

Endoscopic closure of a large iatrogenic rectal perforation using endoloop/clips technique

P. Katsinelos¹, J. Kountouras², G. Chatzimavroudis¹, C. Zavos², I. Piplilidis¹, D. Tzilves¹, G. Paroutoglou¹

(1) Department of Endoscopy and Motility Unit, "G.Gennimatas" General Hospital, Thessaloniki, Greece ; (2) Department of Gastroenterology, Second Medical Clinic, Aristotle University of Thessaloniki, Ippokraton Hospital, Thessaloniki, Greece.

Abstract

Retroflexion to evaluate the rectal vault provides significant additional information compared with standard forward view of the rectum. The procedure is easily performed with rare complications and is well tolerated by patients. We describe the first case of a large oval rectal perforation after retroflexion of the colonoscope in a healthy rectum during a follow-up colonoscopy, immediately closed with the endoloop/clips technique. The patient had an uneventful course and was discharged after 5 days. At his 2-month follow-up visit he remained asymptomatic and endoscopy revealed complete healing of the perforation. (*Acta gastroenterol. belg.*, 2009, 72, 357-359).

Key words : retroflexion, rectal perforation, endoloop/clips technique.

Introduction

Elective colonoscopy is an established tool for the diagnosis and management of colonic and rectal pathology. Iatrogenic colonic and rectal perforation during colonoscopy is a rare but serious complication. Specifically, retroflexion to evaluate the rectal vault is not always practiced in endoscopy and despite the fact that the maneuver is considered safe (1,2), few cases of rectal perforation secondary to retroflexion have been reported (3,4). The definitive management remains controversial. Both nonoperative and operative techniques have been described, though the standard treatment is still an operative repair of the perforation site. Endoscopic clip application was suggested, mainly for iatrogenic perforations, but little is known regarding the effectiveness of endoluminal repair of colonic perforations with clips ; this procedure and further conservative treatment may provide a tool to avoid the major additional trauma associated with laparoscopy or laparotomy and minimizes the duration of hospitalisation (5-7).

We herein describe the first case of successful repair of a large iatrogenic rectal perforation by the endoloop/clips technique.

Case report

An 80-year-old man underwent colonoscopy during his annual follow-up, after resection of a large sessile rectal villous adenoma located close to the anal verge. We used retroflexion of the endoscope within the rectal vault to visualize the resection area, because this maneu-



Fig. 1. — Endoscopic view of the rectum showing a large oval perforation (arrow).

ver is easy to perform, increases the diagnostic yield and improves subsequent patient's management (1,2). On straightening the scope, a 3 cm perforation (measured by a snare) (Fig. 1) of the anterior rectal wall was seen approximately 9 to 10 cm from the anal verge. Because the vertical diameter of perforation was larger than the width of the open clip, we changed the colonoscope with a two-channel gastroscope (GIF-2T200,240 ; Olympus, Tokyo, Japan). An endoloop (MAJ-254 ; Olympus, Tokyo, Japan) was inserted through one of the working channels and the one arm was fixed to the lower margin of the defect with a metal clip (HX-600-090 ; Olympus, Tokyo, Japan) via an applicator device (HX-5QR-1 ; Olympus, Tokyo, Japan). The maneuver was repeated to

Correspondence to : Panagiotis Katsinelos, M.D., Ph.D., Head, Department of Endoscopy and Motility Unit, "G.Gennimatas" General Hospital, Ethnikis Aminis 41, 54635 Thessaloniki, Greece. E-mail : gchatzimav@yahoo.gr

Submission date : 09/11/2008

Acceptance date : 24/12/2008



Fig. 2A. — Complete closure of perforation after application of endoloop/clips technique.



Fig. 2B. — Endoscopic view of the closed perforation five days later.

anchor the other arm of the same loop snare at the upper margin of the defect. The endoloop was tightened slowly, resulting to approximation of the borders of the perforation. Seven clips were required to bring the margins in contact and close the iatrogenic perforation (Fig. 2A and 2B). The patient experienced no discomfort during the procedure and was managed conservatively by using broad-spectrum intravenous antibiotics, bowel test and intravenous fluids. He had an uneventful post-procedural course even though an abdominal computed tomogra-



Fig. 3. — Healing of the perforation two months later

phy (CT) demonstrated extraluminal gas in the peritoneal cavity and subcutaneous emphysema and was discharged on the fifth day. Endoscopy performed two months later demonstrated complete healing of the perforation (Fig. 3).

Discussion

To our knowledge this is the first case of successful closure of a large iatrogenic rectal perforation by the endoloop/clips technique, associated with minimized length of hospitalization (4 days).

A relative search in the literature revealed 4 cases of rectal perforation (3,4) occurred during retroflexion of endoscope to examine the rectal vault (Table 1). In 3 cases the perforations were linear, below the peritoneal reflexion, and were managed conservatively with successful outcomes. The mechanism of rectal perforation in our patient was similar with the fourth case reported by Alhawat *et al.* (4) The shape of perforation in both cases was circular, possibly as a result of trauma caused by the tip instead of the bending section of the endoscope ; however, our case differs in location and size (Table 1). The presence of intraperitoneal gas in our patient suggests that the perforation included the peritoneal reflexion increasing the risk of contamination of the peritoneal cavity. Moreover, the large size of perforation made the repair by endoclips application practically impossible, in contrast to the patient reported by Alhawat *et al.*

The endoloop/clips technique was performed by Endo *et al.* (8) in 32 patients with large mucosal defects after endoscopic mucosal resection (EMR) of gastric mucosal tumors. They used one endoloop to approximate the margins in the middle of the defect, thus dividing it into two

Table 1. — Summary of cases of retroflexion-related rectal perforations

Year	Cases	Author	Location	Endoscopic appearance	Management	Hospitalization (days)	Outcome
1993	3	Chu <i>et al.</i> (3)	anterior wall posterior wall anterior wall (5-8 cm from the anal verge)	longitudinal tear longitudinal tear longitudinal tear	conservative conservative conservative	7 21 10	good good good
2008	1	Alhawat <i>et al.</i> (4)	anterior wall (6-7cm from he anal verge)	circular defect (1-1.5 cm diameter)	endoclips	3	good
2009	1	Katsinelos <i>et al.</i>	anterior wall (10-12 cm from the anal verge)	circular defect (3 cm diameter)	endoloop/clips	4	good

smaller defects. Then each of the smaller defects was closed by endoclips. In the same year, Matsuda *et al.* (9) described the complete closure of a large defect (5 cm in diameter) after EMR of a lateral spreading colorectal tumor, using the endoloop/clips technique. Inspired by these reports, we offered this novel endoscopic therapy to our patient resulting in an uneventful post-intervention course.

In conclusion, it is our belief that endoloop/endoclips technique, which mimics a surgical suture, can be used successfully to close large iatrogenic perforations, EMR-induced defects and probably fistulas, thereby reducing the need for surgical intervention and the length of hospitalization.

References

- CULTER A.F., POP A. Colonoscopic retroflexion revised. *Am. J. Gastroenterol.*, 1999, **94** : 1537-8.
- VARADARAJULU S., RAMSEY W.H. Utility of retroflexion in lower gastrointestinal Endoscopy. *J. Clin. Gastroenterol.*, 2001, **32** : 235-7.
- CHU Q., PETROS J.G. Extraperitoneal rectal perforation due to retroflexion fiberoptic proctoscopy. *Am. Surg.*, 1999, **65** : 81-5.
- AHLAWAT S.K., CHARABATY A., BENJAMIN S. Rectal perforation caused by retroflexion maneuver during colonoscopy : closure with endoscopic clips. *Gastrointest. Endosc.*, 2008, **67** : 771-3.
- MAGDEBURG R., COLLET P., POST S., KAEHLER G. Endocliping of iatrogenic colonic perforation to avoid surgery. *Surg. Endosc.*, 2008, **22** : 1500-4.
- YOSHIKANE H., HIDANO H., SAKAKIBARA A., AYAKAWA T., MORI S., KAWASHIMA H., GOTO H., NIWA Y. Endoscopic repair by clipping of iatrogenic colonic perforation. *Gastrointest. Endosc.*, 1997, **46** : 464-6
- MANA F., DE VOGELAERE K., URBAIN D. Iatrogenic perforation of the colon during diagnostic Colonoscopy : endoscopic treatment with clips. *Gastrointest. Endosc.*, 2001, **54** : 258-9
- ENDO M., INOMATA M., TERUI T., OANA S., KUDARA N., OBARA H., HASHIMOTO Y., CHIBA T., ORII S., SUZUKI K. New endoscopic technique to close large mucosal defects after endoscopic mucosal resection in patients with gastric mucosal tumors. *Dig. Endosc.*, 2004, **16** : 372-5.
- MATSUDA T., FUJII T., EMURA F., KOZU T., SAITO Y., IKEMATSU H., SAITO D. Complete closure of a large defect after EMR of a lateral spreading colorectal tumor when using a two channel colonoscope. *Gastrointest. Endosc.*, 2004, **60** : 836-8.