Self-expandable metallic stent placement as palliative treatment of obstructed colorectal carcinoma

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Introduction

Surgical colostomy is the traditional approach for palliation of unresectable obstructive colorectal cancer and may result in increased patient discomfort. Various nonsurgical endoscopic treatment procedures, such as balloon dilatation1 or Nd-YAG laser,2,3 are also available. These procedures may cause perforation and require multiple sessions. Stent placement for the treatment of malignant colorectal strictures has become an alternative to surgery since first described by Dohmoto4 in 1991. Innovations in stent technology have improved the efficiency of colorectal stent placement. The through-the-scope stent for the exclusive treatment of colorectal cancer is not available in Japan. This report describes the use of an esophageal stent and the technical modifications required for its success in the treatment of colorectal strictures. We describe various technical strategies for colorectal stent placement and report on the outcomes.

Methods

Patients

Medical records of patients who underwent palliative colonic stenting between June 1997 and March 2003 were reviewed retrospectively and the clinical outcome was evaluated. The eligibility criteria for colorectal stenting covers those patients with bowel obstruction, either complete or incomplete, who were considered unsuitable for surgical treatment due to extensive spread of the cancer or high surgical risk. Technical success was defined as the satisfactory deployment and precise positioning of the stent at the location of the stenosis. Four parameters, including abdominal pain, nausea or vomiting, difficult bowel movement, or oral diet were used to evaluate clinical improvement. Clin-
Cal success was defined as improvement of one or more these parameters. Written informed consent was obtained for all patients before the procedure.

**Technique**

Two types of stent were used: Ultraflex (Boston Scientific, Natick, MA, USA), 17–23 mm in diameter, 7–15 cm in length, and Wallstent (Boston Scientific), 22 mm in diameter, 10 cm in length. Stent selection was based on the location of the stricture. An Ultraflex stent was used in the proximal colon and an additional plastic tube was used to increase the length of the delivery system.5 The Ultraflex stent was modified by cutting the delivery tube short and connecting it in reverse to the plastic tube to avoid migration (Fig. 1). As a result of this modification, the stent flare is relocated oral to the stenosis (Fig. 2). All stents were placed with endoscopic and fluoroscopic guidance. Initially, a 7-Fr. catheter was passed endoscopically with the aid of a guidewire [Jagwire, 0.035 in. (480 cm); Boston Scientific] inserted through the stricture. To avoid perforation, balloon dilation is generally not performed.6,7 When insertion of the stent delivery system through the structure was difficult, balloon dilation was used, but kept to a minimum (12 mm, CRE WG; Boston Scientific). After withdrawal of the balloon catheter, the guidewire was exchanged for a stiff guidewire [Amplatz Super Stiff, 0.038 in. (260 cm);

**Fig. 1a,b.** Schematic illustration of modification of Ultraflex stent delivery system. **a** Delivery system before modification. The shaft is cut at both sides of the mounted stent (double-headed arrows). **b** The delivery system is connected in reverse to the plastic tube so that the stent flare is located distally.

**Fig. 2a–c.** Transverse colon cancer treated with the covered stent. **a** Barium enema showing a stricture of the transverse colon. **b** The colonoscope is advanced to the level of the stricture. The guidewire is inserted through the working channel of the scope and passed across the stricture. **c** X-ray immediately following stent placement shows the stent was adequately positioned and fully deployed. The flare of the stent is located oral to the stenosis.