TECHNIQUE/CASE REPORT

Endoscopic Clipping Focused on "TriClip" for Bleeding Dieulafoy's Lesion in the Colon

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Abstract

Endoclips were among the earliest accessories developed for gastrointestinal endotherapy. Now they are currently used for the control of gastrointestinal bleeding and for the closure of perforations, fistulas, and anastomotic leaks. Numerous technical improvements of the original device have led to the development of new devices: rotatable clip, preloaded hemoclip, TriClip and repositioning clip device. The endoclip devices are easy to use. The technique comprises three steps: exposing the clip from the sheath, opening the clip to the maximum, and deploying the clip.

Dieulafoy's lesion is an abnormal, submucosal "caliber-persistent artery" that protrudes through a minute mucosal defect. Although it accounts account for up to 5% of acute upper gastrointestinal bleeding, only a few cases involving colo-rectum have been reported. We report a case of Dieulafoy's lesion of the colon which has given us the opportunity to briefly review the indications and technique of endoclipping.

Key word

Hemoclip - Dieulafoy's lesion - hemostasis

Rezumat

Endoclipsurile reprezinta unele dintre primele accesorii dezvoltate in scopul endoterapiei. Ele sunt utilizate azi in mod curent pentru hemostaza endoscopica a leziunilor gastrointestinale sangerande si pentru inchiderea perforatiilor, fistulelor si dezunirilor anastomotice. Progresele tehnice asupra clipsurilor originale au condus la aparitia unor dispozitive noi: clipsuri rotative, pre-incarcate, TriClip, clipsuri repozitionabile. Tehnica utilizarii endoclipsurilor cuprinde trei etape: expunerea clipsului din teaca, deschiderea la maximum a clipsului si aplicarea clipsului.

Leziunea Dieulafoy reprezinta o malformatie vasculara caracterizata prin prezenta unui vas submucosal cu diametru mare ce ajunge la suprafata mucoasei datorita unui defect mucosal. Leziunea Dieulafoy este responsabila de aproximativ 5% din hemoragiile digestive superioare, dar numai cateva cazuri localizate colorectal au fost raportate in literatura. Prezentam un caz de hemoragie digestiva inferioara printr-o leziune Dieulafoy localizata la nivel sigmoidian. Acesta prezentare ne permite o scurta trecere in revista a indicatiilor si tehnicii aplicarii endoclipsurilor.

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Introduction

Dieulafoy's lesions (exulceratio simplex, cirsoid aneurysm, caliber-persistent vessel, submucosal arterial malformation) account for up to 5% of acute upper gastrointestinal (GI) bleeding, but only a few cases involving colo-rectum have been reported (1). In all series published in the literature, the proximal stomach is by far the most common site for Dieulafoy's lesions, but they have been found throughout the entire GI tract. In the English-language literature, only 23 cases of colo-rectal Dieulafoy's lesions were reported until 2000 (2). The diagnosis of Dieulafoy's lesion is difficult because of its minute size and the intermittent nature of the associated bleeding. This lesion is generally unrecognized and it is probably more common than reported.

Histologically, Dieulafoy's lesion is considered a congenital lesion consisting of an abnormal, submucosal "caliber-persistent artery" that protrudes through a minute mucosal defect (3). The diameter of the submucosal artery does not progressively diminish during the usual ramification till mucosal capillary microvessels and a caliber-persistent artery at muscularis mucosae level is seen, with a diameter almost 10 times the diameter of normal arteries at this level.

Endoscopic appearance of Dieulafoy's lesion consists ofn: 1) active arterial spurting, 2) visualisation of a protru-

ding vessel with/without active bleeding, 3) fresh adherent clot – all of them within a minute mucosal defect or through normal surrounding mucosa (4).

Numerous therapeutic methods for Dieulafoy's lesion have been described: endoscopic (injection monotherapy, thermal coagulation, band ligation, hemoclip application), angiographic and surgical treatment. Before the era of endoscopic therapy, patients often required surgery and the mortality rate was as high as 80% (5). Endoscopic treatment can achieve hemostasis in more than 90% of cases. Mechanical hemostasis methods (band ligation and hemoclip) have been demonstrated to have a high rate of efficacy in achieving hemostasis and preventing further bleeding. Surgical treatment remains the last option (6).

Case report

A 74-year-old woman was admitted for a 24-hour history of painless hematochesia. During the last year she had reported two other episodes of lower gastrointestinal bleeding for which she underwent upper and lower endoscopy but no lesions were detected. Significant orthostatic change was noted in the patient's pulse and blood pressure. Abdominal examination was unremarkable. Her initial value of hemoglobin was 7.1 g/dl (hematocrit 20%). Colonoscopy performed urgently after rapid preparation with polyethylene glycol-based solution (Fortrans, Ipsen Co) showed a significant amount of fresh blood throughout the left colon, below the splenic flexure. The remaining colon till cecum had normal appearance. After washing and sucction, a clot with a small pedicle was seen in the proximal sigmoid. The clot was shaved down with energic washing and cold guilotine technique. After this, micropulsatile streaming of blood through normal surrounding mucosa was seen (Fig.1). Endoscopic clipping was attempted (TriClip TC-8-12, Wilson-Cook Medical Co.) with successful hemostasis (Fig.2). The bleeding stopped and the patient's hematocrit stabilized. The patient was discharged 4 days later after hemoglobin restauration and no further bleeding occurred during a 10 months follow-up.

Technical notes

In 1988, Hachisu first reported the successful treatment of a gastric Dieulafoy's lesion by clipping (7). The use of

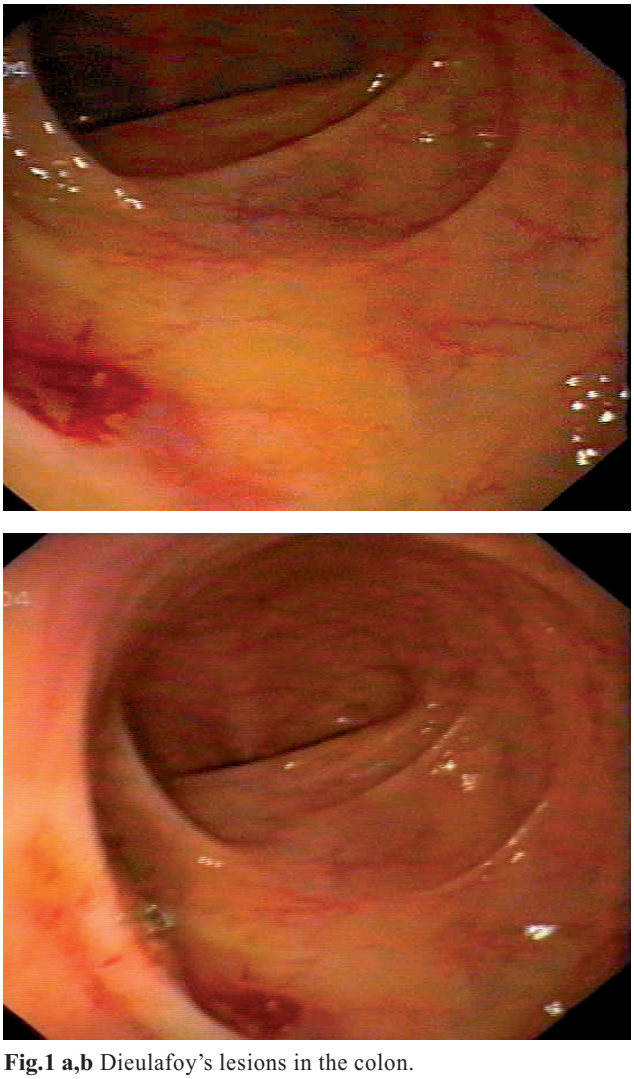

Fig.1 a,b Dieulafoy's lesions in the colon.

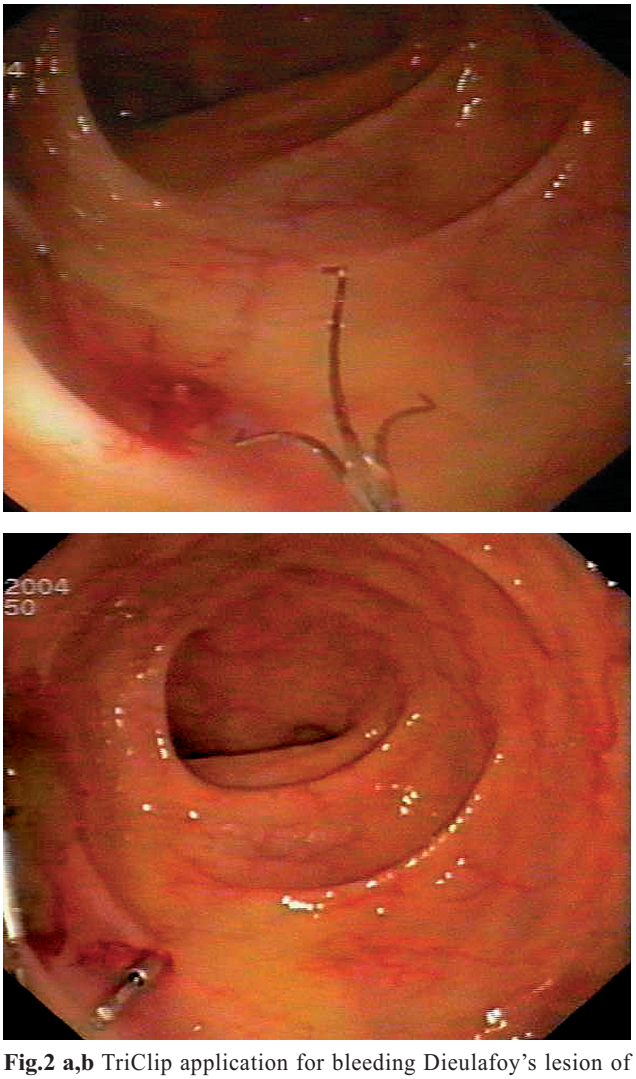

Fig.2 a,b TriClip application for bleeding Dieulafoy's lesion of the sigmoid.

clipping at colonoscopy has also been reported (8) for prevention and hemostasis of post-polypectomy hemorrhage and also for treatment of colorectal Dieulafoy's lesions (2).

The endoclip was one of the earliest accessories developed for GI endotherapy (9). Now, endoclips are used primarily for the control of GI bleeding and for the closure of perforations, fistulas, and anastomotic leaks. In addition, they have been used to anchor catheters, feeding tubes, and stents to the GI wall to prevent their migration. Being metallic, endoclips also served as excellent markers for endoscopic-guided therapy (Table I) (10).

Table I Indication for endoclip therapy in gastrointestinal disorders (modified after Raju and Gajula) (10)

Hemostasis of various bleeding GI lesions
1. Peptic ulcer
2. Dieulafoy's lesion
3. Mallory Weiss tear
4. Diverticular bleeding
5. Post-polypectomy bleeding
Securing of tubes, catheters, and stents to the GI wall
Closure of perforations and fistulas of the GI tract
1. Esophagus, stomach, duodenum, and colon after endoscopic therapy
2. Sealing of anastomotic leaks and fistulas after surgery
Pre-polypectomy for giant polyps to cut the blood supply of the polyp
Direct therapy or identification of an anatomic landmark
1. Guiding radiation oncologists in focusing cancer radiotherapy
2. Helping surgeons decide the extent of resection

Modified after Raju GS (10)

The original devices were cumbersome and required reloading after each deployment, and the clip could not be rotated to the desired axis, making it difficult to deploy the clip on the target. Since then, numerous improvements in the design were made giving rise to different sizes, shapes, and color of the endoclips. The rotatable clip device (HX-5LR-1, Olympus Optical Co, Hamburg, Germany) and the hemoclip was developed in 1995 (11). The development of a preloaded, disposable hemoclip-fixing device (HX-200L/U-135, Quickclip, Olympus) eliminated the need of reloading clips. Recently, Wilson-Cook introduced a new clipping device, the "TriClip"with a three-pronged clip design. Experience with the TriClip is limited with no published literature in peer-reviewed journals till February 2004 when a summary description of the device was made in a technological review by Raju and Cajula (10). A very new clip device is now available from Boston Scientific, the radiopaque Resolution™ clip, engineered to allow opening and closing up to five times prior to deployment aiding in repositioning of the clip.

The endoclip devices are easy to use. The technique comprises three steps: exposing the clip from the sheath, opening the clip to the maximum, and deploying the clip (Fig.2). Control of active bleeding requires placement of the clip accurately on the bleeding point which can be accomplished by approaching the lesion perpendicularly. When lesions are tangential, a transparent cap is used to place the device in proper position (12). Applying a little suction before the deployment of the clip allows the lumen to collapse, so that tissue surrounding the bleeding vessel can also be grasped for additional tamponade. Clips dislodge spontaneously and are passed in feces without any complications (13).

Endoscopic hemoclip placement has certain benefits for hemostasis in Dieulafoy's lesions: firstly, hemostasis can be easily achieved by clipping the surrounding mucosa simultaneously with the Dieulafoy's lesion (6), as the size of the lesion is small and the surrounding tissue is nonfibrotic. With TriClip the bleeding lesion was very quickly caughted in the presented patient and a very good apposition of surrounding tissue could be observed (Fig.2A,B). Secondly, development of a large ulcer is extremely rare after hemoclip placement in comparison with thermal therapy or band ligation. Thirdly, radiopaque hemoclips deployed at endoscopy can be used as indicators for the location of Dieulafoy's lesion when emergency surgery or transcatheter arterial chemoembolization is required (14).

In conclusion, the placement of clips is effective for the immediate control of bleeding and in the prevention of recurrent bleeding during long-term follow-up in patients with Dieulafoy's lesion. Clip-induced occlusion of the bleeding vessel and the resultant local hemostasis appears to prevent delayed recanalization and recurrent bleeding.

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