


# Placement of Palliative Stent With Guidance of a Percutaneous Transhepatic Stent

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## Abstract

The incidence of pancreatic cancer has increased and outcomes have been improving with a multidisciplinary treatment approach. Pancreatoduodenectomy is the surgical approach for pancreatic head tumors; however, postoperative cholestasis or cholangitis may require endoscopic or percutaneous intervention. Placement of a percutaneous transhepatic cholangiographic (PTC) drain is a safe approach; however, this requires routine maintenance. This case demonstrates placement of a palliative biliary stent by a rendezvous approach using an in situ PTC drain.

## Keywords

malignant biliary obstruction, pancreatic cancer, pancreatic stent

## Introduction

The incidence of pancreatic cancer has increased over the past 10 years. There have been modest improvements in pancreatic cancer outcomes due to a multidisciplinary approach including chemotherapy, operative intervention, and radiation.<sup>1</sup> The pancreatoduodenectomy or the Whipple procedure has been the mainstay operation for surgical management of pancreatic head tumors. However, long-term complications from mechanical obstruction of either the hepaticojejunostomy, pancreaticojejunostomy, or gastrojejunostomy can cause cholangitis, pancreatitis, and bowel obstructions.<sup>2</sup> Postoperatively cholangitis can be managed percutaneously or endoscopically with drainage or stenting. Although placement of a percutaneous transhepatic cholangiographic (PTC) stent allows for safe drainage of the biliary system, obstruction of the drainage system with malignant transformations, mechanical obstruction, or afferent limb stricture may call for internal stent placement for biliary drainage. This has its own set of complications and maintenance requiring routine flushing, draining, or exchange to avoid bacteremia, cholangitis, or hemobilia.<sup>3</sup> This case demonstrates the placement of a palliative metal biliary stent with usage of an existing PTC drain for guidance.

## Case Report

A 71-year-old Caucasian male with history of pancreatic cancer status post a Whipple procedure in May 2017 and

subsequent chemoradiation presented with obstructive jaundice in June 2018. Esophagogastroduodenoscopy (EGD) was performed that demonstrated a malignant appearing stricture of the afferent jejunal limb. Contrast injection through the stricture demonstrated stricturing distal to the widely patent hepaticojejunostomy (Figure 1). Attempt to place an endoscopic stent across the stricture was unsuccessful. The contrast did not drain from the liver and he subsequently developed cholangitis. An emergent 8.5-Fr PTC with internal and external biliary drainage catheter was performed by interventional radiology. The internal drainage catheter was placed beyond the stricture in the afferent limb. The patient improved clinically with improvement of his liver function tests and was discharged to a short-term nursing facility.

The patient over the course of the next month had decreased output from his biliary drain and was readmitted with abdominal pain, nausea, vomiting, increased bilirubin, and leukocytosis. The external/internal biliary drain catheter was replaced

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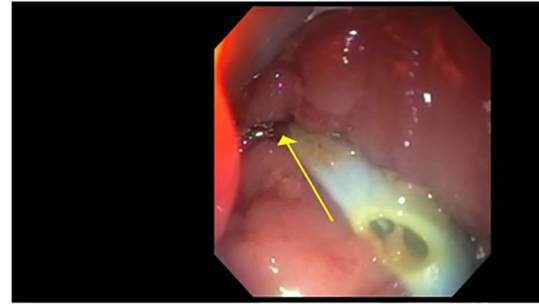


**Figure 1.** Contrast within bile ducts.

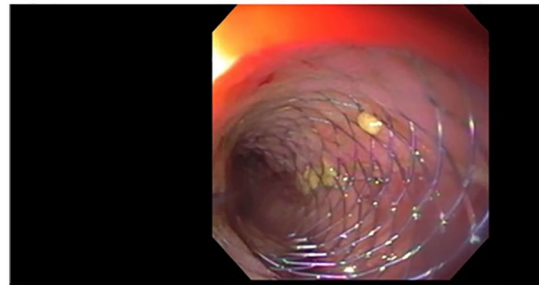


**Figure 2.** Wire within percutaneous transhepatic cholangiographic drain.

without significant improvement. The patient then underwent a repeat EGD and endoscopic retrograde cholangiopancreatography. The previously placed PTC drain was seen in the afferent jejunum traversing the stricture. A 0.025 inch  $\times$  450 cm biliary wire was placed successfully into the biliary tree through one of the side holes of the PTC drain (Figure 2). The wire was advanced externally to the skin through the PTC. Once the wire was secured at the skin, the PTC drain was removed. Cholangiogram demonstrated severe stenosis about 5 cm long distal to the hepatojejunostomy in the afferent jejunal limb. A 10 mm by 10 cm uncovered metal stent was placed from the left main hepatic duct and extending



**A. Afferent Jejunal Stricture (arrow)**



**B. Biliary Stent across Stricture**

**Figure 3.** Placement of metallic stent.

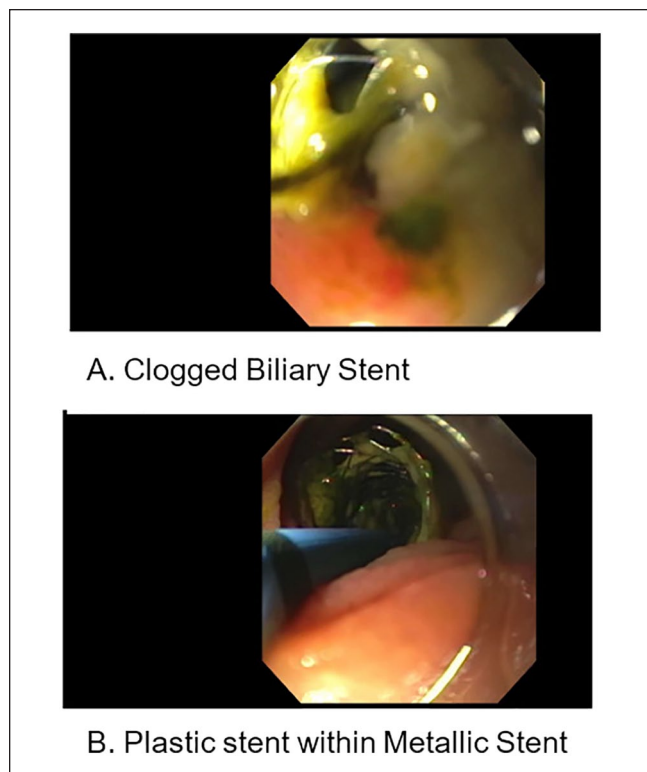
across the afferent jejunal stricture into the normal jejunal limb (Figure 3). Bile flowed through the stents.

Postprocedurally, the patient had down trending liver function testing. However, 6 days later, the patient was noted to have an acute elevation in total bilirubin and alkaline phosphatase. Due to concern for stent occlusion, he had a repeat EGD that demonstrated a clogged stent with debris including food and sludge. The stent was cleared of the sludge and debris. To prevent recurrent clogging, a 10 Fr by 8 cm double pigtail plastic stent was placed through the pre-existing metal stent (Figure 4). After the second procedure, the patient had improvement in his liver function tests including bilirubin and alkaline phosphatase. After goals of care discussion, the patient was transitioned to palliative care with home hospice.

## Discussion

The pancreatoduodenectomy or the Whipple procedure has been the mainstay operation for surgical management of pancreatic head tumors. However, long-term complications can cause cholangitis, pancreatitis, and bowel obstructions.<sup>2</sup> Management of biliary obstructions includes the utilization of previously described procedures (PTC, stent placement, or surgical drainage).

This case highlights the multistep approach for management of malignant biliary obstruction post Whipple. In our case, the hepaticojejunostomy was patent while the biliary



**Figure 4.** Demonstration of occluded metallic stent (A) and placement of plastic stent (B).

obstruction was caused by a stricture in the afferent jejunal limb due tumor recurrence. After identifying an ongoing obstruction after PTC stent, placement of an internal metal stent was performed utilizing PTC drain in a rendezvous approach. Rendezvous techniques allows an alternative strategy for management of complicated biliary stenosis or bile leaks to relieved jaundice and restore continuity.<sup>4</sup> A rendezvous technique allowed for wire access through the old PTC drain to allow for safe placement of an internal metal stent.

Studies have demonstrated that endoscopic stent placement as a common practice for malignant biliary obstructions.<sup>5</sup> Moss et al reported that metal stents were the intervention of choice for jaundiced pancreatic cancer patients.<sup>6</sup> In an event of an occluded metal stent, placement of a plastic stent is effective for management.<sup>7</sup> As seen in this patient despite a larger diameter internal metal stent, he continued to have signs and symptoms of biliary obstruction prompting placement of a plastic pigtail stent within the metal stent.

Stent patency from the pigtail stent has yet to be determined although the duration of plastic stents are not significantly different compared with self-expanding metal stents.<sup>7</sup> In the occurrence of an occlusion and in patients who cannot tolerate endoscopically or percutaneously placed internal or external drainage, endoscopically ultrasound-guided biliary drainage via a hepaticogastrostomy or choledochoduodenostomy is effective.<sup>8</sup> This patient did not undergo further

procedures given goals of care; therefore, these alternative strategies were not explored.

Although the placement of a pancreatic stent has been previously described in the literature, this case highlights the progression of strategies utilized to alleviate the biliary obstruction. In conclusion, placement of a plastic pigtail stent within a metallic stent was useful for treatment of an occluded metallic stent, and placement of this metallic stent was successful using a rendezvous technique through an old PTC drain.

#### Authors' Note

This case was previously presented as an abstract at the American College of Gastroenterology 2019 Annual Scientific Meeting Abstracts in San Antonio, Texas, on October 29, 2019.

#### Author Contributions

SP wrote, drafted, and revised the paper. SP is the guarantor of the case report. NJ wrote, drafted, and revised the paper. PM drafted and revised the paper.

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#### Ethics Approval

Our institution does not require ethical approval for reporting individual cases or case series.

#### Informed Consent

Informed consent for patient information to be published in this article was not obtained because no identifying information is present in this case.

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