

Usefulness of texture and color enhancement imaging in peroral cholangioscopy

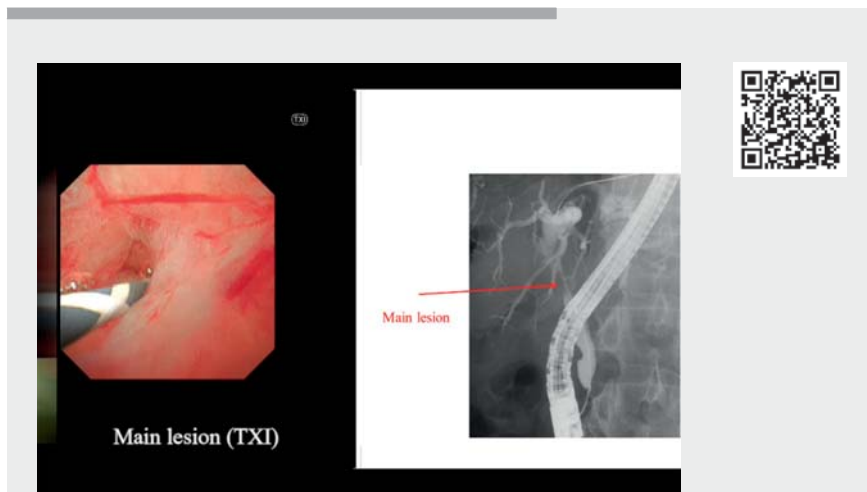


The application of peroral cholangioscopy (POCS) has been reported to be useful for detailed inspection of patients with biliary stricture [1, 2]. We report a case of biliary stricture that had undergone POCS using texture and color enhancement imaging (TXI) and red dichromatic imaging (RDI) equipped in a new-generation image-enhanced endoscopy (IEE) system (EVIS X1; Olympus Medical Systems, Japan) [3].

A 68-year-old man with obstructive jaundice was referred to our facility. Computed tomography imaging revealed the biliary stricture in the hilar bile duct (► **Fig. 1**). Therefore, we performed endoscopic retrograde cholangiopancreatography (ERCP) and POCS (CHF-B290; Olympus Medical Systems, Tokyo, Japan) for a more detailed inspection (► **Video 1**). Cholangiography revealed the biliary stricture in the hilar bile duct and a skip lesion in the distal bile duct (► **Fig. 2**). Subsequently, POCS was performed. The biliary stricture with irregular mucosa in the hilar bile duct was observed as the main lesion. TXI showed structural changes much more clearly than white light imaging (► **Fig. 3 a, b**). A protruding lesion in the distal bile duct was observed as a skip lesion. Compared to narrow band imaging (NBI), RDI mode 3 showed the thick tortuous vessels in the lesion more clearly as the bile juice did not interfere with the imaging [4] (► **Fig. 4 a, b**). POCS-guided biopsy was done from both lesions. Histopathological findings showed that the main and skip lesion consisted of highly irregular and atypical growths, which were diagnosed as adenocarcinoma. The new IEE system with TXI and RDI has been reported as useful in pancreatobiliary endoscopy procedures [5]. TXI is an imaging technique that optimizes three mucosal surface elements: structure, color, and brightness; therefore, it con-



► **Fig. 1** Computed tomography imaging reveals the biliary stricture in the hilar bile duct (red arrow).



► **Video 1** Endoscopic retrograde cholangiopancreatography (ERCP) and peroral cholangioscopy (POCS) using texture and color enhancement imaging (TXI) and red dichromatic imaging (RDI) as equipped in a new-generation image-enhanced endoscopy (IEE) system.

tributes to the improved observation of lesions. In this case, the new IEE system, applying the two abovementioned modalities, improved the diagnostic quality of POCS, showing it to be extremely useful.

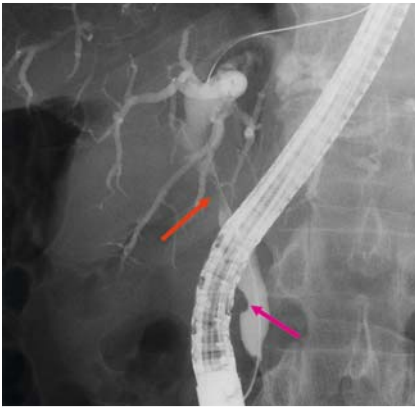
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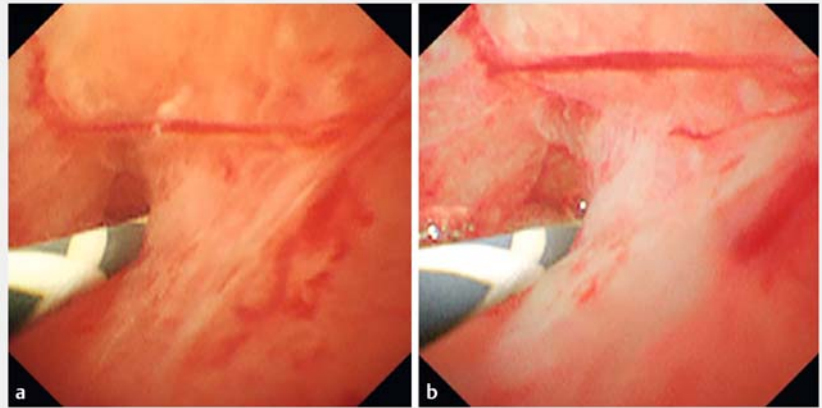
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Competing Interest

The authors declare that they have no conflict of interest.



► **Fig. 2** Cholangiography shows the biliary stricture (red arrow) in the hilar bile duct and a skip lesion (pink arrow) in the distal bile duct.



► **Fig. 3** Peroral cholangioscopy findings in the hilar bile duct. **a** White light imaging (WLI) reveals the biliary stricture with irregular mucosa as a main lesion. **b** Texture and color enhancement imaging showing the structural change more clearly than WLI.

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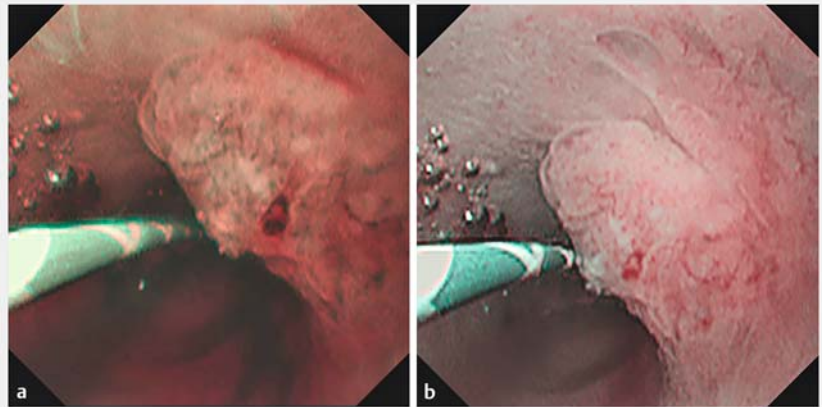
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► **Fig. 4** Peroral cholangioscopy findings in the distal bile duct. **a** Narrow band imaging showing a protruded lesion as a skip lesion. **b** Red dichromatic imaging mode 3 showing the thick tortuous vessels in the lesion more clearly than NBI as the bile juice did not interfere with the imaging.

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