

Successful endoscopic vacuum therapy with new open-pore film drainage in a case of iatrogenic duodenal perforation during ERCP

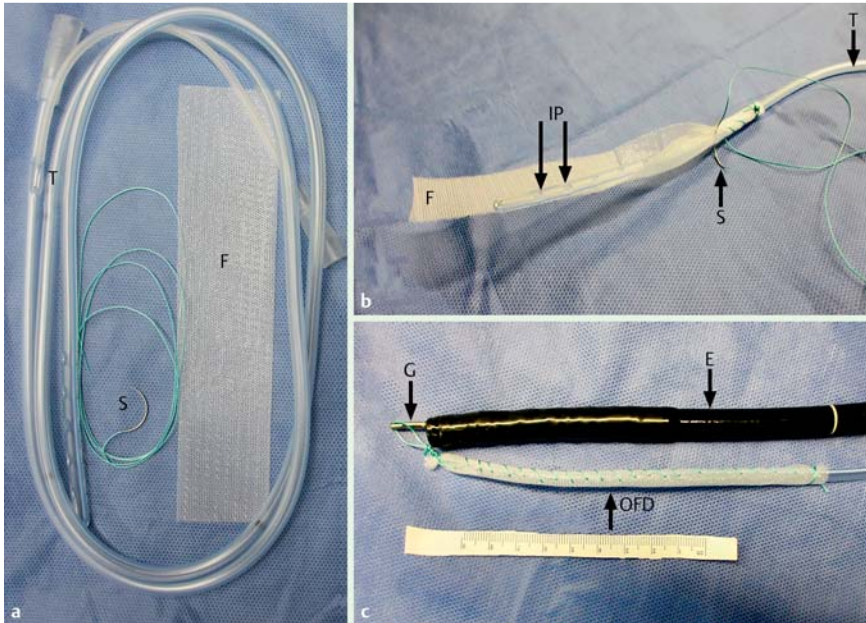


Fig. 1 New, open-pore film drainage (OFD) device. **a** Material used to construct the OFD device: tube (T), open pore film (F), and suture (S). **b** The tube (T) was wrapped in open-pore film (F), which was fixed in place with the suture (S); the tip of the tube has lateral perforations (IP). **c** The OFD, endoscope (E), and grasper (G).

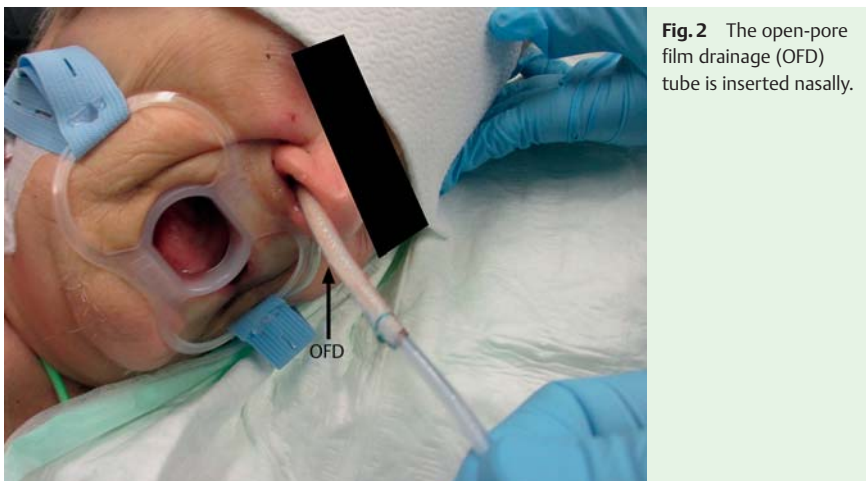


Fig. 2 The open-pore film drainage (OFD) tube is inserted nasally.

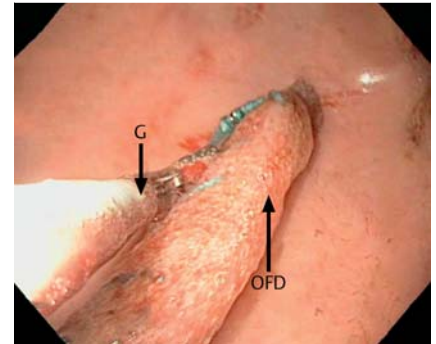


Fig. 3 The open-pore film drainage (OFD) device is grasped by an endoscopic grasper (G) in the stomach.

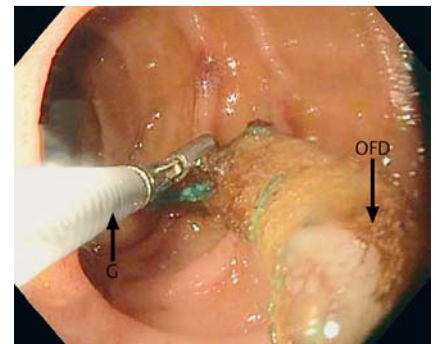


Fig. 4 The open-pore film drainage (OFD) device is guided into the duodenal lumen by the grasper (G).

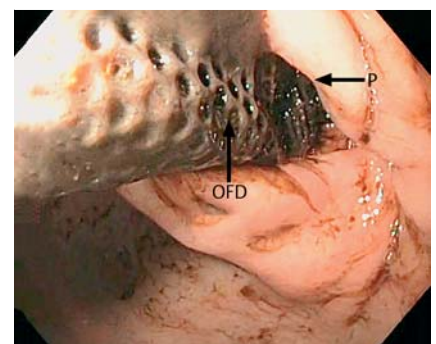


Fig. 5 After 3 days of therapy, the open-pore film drainage (OFD) device is removed by pulling. The OFD is colored brown because of the biliary secretions. The pores of the film are still open. P, pylorus.

Iatrogenic perforation of the duodenum during endoscopic retrograde cholangiopancreatography (ERCP) is a rare but serious complication. Very few cases of endoscopic vacuum therapy (EVT) of duodenal leakages have been reported [1,2]. We developed a new, open-pore film drainage (OFD) technique, which allows the diameter of the drainage tip to be minimized [3]. The distal end of a drainage tube (Ventrol, 12 Fr × 120 cm; Covidien

Argyle, Dublin, Ireland) is wrapped in a very thin, open-pore, double-layered drainage film (Suprasorb CNP, Drainage Film; Lohmann & Rauscher International GmbH & Co. KG, Rengsdorf, Germany) and secured using a suture (Fig. 1). The placement procedure for the OFD tube in the duodenal lumen is the same as for intestinal feeding tubes. The small diameter of the OFD device allows placement through small openings. The OFD tube is

inserted nasally (Fig. 2), and then the tip of the OFD tube is grasped by forceps (Fig. 3) and pushed forward into the duodenal lumen under endoscopic view (Fig. 4). The OFD tube can also be placed

using a guidewire technique. The OFD tube is removed simply by pulling the tube (● Fig. 5).

Application of vacuum by an electronic vacuum device (KCI V.A.C. Freedom; KCI USA Inc., San Antonio, Texas, USA; setting: –125 mmHg, continuous, intensity 10) results in a permanent evacuation and collapse of the stomach and duodenum. Gastric, biliary, and pancreatic liquids are drained in an intraluminal direction continuously, and the transmural defect is closed simultaneously, thereby preventing further extraluminal contamination.

An 80-year-old woman underwent ERCP with papillotomy. After ERCP she developed excessive emphysema of the retroperitoneum, which also spread to the torso and extremities. Simultaneous laparoscopy and duodenoscopy were performed. A slight biliary imbibition of the ligamentum hepatoduodenale was observed, together with bubbles when carbon dioxide insufflation was applied during duodenoscopy. A juxtapapillary diverticulum was observed next to the site of papillotomy; no other duodenal defects were apparent. Therefore, a Type 2 defect was diagnosed [4].

The OFD tube was inserted into the duodenal lumen and EVT was started. No additional operative treatment was necessary. The OFD tube was changed once after 3 days. Treatment ended after a total

of 6 days, when infective parameters had returned to normal and emphysema had disappeared. The area around the papilla and the papilla itself looked normal on duodenoscopy, with no pathologic signs or changes.

The main advantage of OFD is the reduced size of the drainage tube, which allows easy placement of the vacuum drainage. The open-pore film drains gastric, biliary, and pancreatic juice as effectively as standard open-pore foam drainage. Thus, OFD for EVT might become a new easy tool for treatment of perforation.

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Competing interests: Dr. Loske is a consultant for Lohmann & Rauscher GmbH & Co. KG.

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