

Dynamic Intraductal Endoscopic Visualization of Right Hepatic Artery Pulsation Underlying Minor Vascular Impression of the Proximal Bile Duct

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ABSTRACT

Right hepatic artery (RHA) syndrome is a well-recognized, though an uncommon cause of benign bile duct stricture, potentially simulating malignancy. Albeit the latter was not the case in this unique clinical report after cholangitis resolution and clearance of biliary sludge and debris, high-quality direct cholangioscopy (DC) illustration of the RHA overriding the proximal common bile duct with well visible arterial pulsation has not yet been reported before. Beyond its potential visual informativeness, this uncommon cholangioscopic documentation may provide key didactic advances in terms of intraductal visualization of the anatomy of the biliary tree.

Keywords: Bile duct stricture, Cholangitis, Direct cholangioscopy, Endoscopic retrograde cholangiopancreatography, Right hepatic artery syndrome.

Euroasian Journal of Hepato-Gastroenterology (2021): 10.5005/jp-journals-10018-1332

CLINICAL REPORT

A 69-year-old patient presented with signs of cholangitis and underwent urgent endoscopic retrograde cholangiopancreatography (ERCP), revealing stone material in a diffusely dilated common bile duct with an indeterminate proximal bile duct stricture, although the intrahepatic ducts appeared not to be significantly dilated (Fig. 1A). Endoscopic papillotomy with partial stone extraction and insertion of a biliary plastic stent was performed. After stabilization of acute cholangitis under ceftriaxone, the patient underwent an ancillary magnetic resonance cholangiopancreatography without evidence for cholangiocarcinoma and/or a significant stricture in the hilum. Repeat ERCP, including endoscopic papillary large-balloon dilation and direct cholangioscopy (DC), using an ultra-slim upper endoscope, was performed to exclude and/or characterize the putative hilar stricture. Of note, extensive amounts of sludge and debris spontaneously drained after EPLBD up to 12 mm, potentially contributing to the initial cholangiographic presentation after upward mobilization during contrast injection (Fig. 1B). High-quality DC revealed unremarkable mucosal findings with a linear semi-concentric constriction with well reproducible arterial pulsation, highly suggestive of an overriding right hepatic artery (RHA) (Fig. 1C). However, given the only minor bile duct impression, no further interventions whatsoever were warranted.

Albeit sometimes representing a mere incidental finding on imaging studies, true RHA syndrome is recognized as an uncommon cause of non-post surgical benign bile duct stricture and may occasionally simulate malignancy.^{1,2} However, in this unique report, the pulsatile band-like impingement of the proximal bile duct characteristic of an RHA running in close proximity posteriorly was beyond clinical significance on follow-up evaluation; thus, surgical treatment, for example, hepaticojejunostomy, was not warranted. Notwithstanding, to the best of our knowledge, this is the first clinical report on

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How to cite this article: Zimmer V. Dynamic Intraductal Endoscopic Visualization of Right Hepatic Artery Pulsation Underlying Minor Vascular Impression of the Proximal Bile Duct. *Euroasian J Hepato-Gastroenterol* 2021;11(1):41-42.

Source of support: Nil

Conflict of interest: None

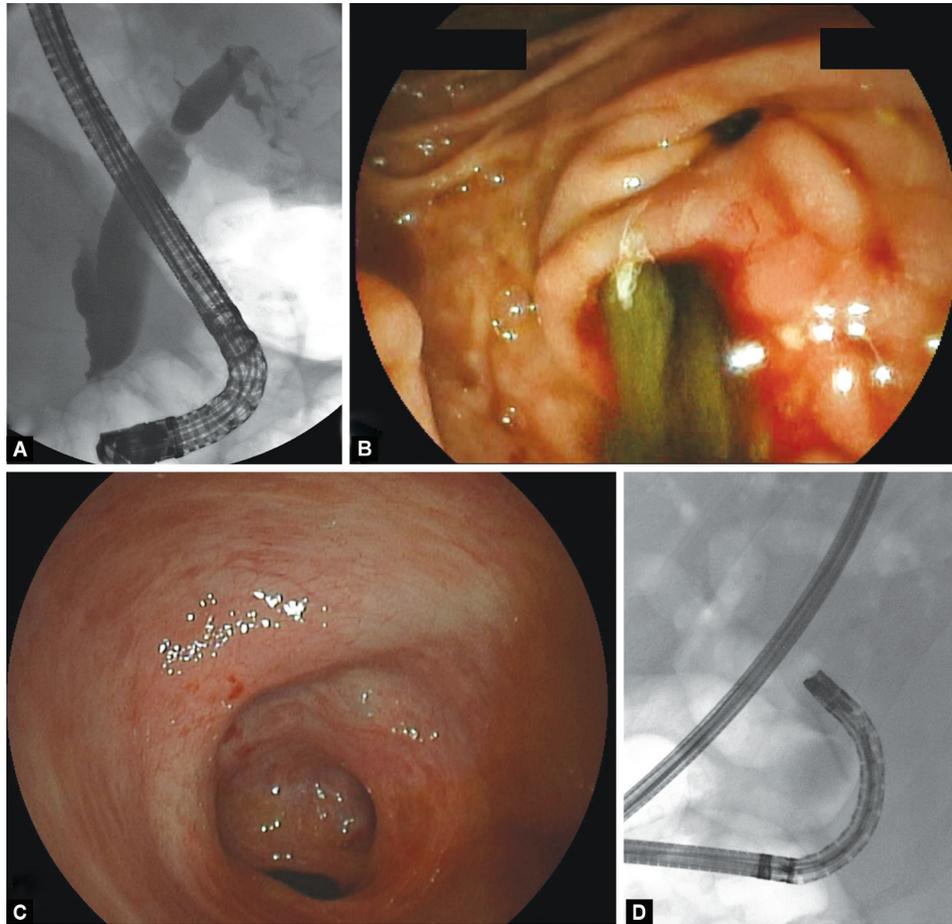
dynamic high-definition video endoscopic visualization of a RHA overriding the proximal bile duct, unlike some reports utilizing catheter-based, single-operator cholangioscopy.^{3,4}

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Figs. 1A to D: (A) ERCP illustration of a diffusely dilated common bile duct up to 20 mm with a concentric indeterminate stricture at the hilum after papillotomy and extraction of some bile duct stones. (B) Extensive drainage of sludge and debris after endoscopic papillary large-balloon dilation up to 12 mm. (C) Direct cholangioscopic visualization of a concentric impression with a smooth mucosal surface in the proximal bile duct. (D) Fluoroscopic correlation corresponding to (C) with the tip of the ultra-slim upper endoscope in the middle-to-high common bile duct (note air cholangiogram)