Percutaneous Biliary Drainage in Malignant Biliary Obstruction: Results of Initial Experience

Dear Editor,

Malignant biliary obstruction is caused mainly by pancreatic tumors, metastatic diseases, cholangiocarcinoma, and carcinoma of gallbladder.[1] Percutaneous transhepatic biliary drainage (PTBD) and endoscopic retrograde cholangiopancreatography (ERCP) are widely used palliative procedures, each with its own merits and lacunae.[2] Percutaneous biliary drainage is one of the several methods of palliating patients with unresectable carcinoma.[3] Improvement in PTBD procedure with advanced in its material consumables, making PTBD equal to ERCP success and complications, with significant reduction in mortality and more survival benefit. PTBD is an image-guided procedure done usually under both fluoroscope and ultrasound (US); its main indications are cholangitis, pruritus, pain alleviation, relief of obstructive jaundice, and in stent placement or transhepatic brachytherapy for local malignant tumor treatment. When stenting is indicated in elderly and frail patients, the endoscopic method should be tried first.[4] Stents were the most effective in achieving long-term palliation; patency was significantly affected by the level of obstruction but not by the type of obstructing tumor.[5] Percutaneously placed self-expandable metallic stents (SEMSs) achieved satisfactory palliation with a low complication rate in a high-risk patient group with advanced malignant biliary obstruction.[6]

From May 2016 to January 2017, 32 patients referred to Shaheed Al-Mihrab Center for Catheterization and Cardiac Surgery, Babylon province, Iraq, for PTBD either when ERCP is not possible (failed trials, contraindications, and previous bypass surgery) or unresectable malignant obstruction, with a mean age of 62.4 years (range 47–77 years).

Under conscious sedation and after review of computed tomography (CT) and magnetic resonance imaging (MRI) studies, best segment puncture was chosen under US guidance with an 18G, 22-cm needle either from the right or left biliary ducts; cholangiography was done using iodine contrast to map the biliary ducts, and then a guidewire is passed into the biliary ducts and negotiated to cross the obstructive lesion using hydrophilic wire of 0.0035" or 0.0014" into the duodenum. A plastic pigtail catheter (8–10 Fr) is placed for internal–external and/or internal–internal drainage; sometimes, a direct metallic stent is placed across the obstruction, again with temporary plastic catheter placement for 3 days. Postoperative analgesia is maintained with follow-up for 6 h for any immediate complications, with same day discharge. Pre procedure, antibiotics metronidazole 500 mg and ceftriaxone 1 g intravenously were given to all patients, with postprocedural oral antibiotics, metronidazole 500 mg and oral ciprofloxacin 750 mg, given for 3 days.

This study was conducted in accordance with the ethical principles that have their origin in the Declaration of Helsinki. It was carried out with patients' verbal and analytical approval before the sample was taken. The study protocol and the subject information and consent form were reviewed and approved by a local ethics committee.

Results

PTBD was done in 32 patients with malignant biliary obstruction (11 female patients and 21 male patients). The causes of obstructive jaundice were pancreatic carcinoma in 13 patients (40.6%), cholangiocarcinoma in 11 patients (34.3%), gallbladder carcinoma in two patients (6.2%), and metastases in six patients (18.7%) [Figure 1].

Access puncture site from the left biliary ducts in four patients (12.5%), access from the right biliary ducts in 28 patients (87.5%), immediate stenting was done in five patients (15.6%) using 10 mm diameter covered SEMS is placed across the obstructive lesion (covered biliary stent, Cook); in the other twenty patients (62.5%), 8–10 Fr pigtail hydrophilic plastic catheter is placed into the duodenum for internal–internal and internal–external drainage with late stenting done after 1 week. In seven patients (21.9%), crossing of obstructive lesion was failed, and only internal–external biliary catheter was placed. Technical success with catheter placement and drainage was achieved in all patients. No procedure-related mortality occurred. Two patients died after 1 month from advanced disease, three patients (9.3%) died

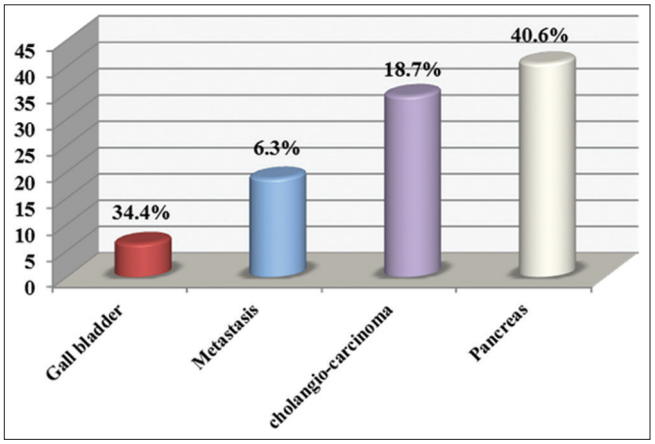

Figure 1: Distribution of patients according to the cause of biliary obstruction

after 3 months, and a total of five patients (15.6%) died after 6 months due to the original advanced malignancy. Early complications in the 1st month in the form of fever, jaundice, and stent block occurred in two patients (6.3%) and late complications (stent occlusion and septicemia) at 6 months occurred in four patients (12.5%) [Table 1].

To our knowledge, this is the first study of PTBD and percutaneous stenting efficacy in Iraq, and follow-up in patients with obstructive jaundice caused by unresectable malignant tumors. Biliary endoprostheses inserted percutaneously or endoscopically can provide excellent palliation. Percutaneous biliary drainage may be performed when endoscopic biliary drainage is not possible or unsuccessful or with obstruction at or above the hepatic duct bifurcation.[7] Metallic stents were used for all patients because the costs are calculated for stents and hospital stay for required reinterventions was higher in the plastic stent. Hence, metal stent insertion for palliation of hilar malignancies does not only offer higher success rates and higher patency rates compared to plastic stent insertion, but is also cost-effective because patients require fewer reinterventions.[8]

Self-expandable, metallic stents can be inserted percutaneously through a small transhepatic track but expand to achieve a relatively large internal diameter. In this study, pancreatic carcinoma was the most common cause of malignant obstruction (40.6%), followed by cholangiocarcinoma and ampullary tumor (34.4%), metastases (18.7%), and gallbladder tumors (6.3%). Right biliary access by puncture of segment VI or V ducts was done in 87.5% of patients and left biliary access by puncture of segment III duct in 12.5% of cases; this was done under US guidance after the review of CT and/or MRI.

Right biliary access is preferred in most of our patients because there is less radiation dose to the operator and drain larger amount of liver parenchyma. Left biliary access reserved for patients with mild ascites, right access is not possible or if technically easier, this is similar in most other studies like study by Covey *et al*.[9] or a study by Teixeira *et al*.[10] Stent occlusion and jaundice occurred as early as 3 months in two patients, with another two patients also complain from stent occlusion in the following 6 months, i.e., total four stent occlusions at 6 months (16%), it seems from overgrowth of tumor along the stent margins, these results are consistent with a several authors worldwide.[1,11-13] Two patients (6.2%) died after 1 month, three patients (9.3%) died after 3 months, and a total of five patients (15.6%) died after 6 months from original advanced malignancy which is observed in a patient with cholangiocarcinoma and pancreatic malignancy.

PTBD for palliation of malignant obstructive jaundice has evolved to a safe and effective technique, and it is equally effective for the treatment of distal and proximal bile obstruction using metallic stents. High technical and clinical success in all major series. Although multiple complications are possible, most can be treated conservatively, and procedure-related mortality is very low in most series. Improvement in patient quality of life and decrease in bilirubin level permitting chemotherapy administration occur in a significant number of patients.

Table 1: Association between death after 6 months and study variables

Study variable	Death		*P*
	Yes	No	
Late complication			
Yes	2 (20.0)	2 (9.1)	0.572
No	8 (80.0)	20 (90.9)	
Total	10 (100.0)	22 (100.0)	
Cause of obstruction			
Cholangiocarcinoma	5 (50.0)	6 (27.3)	0.458
Gallbladder	1 (10.0)	1 (4.5)	
Metastasis	1 (10.0)	5 (22.7)	
Pancreatic	3 (30.0)	10 (45.5)	
Total	10 (100.0)	22 (100.0)	
Occlusion within 6 months			
Yes	0 (0.0)	4 (18.2)	0.238
No	10 (100.0)	18 (81.8)	
Total	10 (100.0)	22 (100.0)	

*$P \leq 0.05$ was statistically significant. f: Fisher's exact test

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Conflicts of interest
There are no conflicts of interest.

Zaid Hadi Hammoodi

Shaheed Al-Mihrab Center of Cardiac Surgery and Catheterization, Babil Health Directorate, Al Hilla, Iraq

Address for correspondence: Dr. Zaid Hadi Hammoodi, Shaheed Al-Mihrab Center of Cardiac Surgery and Catheterization, Babil Health Directorate, Al Hilla, Iraq.
E-mail: zaid_hadi06@yahoo.com

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