

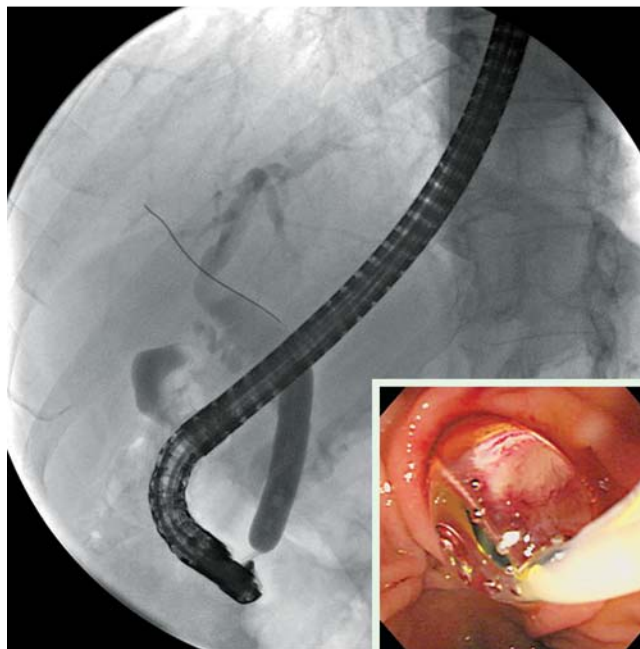
## Life-threatening hemorrhage following large-balloon endoscopic papillary dilation successfully treated with angiographic embolization

A 72-year-old man was admitted for removal of bile duct stones. He had undergone insertion of two 7-F double pigtail stents (Cook Medical, Bloomington, Indiana, USA) 2 months earlier due to a failed stone extraction. He was taking low-dose aspirin (100 mg/day), but had stopped this 1 week ago. Endoscopic retrograde cholangiopancreatography (ERCP) following removal of the biliary stents showed a round stone, approximately 1 cm in size, above a weblike stricture in the distal common bile duct (● Fig. 1). Sphincteroplasty was carried out to 10 mm for 60 seconds, using a balloon dilator (CRE Wireguided, Boston Scientific International, La Garenne Colombes, France) over the guidewire (● Fig. 2). However, the stone could not be extracted because of the weblike stricture and continuous bleeding from the ampulla. An epinephrine injection (1:10 000; 3 mL) was given and an endoscopic nasobiliary drainage tube inserted. Six hours later, the patient suddenly developed continuous hematemesis. His hemoglobin level fell from 14.5 g/dL to 10.2 g/dL, with a blood pressure of 90/60 mm Hg. An emergency duodenoscopy revealed active bleeding from the ampulla, and endoscopic hemostasis could not be achieved as the heavy bleeding was masking the source (● Fig. 3). A double pigtail stent was inserted and emergency angiography carried out. This showed multiple points of extravasation of the contrast medium from three branches of the anterior superior pancreaticoduodenal artery (● Fig. 4). The arteries were successfully embolized with an infusion of butyl cyanoacrylate (Histoacryl) (● Fig. 5).

Hemorrhage related to endoscopic balloon dilation has an incidence of 0%–2.6%, which is less frequent than with sphincterotomy. Marked bleeding requiring surgical or interventional therapy is extremely rare in reported studies [1–3]. Endoscopic balloon dilation is also the preferred strategy in patients with coagulopathy [4, 5]. However, bleeding associated with large-balloon sphincteroplasty might be worsened



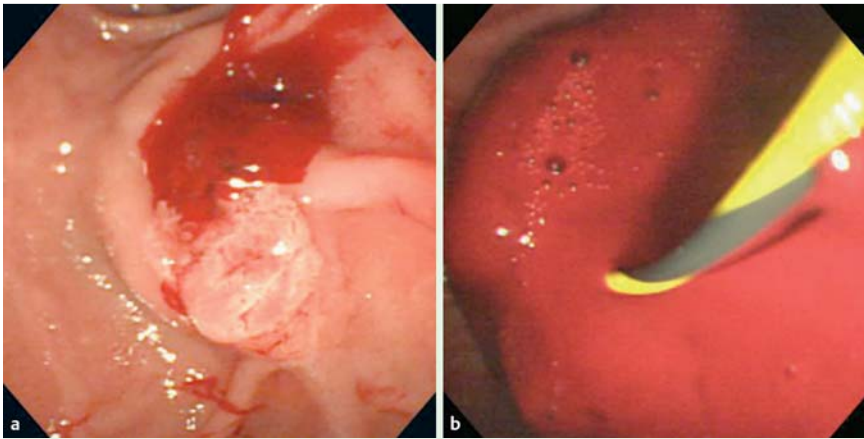
**Fig. 1** A round stone (approximately 1 cm) above a weblike stricture in the distal common bile duct (black arrow) seen on endoscopic retrograde cholangiopancreatography.



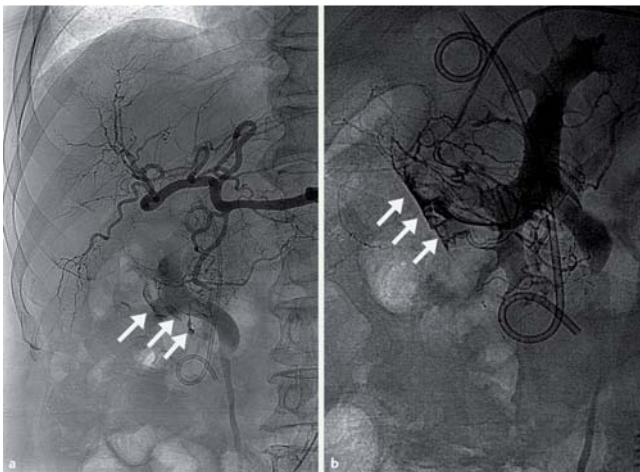
**Fig. 2** Endoscopic retrograde cholangiopancreatography findings of the balloon sphincteroplasty. The large-balloon sphincteroplasty was carried out to 10 mm for 60 seconds, using a balloon dilator over the guidewire (inset: endoscopic view).

by rapid inflation or deflation of the balloon or frequent attempts of the procedure. In such cases, angiographic embolization is an effective diagnostic and therapeutic alternative.

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**Fig. 3** a Endoscopic view of the ampulla following balloon sphincteroplasty and an epinephrine injection. b Duodenoscopy showing active bleeding from the ampulla; the bleeding focus is not evident because of the massive hemorrhage.



**Fig. 4** a Angiography showing multiple foci of extravasation of contrast medium from three branches of the anterior superior pancreaticoduodenal artery (arrows). b Superselective angiography view of the same lesion (arrows).



**Fig. 5** Cessation of extravasation and successful control of bleeding (arrow) after angiographic embolization with Histoacryl.

T. H. Lee<sup>1</sup>, S. H. Park<sup>1</sup>, C. K. Lee<sup>1</sup>,  
I. K. Chung<sup>1</sup>, S. J. Kim<sup>1</sup>, C. H. Kang<sup>2</sup>

<sup>1</sup> Division of Gastroenterology, Department of Internal Medicine, Soon Chun Hyang University College of Medicine, Cheonan Hospital, Cheonan, South Korea

<sup>2</sup> Department of Radiology, Soon Chun Hyang University College of Medicine, Cheonan Hospital, Cheonan, South Korea

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## Corresponding author

T. H. Lee, MD

Division of Gastroenterology  
Department of Internal Medicine  
Soon Chun Hyang University  
Cheonan Hospital  
23-20 Bongmyung-dong Cheonan  
Chungcheongnam-do  
South Korea 330-721  
Fax: +82-41-5745762  
thlee9@lycos.co.kr