Colonoscopic Excision of Large and Giant Colorectal Polyps

Technical Implications and Results Over Eight Years

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Large polyps are sessile or pedunculated lesions that are larger than or equal to 3 cm in size. Sixty-six colonoscopic piecemeal excisions of large pedunculated and sessile polyps (75 percent of 88 recognized large polyps) were performed over eight years. The macroscopic feature of the lesions and the result of an extensive snare biopsy were the deciding factors for endoscopic as opposed to surgical removal. Only three complications (4.5 percent) were recorded (two hemorrhages and one colonic wall burn syndrome), none of which required surgery. Fifty patients with 52 adenomatous lesions had colonoscopic follow-up (range, 3 to 85 months). Of 36 sessile ademonas, two cases of residual (5.5 percent) and four of recurrent disease (11 percent) were observed. Colonoscopic removal is an alternative to local surgical excision of large benign colorectal polyps, and often can be an alternative method to elective colectomy in elderly and high-risk patients. [Key words: Polyps, large colorectal, giant colorectal; Excision, colonoscopic]

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endoscopic polypectomy of large polyps over a period of eight years (1978 to 1985).

Methods

From January 1976 to October 1985, 1275 colonoscopic snare polypectomies were performed on 871 patients for lesions greater than 0.5 cm. Eighty-eight polyps with a diameter of 3 cm or more were found in 86 patients (prevalence 7.5 percent in 1171 polypectomies), and 66 (75 percent) were removed colonoscopically in 64 patients. The mean patient age was 65 years (range, 37 to 87 years), with a major incidence of male patients (53 percent). Fifty-eight polyps (88 percent) had diameters of between 3 and 6 cm, four (6 percent) between 6 and 8 cm, and four (6 percent) between 8 and 11 cm. Twenty-one (31.8 percent) were pedunculated and 45 (68.2 percent) were sessile polyps. The distribution and morphology in colic segments are shown in Table 1.

The entire length of the colon was studied by total colonoscopy in 62 patients, and by barium enema in two patients with high cardiologic risk. Forty-seven patients (73 percent) had symptoms, *i.e.*, irregular bowel habits, mucous discharge, or acute chronic bleeding. The macroscopic feature of the polyps and the outcome of extensive snare biopsy were the deciding factors for endoscopic, as opposed to surgical removal. In most cases the site of the polyp did not influence the decision.

The diathermic braided wire snares and the electrosurgical Olympus unit UES 2® were used for polypectomy. The piecemeal technique was the method that usually was adopted with between one and four sessions

Endoscopic polypectomy is an ongoing procedure that is relatively easy and safe when performed by an expert.[1-5] Colonoscopic excision of large polyps often is accompanied by great technical difficulties, however, and its limitations from the oncologic point of view raise doubts among surgeons about this conservative approach.

Few specific reports are found concerning colonoscopic excision of large polyps.[6-9] They were defined by Christie[6] as lesions of 2 cm or larger. This concept was related to the high incidence of cancer in the adenomatous polyp with these dimensions[10] and to the technical difficulties of endoscopic polypectomy, *i.e.*, the feasibility, safety, and the possibility of extension to a large number of patients. We analyzed patients undergoing
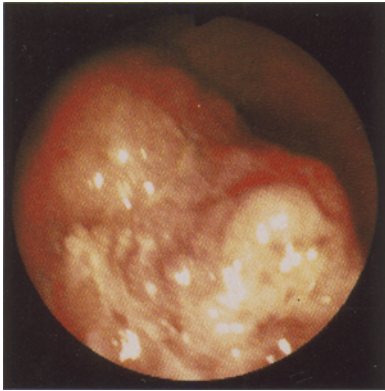
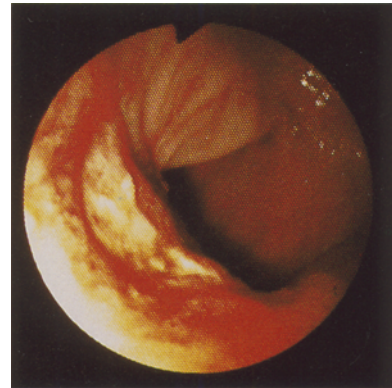FIG. 1. Large, sessile polyp (about 4 cm) of sigmoid colon.
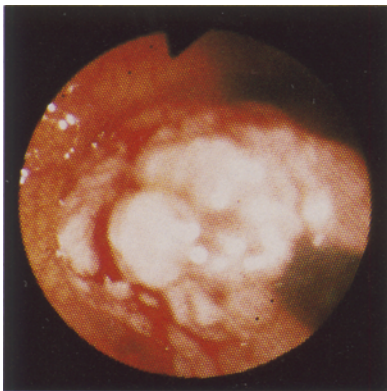

FIG. 2. Colonoscopic piecemeal excision.

FIG. 3. Result of excision after three days. The mucosal defect in the site of previous lesion is visible.

FIG. 4. Advanced regeneration of mucosal surface after six weeks. The site of the polypectomy is recognizable by india ink tatooing points.

at four to 21 days (Figs. 1–3). The transected segments ranged from 1 to 2.8 cm. A complete polypectomy on a single transection was carried out in pedunculated polyps when the head was reduced to less than 3 cm. Submucosally injected india ink (3 to 6 ml) was left as a site marker in sessile lesions (Fig. 4). The tattooing was done in pedunculated lesions within 2 to 3 weeks from the excision in adenomatous polyps with invasive carcinoma either to make follow-up easier in the case of endoscopic therapy only, or to facilitate location of the base of the lesion when it had been treated surgically. Multiple biopsy specimens of the base of the sessile polyps were

taken a few days after a complete polypectomy; moreover, the surfaces of the base were endoscopically electrocoagulated three to four weeks after removal.

Results

The nature of the lesion was an adenomatous polyp in 62 patients (94 percent); the remaining lesions were two polypoid carcinomas, one hyperplastic polyp, and one submucosal lipoma (Table 2). Twenty-six percent (14 of 54) of the polyps that were 3 to 6 cm in diameter showed the presence of a carcinoma (invasive or otherwise), while the percentage rose to 50 percent (two of four) in adenomatous polyps larger than 8 cm. High-degree dysplasia or malignancy were more frequent, particularly in sessile

TABLE 1. *Distribution of Large Colorectal Polyps: Relation Between Dimension and Morphology*

Location	Number	Dimension (Average)	Sessile	Pedunculated
Rectum	22	5.9	21	1
Sigmoid colon	30	3.9	13	17
Descending colon	8	3.5	5	3
Splenic flexure	1	4.0	1	—
Transverse colon	1	5.0	1	—
Hepatic flexure	1	5.0	1	—
Ascending colon	1	4.0	1	—
Cecum	2	5.5	2	—
TOTAL	66		45	21

TABLE 2. *Histopathologic Features in Excised Colorectal Polyps*

Nature of Lesion	Number of Lesions
Tubular adenoma	12
Tubulovillous adenoma	26
Villous adenoma	24
Polypoid carcinoma	2
Other*	2
TOTAL	66

*Hyperplastic polyp and one submucosal lipoma.

TABLE 3. *Malignant Evolution in Adenomas: Relationship to Size and Morphology*

Diameter (cm)	Sessile	Pedunculated	Mild–Moderate Dysplasia	Severe Dysplasia	Noninvasive Carcinoma	Invasive Carcinoma
3–6	34	20	25	15	5	9
6.1–8	4	—	—	3	1	—
8.1–11	4	—	—	2	1	1
Sessile			12	17	5	8
Pedunculated			13	3	2	2
TOTAL	42					

(71 percent) rather than in pedunculated lesions (35 percent; Table 3).

Adenomas with invasive carcinoma were treated as shown in Table 4. Only three complications (4.5 percent) were recorded, none requiring surgical treatment. Two patients with hemorrhaging after the excision of one sessile and one pedunculated polyp were treated by endoscopic electrocoagulation of the surface of the base and by electrocoagulation and associated endoscopic sclerotherapy (5 ml Aethoxysclerol®, 1 percent), respectively. The third complication was a colonic wall burn syndrome, which occurred in patients with a sessile broadbase polyp. The symptoms disappeared promptly as a result of conservative therapy.

Fifty patients with 52 adenomatous lesions had colonoscopic follow-up for an average period of 34 months (median period, 26 months; range, 3 to 85 months); four patients dropped out, one patient died, and seven underwent surgery for malignancy (polypoid carcinoma or invading carcinoma). Two patients were no longer considered because of the benign nature of the lesion (hyperplastic polyp, submucosal polyp).

Follow-up examination with local biopsy specimens of sessile polyps revealed two patients with residual tissue maximum, 2 cm in diameter) and four with recurrent disease, at intervals of six to 28 months from the first removal.

All residual or recurrent lesions were removed endoscopically but, in one patient, further excision was needed 13 months after the second polypectomy. In another patient, a small recurrent lesion (.8 cm) with invasive carcinoma was found 14 months after the first excision and the patient underwent surgical therapy. The total incidence of residual/recurrent disease was 11.5 percent. Relative incidence for sessile polyps was 5.5 percent (two of 36) and 11 percent (four of 36), respectively.

Discussion

When a large polyp, with macroscopically benign features is found in the colon or rectum, the deciding factor in the therapeutic approach is the technical possibility of endoscopic removal. Despite the previous definition of large polyps, as described by Christie (as larger than or equal to 2 cm) the term large polyp should be reserved for sessile or pedunculated lesions with a diameter of 3 cm or more. This is based only on technical criteria of endoscopic removal and not on clinical or pathologic grounds. In fact, the internal diameter of commercially available diathermic snares is about 3 cm, thus making it possible to pass the head of most pedunculated polyps, squeeze the stalk, and remove it in a single transection. Moreover, since the colonic lumen normally is larger than 3 cm, this maneuver usually is possible with a low risk of damaging the bowel walls. This is extremely difficult and more

TABLE 4. *Multiple Findings and Therapy in Patients with Adenomas Containing Invasive Carcinoma*

Patient Number	1	2	3	4	5	6	7	8	9	10
Differentiation Degree	M	H	H	H	H	H	H	L	H	H
Lymphatics or veins invasion	†	†	†	†	†	†	†	†	†	‡
Section line	‡	†	†	‡	†	†	‡	‡	‡	‡
Stalk infiltrated		‡								
Morphology	S	P	S	S	S	P	S	S	S	S
Age	71	66	83	79	71	53	76	65	67	77
Therapy	SUR	E	E	E§	SUR	SUR	E‖	E§	SUR	SUR
Surgical Histopathology										
RT	†				†	†			‡	†
L	‡				†	†			†	†

H = High; M = moderate; L = low; S = sessile; P = pedunculated; SUR = surgery; E = endoscopy; RT = residual tumour; L = lymph nodes.
† = Not infiltrated.
‡ = Infiltrated.
§ = Visceral Metastasis.
‖ = Surgery refused.

dangerous when polyps are larger, and a diffierent technique is required, such as piecemeal polypectomy—a technique that sometimes must be used for average-sized polyps, depending on their site and the feasibility of endoscopic maneuvers. The use of medium-high voltage current for large pedunculated polyps and its dispersion through the contralateral contact points may induce heat damage proportionally inverse to the contact surface.

Full necrosis and perforation due to contralateral burns fortunately are rare. The need to increase the voltage arising from dispersion, however, has two outcomes: the increasing risk of burns and the prevalence of the cutting effect over the coagulating effects of the current. For these reasons, small fragments of the polyps nearest to the contralateral wall are removed step by step, using the piecemeal technique until the head diameter is less than 3 cm.

A single transection polypectomy then is performed. When the stalk is larger than 1 to 1.5 cm, the risk of hemorrhage is increased. Bipolar snare polypectomy was suggested by Williams et al.[11,12] in these cases to avoid heat damage by using a low-voltage current. This technique, however using either a single or double-channel colonoscope, is difficult and should be reserved for special instances. It is important to strangulate the stalk gradually and gently, keeping it very tight for at least 10 or 15 minutes to induce severe vasoconstriction. The risk of mechanical transection emphasized by some authors[13] is minimized by gentle maneuvering and by using thicker braided wire snares with less mechanical cutting effects and a wider coagulation surface. In our series 6 polyps had large stalks (> 1 cm); hemorrhaging did not occur in 1. In the case of sessile polyps, a prudential approach is suggested,[13,14] whereby only small fragments are removed (up to 1.5 cm) to avoid heat damage of the colon due to high voltage.

We tried however, to excise fragments of about 2 to 3 cm. In 29 of 45 large sessile lesions, and particularly in all giant polyps (> 6 cm), we removed tissular fragments 2 to 2.8 cm in size in a single transection with no complications. Such large fragments should be removed from only the more external areas of the polyps in the absence of contralateral contacts, while the pieces nearer to the colonic wall should be smaller in size (about 1 cm), especially in the right colon. Mixed clotting and cutting current can be used for removal of the more peripheral pieces, but it is safer to use only coagulation at the base of the polyp, where the feeding vessels are more prone to the risk of hemorrhage. Whenever there is a risk of colic wall burn, however, the procedure must be interrupted, and the subsequent endoscopic session must be postponed for at least three or four weeks. If endoscopic removal of large polyps has been shown to be possible from the technical point of view, is it justified on theoretical grounds? And then again: is it really possible to remove completely the adenomatous tissue of large sessile polyps with a low or lack of incidence of residual or recurrent disease?

Histology is reliable only if performed on the whole polyp[15-18] specifying the grading and stage of invasion of malignant cells. If neoplastic tissue is found in the stalk, a colonic resection should be performed, bearing in mind that node metastasis is found in 10 to 25 percent of lesions,[19] expecially when the stalk is short.[20]

Moreover, it has been demonstrated by Nivatvongs et al.[9] that although problems may occur regarding fragment orientation or marginal resection, piecemeal polypectomy does not appear to be a cause of unobserved focal malignancy. The endoscopic criteria of malignancy as described by Shinya[1] should not always be conditioning factors in performing polypectomies. The contemporaneous presence of malignant features, however, such as large ulcerations, disproportion between head and stalk, extremely irregular surfaces, and expecially tissue that is hard when touched by forceps, led us to perform extensive snare biopsies instead of first-sight polypectomies.

Considering that the operative mortality of elective colectomy is about 2 to 3 percent[21] with a postoperative complication rate of 6 percent[22] and no deaths and a low compliction rate have been reported in the endoscopic removal of large polyps (Table 5), this therapeutic approach seems attractive.

On the basis of the above, it sometimes is justified to

TABLE 5. *Comparison of Principal Series of Colonoscopically Excised Large Colorectal Polyps*

Results	Christie[6] 47 (1) S	Strekalovsky[8] 136 (2) S	Nivatvongs, et al.[9] 28 (3) S	Present Series 66(4)S[45]P[21]	Total 227
Perforation	—	1.5%	—	—†	0.4%‡
Hemorrhage	6.4%	5.8%	3.5%	4.5%	5%‡
Deaths	—	—	—	—	—
Residual disease	24%	5%	24% (5)	5.5%	≃ 14%‡
Recurrent disease	3%	17%		11%	≃ 10%‡

*S = Sessile polyps; P = pedunculated polyps; (1) = only 19 > 3 cm; (2) = only 89 > 3 cm; (3) = ? > 3 cm (data not available) (4) = all lesions 3 cm or more; (5) = cumululative data.

† = A wall burn syndrome was recorded.

‡ = Average.

operate on a young patient with a low surgical risk and a large polyp that is not too low, but it is a matter of debate whether to operate on elderly, high-risk patients with large polyps without knowing the histologic nature of the whole polyp or the degree of neoplastic involvement. This is particularly true of large sessile adneomatous polyps in the lower rectum, where radical surgical removal can be obtained probably by an abdominoperineal resection only.

Wide colonic resection for benign villous adenoma does not show significant recurrent or residual disease, which may be present in 10 to 24 percent after simple surgical excision.[15,18,23] The incidence of residual lesions and/or recurrence has been 24 and 3 percent in the patients treated by Christie,[6] 5 and 17 percent in the Strekalovsky series,[8] and 23 percent (cumulative data) in the Nivatvongs series.[9]

In our series, residual-recurrent tissue was found in 5.5 and 11 percent, respectively, of sessile lesions (Table 5). Thus, conservative surgery and colonoscopic removal show no difference in recurrence, confirming the relative safety, even over long-term periods, of endoscopic therapy. The need for accurate follow-up must be emphasized. Our policy is follow-up at 3 to 6 months, at 12 months, and every year thereafter, with further removal in the case of recurrence or at least biopsy of the colonic mucosa also in the case of negative endoscopic findings. Consequently, radical surgery can be avoided if the polyp has been removed completely, either immediately or during follow-up, when no histologic signs of invasive cancer are observed.

The endoscopic removal of benign large polyps of the colon has been demonstrated by our experience and that of others. The approach can be an alternative to local surgical excision and, often, to elective colectomy, which is accompanied by a 2 to 3 percent operative mortality, while in local endoscopic excision mortality is nil. The advantage of elective colectomy is that it is radical from the oncologic point of view. This appears less convincing if strict endoscopic follow-up is performed with removal of residual or recurrent disease. This approach is even more justifiable in pedunculated large polyps. It is, therefore, reasonable to try to remove all colorectal polyps, when possible, whatever their dimensions or sites, to carry out a complete histologic examination: in the case of benign lesions, it often would be possible to avoid potentially harmful, costly, and sometimes unnecessary surgical procedures. These can be reserved for unsuccessful endoscopic removal, malignancy, or dysplastic changes during follow-up.

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