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Disposable single-use choledochoscopy may facilitate recanalization of occlusive biliary anastomotic strictures

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ABSTRACT

Biliary interventions are commonplace in interventional radiology. Occasionally, an anastomotic occlusion is encountered that cannot be traversed with fluoroscopy alone. Endoscopy is a tool that should be added to the interventional radiology armamentarium. Unfortunately, most departments do not have endoscopes regularly available for use by nonendoscopists. The disposable single-use flexible LithoVue scope has the potential to provide many applications for interventional radiologists. It is relatively low cost and is easy to use with a simple setup for novice endoscopists.

Introduction

Interventional radiology (IR)-operated endoscopy is not widely used for diagnostic or therapeutic purposes in the angiography suite. Nonetheless, the clinical use of endoscopy during interventional radiological procedures has been described for several decades. A recent review of percutaneous transhepatic choledochoscopy [1] describes the use of a variety of endoscopic techniques for both diagnosis and management of biliary disease. Ahmed et al. describe 2 main purposes of choledochoscopy, namely, for choledocholithotripsy with stone removal and for choledochoscopic-guided biopsy of hepatobiliary lesions.

Purchase of reusable endoscopes can cost upward of $20,000 per scope with associated equipment, sterilization, processing, repairs, and other additional costs totaling $2 million or greater [2]. This makes the capital investment cost prohibitive for most IR groups. The LithoVue flexible disposable endoscope (Boston Scientific, Marlborough, MA) offers an alternative solution for interventional radiologists to perform a simple low-profile endoscopy.

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Case report

This report demonstrates a case of IR-operated endoscopy facilitating the traversal of an occlusive choledochojejunostomy stricture that could not be otherwise cannulated by fluoroscopy. The use of the endoscope in this case was not planned before the procedure, and this case demonstrates the ease of use and the remarkable benefit of using a disposable endoscope to facilitate therapy in the IR suite when traditional maneuvers are unsuccessful.

Institutional review board approval was not required for the submission of this case report. A 65-year-old man who had undergone a pylorus-sparing Whipple procedure for intraductal papillary mucinous neoplasm 13 weeks before IR consultation presented with a biliary obstruction. Computed tomography and magnetic resonance imaging both demonstrated extensive fibrotic tissue surrounding the biliary-enteric anastomosis with severe upstream biliary dilation. The patient presented with 5 weeks of intermittent fevers, chills, and right upper quadrant pain. Laboratory evaluation revealed a white blood cell count of 8.9 (89% neutrophils), alkaline phosphatase of 503, AST/ALT of 88/137, and bilirubin of 0.7. Due to concerns for cholangitis, gastroenterology was consulted and endoscopic retrograde pancreaticocholangiography was attempted, but the ampulla could not be cannulated. IR was consulted for percutaneous transhepatic cholangiography with biliary drainage.

The patient was brought to the IR suite and general anesthesia was induced. Under fluoroscopic guidance, a 22-gauge Chiba needle (Cook Medical, Bloomington, IN) was used to access a peripheral bile duct in the right hepatic lobe. A 0.018-inch Nitrex wire (Medtronic, Dublin, Ireland) was passed distally into the common bile duct but would not advance through the biliary-enteric anastomosis. An Accustick set (Boston Scientific) was used to convert to a 0.035-inch system through which a 4-Fr Kumpe catheter (Cook Medical) and Glidewire (Terumo Medical, Tokyo, Japan) were placed into the distal common bile duct. A 9-Fr × 25 cm vascular sheath was placed for support. Again, despite numerous attempts, the biliary-enteric anastomosis could not be crossed (Fig. 1).

The decision was made to use the LithoVue disposable endoscope to allow direct antegrade visualization of the anastomosis and to facilitate cannulation. The 9-Fr sheath was removed over a 0.035-inch SuperStiff Amplatz guidewire (Boston Scientific). A 12-Fr peel-away sheath (Cook Medical) was placed. A second Amplatz guidewire was also placed to serve as a safety wire. A 9.5-Fr outer diameter (7.7-Fr tip) LithoVue single-use disposable flexible endoscope was placed through the sheath over one of the Amplatz guidewires to the level of the stricture. The Amplatz wire was removed from the 3.6-Fr working channel of the endoscope, and the endoscope was flexed such that a tiny pinhole ostium was easily visualized. A V18 ControlWire guidewire (Boston Scientific) was passed into the ostium through the working channel of the endoscope under direct visualization (Fig. 2). A 2.8-Fr Renegade Hi-Flo microcatheter (Boston Scientific) was then placed over the wire, also through the working channel into the ostium of the strictured anastomosis. The wire was exchanged for a double-angled gold-tip Glidewire (Terumo Medical) and together with the microcatheter, was navigated through the severely stenosed biliary-enteric anastomotic stricture into the small bowel (Fig. 3).

Fig. 1 – Percutaneous transhepatic cholangiography demonstrates a tight biliary stricture at the choledochojejunal anastomosis (arrow). This could not be traversed despite exhaustive efforts with various hydrophilic and nonhydrophilic wires.

The endoscope was removed and the system was upsized to a 0.035-inch system over a 4-Fr Glidecath. An Amplatz

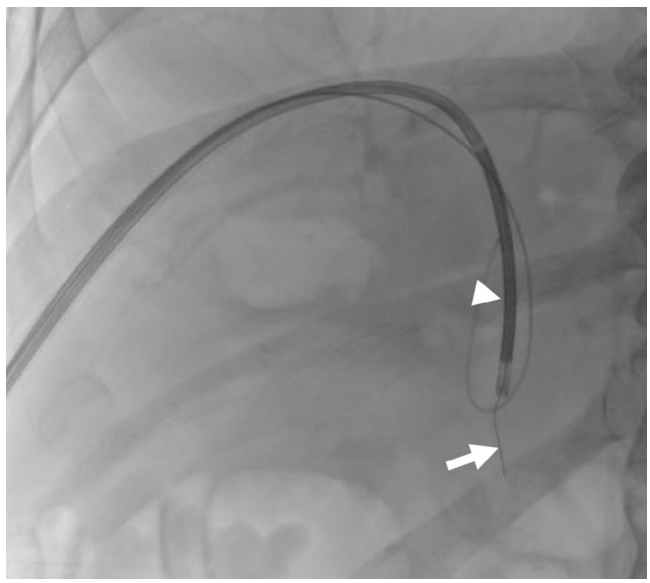

Fig. 2 – Following upsize of the sheath to accept a 9.5-Fr disposable single-use LithoVue (arrowhead) endoscope (Boston Scientific), the pinhole anastomosis is identified and cannulated with a V18 ControlWire Guidewire (arrow). Small-volume peritoneal extravasation is seen from previous fluoroscopic efforts.