

Endoscopic Resection of a Rectal Carcinoid Tumor with an Esophageal Variceal Ligation Device

— Report of a Case and Literature Review

Wei-Feng Feng, An-Liang Chou, Jen-En Tzeng¹, and Kuo-Chih Tseng

*Department of Internal Medicine, ¹Pathology,
Buddhist Dalin Tzu Chi General Hospital, Chiayi, Taiwan*

Abstract

Rectal carcinoid tumors are rarely reported in Taiwan. Surgical resection is usually considered for a large tumor because of the malignant potential. In dealing with a carcinoid tumor smaller than 2 cm, endoscopic treatment is possible and less invasive than surgery. Endoscopic submucosal resection with a ligation device (ESMR-L) for rectal carcinoid tumors was first reported by Ono et al in 2003. In his series, the maximal size of resected rectal carcinoid tumor was less than 1 cm. Although this is a convenient and safe method, the size of treatable tumors was limited because of the size of his device. We report here a 71 year old man whose chief complaint was constipation for years and tenesmus for one month. Colonoscopy showed a submucosal tumor at 5 cm above the anal verge, measuring about 1.1 cm in size. A biopsy revealed carcinoid tumor. ESMR-L was performed smoothly. No evidence of local recurrence, distant metastasis, nor carcinoid syndrome was found during 23 months follow up. (J Intern Med Taiwan 2005; 17: 28-32)

Key Words : Rectal carcinoid tumor, Esophageal variceal ligation device, Colonoscope

Introduction

A carcinoid tumor is a potential malignant disease. Left untreated, the metastasis rate of rectal carcinoid tumors will go to 60 %-80 % in lesions mea-

suring more than 2 cm. With a tumor smaller than 1 cm, the metastasis rate is less than 2 %. If tumor growth is limited to the submucosa and the size is less than 2 cm, resection with an endoscopic method is

the first choice.

Akiko Ono et al. first reported endoscopic resection of a rectal carcinoid tumor by so-called endoscopic submucosal resection with a ligation device (ESMR-L)¹. In his series, the maximum size of resected rectal carcinoid tumors was less than 1 cm. We now present a case of rectal carcinoid tumor that was successfully resected by ESMR-L. No evidence of a residual tumor, local recurrence, or distant metastasis was found after 23 months follow-up.

Case Report

A 71 year old man came to our clinic on Nov. 29, 2003 with the chief complaint of constipation for years, and tenesmus for one month. He was not anemic and physical examination did not reveal lymphadenopathy. Digital examination of the rectum showed a firm nodule. Colonoscopy was arranged and a 1.1 cm submucosal tumor was found at 5 cm above the anal verge. A biopsy was taken, and the pathology report showed several tiny nests or cords, highly suggestive of a carcinoid tumor. For further evaluation of tumor status, an abdominal sonogram was performed which showed a liver hemangioma measuring 2.7 cm x 2.8 cm which was confirmed by a computed tomography (CT) scan. After explaining to the patient and the family the risk of tumor metastasis without treatment, ESMR-L was arranged. First, we used a colonoscope (CF-Q260 A1, Olympus) and epinephrine injection (6 cc of a 1:10000 dilution) which were done to elevate the submucosal tumor. Then we used a single channel gastroduodenal scope (GIF Q260, Olympus, distal end diameter: 9.2 mm). A transparent hood equipped with a pneumoactivated esophageal variceal ligation (EVL) device set (MD-48709 EVL Device, Sumitomo Bakelite Co. Ltd., Tokyo, Japan, distal end diameter of endoscope: 9.0-10.5 mm) was attached to the tip of the endoscope. The EVL device set consists of an air feeding tube, a sliding tube, an inner cylinder, and a rubber band (O-ring). The tumor was suctioned and then ligated to

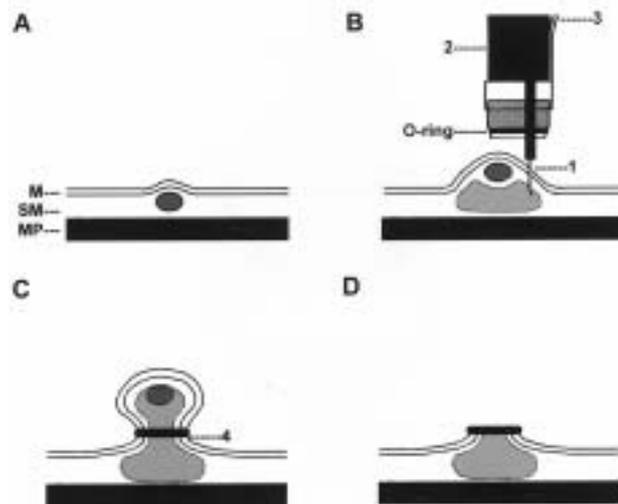


Fig.1.Steps of ESMR-L: (A). M: mucosa, SM: submucosa, MP: muscularis propria; (B). 1. Epinephrine injection to elevate the submucosal tumor; 2. Push the scope and do suction; 3. Trigger the pneumoactivated ligator; (C). 4. The snare is applied at the level of 4, followed by resection; (D). The O-ring remains in place after resection.

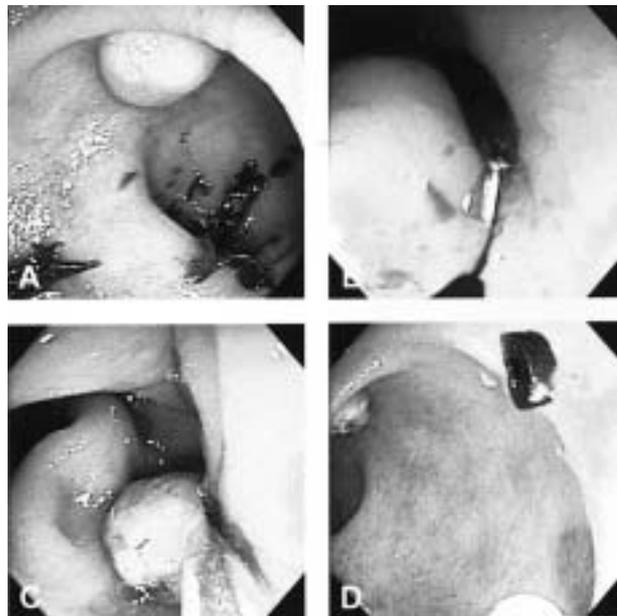


Fig.2.Endoscopic pictures of ESMR-L: (A). A protruding tumor with yellowish discoloration; (B). The O-ring is applied to form a pseudopolyp; (C). Snare the pseudopolyp and resect it with electrocautery; (D). The O-ring remains in place after the procedure.

form a pseudopolyp. The pseudopolyp was then resected with blended electrocautery (Fig. 1, 2). The pathology report revealed a carcinoid tumor

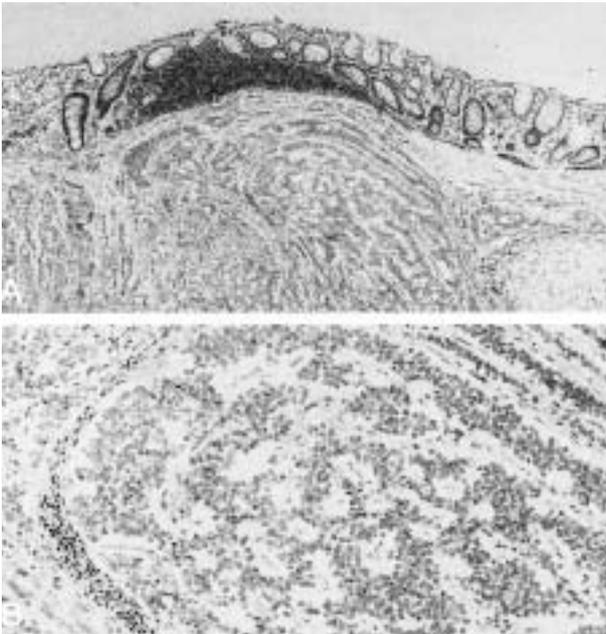


Fig.3.Pathology report: (A) The tumor shows a main tumor part within the submucosa with peripheral ribbon-like and single-file infiltrating patterns (H&E 40X). (B): The tumor demonstrates bland, uniform cells in nests, rosette, or glandular pictures (H&E 100X).

measuring 1.1 cm x 0.9 cm x 0.6 cm with mucosal and submucosal involvement and a free resection margin (Fig. 3). We arranged colonoscopy 4 months later and found no residual tumor or local recurrence. An abdominal CT was also arranged for hepatic tumor and showed a liver hemangioma without enlargement. We have followed the patient for 23 months, until the time of this writing. No any evidence of local recurrence, distant metastasis, or carcinoid syndrome has been found.

Discussion

Carcinoid tumors are rarely reported in Taiwan. The largest investigative series enrolled fifty-four patients with gastrointestinal carcinoids from 1977 to 1991, reported by Wei et al². Of the rectal carcinoids in this study, half were found as tumors of less than 1 cm; one fifth were 1-2 cm in diameter. Endoscopic polypectomy or excision was performed on these patients. All of them remained healthy without disease

recurrence. The remaining one third of these rectal carcinoids were larger than 2 cm and their metastasis rate was 7/8. For gastrointestinal carcinoids larger than 2 cm, the metastasis rate was 80 %, while tumors less than 1 cm rarely metastasize.

Worldwide data of carcinoid tumors indicate a relatively high incidence in Japan, South Asia, and other non-white populations with a male preponderance (1.6:1)^{3,4}. The most recent and largest analysis demonstrates that the greatest incidence of carcinoids are in the gastrointestinal tract (67.5 %) and the bronchopulmonary system (25.3 %)⁵. Within the gastrointestinal tract, most carcinoid tumors occur in the small intestine (41.8 %), rectum (27.4 %), and stomach (8.7 %). Mani et al. evaluated more than 200 reports of rectal carcinoids and noted that tumor size and invasion of the muscularis layer were the two most important predictive criteria for metastasis⁶. Sixty percent of rectal carcinoid tumors are less than 1.0 cm in size; they are non-localized in fewer than 2 % of patients. In rectal carcinoids between 1.0 and 1.9 cm, and in lesions measuring more than 2 cm, the metastasis rates are 10 %–15 % and 60 %–80 %, respectively.

Ono et al. first reported endoscopic submucosal resection of rectal carcinoid tumors by ESMR-L¹. In this series, the maximal size of resected rectal carcinoid tumors was less than 1cm. However, localized rectal carcinoid tumors less than 2 cm can also be successfully treated by the endoscopic method because the overall probability of metastasis is less than 6 %. With the EVL ligation device (MD-48709 EVL Device), the maximal diameter of the base of a carcinoid tumor is limited to 10.5 mm. Therefore, in dealing with a larger tumor, piecemeal resection would have to be considered.

Before starting this endoscopic resection, we first injected epinephrine solution (1:10000) below the lesion to elevate the tumor from the muscularis layer. This technique, originally used by Yokota et al, provided a cushion of safety, and prevented per-

foration and tumor margin involvement⁷. Since we had no endoscopic ultrasound device, the depth of invasion and curability could only be evaluated if the submucosal tumor could be lifted and a pseudopolyp produced. Ishiguro et al correlated the likelihood of non-lifting with the depth of submucosal invasion⁸. With a deep invasion tumor, we may fail to elevate the tumor during endoscopic suction and produce a pseudotumor. In such a case, the procedure of snaring and cutting cannot be done. A piecemeal resection or a surgical intervention should be considered.

A submucosal tumor may be immersed in the injected fluid and it becomes invisible after needle injection. To avoid this circumstance, making a mark on the mucosa over the tumor with a heater probe or a biopsy forceps before needle injection is helpful. Furthermore, pushing the scope firmly against the mucosa will make the immersed tumor protrude. Keeping the scope as close to the mucosal surface as possible to make sealed off contact during suction may help to elevate the immersed tumor. In dealing with a tumor with muscle layer invasion, the tumor can not be elevated. Even if the tumor is sucked up, a broad-based pseudopolyp will be produced. In this case, resection of the pseudopolyp is difficult and dangerous because perforation may occur.

The size of the rectal carcinoid tumor discussed here was 1.1 cm in the largest diameter. Based on the report of Mani et al, the metastasis rate is 10 %–15 % if the size of rectal carcinoids is between 1.0 and 1.9 cm⁶. A abdominal CT scan showed a hepatic tumor before endoscopic resection in our case. A liver hemangioma was diagnosed and didn't enlarge after 4 months of follow up. In addition, no evidence of lymphadenopathy or distant metastasis was found before the procedure and after 23 months follow up.

In conclusion, a rectal carcinoid tumor is a potentially malignant disease that can be cured early by an endoscopic method if it is a localized tumor smaller than 2 cm. Because an endoscopic ultrasound device may not be available at a local hospital, we provided

the combined CT scan and endoscopic method to determine the resectability with conventional endoscopic equipment. If metastasis is shown on a CT scan or failure to produce a narrow-based pseudopolyp after endoscopic suction occurs, the endoscopic resection method should be abandoned. Careful follow up with various imaging studies are also necessary to find out if there is residual tumor or occult metastasis.

References

1. Ono A, Fujii T, Saito Y, et al. Endoscopic submucosal resection of rectal carcinoid tumors with a ligation device. *Gastrointest Endosc* 2003; 57: 583-7.
2. Wei TC, Wei PL, Lee WJ, et al. Carcinoid tumors of the gastrointestinal tract presentation, management, prognosis and comparison of a western and eastern series. *Journal of the Surgical Association R.O.C.* 1994; 27: 2555-64.
3. Godwin JD 2nd. Carcinoid tumors. An analysis of 2,837 cases. *Cancer* 1975; 36: 560-9.
4. Soga J Carcinoids of the rectum: an evaluation of 1271 reported cases. *Surg Today* 1997; 27: 112-9.
5. Modlin IM, Lye KD, Kidd MA 5-decade analysis of 13,715 carcinoid tumors. *Cancer* 2003; 97: 934-59.
6. Mani S, Modlin IM, Ballantyne G, Ahlman H, West B. Carcinoids of the rectum. *J Am Coll Surg* 1994; 179: 231-48.
7. Yokota T, Sugihara K, Yoshida S. Endoscopic mucosal resection for colorectal neoplastic lesions. *Dis Colon Rectum* 1994; 37: 1108-11.
8. Ishiguro A, Uno Y, Ishiguro Y, Munakata A, Morita T Correlation of lifting versus non-lifting and microscopic depth of invasion in early colorectal cancer. *Gastrointest Endosc* 1999; 50: 329-33.

在內視鏡下使用食道靜脈瘤結紮器切除直腸類癌 一病例報告及文獻迴顧

馮偉峰 周安良 曾志恩¹ 曾國枝

佛教大林慈濟綜合醫院 內科 ¹病理科

摘 要

直腸類癌在臺灣極少報告發表。當臨床遇到較大腫瘤，若不處置，等腫瘤增大將有遠端轉移，故常需及早考慮外科切除。對2 cm 以下之類癌，以內視鏡設備切除是可行且較無侵襲性之療法。使用食道靜脈瘤結紮器之內視鏡黏膜下切除術治療直腸類癌最早於2003年提出。雖然使用上方便且減低腸穿孔之危險，但因此設計之尺寸限制，其提出個案均為1 cm 以下。在此提出一病例報告為一71歲男性至本院之主訴為便秘及裏急後重。大腸鏡檢發現於直腸處有一黏膜下腫瘤，約1.1公分。切片檢查為直腸類癌。我們為此病人執行食道靜脈瘤結紮器之內視鏡黏膜下切除術。術後追蹤23個月，並無發現有局部復發，遠端轉移或類癌症候群。