

Endoscopic Resection of Large Colorectal Polyps Using a Clipping Method

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PURPOSE: In conventional endoscopic snare polypectomy, bleeding and perforation are the principal concerns. To prevent these complications, we employ an endoscopic clipping technique using the HX-3L clipping apparatus. **METHODS:** With this method, clips are used to clamp the base of a polyp. A snare is hung peripheral to the clips. The polyp is then resected by coagulating and cutting with an electric current. **RESULTS:** Neither bleeding nor perforation during or after polypectomy has occurred, nor have complications related to the use of clips developed. Gigantic polyps were not resected piecemeal, but rather were resected *en bloc* facilitating a clear determination of cancer on the surface of the resected site. Endoscopic clipping permitted site marking for colonoscopic surveillance. **CONCLUSION:** We conclude that the clipping method has many advantages and is a useful technique in colonoscopic polypectomy. [Key words: Clip; Colonoscopic polypectomy; Complications of colonoscopy; Colonoscopic surveillance]

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Conventional endoscopic polypectomy using a snare is associated with two major risks, bleeding and perforation. Bleeding occurs when too little electric current has been used. Perforation occurs with the use of too much electric current. Since the wall of the colon is thinner than that of the stomach, the safety zone for endoscopic resection of colonic polyps is narrower than that for resection of gastric polyps. We introduced a clipping technique for endoscopic resection of colorectal polyps in December 1989. Here, we report the results of this technique.

MATERIALS AND METHODS

We used the clipping method for endoscopic resection of colorectal polyps in 33 males and 7

females (a total of 40 patients). Their ages ranged from 31 to 78 years, with a mean age of 57 years. Pedunculated polyps tend to bleed during or after resection because they have relatively large feeding vessels in their pedicles. We, therefore, often used the clipping technique to remove pedunculated polyps, even if they were small.

Endoscopic resection using this clipping technique proceeds as follows: 1) The most appropriate posture for the polypectomy is determined. 2) The base of the polyp is clamped with two or three clips. The clamped polyp typically becomes cyanotic (Fig. 1). 3) A snare is hung peripheral to the clips. 4) The snare is fastened and then coagulation and cutting with an electric current are accomplished, and the colorectal polyp is resected.

Clips can also be applied to the site of resection after conventional snare polypectomy has been performed when bleeding is pronounced or vessels are found.



Figure 1. Two clips were applied at the base of a sessile polyp, which subsequently became cyanotic.

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RESULTS

With regard to complications, no massive bleeding occurred during or after polypectomy using our clipping technique. No perforation and no peritonitis occurred following polypectomy. In addition, no complications related to the use of clips occurred. Clips applied to the base of a sessile polyp did not prevent removal of the neoplasm encompassed by them.

DISCUSSION

The major risks associated with conventional snare polypectomy are bleeding and perforation. These complications arise from the use of electric current to cut and coagulate tissues. In conventional snare polypectomy, ligation has not been possible, but the use of this clipping technique does permit ligation during endoscopy.

The endoscopic clipping apparatus used was recently developed by Hachisu *et al.*¹ and is marketed by Olympus® Optical Co. (Tokyo, Japan) as HX-3L. The clipping technique is very easy to perform. Application of the clip is similar to the technique used for biopsy.

This is the first report on the use of clipping apparatus for endoscopic colorectal polypectomy. As expected, bleeding did not occur in any patient during or following polypectomy. Polyps in 599 patients were removed by conventional polypectomy. Bleeding during conventional polypectomy occurred in two patients (0.3 percent) and after polypectomy in one patient (0.2 percent).

Since the clipping technique is not associated with bleeding and only a small amount of electric current delivered for a short period of time is necessary for coagulation, there has been no perforation in any patient. Using conventional polypectomy, perforation or peritonitis occurred in three patients (0.5 percent).

The clips are metal and it is, therefore, possible that current and coagulation will be conducted through the full-thickness of the tissue; thus, the likelihood of perforation is enhanced if clips are applied too deeply into the tissues of the wall and are in contact with the snare. However, Hachisu *et al.*¹ reported that the depth of grasp of the clip was stopped by the submucosal layer and there was no instance of grasping the proper muscle layer.

Other advantages of the clipping technique include the following: 1) Using the clipping technique, a gigantic polyp can be resected *en bloc* rather than piecemeal. The presence or absence of carcinoma on the resected surface can be determined with precision if carcinoma is found in the resected polyp. Unnecessary surgery can thus be avoided. 2) It often cannot be determined whether recurrence or new growth has occurred when a polyp is found at the site of a previous polypectomy. If clips have been applied at the site of polypectomy, it is easy to determine whether recurrence or new growth has occurred in colonoscopic surveillance. Clips, once applied, have not detached in a patient during a 26-month follow-up period. We believe that the clip must be applied deeply into the tissue in order to prevent subsequent detachment. If this is done, the clip can be used as a site marker. 3) The clip is radiopaque. If a minute lesion of the colorectum is detected endoscopically and clips have been applied near the site of the lesion, the site can be located easily, and a useful radiographic image of the minute lesion can be obtained in double-contrast barium enema studies. 4) When a small colorectal lesion is resected surgically, it is often difficult to identify the site of lesion during surgery. In addition, when a minute lesion of the rectum is resected using a transanal or transsphincteric approach, it is often difficult to determine the site of the lesion by inspection during surgery. If clips have been applied before surgery, the site of the lesion can easily be determined by palpation or inspection during surgery and intraoperative colonoscopy is therefore not required. This is one of the many advantages of endoscopic clipping.

Table 1.
Results of Use of the Clipping Method

Resected polyps	
Size 4 ~ 23 mm (10 ± 5 mm)	
Shape	
Sessile	6 (14%)
Semipedunculated	10 (24%)
Pedunculated	24 (57%)
Uncertain	2 (5%)
Total	42 polyps

REFERENCE

1. Hachisu T, Miyazaki S, Hamaguchi K. Endoscopic clip-marking of lesions using the newly developed HX-3L clip. *Surg Endosc* 1989;3:142-7.