

# **The role of endoscopic ultrasound-guided transmural approach in the management of biliary obstructions**

## **Abstract**

### **Introduction**

Transpapillary biliary drainage in endoscopic retrograde cholangiopancreatography (ERCP) is an established method for treatment of patients with benign and malignant biliary obstructions. In the case of ineffectiveness of transpapillary drainage, the alternative is still percutaneous drainage (external) of the bile ducts or surgical drainage (by-pass).

The development of advanced endoscopic ultrasonography (EUS) techniques has enabled extra-anatomical approach to the bile ducts, making it possible not only to perform endoscopic anastomoses of the bile ducts with the digestive tract, but also to obtain extra-anatomic transpapillary access in the event of ERCP failure. This is an alternative to the existing methods of biliary drainage in the case of ERCP ineffectiveness.

### **Objective of the work**

Evaluation of the effectiveness and safety of innovative methods of extra-anatomical endoscopic approach to the bile ducts in the treatment of patients with benign and malignant biliary obstructions.

### **Materials and methods**

Retrospective analysis of the treatment results of all patients with mechanical jaundice in the course of biliary obstruction, treated endoscopically in the years 2016-2023 at the Department of General, Gastroenterological and Oncological Surgery, Ludwik Rydygier Collegium Medicum in Bydgoszcz, Nicolaus Copernicus University in Toruń. The study group consisted of patients who, due to biliary obstruction and lack of transpapillary access to the bile ducts during ERCP, had transmural approach under EUS control during endotherapy.

### **Results**

996 patients with mechanical jaundice in the course of biliary obstruction were qualified for endoscopic treatment. In 191 (19.18%) patients who did not receive transpapillary access during ERCP, transmural endoscopic techniques were used. In 28 (14.66%) patients, endoscopic transpapillary biliary stenting was performed using transmural approach under EUS guidance. The remaining 163 (85.34%) patients underwent extra-anatomical transmural anastomosis of the bile ducts with the digestive tract.

In 26 (13.61%) patients a rendezvous maneuver with transpapillary biliary stenting was performed. In 2 (1.05%) patients transpapillary biliary stenting using transmural approach (antegrade technique) was performed.

Endoscopic extra-anatomic anastomosis of the intrahepatic bile ducts to the gastrointestinal tract was performed in 103 (53.93%) patients. Endoscopic hepaticogastrostomy was performed in the case of 99 (51.83%) patients, endoscopic hepaticoesophagostomy was performed in 4 (2.09%) patients.

Endoscopic extra-anatomic anastomosis of the extrahepatic bile ducts to the gastrointestinal tract was performed in 60 (31.41%) patients. Endoscopic choledochoduodenostomy was performed in 57 (29.84%) patients, endoscopic cholecystoduodenostomy was performed in 3 (1.57%) patients.

In total, technical success was achieved in 186 out of 191 (97.38%) patients, clinical success was achieved in 170 out of 191 (89.01%) patients. Complications were noted in 32 out of 191 (16.75%) cases, including fatalities in 6 out of 191 (3.14%) patients.

## **Conclusions**

Advanced endoscopic techniques using transmural approach under EUS control are effective and safe in the endotherapy of patients with biliary obstructions and are an alternative to other surgical techniques, in the case of ineffectiveness of transpapillary drainage during ERCP and improve the quality of life of patients treated palliatively due to biliary obstructions in the course of unresectable pancreatobiliary cancers. Extra-anatomical transmural approach improves the outcome of endoscopic treatment in patients with biliary obstructions.