VIDEO CASE REPORT

Pancreatoscopy-guided laser dissection of obstructing pancreatic duct stricture: pancreas-preserving endotherapy

Emily R. Jonica, MD, Raj J. Shah, MD

INTRODUCTION

Pancreatic duct (PD) stones and strictures remain challenging sequelae of chronic calcific pancreatitis and contribute to ductal hypertension, which may manifest as abdominal pain, exocrine pancreatic insufficiency, or biliary obstruction.[1,2] Standard ERCP techniques may be insufficient for complex lesions such as severe stricture(s) or extensive stone burden, whereby the degree of obstruction or ductal tortuosity may not permit passage of the wire or catheter.[3] Peroral pancreatoscopy (POP) promotes direct ductal visualization and use of additional devices to treat such advanced pathology, which includes laser therapy that can be used for stone fragmentation or tissue dissection as a means of stricturoplasty.[4] These techniques have been previously described,[3,5-7] with benefits of potentially reducing or delaying the need for surgery.

We present a case of a 74-year-old man with alcohol/tobacco-induced chronic calcific pancreatitis, admitted with an acute flare of pancreatitis attributable to a 15-mm stone in the PD body and a severe stricture immediately downstream (Fig. 1), which subsequently required successive POP sessions.

DESCRIPTION OF TECHNOLOGY

Using a standard duodenoscope (Olympus, Center Valley, Pa, USA), we advanced the SpyGlass DS2 (Boston Scientific, Marlborough, Mass, USA for direct pancreatoscopy. A holmium laser (Litho, Quanta System, Italy) was selected in this case for intervention of the large stone burden. The 272-μm, 100-W holmium laser was used for both the initial stricture dissection (lower power soft tissue settings) and later stone fragmentation (lithotripsy settings), with a range of 0.5 to 2.5 J, 5 to 30 W. The first POP session, which primarily involved stricturoplasty and only limited lithotripsy, used a total energy of 2.78 kJ, compared to 26.2 kJ during the second POP session during which stone fragmentation was the primary focus.

VIDEO DESCRIPTION

Index ERCP revealed a severe, 3-cm segmental stricture immediately downstream from the intraductal stone, which could not be traversed with the wire or contrast to consider use of traditional dilation via balloon or screw tip drill. A 7F × 10-cm single pigtail stent was placed to the margin of the stone to secure future access to the site for subsequent POP therapy and for possible stone fragmentation. At follow-up ERCP, the initial POP session was pursued as planned. Concise strokes were performed with the holmium laser across the stricture using tissue ablation settings, applied in 3-quadrant fashion. The superior quadrant is difficult to access because of the directionality of the laser fiber exiting from the pancreatoscope in the 6 o'clock position.

By the end of the first POP session, the wire was able to traverse to the tail, and the proximal margin of the stone

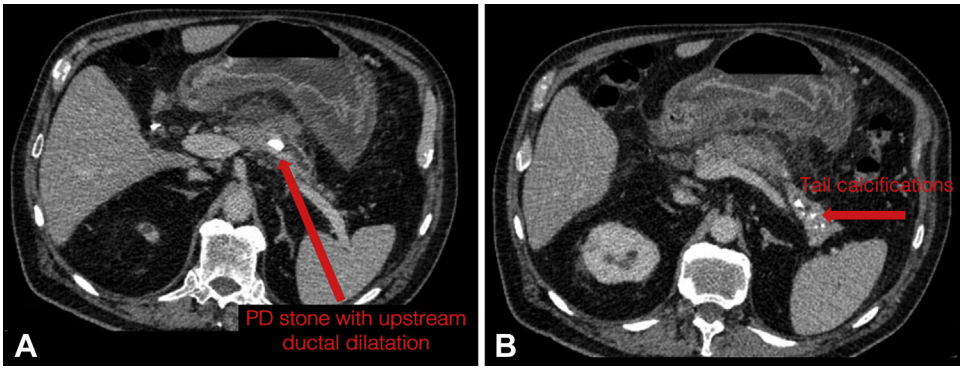

Figure 1. Index CT scan from referring hospital, demonstrating 15-mm intraductal stone in the body of the main pancreatic duct and upstream ductal dilatation **(A)**. Parenchymal tail calcifications are also noted **(B)**.

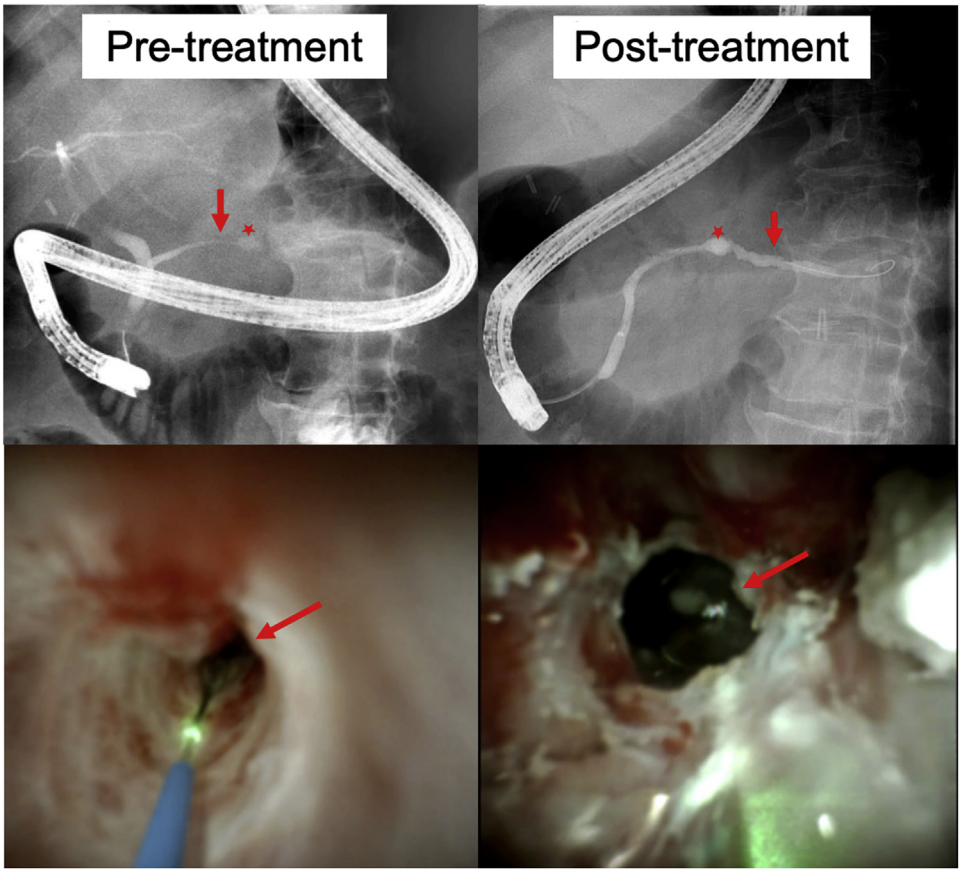

Figure 2. Fluoroscopic images (*top images*) and direct visualization of the stricture and stone by pancreatoscopy (*bottom images*) reveal marked improvement in the caliber of the pancreatic duct and a reduction in the size of the stone after peroral pancreatoscopy therapies. Preintervention images are represented in the *left panel*, in contrast to postintervention in the *right panel*.

was visualized, allowing limited lithotripsy to be performed. At the follow-up POP session, significant obstruction persisted, although there was improved patency of the stricture. Minimal stricturoplasty was required, after which the entire stone could be accessed with the pancreatoscope, and near complete ductal clearance was achieved after lithotripsy (Fig. 2). A 10F × 18-cm wedge stent was placed to the tail. Since this last POP session, the patient has remained clinically stable with improvement of abdominal pain and no further pancreatitis flares or hospitalizations. A 3-month follow-up ERCP is scheduled with anticipated POP if there are residual stone(s) or is a need for further stricturoplasty.

TAKE-HOME MESSAGE

Complex PD strictures or stones may require advanced techniques owing to limitations of standard devices in accessing the affected area because of the degree of ductal narrowing and stone location. POP overcomes these barriers by targeted laser therapy of both PD strictures and stones simultaneously during the same session, which is a novel application of these combined methods demonstrated in this video (Video 1, available online at www.giejournal.org). Ductal patency was restored to the tail, leading to preservation of a significant portion of a potentially viable pancreas and thereby avoiding the need for surgery.

DISCLOSURE

Dr Shah is an advisory board member for Boston Scientific and a consultant for Boston Scientific, Cook Medical, and Olympus. All other authors disclosed no financial relationships.

Abbreviations: PD, pancreatic duct; POP, peroral pancreatoscopy.

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Division of Gastroenterology and Hepatology, University of Colorado Anschutz Medical Campus, Aurora, Colorado.

If you would like to chat with an author of this article, you may contact Dr Shah at Raj.Shah@cuanschutz.edu.

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