

## Magnetic compression anastomosis for post-traumatic disconnected bile duct

Galip Ersoz<sup>1</sup>, Fatih Tekin<sup>1</sup>, Halil Bozkaya<sup>2</sup>, Mustafa Parildar<sup>2</sup>, Ilker Turan<sup>1</sup>, Omer Ozutemiz<sup>1</sup>, Oktay Tekesin<sup>1</sup>

Department of (1) Gastroenterology, (2) Radiology, Ege University Medical School, Izmir, Turkey.

**Key words :** magnetic compression anastomosis, disconnected bile duct.

### To the Editor,

An 18-year-old male underwent to an emergent open cholecystectomy in another hospital after blunt abdominal trauma and referred to our hospital for further biliary interventions with a diagnosis of liver laceration and icterus (total bilirubin : 27.2 mg/dL ; normal < 1.2 mg/dL). Magnetic resonance cholangiopancreatography showed disconnection between left hepatic duct and common hepatic duct. We decided to perform magnetic compression anastomosis [MCA] technique using the recently introduced (1) through-the- scope magnet (OBF, Istanbul, Turkey). The magnet is nickel-coated, cylindrical neodymium- iron-boron earth magnet each with a diameter of 2.4 mm and a length of 5 mm. Magnets have a hole in their centers to permit the advancing of a 0.038-inch guidewire. They have side holes at the distal sides for the attachment of a retrieval loop. Written informed consent was obtained from the patient.

Percutaneous and endoscopic procedures were concurrently performed in endoscopic retrograde cholangiopancreatography [ERCP] unit by experienced interventional radiologist and endoscopists, respectively. Percutaneous transhepatic catheterization was performed using a 22-gauge Chiba needle. After puncture of the bile duct and dilation of the access for insertion of a 6F sheath (AccuStick II, introducer system kit, Boston Scientific, USA), a 0.035" stiff guidewire was carefully advanced into the bile duct and was placed by a 7F introducer (SCW Introducer set, Shenzhen, PRC). Cholangiography was performed to visualize the obstruction and biliary anatomy. Hydrophilic guidewire (0.035", ZIPwire, Boston Scientific, USA) was used to reach the proximal portion of the obstruction. Magnet was placed into the hepatic side of obstruction pushing with a 5F catheter over the guidewire.

Concurrently, ERCP was performed. After an endoscopic papillary sphincterotomy, cholangiography was performed to visualize the obstruction and biliary anatomy. Thereafter, sister magnet was kindly advanced to distal side of the obstruction with a 5F catheter (standard type, Boston Scientific, USA) over a 0.035" guidewire (Fig. 1a). After the approximation of the magnets was seen due to the attraction to each other, the procedure has

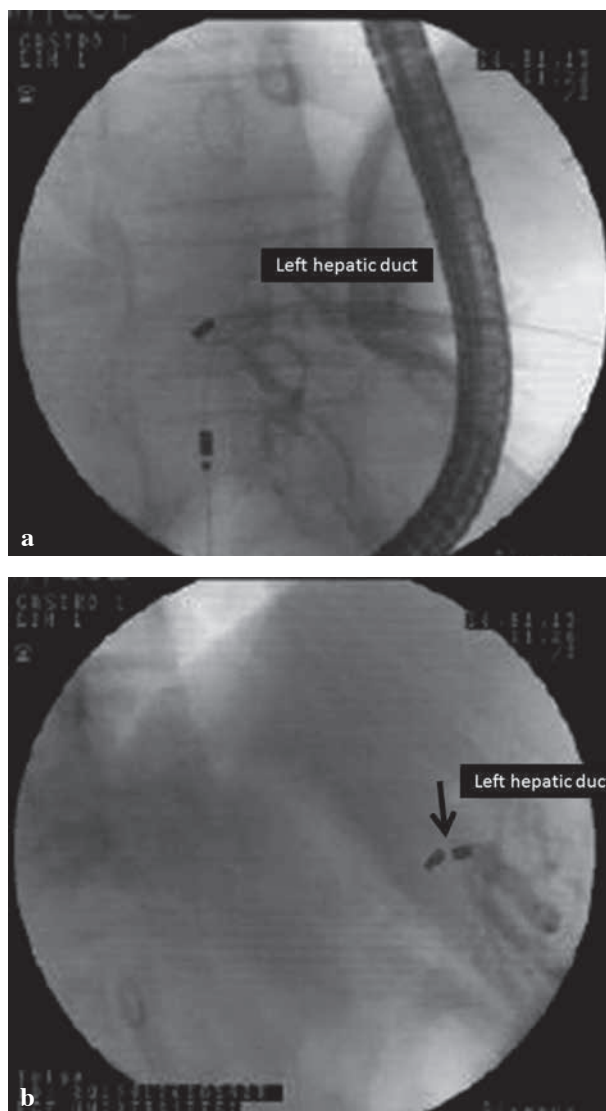


Fig. 1. — a. Fluoroscopic image of the magnets while the second magnet was being advanced to opposite side of the obstruction with a 5F catheter over a guidewire by endoscopist. b. Fluoroscopic image showing the approximation of the magnets (arrow) at the end of the procedure.

Correspondence to : Dr. Fatih Tekin, M.D., Gastroenteroloji Bilim Dalı, Ege Üniversitesi Tıp Fakültesi, Bornova 35100, Izmir, Turkey.  
E-mail : drtekinfatih@gmail.com

Submission date : 20/07/2015  
Acceptance date : 24/08/2015

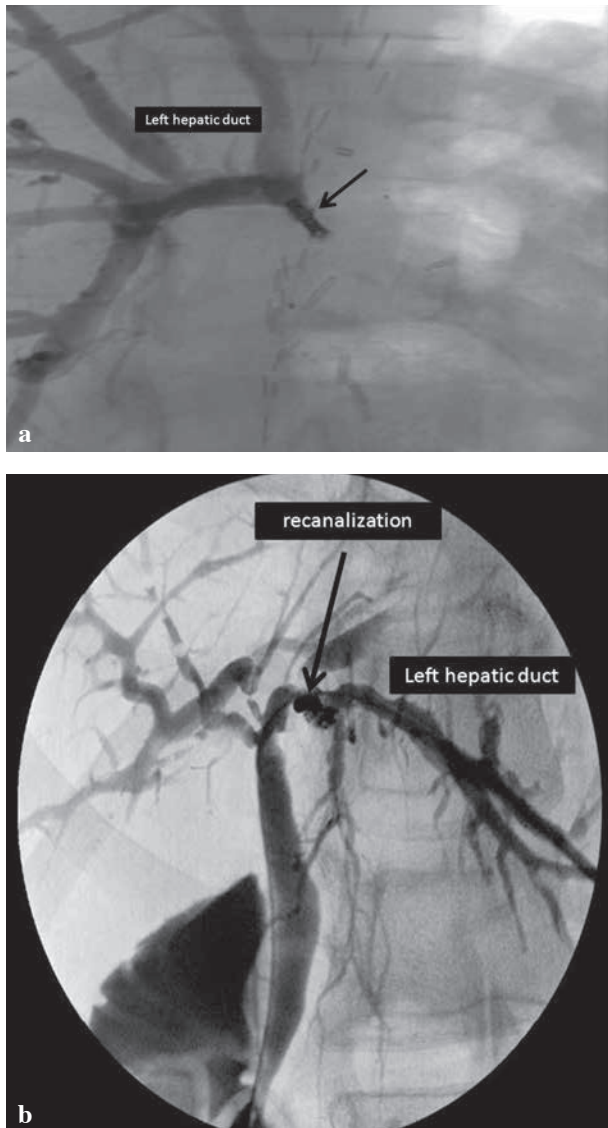


Fig. 2. — a. Percutaneous cholangiography obtained in radiology unit showing the complete junction of the magnets (arrow) after 14 days from the procedure. b. — Percutaneous cholangiography obtained in radiology unit showing the biliary recanalization and improvement of stricture (arrow).

been finished (Fig. 1b). Patient was followed-up with percutaneous cholangiographies (Fig. 2a). Complete approximation of the two magnets and biliary recanalization was confirmed after 14 days from the procedure, however, we decided to wait for an additional week for consolidation. On the 21st day of the procedure, ERCP revealed the disappearance of magnets due to spontaneously migration through the papilla. Biliary stricture was dilated by an 8-mm dilation balloon, and 2 plastic biliary stents were placed. Cholangiography showed the biliary recanalization and marked improvement of stricture (Fig. 2b).

Although limited data exist, MCA technique has been showed to be effective and useful to achieve recanalization of complete anastomotic biliary obstruction after liver transplantation (1-3). To our knowledge, this is the first report demonstrating the effectivity and usefulness of MCA technique in post-traumatic disconnected bile duct. We suggest that MCA technique can be used in selected patients with post-traumatic disconnected bile duct.

## References

1. PARLAK E., KÜÇÜKAY F., KÖKSAL A.Ş., EMINLER A.T., USLAN M.İ., YILMAZ S. Recanalization of complete anastomotic biliary obstruction after living donor related liver transplantation with a novel through-the-scope magnet. *Liver Transpl.*, 2015, **21** : 711-712. doi: 10.1002/lt.24084.
2. JANG S.I., KIM J.H., WON J.Y., LEE K.H., KIM H.W., YOU J.W. *et al.* Magnetic compression anastomosis is useful in biliary anastomotic strictures after living donor liver transplantation. *Gastrointest. Endosc.*, 2011, **74** : 1040-1048. doi: 10.1016/j.gie.2011.06.026.
3. PEREZ-MIRANDA M., ALEMAN N., DE LA SERNA HIGUERA C., GIL-SIMON P., PEREZ-SABORIDO B., SANCHEZ-ANTOLIN G. Magnetic compression anastomosis through EUS-guided choledochoduodenostomy to repair a disconnected bile duct in orthotopic liver transplantation. *Gastrointest. Endosc.*, 2014, **80** : 520-521. doi: 10.1016/j.gie.2014.06.042.