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Authors:
Andrea Monserrat Guillén Graf, Ariadnee Irma Reyna Aréchiga, César Eliud Escareño Pérez, Francisco Bosques-Padilla, Joel Omar Jáquez Quintana

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Digital single-operator cholangioscopy in the evaluation of biliary strictures after liver transplantation

Guillén-Graf, Andrea M.1; Reyna-Aréchiga, Ariadnee I.2; Escareño-Pérez, Cesar Eliud2; Bosques-Padilla, Francisco J.2; Jáquez-Quintana, Joel1

[1] *Gastroenterology Service and Department of Internal Medicine, University Hospital "Dr. José E. Gonzalez" and Medical School, Universidad Autónoma de Nuevo León, Monterrey, Nuevo León, México. Av. Dr. José Eleuterio González S/N, Mitras Centro, 64460 Monterrey, N.L.*

[2] *Tecnologico de Monterrey, School of Medicine and Health Sciences, Monterrey, México. Av. Ignacio Morones Prieto 3000, Sertoma, 64710 Monterrey, N.L.*

Corresponding author: Joel Omar Jáquez-Quintana

+52 1 81 1418 3484

jomjaqui@hotmail.com

Av. Dr. José Eleuterio González S/N, Mitras Centro, 64460 Monterrey, N.L

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Andrea M. Guillén-Graf andyguilleng@gmail.com

Ariadnee Reyna-Arechiga arireyna96@gmail.com

Cesar Eliud Escareño-Pérez cesarescareno@gmail.com

Francisco J. Bosques-Padilla fbosques58@hotmail.com

Joel Omar Jaquez-Quintana jomjaqui@hotmail.com

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Dear Editor,

Biliary tract complications following liver transplantation are frequently observed, with reported incidence rates varying from 5% to 32% across different series and remain a significant source of morbidity after OLT.[1,2]

The incorporation of digital single-operator cholangioscopy (DSOC) has gained increasing significance in the management of biliary tract complications in liver transplant recipients in recent years.[3,4] DSOC serves as a valuable tool for directly observing the bile ducts, conducting tissue sampling, and applying therapeutic interventions.[5]

We retrospectively reviewed the cases of all patients undergoing OLT from February 2019 to August 2022 and reviewed the medical records. Eighteen OLT were successfully performed. In a median of 1 to 8 months after OLT, 5 (27%) patients presented a biliary tract complication (Table 1, Figure 1, 2). Patients were assessed by magnetic resonance cholangiopancreatography and underwent ERCP with DSCO with the SpyGlassTM DS Direct Visualization System (Boston Scientific Corp., Natick, MA).[5]

DSOC emerges as a valuable tool, offering high-quality imaging for improved characterization of strictures that elude traditional ERCP. Despite certain limitations, DSOC has established itself as a viable method to assess the common bile duct in post-OLT complication patients. Moreover, it extends therapeutic options beyond conventional ERCP, elevating the precision and effectiveness of managing these complications and, ultimately, enhancing patient outcome.

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Table 1. Patient characteristics.

	Case 1	Case 2	Case 3	Case 4	Case 5
Age/sex	56/F	58/F	53/F	59/M	41/M
Etiology of liver disease.	Primary sclerosing cholangitis	Autoimmune hepatitis	Overlap syndrome (autoimmune hepatitis/primary biliary cholangitis)	Autoimmune hepatitis	MAFLD
ERCP	Anastomotic biliary stricture	Non-Anastomotic biliary stricture	Non-Anastomotic biliary stricture	Anastomotic biliary stricture	Anastomotic biliary stricture
DSOC	Anastomotic stricture with sloughed mucosa	Stricture with luminal ulceration and increased vascularity	Severely tight stricture	CHD with 1cm linear ulcer, sloughed edges, and necrotic base	Duct-shaped stone and bile sludge
Final diagnosis	Inflammatory CBD anastomotic stricture	Stricture secondary to post-transplant CD20 (+) lymphoproliferative disease	Inflammatory CBD stricture	Ischemic biliary stricture	Large CBD stone
Treatment	Endoscopic dilatation with sphincterotome and plastic biliary stent placement	Plastic biliary stent placement and targeted chemotherapy	Endoscopic balloon dilatation, metal stent placement, and plastic stent placed inside the metal stent	Plastic biliary stent placement	Endoscopic lithotripsy, balloon dilation and stone extraction with basket catheter

CBD, common bile duct; CHD, Common hepatic duct; MAFLD, metabolic associated fatty liver disease.

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Fig. 1

Fig. 1. Non-Anastomotic biliary stricture. ERCP showed supraduodenal bile duct stricture and choledoscopy identified severely tight stricture, requiring a 0.14 guidewire to advance proximally. After dilatation, the opening of the stricture was confirmed. A fully covered 6cm long self-expanding metallic stent was then placed just above the stricture, and a 7FR x 10cm plastic stent was placed inside the metallic stent.

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Fig. 2

Fig. 2. Proximal CBD anastomotic stricture. ERCP is performed and a choledoscope is introduced, identifying stricture of the anastomosis, which is crossed and dilated with Spyscope®. Subsequently, intrahepatic stones in the shape of the duct are identified, and lithotripsy is performed, and a fragment is extracted with a basket.