Percutaneous Self-expandable Metallic Stent Placement for Cancer Recurrence at the Hepaticojejunostomy Site

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PURPOSE: To evaluate long-term outcomes of patients receiving percutaneous stent placement for cancer recurrence at the anastomotic hepaticojejunostomy site after curative or palliative biliary surgery.

MATERIALS AND METHODS: Fourteen patients (mean age, 60.1 years; range, 43–81 years) who received stent placement for malignant biliary anastomotic recurrence were enrolled. The median interval between biliary surgery and stent placement was 21 months (range, 0.7–54 months). Technical success, complications, clinical success (ie, >30% decrease in serum bilirubin level 1 week after stent placement vs baseline), stent malfunction and management, stent patency, and patient survival were evaluated.

RESULTS: The 14 patients received a total of 20 stents without procedure-related complications at the time of initial stent placement. Six patients each required two stents to drain both lobes of the liver. Clinical success was achieved in 10 patients (71%), and an additional two patients showed a decrease in total bilirubin level that was less than 30% versus baseline measurement. Stent malfunction occurred in 10 stents in seven patients (50%) and was managed with interventional procedures such as percutaneous transhepatic biliary drainage, balloon dilation, or a second biliary stent placement. Median overall stent patency was 5.0 months (range, 0.7–60 months), and median survival time was 10.0 months (range, 0.7–60 months).

CONCLUSION: Stent placement was feasible, safe, and effective in patients with cancer recurrence at the anastomotic hepaticojejunostomy site.

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Abbreviation: PTBD = percutaneous transhepatic biliary drainage

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CANCER of the pancreas or bile ducts is the most common cause of malignant obstruction of the biliary tree (1–3). Surgery is the only curative treatment for patients who have these malignancies, but only approximately 20% of these tumors are resectable (1,4). As a result of improvements in major hepatobiliary resection, the 5-year survival rate of patients resected for hilar cholangiocellular carcinoma is approximately 11%–32.5% (2,3,5,6). However, even after curative resection, the postoperative recurrence rate is still high and the outcomes are unsatisfactory (7).

Biliary stent placement is the treatment of choice for malignant biliary obstruction caused by unresectable neoplasms. Although there have been many studies of outcomes after palliative stent placement for unresectable tumors (1,8–12), less is known about outcomes after stent placement for cancer recurrence at the anastomotic site after curative resection. As a result of postoperative anatomic distortion, access to the stricture is difficult, precluding the endoscopic approach. The purpose of this study was to evaluate long-term outcomes of percutaneous stent placement for cancer recurrence at the anastomotic hepaticojejunostomy site after curative or palliative biliary surgery.

MATERIALS AND METHODS

Patients

From January 2000 through June 2007, a total of 429 patients underwent

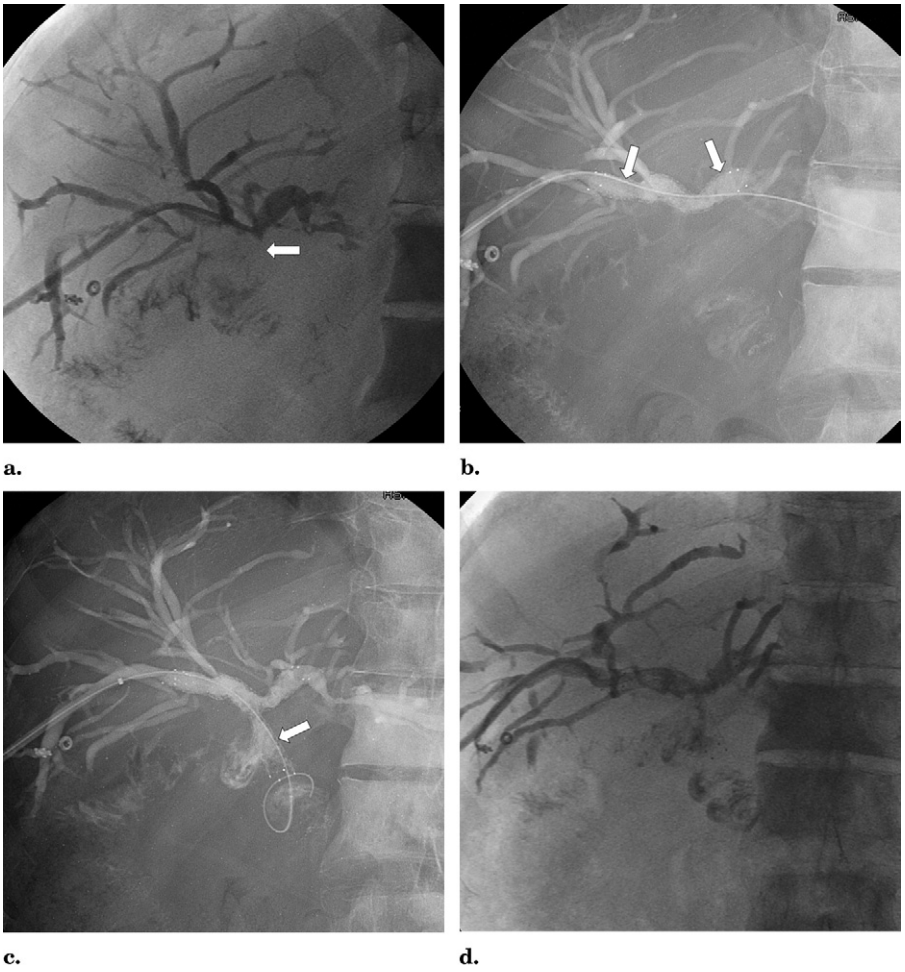

Figure 1. Images from a patient with hilar lymph node and bile duct dissection for Klatskin tumor (patient 6). **(a)** Cholangiogram via the right PTBD tract shows separation of the bilateral hepatic ducts and stricture of the hepaticojejunostomy anastomosis (arrow). **(b)** A guide wire was passed into the left hepatic duct and the first transverse stent (arrows) was inserted after balloon dilation of the stricture (not shown). **(c)** Cholangiogram obtained after second vertical stent placement (arrow) shows good expansion of the stents and good contrast agent passage through the stents. **(d)** Cholangiogram obtained 3 days after stent placement demonstrates full expansion of the stents and good contrast agent passage.

percutaneous biliary stent insertion for malignant biliary obstruction in two large tertiary referral hospitals. Among them, 14 patients (seven men; mean age, 60.1 years; age range, 43–81 y) underwent stent placement for malignant biliary anastomotic recurrence. These patients had previously undergone resection for Klatskin tumor (n = 5), peripheral cholangiocellular carcinoma involving hepatic hilum (n = 3), gallbladder carcinoma (n = 2), common bile duct cancer (n = 2), pancreatic head cancer (n = 1), and ampulla of Vater cancer (n = 1). For malignant biliary anastomotic recurrence, radiation therapy (36–50 Gy in 20 fractions) and oral chemotherapy (5-fluoruracil, TS-1) were performed in three and six patients, respectively. All diagnoses were based on histologic evaluation of surgical specimens in addition to imaging findings. The median interval between surgery and stent placement was 21 months (range, 0.7–54 months).

All obstructions were at the postoperative anastomosis, with all anastomoses having been created in hepaticojejunostomy procedures. Tumor recurrence at the anastomosis was defined as increasing mass involving the anastomotic portion on serial computed tomography (CT) scans and increased total bilirubin levels. Strictures were confirmed on cholangiograms after percutaneous transhepatic biliary drainage (PTBD).

This retrospective study was approved by the institutional review boards of both participating universities, and individual patient consent was waived for this study.

Stent Placement and Follow-up

All PTBD procedures were performed to decompress the biliary obstruction and provide access for biliary stent placement. The PTBD procedures were performed with analgesia with intramuscularly injected meperidine hydrochloride (Demerol; Keukdong Pharmaceuticals, Seoul, Korea) and local anesthesia with lidocaine (Jeil Pharmaceuticals, Daegu, Korea). Broad-spectrum antibiotics were given for at least 12 hours before each procedure. The routes of stent insertion were via left (n = 8), right (n = 1), and bilateral (n = 5) PTBDs, with the latter required in cases of complete separation of the bilateral ducts. All stents were placed 5–120 days after the initial drainage procedure, allowing cholangitis, if present, to be treated. The stents used were self-expandable bare metal Zilver 635 vascular stents (Wilson-Cook Medical, Winston-Salem, North Carolina), Sentinol stents (Boston Scientific, Natick, Massachusetts) and Hercules DH biliary stents (S&G Biotec, Seongnam, Korea). Zilver and Sentinol stents are made of nitinol (a nickel and titanium alloy) with laser cutting, have high flexibility and minimal foreshortening during deployment, and come with 6-F-diameter introducing systems. Hercules DH stents are made of nitinol wire and come with 8-F diameter introducing systems. Stents were chosen based on availability and operator preference.

For the procedure, a 5-F Kumpe catheter (Cook, Bloomington, Indiana) and 0.035-inch guide wire (Radifocus Guide Wire M; Terumo, Tokyo, Japan) were advanced through PTBD tracts, across the anastomotic stricture to the jejunum. The stricture was opacified by contrast agent injection through the Kumpe catheter, and the length of the stricture was measured with a ruler