**Purpose**

- The SpyGlass single-operator peroral cholangioscopy system developed by Microvasive Endoscopy, Boston Scientific Corp., Natick, MA, USA is direct visualization system that uses semi disposable equipment which can be strapped on to the duodenoscope consisting of three components:
  1. Access and delivery catheter: SpyScope,
  2. Optical probe: SpyGlass and
- It is a useful diagnostic and therapeutic tool that has been shown to be superior to conventional cholangioscopy for the diagnosis of indeterminate biliary lesions at ERCP through direct visualization and targeted biopsy sampling.(2),(3).
- Management of biliary stones was reported to be successful in 92% of patients when using the SpyGlass technology (5)
- Endoscopic examination of the biliary tree and therapy of an impacted cystic duct stone can be very challenging(4).
- Successful passage of a guidewire beyond the impaction is necessary for successful further treatment with extractor balloon or lithotripsy basket.
- We present a unique case of a large impacted cystic duct stone where we used spyglass cholangioscopy to direct the guidewire into the cystic duct with subsequent removal of the stone in a patient who failed conventional ERCP techniques.

**Case**

- A 52 year old woman with a history of cholecystectomy 10 years ago is referred to our center for further management of a large cystic duct stone.
- She initially presented to an outside hospital with severe abdominal pain, nausea, vomiting and fever and was subsequently diagnosed with gallstone pancreatitis and a liver abscess.
- She was started on IV antibiotics and remained hospitalized for 2 weeks.
- An ERCP was performed at the outside hospital that revealed a common bile duct dilated to 2cm and a cystic duct stone that was 1.5cm in diameter.
- A sphincterotomy was performed followed by removal of sludge and stone fragments. A stone crusher was used to remove the cystic duct stone with no success.
- A 10xS F biliary stent was placed and then patient was referred to our center for further management.
- At presentation to our institution, the patient reported intermittent abdominal pain. Physical exam was unremarkable.

**ERCP**

- She underwent a repeat ERCP at our institution.
- Cholangiogram revealed a markedly dilated bile duct to 2cm.
- The cystic duct remnant contained a 1.5cm stone causing extrinsic compression/obstruction of the bile duct suggestive of Mirrizzi’s Syndrome.
- We were unable to traverse the cystic duct using traditional ERCP maneuvers due to the large impacted stone.
- The spyglass system was then introduced into the biliary tree and a large stone was visualized in the cystic duct remnant.
- A guidewire was passed into the cystic duct remnant under direct vision.
- The papillary orifice was then dilated with a 15mm CRE balloon followed by balloon sweep with extraction of the large cystic duct stone.
- Abdominal pain, nausea and vomiting resolved after the procedure.

**Conclusion**

The removal of an impacted cystic duct stone can be very challenging and time consuming. In our case, placement of a guidewire into the cystic duct under direct view lead to successful removal of an impacted stone. In addition, spyglass cholangioscopy allows for targeted therapy of refractory bile duct and cystic duct stones with electrohydraulic lithotripsy or laser therapy as well as targeted biopsy sampling of indeterminate biliary strictures. SpyGlass single-operator peroral cholangioscopy system is a safe and effective diagnostic and therapeutic tool.

**References**

- Chen YK, Pleskow DK. SpyGlass single-operator peroral cholangiopancreatoscopy system for the diagnosis and therapy of bile-duct disorders: a clinical feasibility study (with video). Gastrointest Endosc. 2007 May; 65(6):832-41.