Suprapapillary versus Transpapillary Stent Placement for Malignant Biliary Obstruction: Which Is Better?

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ABSTRACT

Purpose: To compare the complications, stent patency, and patient survival with self-expandable metal stents (SEMSs) placed above or across the sphincter of Oddi in malignant biliary obstruction.

Materials and Methods: From January 2008 to December 2012, 155 patients were treated with percutaneous transhepatic SEMS placement. Seventy-four patients underwent suprapapillary stent placement (group A), and 81 patients underwent transpapillary stent placement (group B). Complications rates, stent patency, and patient survival were evaluated and analyzed for potential predictors.

Results: In group A, 68 covered and 28 uncovered SEMSs were placed, and, in group B, 78 covered and 19 uncovered SEMSs were placed. Thirty-six stent-related early complications were observed in a total of 154 patients (23.4%): pancreatitis (n = 23), cholangitis (n = 12), and cholecystitis (n = 1). The early complication rates for groups A and B were 14.9% (11 of 74) and 31.3% (25 of 80), respectively ($P = .016$). Pancreatitis occurred in three patients (4.1%) in group A and 20 patients (25.0%) in group B ($P = .001$). Stent location was a single independent predictor of pancreatitis ($P < .001$). Stent occlusions by tumor growth was more frequently observed in group A than in group B ($P = .007$), whereas stent occlusion by sludge incrustation was more frequently found in group B than in group A ($P = .007$). There was no significant difference in cumulative stent patency ($P = .401$) or patient survival ($P = .792$) between groups.

Conclusions: To decrease the incidence of pancreatitis, suprapapillary placement of SEMSs is recommended for malignant biliary obstruction, but not in the lower 2 cm of the common bile duct.

ABBREVIATIONS

CBD = common bile duct, PTBD = percutaneous transhepatic biliary drainage, SEMS = self-expandable metal stent

In patients with obstructive jaundice caused by unresectable malignant tumors, such as pancreatic cancer, cholangiocarcinoma, and gallbladder cancer, percutaneous or endoscopic self-expandable metal stent (SEMS) insertion has become a standard palliative treatment. Most previous studies have evaluated the effectiveness of the procedure with regard to patient-related characteristics (tumor type/stage and obstruction level) or stent-related characteristics (covered or uncovered, covering material, self- or balloon-expanding, and stainless steel or nitinol composition). Although there is a consensus among interventional radiologists that a safety margin of at least 2 cm should be left at each end of the upper and lower margins of the stricture to prevent tumor growth (1), controversy exists about the need to place the stent across the sphincter of Oddi located in the papilla of Vater when the tumor spares that region and does not obstruct the lower 2 cm of the common bile duct (CBD). Only a few reports (1–5) with SEMSs have compared efficiency between suprapapillary and transpapillary methods of stent placement for the palliation of malignant biliary obstruction. In terms of the incidence of cholangitis, the selection of a suprapapillary versus a transpapillary method of SEMS placement is under debate (2–4). Some authors suggested that the patency of a SEMS was not influenced by its location (1,5). The aim of the present study was to compare the complications, stent patency,

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and patient survival associated with SEMS placement above versus across the sphincter of Oddi in malignant biliary obstruction.

MATERIALS AND METHODS

Patient Population

Of patients who had inoperable malignant biliary obstruction or rejected surgery for malignant biliary obstruction (Fig 1), 155 patients (85 men and 70 women; mean age, 75 y; age range, 41–98 y) who underwent percutaneous transhepatic SEMS placement in our institution between January 2008 and November 2012 were included in this retrospective study. Institutional review board approval and a waiver of informed consent were obtained for this study.

Causes of biliary obstruction were as follows: cholangiocarcinoma (n = 57), pancreatic carcinoma (n = 49), gallbladder cancer (n = 14), metastatic carcinoma from a variety of primary sites (involving metastatic lymphadenopathy, n = 28), and other causes (n = 7). Forty-five patients had lesions involving the proximal bile ducts (hilar lesions), and 110 patients had lesions of the middle and distal bile ducts (nonhilar lesions).

For analysis, the patients were divided into two groups according to the location of the distal end of the stent, ie, whether it crossed the ampulla of Vater. In group A, the distal end of the stent always lay above the sphincter of Oddi (suprapapillary location; Fig 2). In group B, the distal end of the stent protruded into the duodenum, less than 15 mm below the papilla (transpapillary location; Fig 3). There were 74 patients in group A and 81 in group B. Details of patient characteristics are presented in Table 1.

The clinical data, biologic data, imaging studies, and interventional radiologic procedures were analyzed by two independent radiologists. Data were recorded for the following variables: stent-related early and late complications, duration of stent patency, and patient survival time.

Procedure and Device

A total of 193 SEMSs were implanted in 155 patients. Two or more SEMSs were inserted in 35 patients each. Of these patients, 32 with tumor involving the hepatic hilum received stents in X-, Y-, or T-configurations to facilitate bile drainage. Based on the morphologic findings of cholangiograms obtained before stent placement, covered stents were directly inserted to tumors involving the biliary tree. In cases of extrinsic biliary compression, uncovered stents were inserted. In group A, 68 covered and 28 uncovered SEMSs were placed, whereas, in group B, 78 covered and 19 uncovered SEMSs were placed.

Stent placement was performed in a two-step procedure: percutaneous transhepatic biliary drainage (PTBD) as the first step and stent deployment as the second step. A standard PTBD procedure through a 21-gauge Chiba needle under fluoroscopic and/or ultrasound (US) guidance was performed on all patients, always under local anesthesia along with mild intravenously administered sedation and analgesia. The access site (right or left lobe) was chosen according to the extent of the tumor on preprocedural imaging. Two days after PTBD, we obtained tube cholangiograms to evaluate the exact disease extent and to locate the biliary stent. The median time interval between initial biliary drainage and stent placement was 12 days (range, 1–413 d; mean, 26 d). For a lesion with a distal margin located within the lower 2

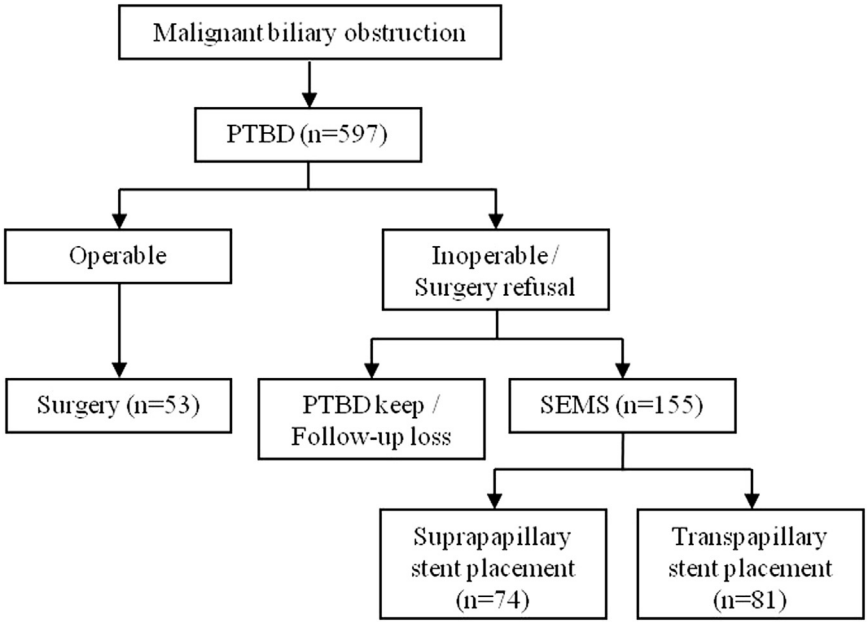

Figure 1. Patient selection protocol of transhepatic biliary stent insertion.