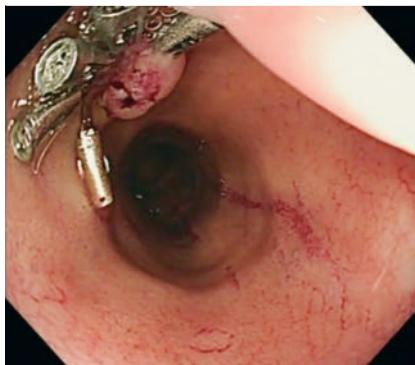


Cholangioscopy-assisted electrocoagulation therapy with electroacupuncture device for intraductal superficial lesions or hemobilia in porcine model ▶

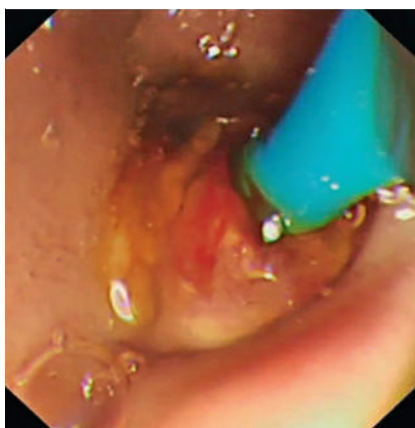
With advances in and popularization of radiological and peroral cholangioscopy techniques, more and more early neoplastic lesions in the biliary duct system, including dysplasia, atypical hyperplasia, adenoma, have been identified [1, 2]. Patients with early neoplastic lesions in their biliary duct system have often faced a dilemma. Surgical treatment for such early lesions is accompanied by relatively significant trauma whereas following up with observation risks lesion progression. Moreover, to date, there are still a dearth of effective treatments for hemobilia.

Therefore, our team developed a type of electroacupuncture device that can pass through the working channel of a peroral cholangioscope. In this study, we attempted to evaluate the feasibility of cholangioscopy-assisted electrocoagulation therapy (CAET) using the aforementioned electroacupuncture device after submucosal injection for intraductal superficial lesions or hemobilia in a porcine model.

First, the papilla in the common bile duct (CBD) were closed using metal clips the day before surgery to dilate the CBD (▶ Fig. 1). Second, the metal clips were removed and papillary intubation was performed. Third, an 11F cholangioscope was inserted into the CBD (▶ Fig. 2). Fourth, submucosal injection into part of the CBD mucosa was performed using a 1.7-mm injection needle under direct vision (▶ Fig. 3). Fourth, the specially designed electroacupuncture device was inserted into the CBD through the working channel of the cholangioscope and electrocoagulation therapy was administered using the electrocoagulator with a 50W power in soft electrocoagulation mode (▶ Fig. 4, ▶ Fig. 5, ▶ Video 1). No serious adverse events were encountered during 1-week follow-up.



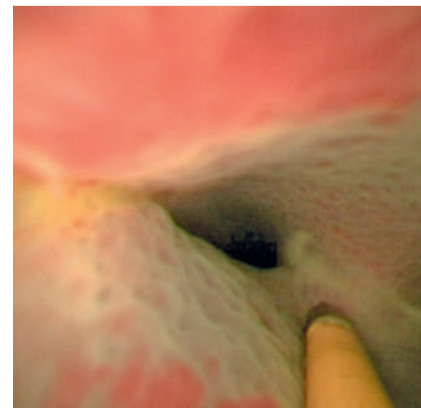
▶ Fig. 1 The papilla of in the common bile duct (CBD) were closed using metal clips the day before the surgery.



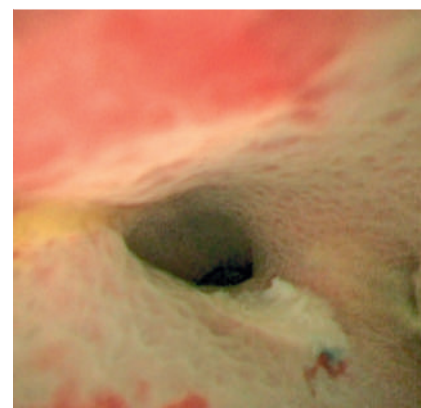
▶ Fig. 2 The 11F cholangioscope was inserted into the bile duct.



▶ Fig. 3 Submucosal injection into part of the bile duct mucosa was performed using an injection needle under direct vision.



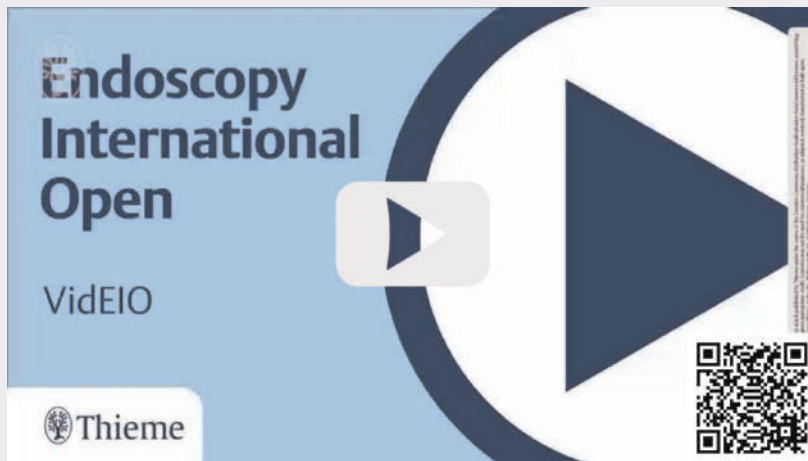
▶ Fig. 4 The specially designed electroacupuncture needle was inserted into the bile duct through the working channel of the cholangioscope and electrocoagulation therapy was administered.



▶ Fig. 5 The appearance of the part of bile duct mucosa after electrocoagulation therapy.

This study preliminarily confirmed the feasibility and safety of CAET after submucosal injection for early neoplastic lesions in the CBD system or hemobilia in a porcine model. In the future, this technique may be particularly beneficial for patients with early neoplastic lesions of biliary or pancreatic duct system because the operative technique is simple and results in relatively little trauma.

VIDEO



► **Video 1** Steps in cholangioscopy-assisted electrocoagulation therapy after submucosal injection of the bile duct in a porcine model.

Conflict of Interest

The authors declare that they have no conflict of interest.

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