

## Safe technique for direct percutaneous endoscopic jejunostomy tube placement using single-balloon enteroscopy with fluoroscopy

Direct percutaneous endoscopic jejunostomy (DPEJ) is a useful method for the delivery of nutrition in patients with a variety of gastrointestinal (GI) problems [1–3]. However, DPEJ using standard colonoscopes or the push technique remains a technically challenging procedure, with success rates of about 68% in expert hands [2]. Herein, we present the key steps to conducting a successful DPEJ using a single-balloon enteroscopy technique.

A 62-year-old woman presented with severe necrotizing pancreatitis mandating intensive care therapy. The pancreas necrosis progressed into a huge collection, resulting in partial gastric outlet obstruction (► **Fig. 1 a**). Despite endoscopic drainage, the patient remained nauseated and was unable to tolerate oral feeding. We were consulted to place a direct percutaneous jejunostomy (PEG) tube.

The patient was placed in the supine position, and the therapeutic double-balloon enteroscope was used in single-balloon mode (i.e. no balloon was attached to the tip of the scope) (► **Video 1**). The scope and overtube were then advanced to about 80 cm distal to the pylorus. A jejunal loop was then carefully located using both endoscopic and fluoroscopic guidance (► **Video 1**). PEG tube placement was performed using the Ponsky method (pull-type technique using a 20 Fr PEG-kit; Cook Medical, Bloomington, Indiana, USA) (► **Video 1**). Once the string had been endoscopically grasped by the snare, the scope and string were pulled back out through the overtube (► **Fig. 1 b, c**, ► **Video 1**). A key element of the technique is the overtube, which is left in situ. The string was attached to the PEG tube and, as the string was

pulled back out through the skin incision, the PEG tube was pulled through (i.e. inside) the overtube (► **Video 1**). The scope was advanced into the overtube and was used to help push the PEG button, and subsequently to inspect the jejunum for correctness of PEG tube placement (► **Fig. 1 d**, ► **Video 1**). An enteral diet was started 12 hours later.

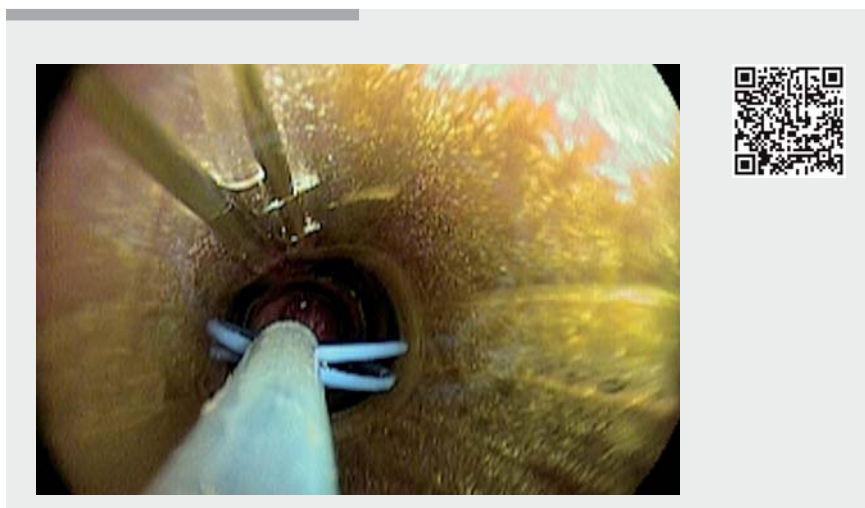
This new method of PEG tube placement focuses on three key components: 1) use of a balloon-assisted overtube, which provides endoscopic stabilization during the procedure; 2) use of fluoroscopy, leading to increased success of finding an adequate jejunal loop for puncture; 3) leaving the overtube in place during

the entire procedure (and also for PEG tube removal), which decreases the risk of GI luminal damage during pulling of the PEG tube and during scope manipulation, as the overtube “shields” the inside of the GI tract. The combination of all these aspects may increase the safety and success of this technique.

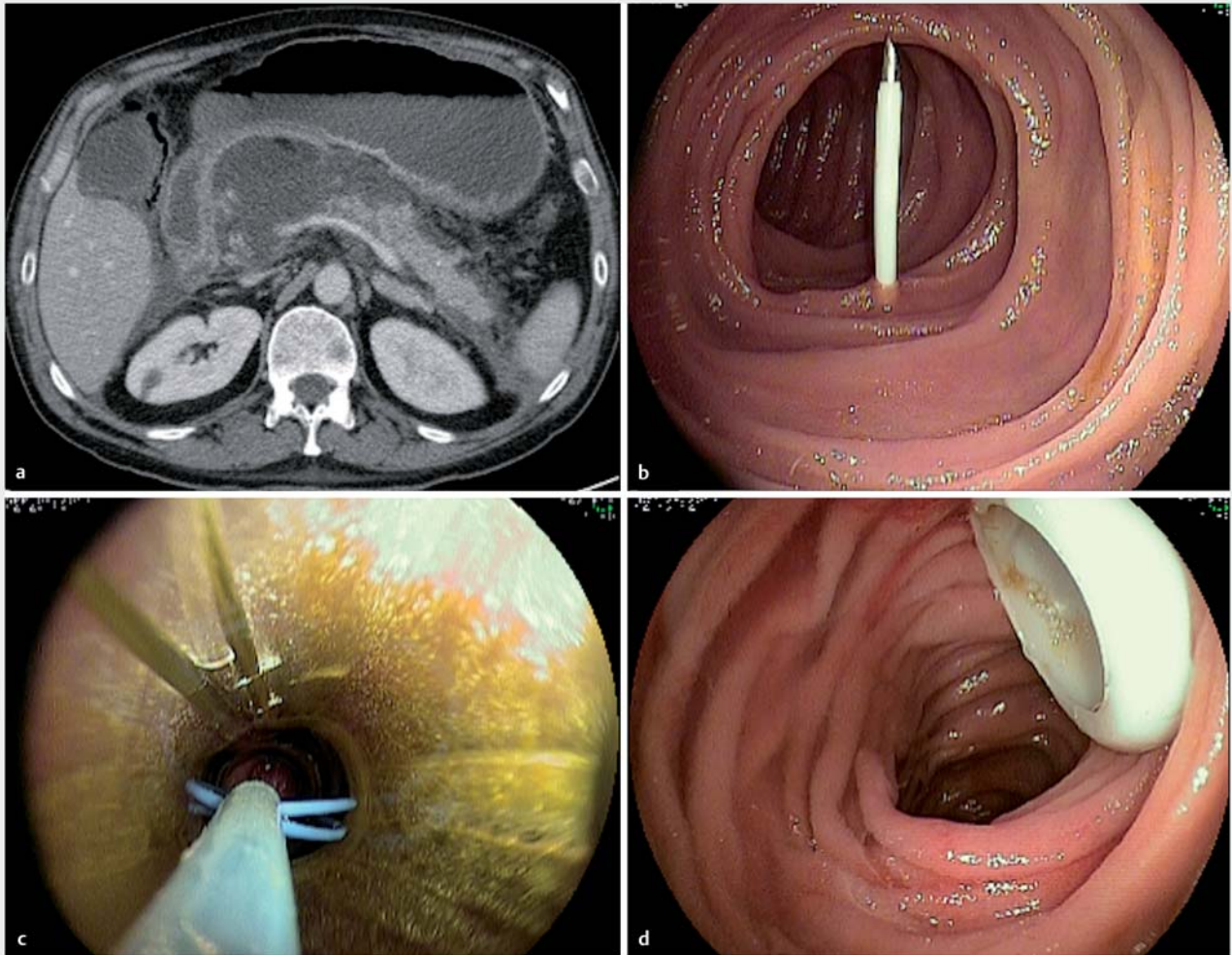
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### Competing interests

Dr. Mönkemüller has received honoraria/speaker fees from Cook Medical, USA, and Ovesco, Germany.



► **Video 1** This new method of percutaneous endoscopic jejunostomy (DPEJ)/PEG tube placement focuses on three key components: 1) use of a balloon-assisted overtube, which provides endoscopic stabilization during the procedure; 2) use of fluoroscopy, leading to increased success of finding an adequate jejunal loop for puncture; 3) leaving the overtube in place during the entire procedure (and also for PEG tube removal), which decreases the risk of gastrointestinal (GI) luminal damage during pulling of the PEG tube and during scope manipulation, as the overtube “shields” the inside of the GI tract.



► **Fig. 1** Direct percutaneous endoscopic jejunostomy. **a** Computed tomography demonstrated severe necrotizing pancreatitis. **b** Endoscopic view of catheter for string delivery. **c** The string was caught and then pulled through the overtube, which was then left in situ. **d** Inspection of the button. The scope was pushed through the overtube. Reaching the jejunostomy site was thus quite easy and safe, as the overtube served as a giant working channel, and protected the upper gastrointestinal tract from tearing damage.

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## Bibliography

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