Endoscopic ultrasound-guided biliary drainage in a novel radiofrequency ablation-based swine biliary dilatation model

Endoscopic ultrasound (EUS)-guided drainage procedures are becoming increasingly widespread in clinical practice, even though they are technically challenging and require a substantial learning curve. In vivo swine biliary dilatation models for training have been described; however, they provide erratic biliary dilatation and can also be technically cumbersome [1–5]. We describe EUS-guided gallbladder drainage with a lumen-apposing metal stent (LAMS) in a novel swine biliary dilatation model.

A 30-kg minipig underwent endoscopic retrograde cholangiography and temperature-controlled endobiliary radiofrequency ablation (EB-RFA) of the distal common bile duct (CBD) with a dedicated RFA system (ELRA, STARmed) (Video 1). The ablation consisted of 10W of power delivered via an endobiliary catheter-electrode, with a temperature sensor at a target temperature of 80 °C, for two rounds of 90 seconds. After 11 days, the pig was re-examined with a linear EUS scope, which revealed dilatation of the CBD and intrahepatic biliary ducts (*); c the RFA-induced hyperechoic lesion (arrows) in the distal CBD seen from the bulb; d the distal flange of the lumen-apposing metal stent, seen from the gastric antrum and correctly deployed in the distended gallbladder (**).

Temperature-controlled EB-RFA of the distal CBD proved to be a straightforward, effective, and novel technique to create a biliary stricture with subsequent massive upstream biliary dilatation. EUS-guided gallbladder drainage with a LAMS was feasible in this model, which is theoretically suitable also for other EUS-guided biliary interventions. Furthermore, the swine model provides excellent haptic feedback and suitable levels of realism in comparison to procedures undertaken in humans.

Competing interests

None
The authors

Dario Ligresti1, Stefano Baraldo2, Radhika Chavan3, Margaret Geri Keane4, Yu-Ting Kuo5, Shaimaa Saleem6, Dong-Wan Seo7
1 Endoscopy Service, Department of Diagnostic and Therapeutic Services, IRCCS-ISMETT, Palermo, Italy.
2 Department of Endoscopy, Barretos Cancer Hospital, Barretos, Brazil
3 Department of Medical Gastroenterology, Asian Institute of Gastroenterology, Hyderabad, India
4 Institute of Hepatology, Kings College Hospital, London, UK
5 Division of Endoscopy, Department of Integrated Diagnostics and Therapeutics, National Taiwan University Hospital, Taipei, Taiwan
6 Gastroenterology and Endoscopy Department, Ahmed Maher Teaching Hospital, Cairo, Egypt
7 Department of Gastroenterology, Asan Medical Center, University of Ulsan College of Medicine, Seoul, South Korea

Corresponding author

Dong-Wan Seo, MD, PhD
Department of Gastroenterology, Asan Medical Center, University of Ulsan College of Medicine, 88 Olympic-ro 43-gil, Sóngpa-gu, Seoul 05505, South Korea
Fax: +82-2-4760824
dwseoadc@amc.seoul.kr

References


Bibliography
DOI https://doi.org/10.1055/a-0867-9348
Published online: 1.4.2019
Endoscopy 2019; 51: E162–E163
© Georg Thieme Verlag KG
Stuttgart · New York
ISSN 0013-726X

Endoscopy E-Videos is a free access online section, reporting on interesting cases and new techniques in gastroenterological endoscopy. All papers include a high quality video and all contributions are freely accessible online.

This section has its own submission website at https://mc.manuscriptcentral.com/e-videos