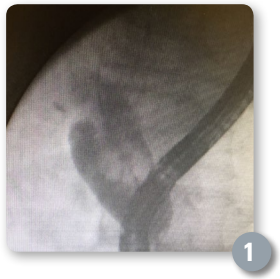
Procedure

The ERCP removed the previously placed stent with a snare, followed by free cannulation and drainage of clear green bile with some debris. A DreamWire guidewire was advanced into the intrahepatic ducts. This was exchanged for the SpyGlass DS System's SpyScope™ DS Catheter. A greater than 3cm oval-shaped pigmented cholesterol stone was visualized just distal to the bifurcation (Figure 2). The SpyScope DS Catheter was advanced into the left IHD and right IHD and there was no stone material or debris visualized. This was followed by advancement of the EHL probe. Successful disruption of the stone was visualized as the camera was withdrawn from the CBD. The last SpyGlass DS System imaging of the duct showed tiny specs of yellowish debris, and some abrasion of the bile duct epithelium, no overt strictures or stones remained (Figure 3). No stent was placed and no cholangiogram was needed. The patient was discharged on three days of a fluoroquinolone. Three weeks later, he felt well and liver tests were normal TB 0.62 AST 16 ALT 8 AP 95.

Outcome

Ten weeks later, the patient presented with mild LFT elevations (TB= 0.79, AST 30 and ALT 35 - normal, AP 340) and recent fevers (2 -3 weeks ago) with concern for possible residual obstruction. Endoscopic Ultrasound (EUS) shows dilated CBD to 15mm, with abrupt distal narrowing in the absence of an overt mass or hyperechoic shadowing contents. No peripancreatic, biliary or celiac lymph nodes were present. The pancreatic parenchyma in the head, body and tail were normal with normal pancreatic duct.

The ERCP showed that the ampulla appeared normal with prior sphincterotomy, the duct was freely cannulated with a 15-18mm extraction balloon and clear yellow bile was noted to drain. Contrast injection showed the dilated CBD without overt filling defects. The SpyGlass™ DS System showed the biliary tree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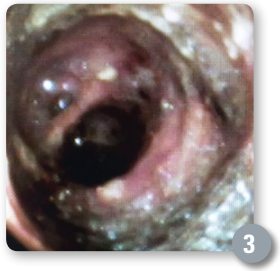
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to be free of any stone material. There was a distal symmetrical narrowing that was biopsied under direct cholangioscopic visualization. The bile duct stricture biopsy pathology showed disrupted biliary mucosa with reactive epithelial changes, and no carcinoma identified. Twenty-one months later he was free of recurrent stone disease, and his liver tests remained essentially normal.

Summary

This patient was a challenge to manage prior to being evaluated using the SpyGlass DS System. This recalcitrant stone resulted in 17 ERCPs that were unsuccessful in complete stone eradication. The magnitude of this problem was not recognized prior using the SpyGlass DS System that permitted direct visualization of the stone and guided lithotripsy.

The SpyGlass DS System enabled complete ductal clearance in only one session. This technology is necessary in the daily armamentarium of the therapeutic endoscopist. The SpyGlass DS System is invaluable in the management of patients with complex biliary duct disease. It may help reduce the number of procedures required, the patient-related morbidity, and fluoroscopy time required for ductal imaging. Lastly, this technology is extremely efficient and easy to set-up and use.

Potential Economic Impact (US Only)

Earlier use of the SpyGlass DS System may have helped to avoid several previously failed ERCP procedures costing at least $2,246.*

CPT® Code	Code Description	2014 Medicare Geometric Mean Cost – Outpatient
43264	Endoscopic retrograde cholangiopancreatography (ERCP); with removal of calculi/debris from biliary/pancreatic duct(s)	**$2,246**

**Source: Medicare's CY 2016 OPPS Cost Statistic File*

The potential economic impact identified in this case only takes into account surgical and/or procedural costs avoided and does not take into account reimbursement. As more hospital systems move away from traditional reimbursement models (Fee For Service) to population health models (Accountable Care Organizations), examples of cost avoidance help demonstrate the potential economic value of SpyGlass DS System.

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Results from case studies are not predictive of results in other cases. Results in other cases may vary.

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