CASE REPORT

Endoscopic Treatment for Repeated Arterial Bleeding with Ulcerative Colitis

Tadayuki Oshima · Takashi Joh · Hiromi Kataoka · Makoto Sasaki · Fumitaka Fujita · Shozo Togawa · Tsuneya Wada · Etsuko Iio · Makoto Itoh

Introduction

Bloody diarrhea is a cardinal symptom of patients with moderate to severe ulcerative colitis (UC). In a recent study, acute massive lower gastrointestinal (GI) bleeding represented only 0.1% of admissions for ulcerative colitis [1]. Other reported incidence rates vary from 1.4% to 4.2% [2–4]. In a recent overview of emergencies in UC patients, approximately 6%–10% of all urgent colectomies performed were due to hemorrhage [5]. In the setting of UC, bleeding from inflamed mucosa is most often diffuse, and arterial bleeding is only observed in a small subset of patients. Emergency proctocolectomy is advocated as the only reliable treatment for this patient group and is also the treatment of choice in cases of toxic megacolon and perforation. However, urgent colectomy is associated with high morbidity and mortality in the setting of hemodynamic instability and active bleeding [6]. When a discrete source of bleeding can be identified, endoscopic treatment may provide a new modality for the treatment of massive lower GI bleeding in the setting of UC.

This is the first case describing resolution of arterial bleeding in the descending colon of a UC patient via three treatments with hemoclipping targeted at three different locations

T. Oshima (✉) · T. Joh · H. Kataoka · M. Sasaki · F. Fujita · S. Togawa · T. Wada · E. Iio · M. Itoh
Department of Internal Medicine and Bioregulation, Nagoya City University Graduate School of Medical Sciences, 1 Kawasumi, Mizuho, Nagoya 467-8601, Japan
e-mail: toshima@med.nagoya-cu.ac.jp

and performed at different times. Emergent endoscopic treatment, instead of surgery, may be considered in certain cases of massive colonic hemorrhage in UC patients.
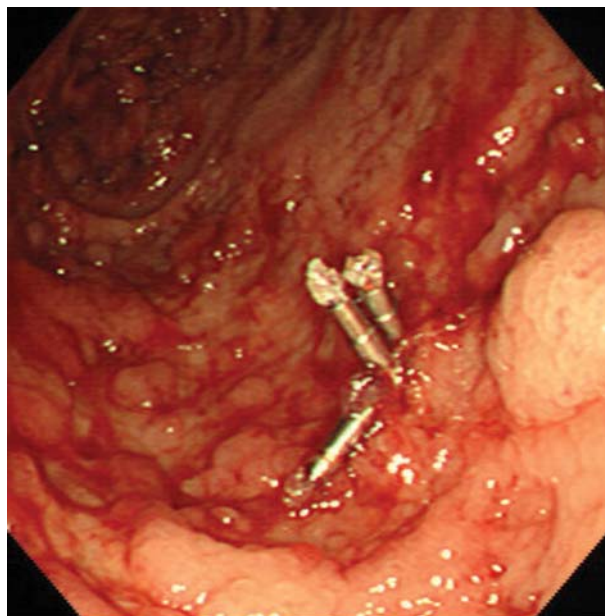
Case report

A 24-year-old man was referred to our clinic with a 10-year history of UC. History revealed two documented exacerbations, which were successfully treated with short courses of steroids and mesalazine. The patient's daily treatment regimen included 2250 mg of oral mesalazine, and he denied intake of nonsteroidal anti-inflammatory drugs or aspirin. Upon presentation to our Outpatient Clinic the patient was noted to have worsening of his disease as evidenced by massive lower GI bleeding and sudden hypovolemic shock. Emergent colonoscopy showed mildly active disease in the rectosigmoid and descending colon, with coagula and oozing from spotted ulcers, but normal colonic mucosa was seen around the ulcers. After admittance, 8 units of blood was administered, and intensive intravenous steroid therapy was initiated. Although the patient's general condition appeared to improve after admission, on the ninth hospital day, the patient developed sudden massive bloody stools and hypovolemic shock. On physical examination, his blood pressure was 70/44 mm Hg, pulse rate was 72 beats/min, and body temperature was 37.0°C. Abdominal examination revealed normal bowel sounds and right-sided abdominal tenderness, without a palpable mass. Abdominal x-ray excluded toxic megacolon. Laboratory evaluation revealed a hemoglobin concentration of 7.1 g/dl, C-reactive protein concentration of 0.3 mg/dl, erythrocyte sedimentation rate of 3 mm/hr, white blood cell count of $18,000/\mu l$, blood urea nitrogen of 15 mg/dl, and creatinine of 0.7 mg/dl. Serum cytomegalovirus antigenemia was negative. Surgery was

discussed but was declined by the patient and family. Urgent colonoscopy showed spouting bleeding from a visible vessel in the descending colon (Fig. 1a). Endoscopic hemostasis was achieved by applying three normal-sized clips with a clipping device (Fig. 1b). Ten units of blood was administered, and upper endoscopy failed to demonstrate an upper GI lesion that might be responsible for the patient's bleeding. Subsequently, the patient remained stable for 13 days.

He had neither fever nor abdominal pain. However, massive hemorrhage recurred on the 22nd hospital day and on the 24th hospital day. Surgery was again discussed but was declined. Emergent colonoscopy disclosed active spouting bleeding at different locations during each episode, and additional clips were applied each time. The patient regained hemodynamic stability and his hematocrit stabilized without additional blood transfusion. His white blood cell count and C-reactive protein level showed no elevation. On the 25th hospital day, CT and abdominal angiography were performed to assess for angiodysplasia or other significant lesions which might be responsible for massive bleeding. No significant lesions were detected by CT (Fig. 2). No areas of contrast extravasation or arterial venous malformation were seen by digital subtraction arteriography of the superior and inferior mesenteric arteries (Fig. 3). No complications occurred, and

(a)

(b)

Fig. 1 Endoscopic view. (a) Active bleeding was seen in the descending colon. (b) Hemostasis was obtained by the application of three clips
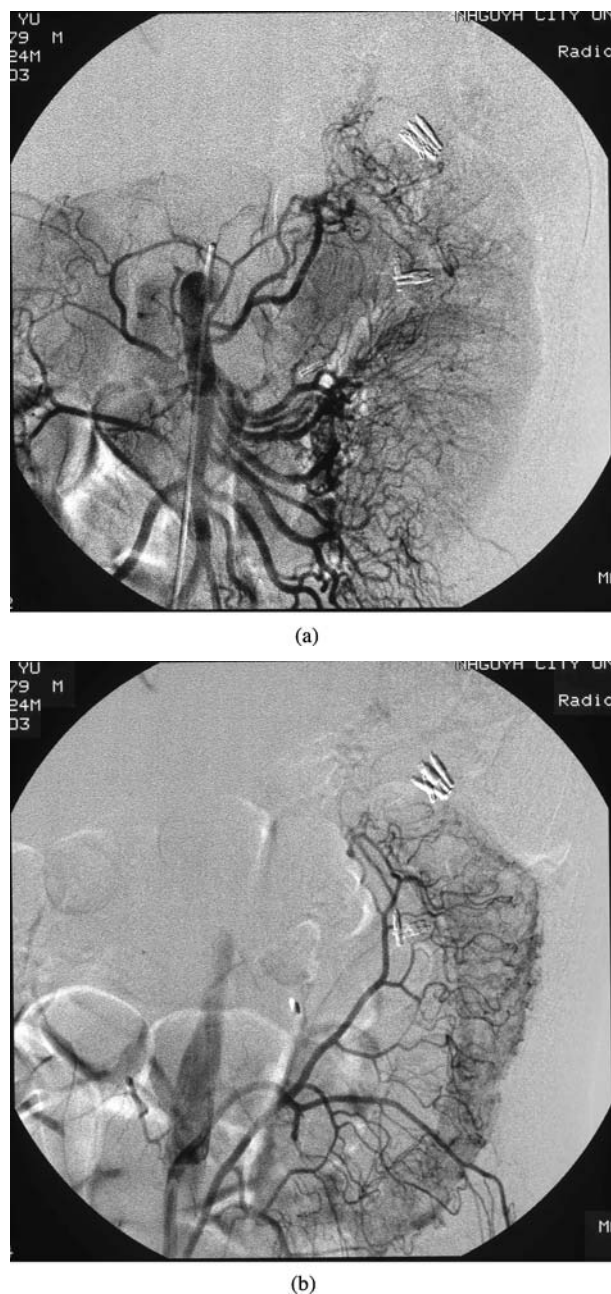

(a)

(b)

Fig. 2 CT scan. Plain CT (a) and CT enhanced with medium (b) on day 25 after admission showed colonic wall thickness. No other significant changes were noted. The high-density lesion in the descending colon is due to the hemoclips

Fig. 3 Abdominal angiography. Digital subtraction arteriography of superior (a) and inferior (b) mesenteric artery. No significant abnormalities were noted

neither procedure precipitated any flare of the patient's colitis. Following these treatments and examinations, he required no further transfusions and remained stable without evidence of rectal bleeding during a follow-up period of 2 years.

Discussion

Massive bleeding occurs in about 0% to 4.5% of patients with UC who experience a disease exacerbation and is usually the result of acute or fulminant colitis [7–9]. Only a small subset of patients progresses to hypovolemic shock [4], because bleeding typically arises as oozing from inflamed mucosa. When bleeding is resistant to conservative therapy, surgery is indicated [2]. Approximately 6%–10% of emergent operations for UC patients are due to massive bleeding [5]. Emergent proctocolectomy, although a high-risk procedure, has been advocated as the only reliable treatment for this patient group [10, 11]. Robert *et al*. performed urgent colectomy for massive hemorrhage in UC in 11 patients. They described several complications, ranging from persistent bleeding to bowel obstruction and infection, resulting in 100% morbidity. One of the 11 patients (9%) died of sepsis due to perforation of a duodenal ulcer. Further surgery was necessary in three patients (27%), including one who later died [2]. In other reports, the mortality rate associated with emergent operations for massive bleeding is approximately 10% [6, 12, 13]. These reports indicate that emergent operations have a relatively high morbidity when the general condition of the patient is poor due to the severity of the disease, and that the postoperative course is often complicated by inflammation, infection, and delayed wound healing. Because it is often difficult to determine the indications for surgery with often devastating complications, endoscopic treatment may provide an alternative therapy for massive colonic bleeding in UC.

In a report considering bleeding in the setting of Crohn's disease, 7of 34 episodes of bleeding were controlled endoscopically (with either laser coagulation, bipolar coagulation, or removal of a pseudopolyp), and the majority of patients responded to medical therapy alone [14]. There is limited literature regarding endoscopic therapy for massive bleeding in UC patients. In the past, emergent colonoscopy in patients with active UC with massive bleeding has been considered a contraindication due to the increased risk of inducing toxic megacolon or perforation. However, in cases involving sudden massive bleeding with hypovolemic shock, emergent endoscopic treatment may be effective, as the bleeding may be from a point arterial source, rather than diffuse oozing from the entire inflamed colonic mucosa. It is therefore advocated that these patients with a suspected focal arterial source be managed conservatively and that accurate localization and hemostasis of the bleeding point be performed prior to considering surgery.

One previous report describes several patients treated with epinephrine injection and bipolar coagulation, which might be comparatively easy [1]. However, this may increase the risk of perforation and aggravate the mucosal inflammation. The endoscopic application of clips may be a more satisfactory alternative in certain patients with UC when massive lower GI bleeding arises from a point source [15]. Although Yoshida *et al*. reported that endoscopic application of hemostatic clips is effective, they did not catch the spouting

bleeding [15]. Here we caught the spouting bleeding from the exposed artery three times at different lesions. Improvement in inflammation does not always portend an improvement in clinical condition, particularly in cases of rupture of an exposed artery. Given the perceivably higher risk of rebleeding, competent technical skills and careful follow-up are important to ensure effective hemostasis. Transcatheter embolization has also recently been described as an alternative therapy to avoid the high risk associated with emergency colectomy [16, 17], and in unsuccessful cases of hemoclipping, this alternative technique might be useful.

In summary, we report the successful treatment of major lower GI arterial bleeding via hemo clipping in a patient with mildly active ulcerative colitis. This case report highlights the fact that in UC arterial bleeding can occur from lesions separated in both time and space. Endoscopic hemoclipping is suggested as an alternative therapeutic approach to hemostasis in selected UC patients in an effort to avoid the high risks of emergent surgery. In unsuccessful cases of endoscopic hemostasis or transcatheter embolization, colectomy remains a viable therapeutic option.

References

1. Pardi DS, Loftus EV Jr, Tremaine WJ, Sandborn WJ, Alexander GL, Balm RK, Gostout CJ (1999) Acute major gastrointestinal hemorrhage in inflammatory bowel disease. Gastrointest Endosc 49:153–157
2. Robert JH, Sachar DB, Aufses AH Jr, Greenstein AJ (1990) Management of severe hemorrhage in ulcerative colitis. Am J Surg 159:550–555
3. Edwards FC, Truelove SC (1964) The course and prognosis of ulcerative colitis. III. Complications. Gut 32:1–22
4. Bruce D, Cole WH (1962) Complications of ulcerative colitis. Ann Surg 155:768–781
5. Bitton A, Peppercorn MA (1995) Emergencies in inflammatory bowel disease. Crit Care Clin 11:513–529
6. Szold A, Katz LB, Lewis BS (1992) Surgical approach to occult gastrointestinal bleeding. Am J Surg 163:90–92, discussion 92–93
7. Smith JN, Winship DH (1980) Complications and extraintestinal problems in inflammatory bowel disease. Med Clin North Am 64:1161–1171
8. Sloan WP Jr, Bargen JA, Gage RP (1950) Life histories of patients with chronic ulcerative colitis: a review of 2,000 cases. Gastroenterology 16:25–38
9. Farmer RG (1991) Lower gastrointestinal bleeding in inflammatory bowel disease. Gastroenterol Jpn 26(Suppl 3):93–100
10. Truelove SC (1992) Medical management of ulcerative colitis and indications for colectomy. In: Jarnerot G, Lennard-Jones J, Truelove SC (eds) Inflammatory bowel disease. Berlings, Stockholm, pp 363–378
11. Becker JM (2001) Indication for colectomy and choice of procedures. In: Bayless TM, Hanauer SB (eds) Advanced therapy of inflammatorybowel disease. B. C. Decker, Hamilton/London, pp 175–178
12. Fleshner PR, Michelassi F, Rubin M, Hanauer SB, Plevy SE, Targan SR (1995) Morbidity of subtotal colectomy in patients with severe ulcerative colitis unresponsive to cyclosporin. Dis Colon Rectum 38:1241–1245
13. Ziv Y, Fazio VW, Church JM, Milsom JW, Schroeder TK (1995) Safety of urgent restorative proctocolectomy with ileal pouch-anal anastomosis for fulminant colitis. Dis Colon Rectum 38:345–349
14. Belaiche J, Louis E, D'Haens G, Cabooter M, Naegels S, De Vos M, Fontaine F, Schurmans P, Baert F, De Reuck M, Fiasse R, Holvoet J, Schmit A, Van Outryve M (1999) Acute lower gastrointestinal bleeding in Crohn's disease: characteristics of a unique series of 34 patients. Belgian IBD Research Group. Am J Gastroenterol 94:2177–2181
15. Yoshida Y, Kawaguchi A, Mataki N, Matsuzaki K, Hokari R, Iwai A, Nagao S, Itoh K, Miura S (2001) Endoscopic treatment of massive lower GI hemorrhage in two patients with ulcerative colitis. Gastrointest Endosc 54:779–781
16. Mallant-Hent R, van Bodegraven AA, Meuwissen SG, Manoliu RA (2003) Alternative approach to massive gastrointestinal bleeding in ulcerative colitis: highly selective transcatheter embolization. Eur J Gastroenterol Hepatol 15:189–193
17. Kazama Y, Watanabe T, Akahane M, Yoshioka N, Ohtomo K, Nagawa H (2005) Crohn's disease with life-threatening hemorrhage from terminal ileum: successful control by superselective arterial embolization. J Gastroenterol 40:1155–1157