



Neoadjuvant double metal stent placement in a patient with locally unresectable cancer of the pancreatic head—a case report

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Abstract: Pancreatic cancer still has a poor prognosis and the only curative treatment that also leads to longest survival is surgical resection. However, due to poor performance status, locally advanced disease, or metastases only a minority of patients are candidates for surgery. On the other hand, newer and more potent neoadjuvant chemotherapy regimes may render locally advanced tumors resectable and when resection is achieved, resection results in improved prognosis. Cancer of the pancreatic head frequently cause biliary and duodenal obstruction that needs to be resolved prior to application of chemotherapy. Here we report the case of a 72-year-old patient who we diagnosed with cancer of the pancreatic head. At the time of diagnosis, cross-sectional imaging displayed no metastases. Histology of the tumor was confirmed by open surgery but the tumor was locally unresectable at the time of first exploration. Subsequently, the patient developed both jaundice and duodenal obstruction, therefore we performed “neoadjuvant” double metal stenting of the duodenum and the bile duct. The procedure involved an external-internal rendez-vous procedure that resulted in complete relief from biliary and gastric obstruction and enabled the patient to receive timely pre-operative chemotherapy.

Keywords: Pancreatic cancer; borderline resectability; biliary obstruction; gastric outlet obstruction; case report

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Introduction

More than 20 years after the advent of the first options for chemotherapy prognosis for pancreatic cancer is still poor. Only surgical resection combined with adjuvant chemotherapy may result in long-term survival. However, only a minority of patients present with localized and surgically resectable tumors. In general, patients with metastatic disease are not considered for surgery. Other patients present with locally advanced disease that may become resectable following neoadjuvant therapy. Novel concepts to achieve surgical resection include pre-operative chemotherapy following the combined chemotherapy regime “FOLFIRINOX” and this strategy may provide a survival benefit for patients with locally advanced pancreatic cancers. However, patients may develop complications

such as jaundice and duodenal obstruction that need to be resolved prior to chemotherapy. We present the following case in accordance with the CARE reporting checklist (available at <https://dx.doi.org/10.21037/dmr-21-31>).

Case presentation

A 72-year-old patient presented to the emergency department of our hospital with upper abdominal discomfort and nausea. The past medical history and family history were unremarkable. Physical examination revealed upper abdominal tenderness but was unremarkable otherwise. Routine laboratory finding including liver function tests were within normal limits. Abdominal ultrasound showed a dilated pancreatic duct (*Figure 1A*) and a mass in the pancreatic head with low echogenicity (*Figure 1B*).

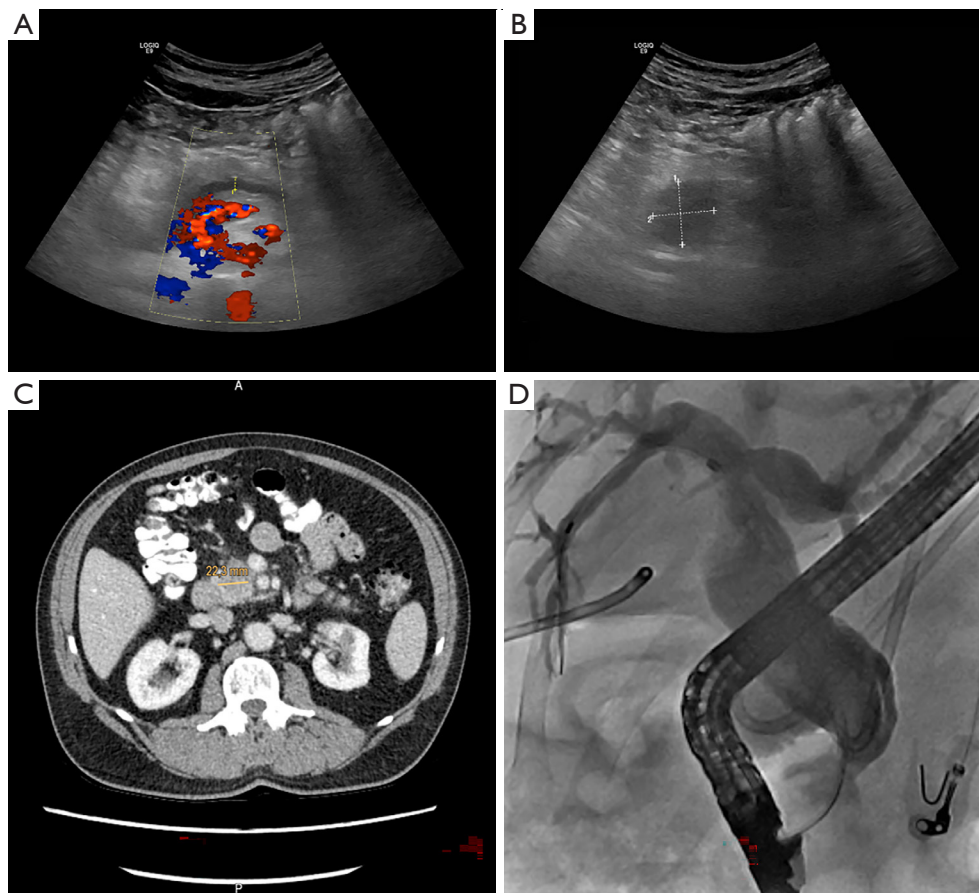


Figure 1 Diagnostic procedures. (A) At the time of first presentation, a transabdominal ultrasound revealed a dilated pancreatic duct (marked by measurement) and (B) a mass with low echogenicity in the pancreatic head (marked by measurements). (C) CT scan confirmed a mass of the pancreatic head/uncinate process with broad contact to the superior mesenteric artery (marked by measurement). ERCP confirmed a distal stenosis of the bile duct and a dilation of the common bile duct. An ERCP catheter is placed in the common bile duct. In addition, external and internal drainages of retroperitoneal fluid collections are visible (D). All figures were obtained during care of the patient in this report and have not been previously published. ERCP, endoscopic retrograde cholangiopancreatography.

The common bile duct was not dilated at the time of presentation and there were no distant metastases detected. CT scan confirmed a mass of the pancreatic head/uncinate process with broad contact to the superior mesenteric artery (*Figure 1C*). The findings were compatible with cancer of the pancreatic head and the interdisciplinary tumor conference deemed the tumor borderline resectable due to possible arterial involvement and recommended exploration. Surgery confirmed tumor contact with the superior mesenteric artery $>180^\circ$ and therefore, resection was not possible at the time. Adenocarcinoma of the uncinate process (cT3 cNx cM0) was histologically confirmed following partial diagnostic tumor resection. Unfortunately, post-surgery the patient developed acute

pancreatitis with extensive fluid collections, which in the further course required internal and external drainage due to bacterial superinfection. Four weeks after surgery, the patient became jaundiced due to distal bile duct obstruction; endoscopic retrograde cholangiopancreatography (ERCP) was performed and following sphincterotomy a plastic stent was placed (*Figure 1D*). An additional 4 weeks later the patient developed postprandial nausea and vomiting. Gastroscopy confirmed gastric outlet obstruction due to duodenal compression stenosis, which could only be passed with a small diameter nasal endoscope. Options to relieve both biliary and gastric outlet obstruction were discussed and we decided to perform a two-step procedure: first, the biliary plastic stent was removed employing the

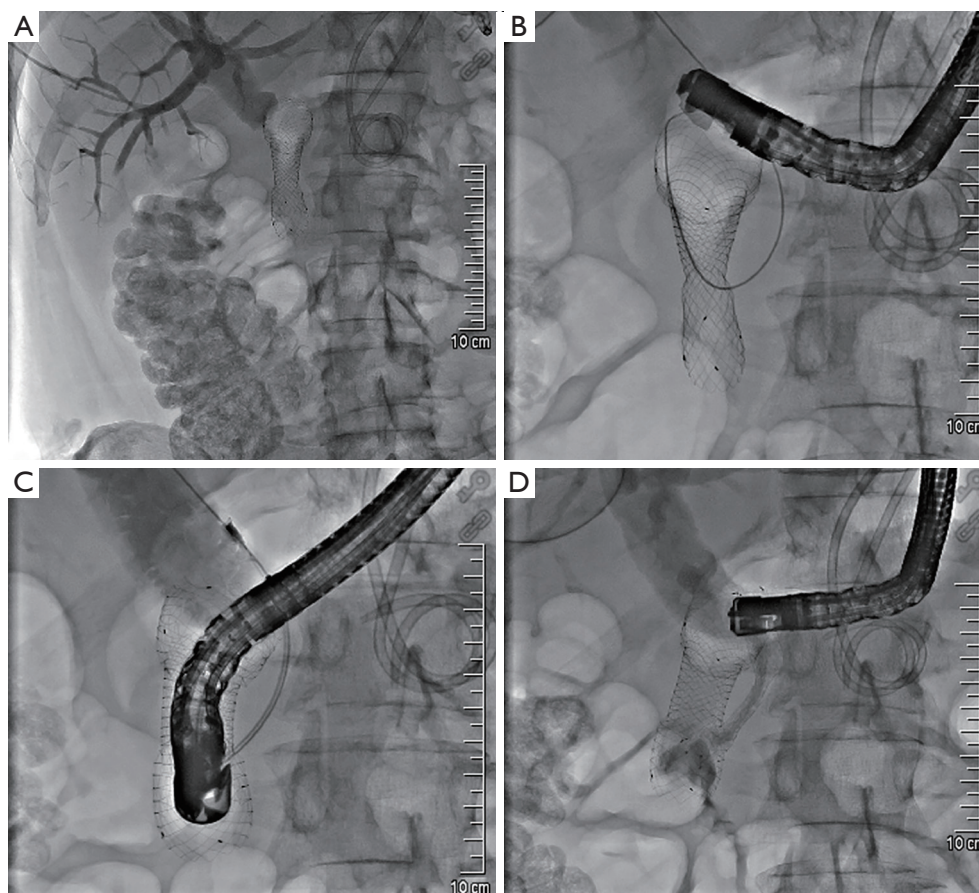


Figure 2 Interventional treatment. (A) Percutaneous access to the biliary tree was achieved in the right liver lobe. (B) A Terumo wire has passed over the bile duct stenosis and through the metal mesh of the duodenal stent and was gripped with forceps and pulled through the duodenoscope. (C) Over this wire, a diagnostic ERCP catheter was placed through the metal mesh into the common bile duct. (D) After transpapillary access to the common bile duct was established, the metal mesh and the stenosis were dilated and an uncovered metal stent was placed in the common bile duct. Contrast media passed through the stent into the duodenum. All figures were obtained during care of the patient in this report and have not been previously published. ERCP, endoscopic retrograde cholangiopancreatography.

nasal gastroscope and a standard short uncovered duodenal stent was placed (Cook Medical, 6 cm). Unfortunately, the stent blocked access to the papilla, which we were unable to identify through the metal mesh. Therefore, we waited for 6 days for cholestasis to develop. We then established percutaneous transhepatic access to the bile duct system (*Figure 2A*) and passed a guide wire through the distal bile duct stenosis and the metal mesh inside the stent in the duodenum (Terumo Guidewire). We grasped the wire with forceps and withdrew it through the duodenoscope (*Figure 2B*). Subsequently, a standard diagnostic ERCP catheter was inserted over the Terumo guidewire, stable position with the duodenoscope within the duodenal stent was achieved, and the catheter was inserted over

the external guidewire through the metal mesh into the common bile duct (*Figure 2C*). The guidewire was exchanged and a stiff wire (Visiglide, Olympus) was placed through the duodenoscope into the common bile duct. We dilated the distal bile duct stenosis and the metal mesh with a balloon (6 mm) and placed a metal stent over the wire into the distal bile duct with the distal end of the stent within the duodenal stent (Cook, 10 mm, 6 cm). Contrast media passage through both the bile duct and the duodenal stent was satisfactory (*Figure 2D*). The patient reported that he did well after the rendez-vous procedure, jaundice did not reoccur as confirmed by laboratory tests and oral ingestion was possible with no limitation. He started neoadjuvant chemotherapy 4 weeks later and continuous to

do well after 5 cycles of chemotherapy with Gemcitabine (1,000 mg/m²) and nab-Paclitaxel (125 mg/m²) days 1, 8, 15. A recent CT scan showed no distant metastases and we plan a repeat-exploration with possible pancreaticoduodenectomy. Written informed consent was obtained from the patient for publication of this case report and the accompanying images. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee(s) and with the Helsinki Declaration (as revised in 2013).

Discussion

Despite progress in the understanding of the molecular pathology, imaging, surgery and chemotherapy, pancreatic cancer is still associated with a poor prognosis (1). Surgery is the only curative treatment and results in longer survival compared with other therapies (1). However, only a minority of patients can receive tumor resection due to metastatic disease, performance status or locally advanced tumors (2). In addition, locally advanced tumors commonly cause local complications including biliary and gastric outlet obstruction. Advances in chemotherapy for pancreatic cancer enable neoadjuvant treatment for locally advanced cancers (2). In our case, the tumor was not resectable due to contact with the superior mesenteric artery >180°. Neoadjuvant chemotherapy may render locally advanced tumors resectable and when resection is achieved, resection results in improved prognosis (3). Importantly, following chemotherapy, radiology is not a predictor of resectability and therefore, patients without progress and distant metastases require surgical exploration. For our patient, we planned neoadjuvant chemotherapy after histological confirmation. Unfortunately, due to postoperative pancreatitis this was delayed and he required stenting of the common bile duct for obstructive jaundice. At the time of stenting there was no duodenal obstruction present and we decided to place a plastic stent, which we routinely exchange every three months. Infection of peripancreatic fluid collections delayed chemotherapy further and the patient developed duodenal obstruction. Concomitant biliary and gastric obstruction is a common dilemma in patients with cancer of the pancreatic head (4). In general, treatment options include double bypass surgery (hepaticojejunostomy and gastrojejunostomy), transpapillary bile duct stenting and duodenal stenting

as well as endoscopic ultrasound-guided stenting and duodenal stenting (4). We avoided the surgical approach so as not to delay chemotherapy any further and ultrasound-guided stenting due to remaining fluid collections. Placement of a permanent transpapillary metal stent first was not achieved because passage of the stenosis with a duodenoscope was not possible. Therefore, we placed the uncovered duodenal metal stent first and, due to blockage of the papilla by the metal stent, we performed a complex rendez-vous procedure to place a transpapillary metal stent. Following the “neoadjuvant” double-stenting, the patient does very well and received 5 cycles of neoadjuvant chemotherapy with Gemcitabine and nab-Paclitaxel (5). We avoided more aggressive chemotherapy with the modified FOLFIRINOX combination chemotherapy owing to the patients’ performance status. In conclusion, improved surgical and medical tools for the treatment of pancreatic cancer require strategies for complication management in order to enable patients to receive these therapies. Here we describe a “neoadjuvant” double-stenting approach involving a rendez-vous procedure that resulted in complete relief from biliary and gastric obstruction and enabled the patient to receive timely chemotherapy.

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Footnote

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Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. Written informed consent was obtained from the patient for publication of this case report and the accompanying images. A copy of the written consent is available for review by the editorial office of this journal. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee(s) and with the Helsinki Declaration (as revised in 2013).

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