The incidence of colonic polyps is increasing with patient age. They rarely cause bleeding or becomes cancerous, with bleeding or cancer occurring in only about 1.4-2.7% of neoplastic polyps. Most of these cases can be managed by colonoscopic polypectomy.

There are two published theories as to cancer formation. One is loss of heterozygosity (LOH)-like oncogen (K-ras), depressed gene (P-53); the other is replication error (RER) by mutation of a mismatched repair gene such as hMSH2, hMLH1, thus causing microsatellite instability and then HNPCC, sporadic cancer formation. With the molecular basis, the popular belief of cancer formation is the sequence of adenoma/carcinoma.

Accordingly, the removal of polyps with polypectomy may reduce the occurrence of colon cancer, which has been confirmed by a numerous studies. To our knowledge, polypectomy is sufficient for treatment of a benign polyp or carcinoma in situ. A malignant polyp or early cancer can be treated with polypectomy by endoscopy, but the incidence of the recurrence is about 10-14%. This is via lymph node metastasis, recurring at the original polypectomy site or distant metastasis. Most malignant polyps can be resolved by polypectomy or colectomy following colonoscopy if the margin is free of tumor or be resolved by colectomy if the margin may have residual tumor. We report a rare case of malignant pedunculated polyp demonstrated by polypectomy with free margin of resection. Pathology revealed the malignant transformation with submucosal invasion. We explained the incidence of recurrence to the patient and suggested colectomy, but he refused surgery and received only regular follow up. A recurrence of cancer at the original polypectomy lesion with lymph node and liver metastasis were noted 5 years later by annual colonoscopic follow-up.

Case Report

Malignant Polyp Post Polypectomy with Unusual Behavior

Tung-Yuan Chen¹
Hong-Hwa Chen²
Zen King¹
¹Division of Colon and Rectal Surgery, Kaohsiung General Military Hospital, ²Kaohsiung Chang Gung Memorial Hospital, Kaohsiung, Taiwan.

Key Words
Malignant polyp

Problems with managing the malignant polyp are likely to be more frequently encountered and controversial. It is generally believed that a polypectomy is sufficient for treatment of a benign polyp or carcinoma in situ. A malignant polyp or early cancer can be treated with polypectomy by endoscopy, but the incidence of the recurrence is about 10-14%. This is via lymph node metastasis, recurring at the original polypectomy site or distant metastasis. Most malignant polyps can be resolved by polypectomy or colectomy following colonoscopy if the margin is free of tumor or be resolved by colectomy if the margin may have residual tumor. We report a rare case of malignant pedunculated polyp demonstrated by polypectomy with free margin of resection. Pathology revealed the malignant transformation with submucosal invasion. We explained the incidence of recurrence to the patient and suggested colectomy, but he refused surgery and received only regular follow up. A recurrence of cancer at the original polypectomy lesion with lymph node and liver metastasis were noted 5 years later by annual colonoscopic follow-up.

Received: April 17, 2007. Accepted: June 21, 2007. Correspondence to: Dr. Hong-Hwa Chen, Kaohsiung Chang Gung Memorial Hospital, No. 123, Tapei Road, Niao Sumg Hsiang, Kaohsiung 833, Tel: +886-7-7317123 ext. 2274; E-mail: ma2561@adm.cgmh.org
We report a rare case of malignant polyp post polypectomy with free margin. The patient refused a further operation and only received a regular colonoscopic follow-up once per year. Unfortunately, local recurrence with liver metastasis was noted 5 years later.

**Case Present**

The patient was a 70 year male. He had symptoms of difficulty in defecation and intermittent bloody stool. This was sometimes complicated by a frequency of bowel movement of 2-3 times per day for more than 1 month. After visiting our OPD on 8/20, 2001, colonoscopy was arranged according to the history of malignant polyps post polypectomy 5 years ago. We found a circumferential polypoid mass 15 cm from the anal verge with slight stricture intraluminally (Fig. 1). We noted it bled easily. Other findings were negative to the cecum. Biopsy was performed and adenocarcinoma was reported 2 days later. He was then admitted for further evaluation and therapy.

According to the case history, he had symptoms of intermittent bloody stool with lower abdominal cramping pain 5 years ago. At that time he came to our OPD, where digital examination revealed mucous with bloody stool. Rigid sigmoidscopy revealed a 1 to 2 cm mass with a pedicle 15 cm from the anal verge. Pathology revealed tubular villous adenoma with a malignant

LGI series with double contrast was performed on 11/23, 1995, revealing a polypoid lesion in sigmoid colon with smooth passage (Fig. 2). Colonoscopy was performed on 11/27 1996. During colonoscopic exams, the 1 to 2 cm pedunculated polypoid mass 15 cm from the anal verge was noted (Fig. 3), and a snared polypectomy was performed smoothly. Pathology revealed tubular villous adenoma with a malignant

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**Fig. 1.** Polypoid circumferential mass lesion with intra-luminal slight stricture.

**Fig. 2.** Polypoid mass lesion over recto-sigmoid junction.

**Fig. 3.** Peduculated polyp 1*2 cm 15 cm from anus.
change. Microscopically it showed a villotubular adenoma with local malignant transformation; subepithelial invasion was evident (submucosa invasion) but the margin was free from cancer. (Fig. 4) Two weeks following polypectomy, CEA was 2.48 ng/mL. We explained to the patient that the incidence of recurrence rate was about 10% after the polypectomy and the patient chose to have regular follow-up, refusing aggressive operative therapy. Three months later, a follow-up colonoscopy revealed the healed polypectomy site and a diverticula in the cecum. Eighteen months later, it was still negative to the cecum. Two years later, the patient complained of abdominal pain for a few months, though colonoscopic exams revealed negative findings each year he was tested.

Personal history and family history were not remarkable except for the habit of smoking 1 package of cigarettes/day. Blood pressure was 150/80 mmHg, heart rate was 100/min, respiratory rate was 16/min and body temperature was 36.8°C.

Physical exams revealed mild tenderness over the left lower quadrant of the abdomen and slight tenderness over the right upper quadrant of abdomen. No rebounding pain, ascites or groin lymph node enlargement were found.

Laboratory data was all within normal limits except for a bilirubin level of 2.2 mg% and a CEA level of 36 ng/dl. When it was rechecked, we found the total bilirubin have decreased to a normal range of 1.2 mg%.

Computerized tomography revealed two low density nodules in the left lobe of the liver. Bilateral renal cyst with a tiny left renal stone, segmental wall thickness with a big protruding mass on the left side of the rectosigmoid junction and enlargement of regional lymph nodes were also noted (Figs. 5 and 6) Double contrast barium enema revealed a mottle filling defect in the whole colon, with the possibility of fecal material due to the poor preparation of colon and no evi-

Fig. 4. Tubulovillous adenoma with focal malignant change (subepithelial invasion).

Fig. 5. Two low attenuated mass lesion over left lobe.

Fig. 6. Mass lesion with a wall thickness of 3 cm diameter over the rectosigmoid junction and regional lymph node enlargement.
evidence of colon obstruction (Fig. 7).

Within the next two days, the patient received surgery under the impression of recurrent colon cancer with liver metastasis. During the operation, we found multiple liver nodules. A liver biopsy was performed and a mass 3 cm in diameter was found over the rectosigmoid junction with serosa retraction and lymph node enlargement over regional mesentery, inferior mesentery artery and pelvic side wall. The decision was to perform a low anterior resection with colonic J pouch by double staple (ILS 29 and TA 55,4.8) and liver biopsy. A T-loop colostomy was also performed. The whole procedure was smooth with no other complications. Pathology revealed moderately differentiated adenocarcinoma of sigmoid colon with lymph node and liver metastasis.

Post-operative condition was stable except for a mild fever of 38°C for the first 2 days. Following chest percussion, coughing, respiratory training and steam inhalation with bronchus dilator, the fever subsided. Passage of flatus was noted 3 days later and oral intake was given step by step. He was discharged in stable condition 9 days following operation. In the post-operative follow-up, the abdominal wound healed well and the CEA level decreased from 33.6 ng/dl to 5.58 ng/dl. Finally, the patient discontinued follow-up and died one year later according to telephone information.

Discussion

Polyps are classified as neoplastic and non-neoplastic polyps. Polyps such as hyperplastic, juvenile and inflammatory polyps have no malignant potential, although polyps do have malignant potential. The benign neoplastic polyps include tubular (71.9%), villious (9%), and tubulovillous adenoma (19%) dependent on the composition of villous structure. Any colonic adenoma with more than 50% (some say 75%) villous component is called a villous adenoma. These are the least common (9%) but usually largest and most dangerous neoplastic polyps. The incidence and factors of polyps transforming to malignant change is associated with the size of polyps, severity of dysplasia and histology architectures. In lesions of 1-2 cm in diameter the incidence of invasive cancer is about 5-10%. In larger lesions, the incidence may increase to 30%-40%.

All of the above descriptions can be proved by the evidence of genetic mutation and chromosomal abnormalities that are not seen very often in small benign adenoma but are present more frequently in larger lesion and malignant growths. Thus, small-medium-larger adenomas occur at different phases of progression to cancer, and the latent phase may have a long duration of about 5 years.

A malignant polyp is defined as one having dysplastic cells that penetrate through the muscularis mucosa. Controversy exists as to the treatment of these malignant polyps. Most authors consider polypectomy are adequate treatment for malignant polyps meeting certain criteria (1). neoplastic polyps with aplasia or dysplasia, (2). carcinoma in situ, (3). well differentiated adenocarcinoma, (4). no lymphovascular invasion, (5). margin free of polypectomy. In addition most authors suggest colectomy in patients whose polyps have certain histopathologic characterics (1). inadequate endoscopic margin of resection which is defined as < 2 mm, (2). lymphovascular invasion, (3). poorly differentiated, (4). any sessile type of malignant change with invasion to muscular mucosa: since these
characteristics put them at a high risk of recurrence.

Haggitt et al. also proposed a classification of polyps with carcinoma according to the depth of invasion and suggests therapy as follows:

**Level 0:** carcinoma in situ or intramucosal carcinoma. They have not yet invaded, and so do not need resection.

**Level 1:** carcinoma invading through the muscularis mucosa into the mucosa but limited to the head of the polyp (above the junction between the adenoma and the stalk). Colorectal resection is not necessary if the line of resection of the stalk is free and routine follow-up is needed.

**Level 2:** carcinoma invading to the level of the neck of adenoma (the junction of adenoma and stalk). Resection is not necessary if the margin of resection of the stalk is free and endoscopic follow-up is needed.

**Level 3:** carcinoma invading any part of the stalk. A free margin of resection precludes the necessity for any formal colorectal resection.

**Level 4:** carcinoma invading the submucosa of bowel wall below the stalk of the polyps but above the muscular propria. This is invasive cancer and a formal bowel resection is necessary. By definition, all sessile polyps with invasive carcinoma are level 4. Hence, resection of bowel wall is indicated.

The reason that carcinoma in situ or cancer limited in mucosa have no potential to spread cancer has been studied by a group of authors, who used light and electron microscopy to examine hundreds of normal large bowel and polyps. They found that in the normal mucosa of the large bowel as well as in polyps, the lymphatic channels are seen as a network immediately superficial to, within, and below the muscularis mucosa. Some blunt-ended lymphatic loops extend upward for a short distance, to about the base of a crypt. No lymphatic channels are identified in the lamina propria above the lowest one-sixth of the crypt. In all cases the lymphatic channels maintain an intimate association with the muscularis mucosa. In addition, there are also numerous capillary channels within the lamina propria. There is, therefore, no theoretical reason why capillary channels or lymphatic channel cannot be invaded by a tumor and result in hepatic or lymph node metastasis. Nevertheless, carcinoma confined to the mucosa (level 0) seems to be incapable of this metastasis potential.

Gross appearance of malignant polyps with potential lymphatic metastasis have been recorded as being larger in size, hard in consistency, expansive, with fold convergence, coexisting with white spots, ulceration, with surface irregularity and non-structured pit pattern. However, most of these characteristics are frequently inaccurate and discernible only to a specialist. Ultimately, the decision-making still depends on accurate pathologic results.

The most common site of metastasis in colorectal cancer following surgery are the liver 26%, lung 19% pelvic 18% and anastomosis 15%. Multiple sites are found in 14% of the cases. For malignant polyps post-polypectomy, the most commonly recurrent lesion is at the original polypectomy site and at lymph nodes after two years, with a peak point at 6-12 months. Accordingly, some articles have suggested the post polypectomy follow-up should just focus over the original lesion at 1-3 months and 1 year with endoscopy and biopsy. The symptoms of recurrent colon cancer are nonspecific and contribute little to the diagnosis. Crampy abdominal pain and constipation are frequent complaints. While intensive follow-up may discover earlier recurrence, it does not appear to increase the number of patients who are cured.

Most patients with malignant polyps following polypectomy, even if the margin was free or limited in submucosa, still received our suggestion for further curative colectomy to prevent the rare incidence of residual tumor in the regional lymph node. Even if the patient refused the operation, close follow-up with colonoscopic exams per year was necessary. Fortunately, till now, most of recoveries have been smooth and no recurrence was found except for this one. We have seen no other cases like this, where a recurrence was noted 5 years later. Retrospectively, we now believe we could have done a more thorough post-polypectomy follow-up. For example, the CEA level and the survey of liver should be basic and routine exams for colorectal cancer post operation.

CEA is known as a tool for detecting the recurrence of colon cancer. The utility of CEA monitoring after resected colon cancer is controversial, although claims have been made that CEA-driven second-look
surgery could contribute to cure up to 20% of patients with recurrent colon cancer. Mortel et al found very little difference in survival in CEA monitored patient versus non-CEA monitored patient (2.3% vs 2.0%).

The decreasing data of CEA post operation may be explained by the decrease of tumor volume, but the evidence of liver metastasis was noted already. So we should have been suspicious of the elevating CEA months later.

Distinguishing between colon cancer that was recurrent and metachronous colon cancer is problematic. According to Muto and colleagues who reviewed the time intervals between the identification of neoplastic polyps and the development of malignancy, the adenoma carcinoma sequence was at least 5 years and could take longer. Additional evidence for time intervals of at least 5 years in the adenoma carcinoma sequence is the difference in mean age at diagnosis of adenoma (58.1 years) versus that for carcinoma (62.1 years) (3.4).

It was less likely to have been a metachronous tumor because we did a colonoscopic follow-up after one year and found nothing. However we found a mass at the original polypectomy site at the fifth year, so colon cancer is most likely have been the recurrence. Further evidence is that it still occurred in the original polypectomy region with positive regional lymph node (2/2).

Finally, we reviewed the histology which showed a pedunculated tubulovillious adenoma with local malignant change and invasion to level 1. The stalk was long and free from carcinoma, while the line of excision was clear and adequate. However, there was recurrence several years later. There is evidence that the risk of nodal metastasis in malignant polyps with invasion confined to the head (especially without evidence of lymphatic invasion or poor differentiated cancer) would be extremely low, probably less than the risk of surgery. The most likely possibility, in the authors opinion is that the micrometastasis cancer cell had already spread to the regional lymph node or lymph channel. It could have been present for many years at the time of polypectomy in a “latent phase”. It was then expressed into the liver and backwashed to the original polypectomy lesion through the lymph channel. However, the patient required a close follow-up, including colonoscopic exams, CEA, sonography of liver or C.T. scan of abdomen for liver and lymph node detection. As the idiom says, Unexpected condition should be expect especially in the microscopic field, which can not be examined with total accuracy.

In conclusion, to reduce the incidence and mortality of colorectal cancer, colonoscopic resection is a simple and safe procedure for removing a neoplastic lesion. Detailed histological exams and familiarity with the criteria and characteristics which are mentioned above will generally mean it is curable. The patient will be able to regain full fitness, even though there is a minimal risk of lymph node metastasis, as in this case.

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病例報告

惡性大腸瘜肉經大腸鏡切除後：
併不尋常轉移之病歷報告

陳東源 1  陳鴻華 2  金 仁 1

1 國軍高雄總醫院 大腸直腸外科
2 高雄長庚醫院* 大腸直腸外科

大腸鏡廣泛應用於疑大腸病兆的篩檢，大腸瘜肉切除手術及大腸病症術後追蹤。經許多研究證實，大腸瘜肉與癌症有一定的相關，且腫瘤性瘜肉切除亦可降低大腸癌之發生率。至於惡性瘜肉經大腸鏡瘜肉切除手術，若可完全切除再加術後完整追蹤，復發極低，幾乎可達一定治癒效果 (尤其是早期只達黏膜下層，分化良好，無血管淋巴侵犯)，許多學說研究亦支持這項論點。

報告一例早期惡性大腸瘜肉，經大腸鏡瘜肉完整切除手術併定期大腸鏡追蹤，卻於五年多後，經大腸鏡檢查於原切除病症復發併已肝轉移。經由此少見病例討論惡性瘜肉形成的理論基礎，經由組織學討論癌細胞可能轉移的方式及癌細胞的殊多不確定性，再次強調，惡性瘜肉完整切除雖可達治療效果但仍有有可能轉移，如此例早期惡性瘜肉，就如同諺語所說”羊披虎皮”不可等閒視之。

關鍵詞 惡性大腸瘜肉。