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ORIGINAL ARTICLE

Biliary duct obstruction treatment with aid of percutaneous transhepatic biliary drainage



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KEYWORDS

Biliary drainage;
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Biliary tract obstruction

Abstract *Introduction:* Percutaneous Transhepatic Biliary Drainage (PTBD) is a procedure indicated in patients with non-operative lesions, when endoscopic application of prosthesis is impossible due to anatomic reasons, complications or severe general condition of patient. Most often it is a palliative procedure, aiming for live-quality improvement, although not altering prognosis of basic disease.

Aim: This study presents own experience in biliary drainage with the aid of percutaneous transhepatic method and simultaneous assessment of method effectiveness and safety. The aim was to assess outcomes and complications of PTBD in a large group of patients.

Materials and method: In time period 2007–2014, 167 patients hospitalized in Radiodiagnostics and Radiology Department of Clinical Hospital, were investigated retrospectively. PTBD procedure was applied to patients with biliary tract obstruction. In total 186 procedures of percutaneous drainage were applied. Average age of patients was 63.6 years. Bilirubin, alkaline phosphatase and gamma-glutamyl transferase were measured before and after procedure. All data were analyzed statistically.

Results: In examined group percutaneous drainage was successful in 90.7% interventions. In 8.1% procedures drainage application was ineffective. The most common complication during procedure was hemobilia (3.2%) and the long term complication was drain dislocation (2.7%). The mean bilirubin levels declined from 397.06 $\mu\text{mol/l}$ before drainage to 297.88 $\mu\text{mol/l}$ after drainage ($p < 0.05$).

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Conclusions: PTBD is an effective method of biliary tract decompression and it is an important alternative to endoscopic drainage. This method is indicated in patients with neoplastic obstruction of biliary tract with low expected survival rate and thus is a palliative procedure.

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1. Introduction

Two main neoplasms causing obstructive jaundice are pancreas carcinoma and cholangiocarcinoma. Other causes include gall bladder carcinoma, hepatocellular carcinoma, metastases to the liver and advanced carcinoma of stomach or duodenum. Therapy of obstructive jaundice aims at restoring patency of biliary ducts. Thanks to technical and instrumental development of interventional radiology, decompression of biliary ducts is possible [Fig. 1]. Percutaneous Transhepatic Biliary Drainage (PTBD) is intended for patients with non-operative lesions, when endoscopic stent application is impossible due to anatomic reasons, complications or severe general state of patient.^{1,2} In such patients PTBD plays an important role in treatment. Drainage can normalize plasma bilirubin level^{3,4} and alleviate jaundice symptoms⁵, leading to improvement in quality of life, thus optimizing the clinical state of patient allowing for resection or palliative radio or chemotherapy. However, the negative side of this method is a large number of early or late complications as well as necessity of bile delivery to the gastrointestinal tract.^{5,6} Complications include hemorrhage, cholangitis, hemobilia, biliary duct perforation, peritonitis, edema, sepsis, infection and neoplastic cells spreading among biliary duct.⁷

Reduction in plasma bilirubin level is usually a significant marker of successful drainage. Nevertheless, in spite of proper catheter positioning in the biliary duct, some patients have poor bile drainage and a high plasma bilirubin level.⁸ PTBD most often is a palliative procedure, aiming to improve a patients' quality of life, although not changing the prognosis related to the basic condition.

This paper aims for the assessment of effectiveness and complication numbers in patients with obstructive jaundice treated by PTBD.

2. Materials and methods

The Department of Radiology of the Central Clinical Hospital performed 186 procedures of Percutaneous Transhepatic Biliary Drainage (PTBD) in the years spanning 2007–2011. The clinical records of patients with obstructive jaundice from the General Surgery Ward and Gastroenterology Ward were analyzed. The study group consisted of 167 patients: 87 females (52%) and 80 males (48%). The average age of women was 62 years and the average age of men was 62 years. Population structure of the study [Fig. 2].

The main indications for PTBD include failed ERCP and patients with conditions that do not qualify for ERCP. Patients who qualified for PTBD were found to have dilated intrahepatic ducts (right hepatic duct or left) of at least 5 mm, which was necessary for the insertion of the catheter without damaging the duct walls. All patients were qualified for the procedure on the basis of imaging tests including ultrasonography, tomography and magnetic resonance imaging. These tests revealed the presence of unresectable tumors and biliary obstructions. All patients achieved histologic confirmation of the neoplastic nature of the change. In our study, the three main unresectable tumors were pancreatic head tumors (43.01%), cholangiocarcinoma (17.7%) and metastases to the bile duct (10.75%) [Fig. 3]. The most common location of biliary stricture was the common bile duct (58.06%), common hepatic duct (33.97%) and left bile duct (4.3%) [Fig. 4].

Signs and symptoms of biliary obstruction vary depending on the disease process, history of prior intervention, and comorbidities. In our case the most common sign and symptom was clinical jaundice, which is common with a serum bilirubin over 3 mg/dl. Additionally, to qualify for PTBD patients' INR had to be within normal limits.

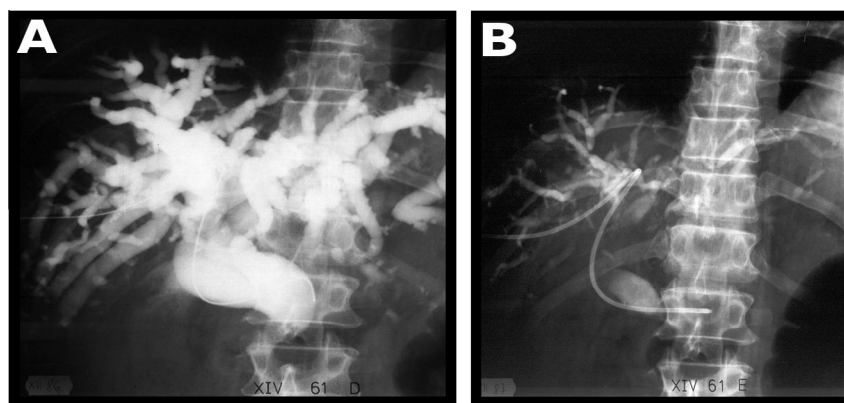


Figure 1 A 67-year-old patient. Percutaneous drainage of biliary ducts carried out on account of inoperable neoplasma infiltration of biliary tract. Fluoroscopy images demonstrating distal CBD obstruction (A) and state of biliary tracts after decompression (B).

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