

## Endoscopic management of bilio-pancreatic diseases in surgically altered patients

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Endoscopic retrograde cholangiopancreatography (ERCP) remains challenging in patients who have undergone surgical reconstruction of the intestine. In 2001, double-balloon enteroscope (DBE) was reported by Yamamoto et al to be an effective procedure for the diagnosis and treatment of small intestinal lesions. In 2005, DBE-assisted ERCP was first successfully by Haruta et al used to treat a late anastomotic stricture in a patient who undergone biliary reconstruction by R-Y choledochojejunostomy after liver transplantation. After that, several studies with long enteroscope have reported that balloon enteroscope-assisted ERCP (BEA-ERCP) is a safe and effective procedure with about 75 % of reaching the blind end. However, long type enteroscope allows us to use limited number of ERCP devices because of its 200 cm length. Then short type double balloon enteroscope (DBE) has been developed by Fujifilm Co., furthermore Olympus Co. introduce the prototype of short single balloon enteroscope (SBE) with bigger channel 3.2 mm in diameter. Using short type SBE, we can diagnose and treat biliopancreatic diseases with about 90% of reaching the blind end, 90% diagnostic success rate, and 96% therapeutic success rate, because short type SBE allows us to use most of ERCP devices, even with guide-wire equipment. And complication rate is also rare 3% in pancreatitis, 1.5% in perforation, etc. In general, BEA-ERCP seems to be taken long time, because it is sometimes difficult to choose right route to the papilla or chodedochal

or pancreatic anastomosis. In order to choose right route, several techniques such as intraluminal injection of indigo carmine by Yano et al and CO2 inflation guidance by Iwai et al have been reported. Furthermore, PTBD rendezvous technique and improvement of enteroscope such as passive vending function etc. introduce to shorten the reaching blind end time (10-21 min), although there are some learning effect too. The rate of reaching blind end with short type SBE is 94 % (126/134) in R-Y gastrectomy, 72% (39/54) in R-Y choledochojejunostomy, 96% (71/74), 96% (71.74) in Child/Whipple's resection, and 97% (29/30) in B-II gastrectomy, respectively. Using long type SBE, we could reach blind end in 94% (15/16) cases which could not be reached by short type SBE and were mainly cases of R-Y Choledochojejunostomy. Concerning about therapeutic procedures, we have sometimes employed electrocautery in case of tight stricture of anastomosis such as hepaticojejunostomy if guide-wire passed and EUS-BD with forward-viewing echoendoscope was performed in case of non-guide-wire passed. In cases of large bile duct stone, we have made EPLBD and treated by EHL after inserting SBE (direct cholangioscopy) into the bile duct. Finally remaining difficult cases, which we could not treated by SBE because of un-reaching blind end, were treated by EUS-HGS route.

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