

Transpapillary dilation of refractory severe biliary stricture or main pancreatic duct by using a wire-guided diathermic dilator (with video)

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Benign and malignant tumors generally cause strictures in the bile duct (BD) or the pancreatic duct (PD) and result in jaundice or abdominal pain. An appropriate technique for dilation of these strictures is therefore necessary. Endoscopic stent placement has been reported to improve the severity of abdominal pain in selected patients with benign and malignant BD and PD strictures.¹ During ERCP, a guidewire is passed through the stricture into the proximal BD or PD. Subsequently, a plastic stent(s) or self-expandable metallic stent is placed at the stricture. Although these stents are sometimes placed after dilation of the stricture, dilation may be unnecessary in most cases. Severe ductal strictures can usually be dilated using balloon dilation or a dilation catheter. However, this type of dilation is not possible when the BD or PD stricture is severe; in such refractory cases, only the guidewire can pass through it, and a screw drill may be used.^{2,3}

Abbreviations: BD, bile duct; IQR, interquartile range; PD, pancreatic duct.

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Several investigators have described the dissection of difficult PD strictures using a needle-knife or wire-guided snare forceps.⁴⁻⁶

Diathermic dilators, which are commonly used for pancreatic fluid collection drainage, are effective for creating and enlarging the fistula channels between the stomach or duodenum and a pancreatic pseudocyst, PD, or gallbladder.^{7,8} We recently reported our experience using a diathermic dilator to treat severe BD strictures.⁹ The current prospective observational cohort study was conducted to evaluate whether a wire-guided diathermic dilator could pass through BD or PD strictures. We also evaluated the rate of adverse events after diathermic dilation of BD or PD strictures.

METHODS

A total of 851 therapeutic ERCPs was performed in our hospital between April 2011 and March 2013. During this period, 690 patients required biliary drainage for benign or malignant biliary obstruction, and 83 patients required pancreatic drainage for benign obstruction. Of the 690 who required biliary drainage, selective BD cannulation during ERCP was unsuccessful in 10 patients. Of these 10 patients, the precut technique was attempted for selective BD cannulation in 8 patients but was successful in 2 patients only. Of the 6 patients who had unsuccessful BD cannulation using the precut technique, the percutaneous transhepatic biliary drainage rendezvous procedure with successful BD cannulation was performed in 4 patients and surgery in 2 (pancreatic cancer or cholelithiasis with choledocholithiasis). In 2 patients with advanced gastric cancer, the duodenal papilla could not be accessed endoscopically, and both patients refused percutaneous transhepatic biliary drainage. Initial selective PD cannulations for PD strictures were successful in all patients by using a standard ERCP catheter or sphincterotome. Twenty-two consecutive patients of the total number of patients who underwent successful BD or PD drainage were candidates for decompression with a wire-guided diathermic dilator (Fig. 1).

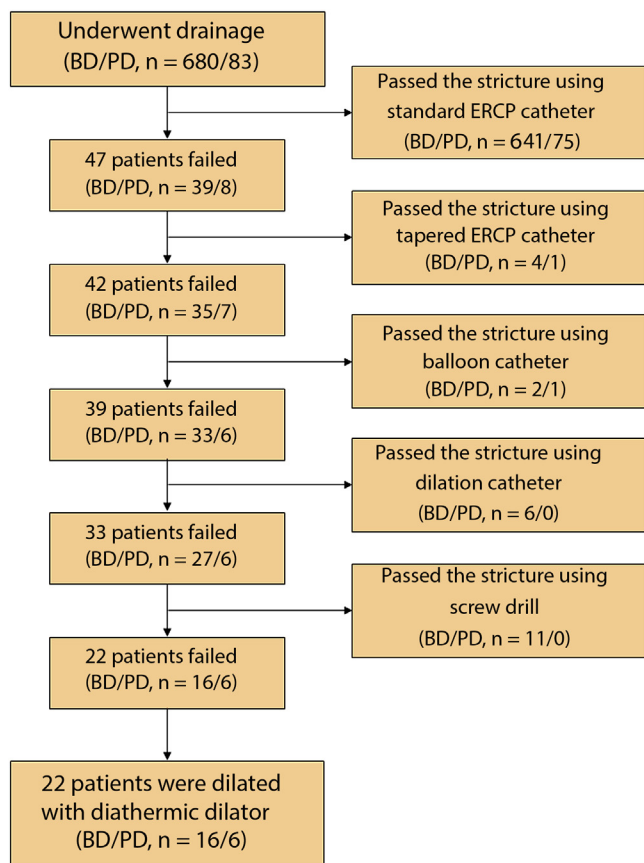


Figure 1. Flow diagram of the trial for biliary or pancreatic drainage. *BD*, bile duct; *PD*, pancreatic duct.

Eligibility criteria

The study included patients who required biliary or pancreatic drainage. Exclusion criteria included age less than 20 years, a performance status value greater than 3 according to the Eastern Cooperative Oncology Group scale, mental disability, contrast medium allergy, severe heart disease (New York Heart Association class III or IV heart failure), severe pulmonary disease (peripheral oxygen saturation < 90%), ampullary neoplasm, infiltration of the papillary area by pancreatic cancer, acute pancreatitis, chronic pancreatitis with an acute exacerbation at the time of the ERCP, Roux-en-Y reconstruction, actual or possible pregnancy, women wishing to become pregnant, nursing mothers, and refusal to provide informed consent.

Endoscopic protocol

Diagnostic ERCP was performed using a duodenoscope with 15-degree backward oblique with an elevator function (TJF-260V; Olympus Medical Systems Corp, Tokyo, Japan). After selective BD or PD wire-guided cannulation,¹⁰ the stricture was evaluated by ERCP and then dilated by endoscopic intervention. A guidewire was passed across the BD or PD stricture, and dilation of the stricture was

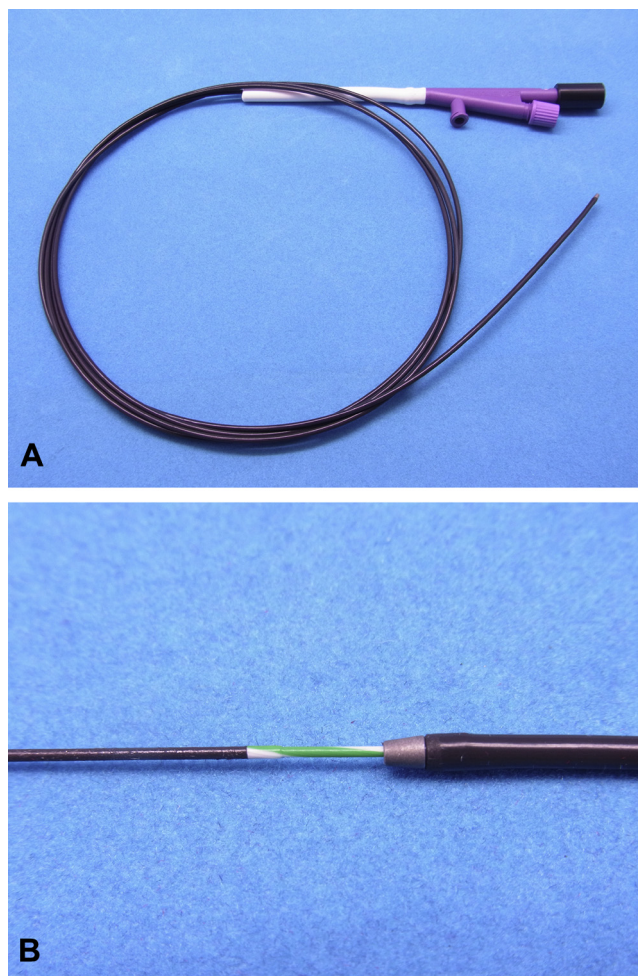


Figure 2. **A**, A 6F wire-guided diathermic dilator (Cysto-Gastro-Set; Endo-Flex, GmbH, Voerde, Germany). **B**, A 6F wire-guided diathermic dilator is always coaxial with the guidewire.

subsequently performed with (1) a standard ERCP catheter or sphincterotome, (2) a tapered ERCP catheter, (3) a standard balloon catheter, (4) a biliary dilation catheter, or (5) a screw drill. If none of these devices could be passed through the BD or PD strictures, dilation using a wire-guided diathermic dilator was scheduled. An internal stent or nasobiliary/nasopancreatic drainage catheter was inserted after diathermy to provide BD or PD drainage (Fig. 2).

All procedures were performed on an inpatient basis. Our institute's review board gave study approval. All patients provided written informed consent. Endoscopic procedures were performed on an inpatient basis, with the patient under conscious sedation with fentanyl citrate and midazolam. The diathermic dilation was performed by a skilled therapeutic endoscopist (H.K.) who had experience performing more than 2000 ERCPs.

Endoscopic equipment

A standard ERCP catheter was used corresponding to the 0.025- and 0.035-inch guidewire (endoscopy catheter

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