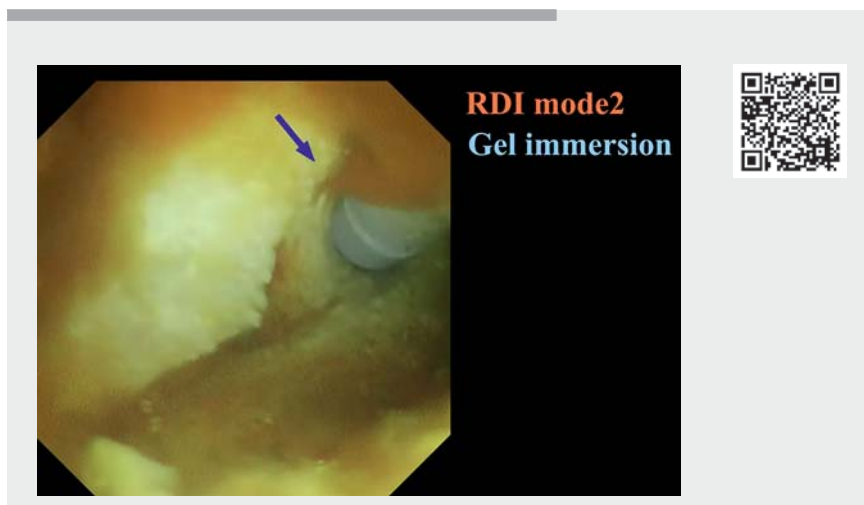


Effective application of self-assembling peptide matrix with the gel immersion technique and red dichromatic imaging for hemostasis of postendoscopic sphincterotomy bleeding

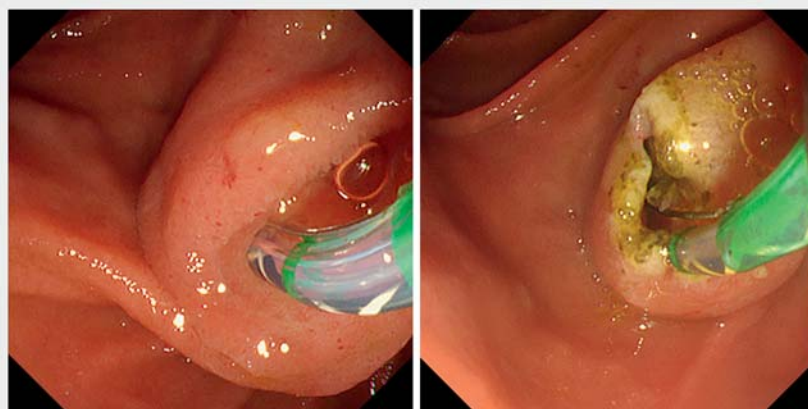
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Endoscopic sphincterotomy is an essential procedure during endoscopic retrograde cholangiopancreatography (ERCP) for the diagnosis or treatment of pancreaticobiliary disease; however, postendoscopic sphincterotomy bleeding occasionally occurs and is a potentially life-threatening adverse event [1]. Recently, a novel self-assembling peptide matrix (PuraStat; 3-D Matrix Europe SAS, France), which is approved for hemostasis in gastrointestinal endoscopic procedures, was launched [2]. Because of its characteristics, this product is not effective in achieving hemostasis of pooled blood, as the peptide matrix assembles when the solution comes into contact with body fluids. For effective hemostasis, the peptide matrix gel should be applied as close as possible to the bleeding point of the injured vessel wall. Herein, we report the effective application of PuraStat for hemostasis of postendoscopic sphincterotomy bleeding while securing an endoscopic field of view with the gel immersion technique [3] and red dichromatic imaging (RDI; Olympus, Japan) [4, 5] (► **Video 1**).

An 85-year-old man underwent ERCP for acute cholangitis due to a common bile duct stone. The stone was successfully removed with a balloon extractor following endoscopic sphincterotomy (► **Fig. 1**). After removal of the stone, bleeding occurred at the endoscopic sphincterotomy site (► **Fig. 2**); therefore, we performed hemostasis using the peptide matrix gel. We used the gel immersion technique and RDI to secure the endoscopic field of view and detect the bleeding point (► **Fig. 3**). As the flowing blood does not spread and mix with the gel, we applied the peptide matrix gel and put the endoscope into the gel. RDI was used to provide color contrast between the bleeding point and the pooled peripheral blood. The peptide matrix was applied directly onto the bleeding point using a dedicated



► **Video 1** A novel self-assembling peptide matrix (PuraStat) is successfully applied to achieve hemostasis of postendoscopic sphincterotomy bleeding, with the endoscopic field of view secured with the gel immersion technique and red dichromatic imaging.



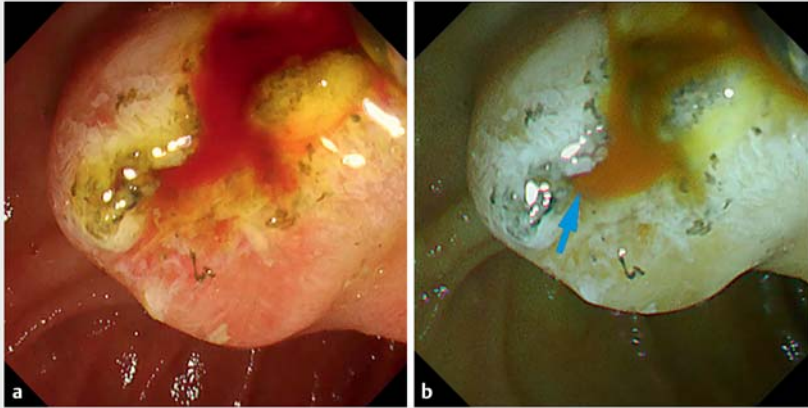
► **Fig. 1** Endoscopic sphincterotomy was performed before removal of the common bile duct stone.

catheter (► **Fig. 4**), and complete hemostasis was achieved (► **Fig. 5**). The patient's clinical course was uneventful after the procedure. Understanding the characteristics of various devices and techniques can lead to an effective and safe procedure.

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Competing interests

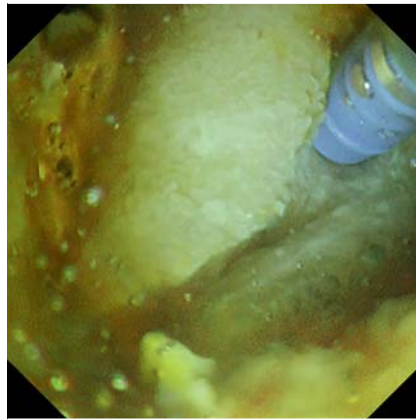
A. Katanuma has received lecture fees from Olympus Co., Tokyo, Japan, and he is an associate editor of Digestive Endoscopy. T. Hayashi, K. Iwano, T. Kin, R. Nakamura, K. Takahashi, and H. Toyonaga have no conflicts of interest to declare.



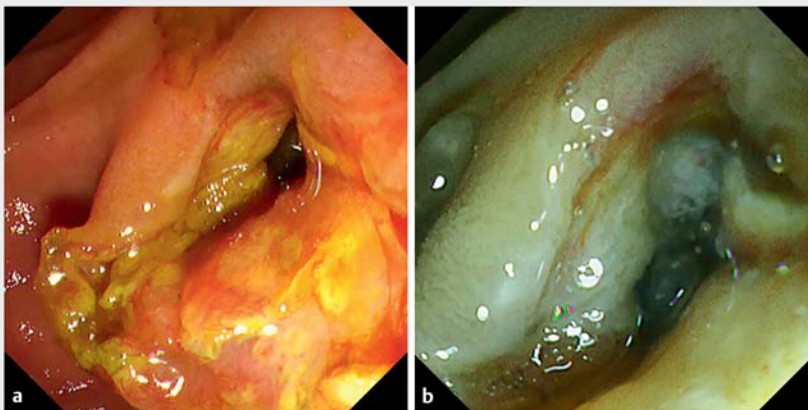
► **Fig. 2** Endoscopic image of the postendoscopic sphincterotomy bleeding under: **a** white-light imaging; **b** red dichromatic imaging (RDI) mode 2, with the bleeding point (arrow) clearly observed owing to the color contrast



► **Fig. 3** A dedicated catheter was used to deliver a self-assembling peptide matrix gel (PuraStat) and the bleeding point (arrow) could be clearly seen using the gel immersion technique under red dichromatic imaging as the mixing of blood and body fluids was prevented.





► **Fig. 4** After the endoscopic field of view had been secured with the gel immersion technique and red dichromatic imaging, the catheter could be placed onto the injured vessel wall, allowing effective hemostasis with the peptide matrix.



► **Fig. 5** Endoscopic images of the postendoscopic sphincterotomy bleeding site under: **a** white-light imaging; **b** red dichromatic imaging.

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