

Cold Snare Excision is a Safe Method for Diminutive Colorectal Polyps

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The First Department of Internal Medicine, Hirosaki University School of Medicine, Hirosaki 036, ¹The Second Department of Internal Medicine, Fukushima Medical College, Fukushima 960-12, and ²The Department of Digestive Medicine, Shanghai Second Medical University, Shanghai 200001, P.R. China

UNO, Y., OBARA, K., ZHENG, P., MIURA, S., ODAGIRI, A., SAKAMOTO, J. and MUNAKATA, A. *Cold Snare Excision is a Safe Method for Diminutive Colorectal Polyps*. Tohoku J. Exp. Med., 1997, **183** (4), 243-249 — Cold snare excision (CSE) has proved to be an effective method for the destruction of diminutive polyps of the colon and rectum. We investigated the correlation between polyp size and bleeding time at the resected end after CSE, and also an appropriate measuring method using CSE. Eighty patients with single polyps were examined. Each polyp was identified as being 5 mm in diameter or smaller using the open-biopsy forceps technique (OBFT). The size of the polyp was calculated using our measuring system (SMS). Of the polyps identified as being 5 mm in diameter or less using OBFT, 15% were 6 mm or more using the SMS. CSE was performed for each polyp, and the time taken for the hemostasis (bleeding time of the CSE; BTCSE) was determined. In seventy-seven polyps that were 6 mm or smaller in SMS, a correlation was noted between SMS and BTCSE. In three polyps that were 7 mm or more by SMS, hemostasis took 10 min or more after CSE, and required electrocoagulation. These results suggest that CSE is a safe method for the removal of polyps determined to be 6 mm in diameter or smaller using the SMS. — colorectal polyp; cold snare excision; bleeding time © 1997 Tohoku University Medical Press

Most colorectal polyps can be removed or destroyed endoscopically. If a

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polyp is small, or particularly small (<6 mm in diameter), hot biopsy (Williams 1973) is a common treatment. For diminutive polyps, complete excision performed during colonoscopy is cost-effective because it obviates the need for subsequent colonoscopy. However, the diathermic removal of diminutive polyps by hot biopsy forceps is not always without risk; there is a small but significant risk of perforation and serious delayed hemorrhage (Wadas and Sanowski 1987; Church et al. 1988; Quigley et al. 1989; Vanagunas et al. 1989). On the other hand, cold snare excision (CSE) or "guillotine" resection has proved to be a safe and effective method for the destruction of diminutive polyps (Tappero et al. 1992). However, the following points have not yet been elucidated: (1) Why is this method indicated for polyps of 5 mm in diameter or smaller? Does bleeding not occur in polyps measuring 6–7 mm? (2) If bleeding occurs, does this depend only on the size of the polyp, or is it influenced by the site of the polyp, the age of the patient or skin bleeding time? (3) Is the open-biopsy forceps technique (OBFT) sufficient for the evaluation of polyp size? The study reported here was performed to clarify these issues.

MATERIALS AND METHODS

Estimations of polyp size

The study included 80 cases of colorectal polyp, which had been diagnosed by colonoscopy. All the patients gave their informed consent and approved of this prospective study. None of the patients had a history of bleeding disorders, and none had been taking aspirin or other medication which could affect bleeding time. Each of these cases involved a single lesion, and was 5 mm or less in diameter using OBFT. First, the polyps were divided 4 groups (2 mm, 3 mm, 4 mm or 5 mm) on the basis of size determined by OBFT. Each polyp was then measured using the disk plate method (Classen et al. 1980; Dancygier et al. 1981; Okabe et al. 1986) prior to CSE. For this, a rubber plate of 5 mm in diameter was passed through the biopsy channel of the endoscope and placed adjacent to the polyp. The size of the polyp was then calculated using our own measuring system comprising an image processor and personal computer (SMS) (Munakata et al. 1994). The polyp size determined by SMS was then compared with that determined by OBFT (size of OBFT; SOBFT).

Determination of colorectal bleeding time

CSE was performed for all lesions, and blood exuding from the resected end was flushed away with water every 20 seconds; the time taken for hemostasis (bleeding time of the CSE; BTCSE) was thus determined (Fig. 1). Furthermore, in all cases, skin bleeding time was determined using the Duke's method (Duke 1910), and the results were compared with those of BTCSE. If the bleeding continued after 10 minutes, we performed electrocoagulation on the wound to achieve hemostasis.

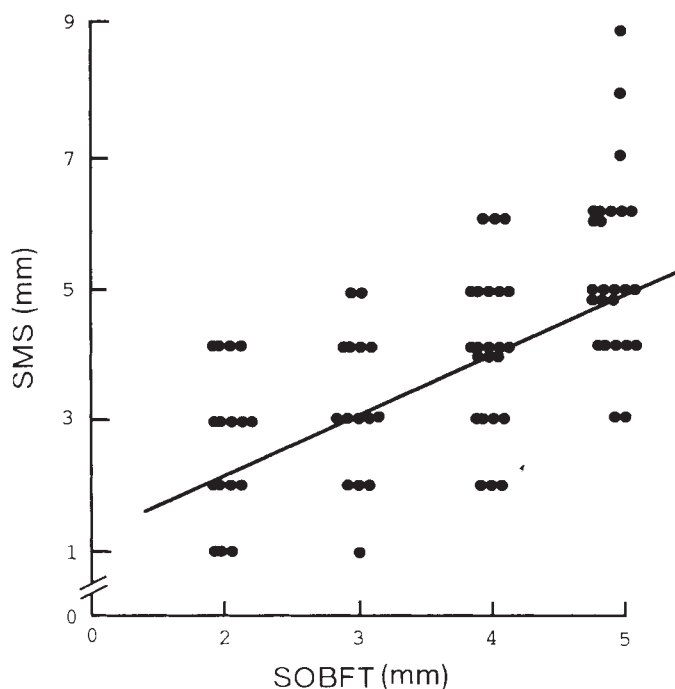


Fig. 1. Correlation of the size by open-biopsy forceps technique (SOBFT) and true diameter (SMS). A correlation was noted between SMS and size of OBFT ($n=80$, $r=0.632$, $y=0.651+0.896x$, $p<0.01$). However, 12 polyps (15%) were 6 mm or more in SMS.

Each resected polyp was retrieved by colonoscopy. Histological examination of all the collected polyp was undertaken by two expert pathologists in our hospital. All statistical analyses were performed by either the chi-square test or Student's *t*-test, and differences at *p* values of less than 0.01 were regarded as statistically significant.

RESULTS

The measured SMS values of the polyps which were identified as 2 mm in diameter using OBFT were 1–4 (2.4 ± 1.3 , mean \pm s.d.) mm. Similarly, the SMS values were 2–5 (3.4 ± 1.1) mm for polyps measured as 3 mm in diameter, 2–6 (4.0 ± 1.2) mm for those measured as 4 mm in diameter, and 3–9 (5.1 ± 1.5) mm for those measured as 5 mm in diameter. A correlation was noted between the size determined by SMS and that by OBFT ($r=0.632$, $p<0.01$) (Fig. 1). However, SMS showed that 12 polyps (15%) were 6 mm or more in diameter. In three polyps that were measured as 7 mm or more by SMS, hemostasis took 10 minutes or more after CSE, and required electrocoagulation. For the 77 other polyps, a correlation was noted between SMS size and BTCSE ($r=0.73$, $p<0.01$) (Fig. 2): BTCSE ranged from 0.3 to 2 (1.2 ± 0.6) minutes for a SMS size of 1 to 2 mm, from 0.5 to 3.2 (1.8 ± 0.9) minutes for a SMS size of 3 mm, from 2 to 4 (2.6 ± 0.8) minutes for a SMS size of 4 mm; from 2 to 6 (3.7 ± 1.3) minutes for a SMS size of 5 mm; and from 3 to 6 (4.9 ± 1.4) minutes for a SMS size of 6 mm. There was no significant relationship between BTCSE and lesion site (Fig. 3), patient age (Fig. 4) or skin

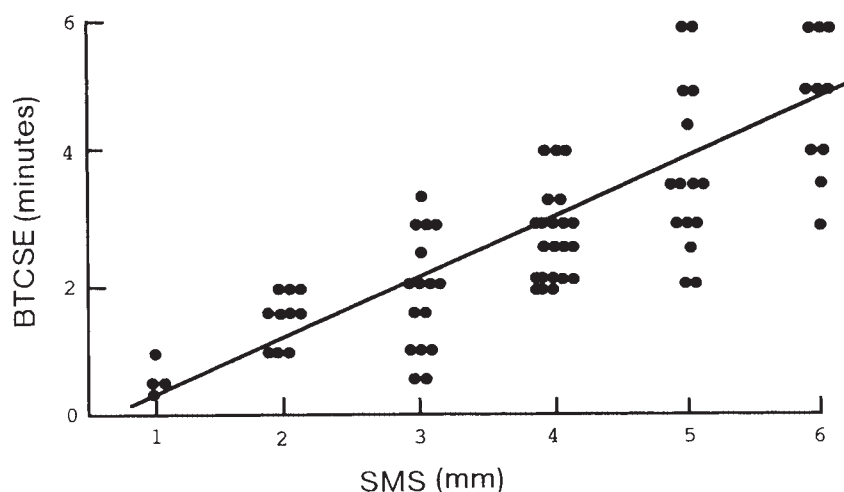


Fig. 2. Correlation of SMS and bleeding time of the CSE (BTCSE). A correlation was noted between SMS and BTCSE ($n=77$, $r=0.73$, $y=-0.465+0.834x$, $p<0.01$).

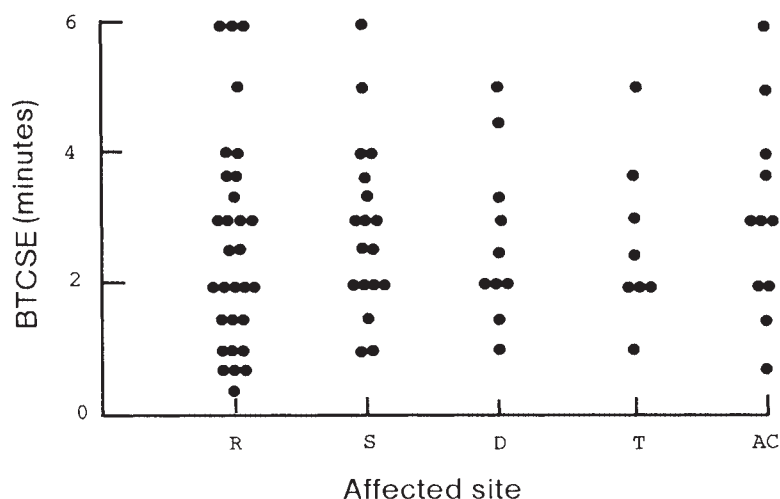


Fig. 3. Correlation of affected site and BTCSE. R, rectum; S, sigmoid colon; D, descending colon; T, transverse colon; AC, ascending colon and cecum. There was no significant difference among each BTCSE.

bleeding time (Fig. 5).

Histological examination revealed that 57 (71%) of the polyps were adenomas without severe dysplasia and 23 (29%) were hyperplastic polyps. The histological diagnosis of the three bleeding polyps was tubular adenoma. No characteristic histological findings (e.g., large vessels or hemorrhage within the lamina propria) were revealed in these bleeding polyps. None of the patients had episodes of bleeding episodes within the 10 days of follow-up.

DISCUSSION

Most cases of colorectal carcinoma are thought to originate as adenoma, develop into intramucosal carcinoma, and then progress to become invasive carcinoma. Accordingly, polyps are an important precancerous lesion, and diath-

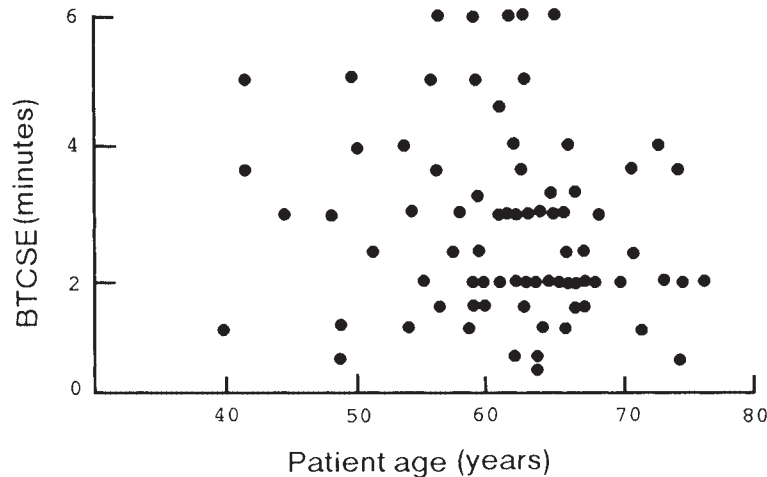


Fig. 4. Correlation of patient age and BTCSE. There was no significant relationship.

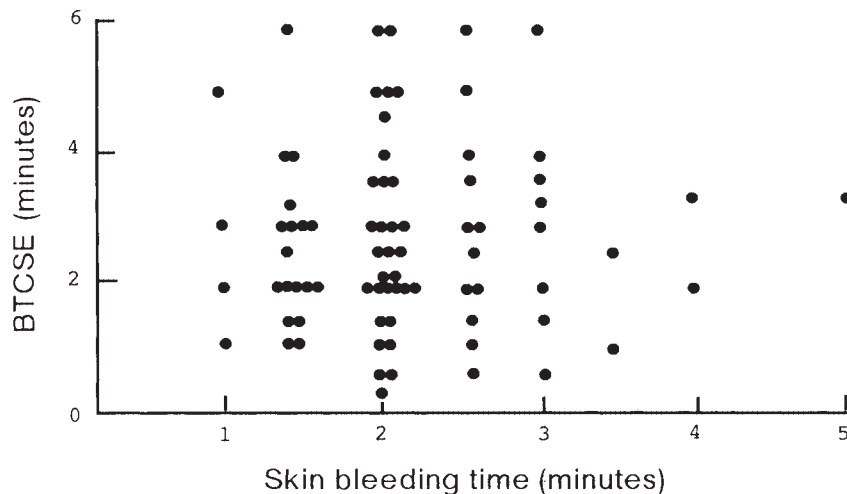


Fig. 5. Correlation of skin bleeding time and BTCSE. There was no significant relationship.

ermic resection is the most effective means of secondary prevention of cancer even in small polyps. Tappero et al. (1992) have reported that all visible polypoid lesions should be removed, and that CSE of small polyps is a safe and effective alternative method of treatment in patients who have no clotting problems. However, in their series, some patients required injection of diluted adrenaline to control bleeding after CSE.

In this study, we used two methods for measurement of polyp size. The rate of error for SMS was $-1.1 \pm 1.3\%$ (mean \pm s.e.), and so the size determined using SMS was considered to be the true diameter. Polyps that were 6 mm in diameter or less, which were accurately measured by SMS, presented no problem for CSE. However, of those identified as being 5 mm in diameter or less using SOBFT, 15% actually exceeded 6 mm. Furthermore, in three polyps that were 7 mm in diameter or more, bleeding occurred for 10 minutes or more after CSE, necessitating electrocoagulation. Vakil et al. (1994) reported that the endoscopic measurement

of lesion size by the open-biopsy forceps method underestimated the lesion size significantly (mean error in vivo was $26.5 \pm 5.7\%$), particularly for small lesions (Margulies et al. 1994; Vakil et al. 1994). Similarly, a measuring probe is associated with a much greater degree of error (Sonnenberg et al. 1979). and Wakabayashi et al. (1990) reported a mean error of $30.7 \pm 25.3\%$ of the rod method. In contrast, when the marker disk method was used, this error was reduced to $4.2 \pm 0.5\%$ (Dancygier et al. 1981) or $3.1 \pm 2.0\%$ (Mituhashi 1988). Accordingly, when determining the indications for CSE, the size of the polyp should be determined by the marker disk method, and not by SOBFT.

The American Society for Gastrointestinal Endoscopy have recommended that it is not necessary to determine prothrombin time, partial thromboplastic time and platelet count prior to colonoscopic polypectomy (ASGE 1993). The results of our study show that for patients with no history of bleeding disorders, it is not necessary to determine the skin bleeding time before CSE.

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