Thieme

Combined endoscopic and surgical covered stent placement: a new tailored treatment for enteroatmospheric fistula in patients with terminal ileostomy

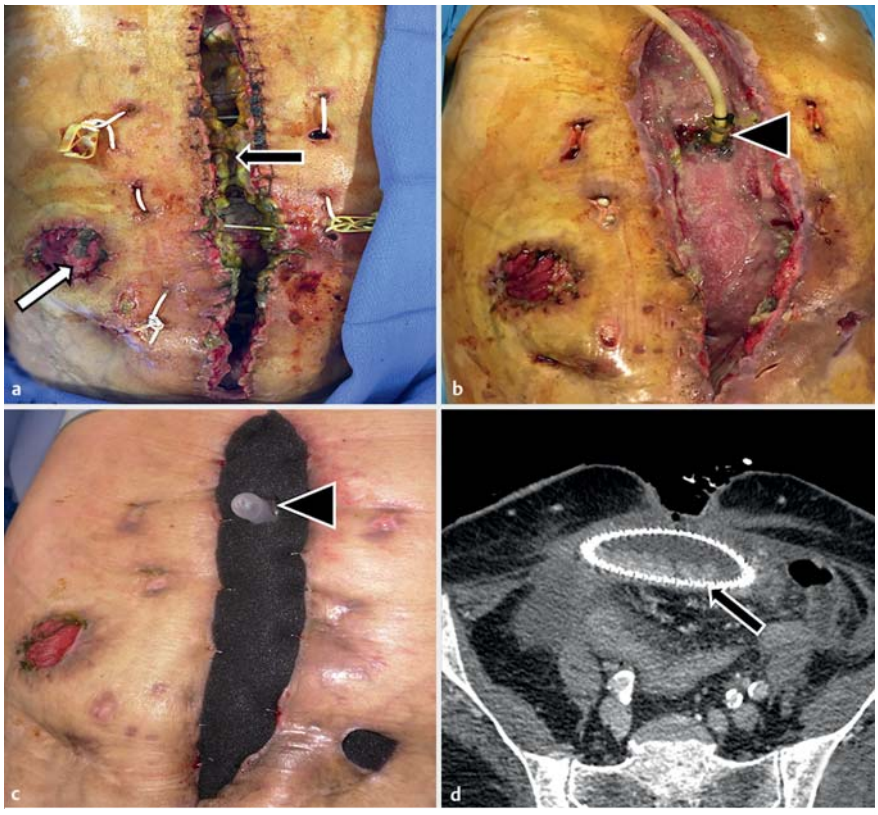
An enteroatmospheric fistula (EAF) is defined as the presence of an enteric fistula in the middle of an open abdomen with no overlying soft tissue [1].

We describe an alternative approach to the management of EAFs located on the small bowel close to a terminal ileostomy using a covered self-expanding metal stent (CSEMS), which we used in three patients. The median time to discovery of the EAF was 42 days (range 35 – 55). The median distance between the EAF and the terminal ileostomy was 15 cm (12 – 20). All patients had been previously managed for EAF using adapted tube vacuum-assisted closure (VAC) (▶ **Fig. 1**). The median interval between discovery of the EAF and use of the CSEMS was 20 days (17 – 42).

Endoscopy was performed via the terminal ileostomy. A guidewire was introduced through the ileostomy and guided beyond the EAF. A colonic CSEMS (Hanarostent HRC, Life Partners Europe, Bagnolet, France) with a diameter of 40 – 20 – 26 mm and a length of 24 cm was then placed on either side of the EAF. The position of the stent was checked by direct vision and radiological guidance, and it was then deployed to cover the EAF. The stent was sutured to the edge of the EAF using absorbable sutures to prevent migration. Sutures were placed on the mesh without passing through the coating of the CSEMS (▶ **Fig. 2**; ▶ **Video 1**). VAC therapy using white then black foam was placed on the EAF orifice.

Postoperative management consisted of changing the VAC therapy every 48 – 72 hours (▶ **Fig. 3**) and enteral nutrition via a nasojejunal tube. The CSEMS was removed after 1 month.

By this time, the EAF had closed in two patients and the CSEMS was easily removed. In the remaining patient, the CSEMS had to be changed because of persistence of the EAF with endoscopic perforation occurring during placement of the second CSEMS. In all three pa-



▶ **Fig. 1** Management of an enteroatmospheric fistula (EAF). **a** Photograph of the open abdomen showing the terminal ileostomy (white arrow) and the EAF (black arrow). **b** The EAF being managed using a tube (black arrowhead) with vacuum-assisted closure therapy. **c** The EAF being managed using a nipple (black arrowhead) with vacuum-assisted closure therapy. **d** Abdominal computed tomography (CT) scan showing the covered stent (black arrow) in the small bowel covering the EAF.

VIDEO 1

▶ Video 1: Combined endoscopic and surgical placement of a covered stent as treatment for an enteroatmospheric fistula in a patient with a terminal ileostomy.

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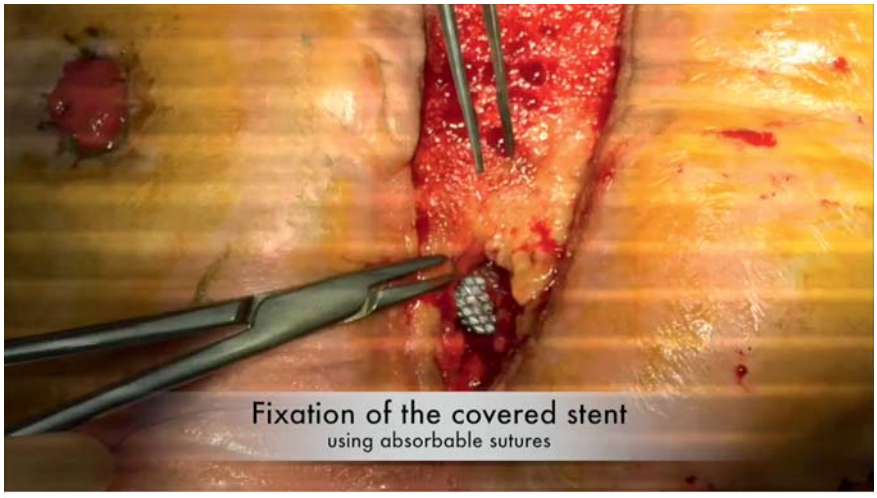
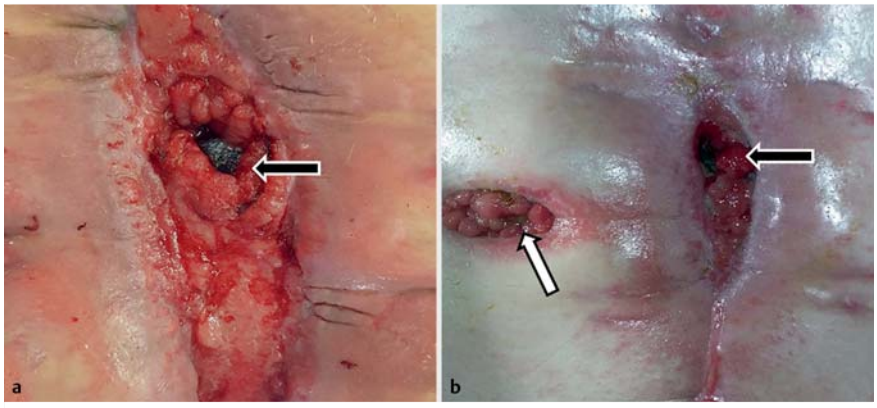


▶ **Fig. 2** Photograph showing the covered stent being sutured to the edge of the enteroatmospheric fistula.



▶ **Fig. 3** Photographs of an enteroatmospheric fistula being treated with a covered stent (black arrow) showing gradual closure between changes of the vacuum-assisted closure therapy on: **a** day 7 after placement of the stent; **b** day 15 (white arrow shows the terminal ileostomy).

tients, a single endoscopy allowed placement of the CSEMS with no intestinal flow into the VAC therapy, all intestinal flow being directed towards the terminal ileostomy.

This short series proposes an unusual treatment for EAFs that allows endoscopic closure. Series with larger numbers are needed to confirm the applicability and results of this treatment.

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Competing interests

None

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