

Hepatic Arterio biliary Fistula Successfully Treated with an Endobiliary Covered Stent

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Editor:

Percutaneous transhepatic biliary drainage (PTBD) is an invasive procedure that carries the risk of several complications such as pain, infection, cholangitis, sepsis, and hemobilia. Hemobilia occurs in approximately 2.6%–9% of patients undergoing PTBD (1). Hepatic arterio biliary fistula after PTBD is a well-known complication and is usually associated with a pseudoaneurysm. Treatment of a hepatic arterio biliary fistula with embolization of the catheter track or the bleeding branch of the hepatic artery has already been described (2,3). In recent years, covered stents are increasingly being used for the management of arterial injuries. Herein, we describe the use of an endobiliary covered stent in a patient with advanced carcinoma of the head of the pancreas to treat an iatrogenic hepatic arterio biliary fistula.

A 71-year-old man with a history of pancreatic carcinoma was referred from an outside hospital for the evaluation of persistent bleeding around an internal-external biliary drainage catheter (which manifested as blood-soaked dressings) and possible internalization of the internal-external biliary drainage catheter. An 8-F internal-external biliary drainage catheter (Cook, Bloomington, Indiana) had been placed at an outside hospital. Review of the contrast medium–enhanced computed tomographic (CT) scans of the abdomen showed a pancreatic mass at the head and uncinate process measuring approximately 4.3 × 3.9 cm with multiple enlarged peripancreatic nodes and hepatic ductal dilatation. The hepatic artery and

portal vein were patent. Initial cholangiograms obtained through the existing catheter did not reveal a definite source of hemobilia. Multiple filling defects were thought to be due to blood clots. The biliary drainage catheter was cut to release the pigtail, and active hemorrhage was noted to be draining through the catheter. Under fluoroscopic guidance, a 0.035-inch regular stiff Amplatz wire (Cook) was advanced through the catheter and the catheter was removed. A 7-F Pinnacle sheath (Terumo, Somerset, New Jersey) was inserted and a pull-back cholangiogram obtained. There was irregular narrowing of the distal common bile duct consistent with the diagnosis of carcinoma of the pancreas. The cholangiogram also demonstrated the presence of a communication between a right-sided biliary duct and a branch of the hepatic artery with a moderate-sized pseudoaneurysm at approximately the level of the 9th rib (Figure, a and b). The sheath was advanced beyond the arterio biliary fistula and its tip positioned in the proximal common bile duct. Under fluoroscopic guidance, a 10 × 80-mm Protégé stent (ev3, Plymouth, Minnesota) was successfully deployed across the middle and distal thirds of the common bile duct. This was followed by cholangioplasty with a 10 × 40-mm Bard XT angioplasty balloon (Bard, Tempe, Arizona). The sheath was then withdrawn slowly over the wire, and a repeat cholangiogram was obtained to identify the arterio biliary fistula. Therapeutic options that were considered included embolization of the tract and angiographic embolization of the bleeding branch. However, to avoid another invasive procedure, hepatic arteriography, and embolization, we decided to place a covered stent across the arterio biliary fistula. Under fluoroscopic guidance, a 5 × 22-mm balloon-expandable covered stent (Atrium Medical, Hudson, New Hampshire) was deployed in the injured bile duct across the arterio biliary fistula. Before deployment, the exact position of the stent across the arterio biliary fistula was confirmed by injecting contrast medium through the side arm of the sheath. A cholangiogram obtained after stent deployment demonstrated successful occlusion of the arterio biliary fistula with the stent in the bile duct (Figure, c). An 8-F Skater biliary internal-external drainage catheter (Angiotech, Gainesville, Florida) was placed

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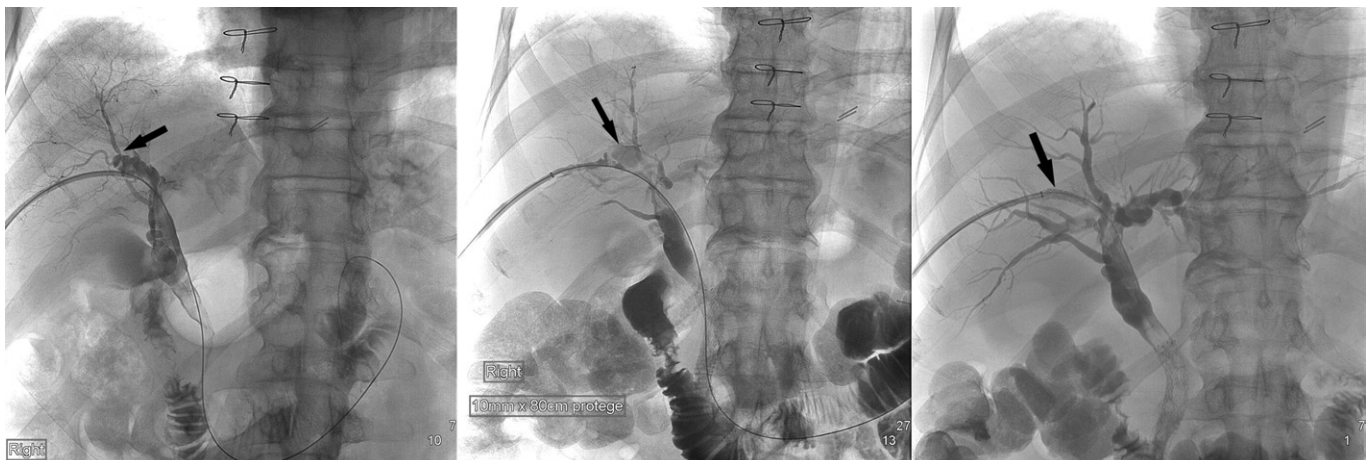


Figure. (a) Cholangiogram demonstrates opacification of the arterio biliary fistula (arrow). Also noted is a stricture involving the middle and distal parts of the common bile duct. (b) Cholangiogram demonstrates a pseudoaneurysm (arrow) at the site of the arterio biliary communication. Also noted is the stent across the middle and distal parts of the common bile duct. (c) Cholangiogram demonstrates good flow of contrast medium through the covered stent (arrows) placed across the arterio biliary fistula. There is no opacification of the arterial system or pseudoaneurysm.

with its tip coiled in the small bowel. Follow-up cholangiography performed the next day demonstrated successful closure of the arteriobiliary fistula.

The management of hemobilia includes an initial cholangiogram, and, if the source of hemobilia is venous bleeding (dark blood that is nonpulsatile), treatment by upsizing the tube to tamponade the bleeding may be all that is necessary. If the source is arterial, however, treatment of the hepatic artery injury is often necessary. Hepatic artery embolization has been the method of choice for the control of hemobilia from an arteriobiliary fistula. Ideally, embolization should be performed as close to the injury as possible, but this may be impossible technically, despite the use of a variety of guide wires and catheters. In our patient, considering the advanced nature of the disease, placement of an endobiliary covered stent through the existing track was thought to be reasonable as a first attempt because, if it worked, it would obviate the need to obtain an arteriogram. Due to small size of the covered stent, no major side branch bile duct occlusion was seen at cholangiography. The placement of a covered stent in the biliary system to treat a portobiliary fistula has already been reported (4). During placement of a covered stent, care should be taken not to occlude large vessel branches or bile duct

branches. Therefore, the precise identification of the arteriobiliary fistula and placement of the shortest covered stent possible should be the goal. Placement of a covered stent may be associated with complications such as liver infarction adjacent to stent-grafts, particularly if the portal vein is occluded and can be noted on follow-up CT scans (4). The use of covered stents in the biliary tree also carries a potential risk of bacteremia, especially in the first few days after stent placement, before the fistula is completely endothelialized.

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