

# Metachronous Esophageal Cancer and Colon Cancer Treated by Endoscopic Mucosal Resection

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Most cases of esophageal cancer and colorectal cancer in Taiwan are diagnosed in the advanced stage and treated by surgery or concurrent chemoradiation. The detection rates of early esophageal cancer and early colorectal cancer are still low in Taiwan. Metachronous early esophageal cancer and early colorectal cancer have rarely been reported. Endoscopic mucosal resection (EMR) is a well-established method for treatment of early gastrointestinal cancer in Japan. We report a 77-year-old man with metachronous early esophageal cancer and early colorectal cancer detected by chromoendoscopy with 3% Lugol's iodine and 0.2% indigo carmine, respectively. These two lesions were successfully treated by EMR. Endoscopic mucosal resection of early cancer in the gastrointestinal tract may be considered in patients who are not suitable for open surgery. [*J Formos Med Assoc* 2007;106(3 Suppl):S5-S9]

**Key Words:** early colorectal cancer, early esophageal cancer, endoscopic mucosal resection

Esophagectomy continues to be the standard treatment for patients with superficial cancer. However, it is a major operation involving substantial risks. In a US study, the mortality was 2.5% in hospitals with high surgical volume, and 15% in hospitals with low surgical volume.<sup>1</sup> Esophagectomy with lymph node dissection can now be performed with relative safety as a result of advances in surgical techniques and postoperative management, but complications including pneumonia, cardiac arrhythmia, anastomotic leakage, infections, and recurrent laryngeal nerve paralysis are still observed in approximately 12–50% of patients with esophageal cancer who undergo esophagectomies.<sup>1–4</sup> About 3% of patients die within 1 month of operation.<sup>2</sup> Endoscopic mucosal resection (EMR) is now a common treatment for

esophageal squamous cell carcinoma confined within the mucosa.<sup>5–7</sup>

Drinking and smoking are epidemiologic risk factors for squamous cell carcinoma of the head and neck and the esophagus.<sup>8–10</sup> These cancers are usually diagnosed in synchronous or metachronous presentation.<sup>11,12</sup> The incidence of colorectal cancer in Taiwan increased from 17.2/100,000 in 1991 to 26.6/100,000 in 1998.<sup>13</sup> Colorectal cancer is ranked as the third major cause of mortality in Taiwan. Colorectal cancer is diagnosed in the advanced stage in most patients, who then undergo colectomy. EMR can be considered safe when invasion of the submucosa is less than 1000  $\mu\text{m}$  in early colorectal cancer.<sup>14</sup> Because metachronous early esophageal and early colorectal cancers have not been reported in Taiwan, we report a

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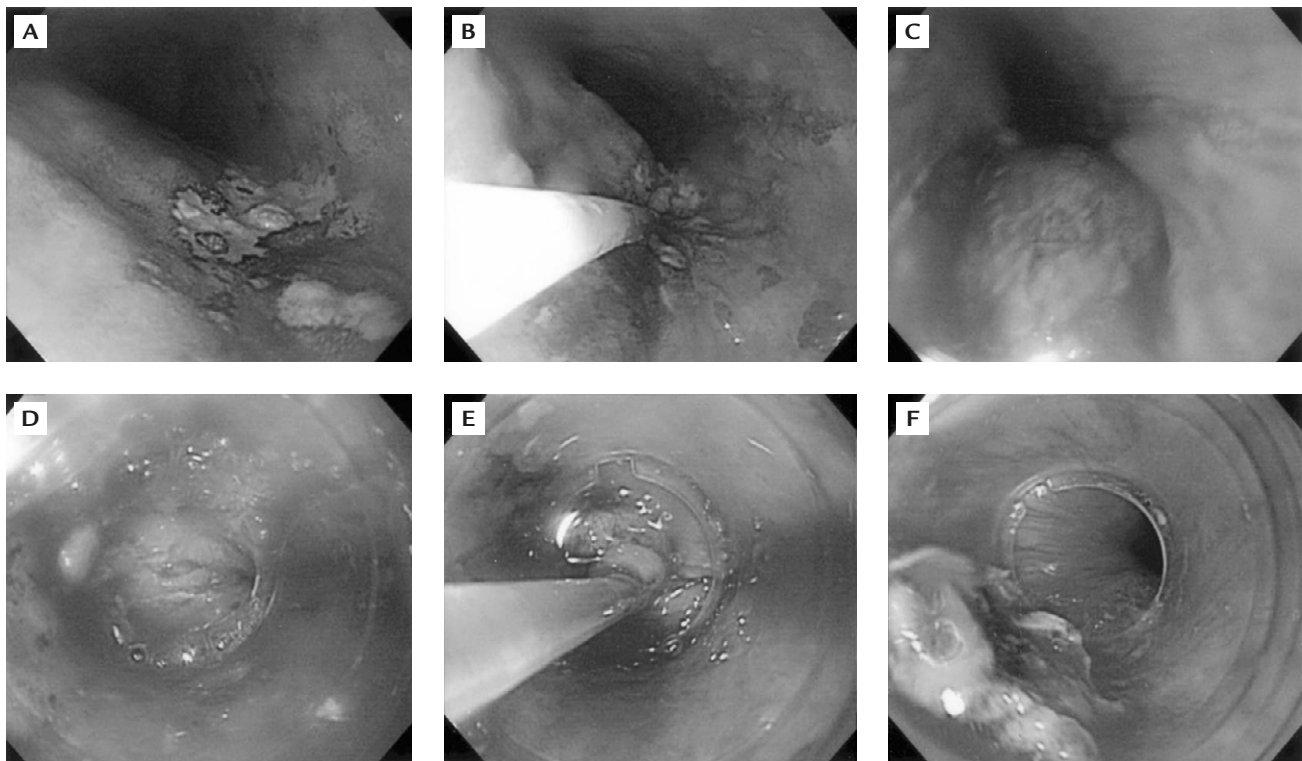
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77-year-old man with metachronous esophageal cancer and colon cancer treated by EMR.

### Case Report

A 77-year-old man had undergone subtotal gastrectomy with Billroth II anastomosis because of a bleeding gastric ulcer about 31 years prior to this visit. He denied any history of smoking or drinking. Arrhythmia and congestive heart failure caused by aortic regurgitation were diagnosed 10 years prior to this visit. He visited our outpatient department in September 2003 complaining of epigastric dull pain for the preceding 2 months. Upper gastrointestinal endoscopy revealed a superficial elevated lesion with granulation of the esophagus around 33–34 cm from the incisor. After dyeing with iodine, the lesion remained unstained in contrast to the surrounding mucosa. Biopsy specimens were obtained from the lesion and the pathology showed squamous cell carcinoma. Endoscopic

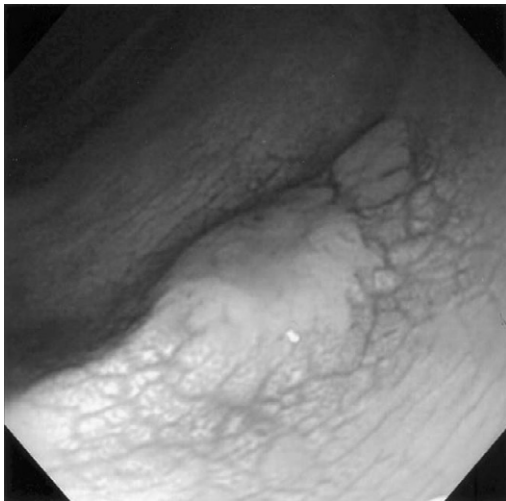
ultrasonography disclosed neither obvious thickening of the esophageal wall nor obvious lymph nodes. Because the patient was considered to be at greater risk of esophagectomy and major anesthesia, the lesion was resected by piecemeal EMR with a cap-fitted endoscope in October 2003. Initially, 20 mL of glycerol was injected into the submucosa of the lesion with a 23-G injector (NM-200L-0423, Olympus Optical Co., Ltd., Tokyo, Japan) to elevate this lesion. The EMR method employed a transparent cap (MAJ-293, Olympus Optical Co., Ltd.). After ligating the aspirated mucosa with a special type of snare (SD-7P-1, Olympus Optical Co., Ltd.), the lesion was excised with electrocautery gradually (Figure 1). The operative course was smooth, and no severe bleeding was encountered. Histology revealed squamous cell carcinoma *in situ*, and no evidence of invasion in the resected specimens. Upper gastrointestinal endoscopy performed on the 2<sup>nd</sup> day after EMR revealed an ovoid shallow ulcer. Follow-up 1 year after EMR found no evidence



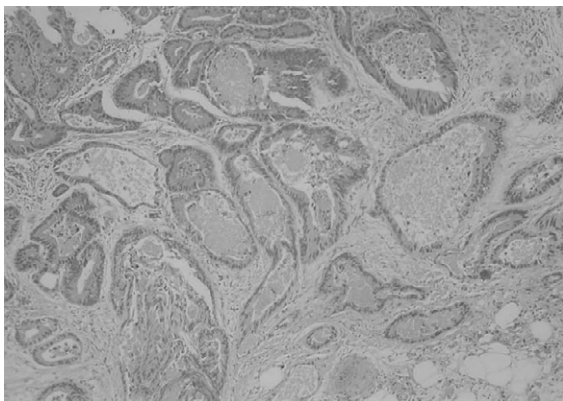
**Figure 1.** (A) Unstained area 33 cm from the incisor after application of Lugol's iodine. (B) After 20 mL of glycerol was injected into the submucosa of the lesion. (C) Elevation of the lesion after glycerol injection. (D) Transparent cap fitted onto the endoscope. (E) Snare used to ligate and cut the lesion. (F) Lesion resected by piecemeal EMR.

of local recurrence at the site of EMR in the esophagus.

During the follow-up period, the patient complained of loose yellowish stool passage three to four times a day for several months. Colonoscopy was performed and revealed a superficial flat lesion about 10 mm in size located 25 cm from the anus (Figure 2). Biopsy specimens were taken and the pathology revealed an adenomatous polyp with severe dysplasia. Due to high suspicion of malignancy, EMR was performed using the injection and cut method. There were no postoperative sequelae. Histology revealed moderately differentiated adenocarcinoma with submucosal invasion (Figure 3). Additional surgery was advised but the patient refused because of the risk of general



**Figure 2.** Superficial flat lesion located 25 cm from the anus and measuring about 10 mm in size after 0.2% indigo carmine spraying.



**Figure 3.** Moderately differentiated adenocarcinoma with submucosal invasion (hematoxylin & eosin, 100 $\times$ ).

anesthesia and major systemic diseases. Six months later, colonoscopy revealed a polyp at the site of the previous EMR. Polypectomy was performed and histology revealed polypoid granulation tissue without mucosa covering or residual epithelial nests. Metachronous superficial esophageal cancer and superficial colorectal cancer were thus diagnosed at an interval of 1 year and 3 months.

## Discussion

EMR for early gastric cancer was first reported in 1983 in Japan. The original strip biopsy technique was advocated by Tada et al.<sup>15</sup> Since then, many variations of EMR methods have been developed for the treatment of early gastrointestinal cancer (Table 1).<sup>16</sup> These methods may be classified as conventional EMR. Endoscopic submucosal dissection is an advanced type of EMR used for the resection of large early gastrointestinal cancers (> 2 cm) (Table 2). EMR has been reported in the treatment of early gastric cancer in Taiwan but not in the treatment of early esophageal cancer.<sup>17</sup> Most esophageal and colorectal cancers in Taiwan

**Table 1.** Various techniques of endoscopic mucosal resection (EMR)

Inject and cut
Inject, lift, and cut
EMR with a cap
Endoscopic aspiration mucosectomy
EMR with ligation

**Table 2.** Various techniques of endoscopic submucosal dissection

Endoscopic resection with hypertonic saline-epinephrine solution
Endoscopic resection with an insulation-tipped electrosurgical knife
Endoscopic resection with sodium hyaluronic solution
Endoscopic resection with a hook knife
Endoscopic resection with a flex knife
Endoscopic resection with a triangle-tipped knife

are found in the advanced stage and are treated with esophagectomy or colectomy plus lymph node dissection. Many complications and a poor quality of life can occur after major cancer surgery. This case supports the feasibility of treating metachronous superficial esophageal cancer and superficial colorectal cancer by EMR. For a larger esophageal lesion (> 2 cm), *en bloc* resection with conventional EMR cannot be accomplished. Piecemeal EMR was therefore performed in this patient. However, local recurrence may be encountered after piecemeal EMR and intensive follow-up endoscopy is necessary. In this patient, no recurrent esophageal cancer was found during follow-up endoscopy at 3, 6, and 12 months after EMR.

Squamous cell carcinomas of the head and neck and the esophagus are usually diagnosed with a synchronous or metachronous presentation.<sup>11,12</sup> Metachronous esophageal and colorectal cancers are not commonly reported, because the risk factors for these conditions are not similar, except for old age. Incidence of esophageal cancer increases with age. Nearly half of people with this cancer are older than 70 years. Around 77% of cases of this condition are diagnosed in patients between 55 and 85 years of age. For people younger than 40 years, the chance of developing esophageal cancer is less than one in 100,000.<sup>18</sup> In more than 90% of cases, diagnosis of colorectal cancer is made after the age of 50 years. This 77-year-old man suffered from metachronous esophageal and colorectal cancers, both of which are associated with the risk factor of old age.

Early esophageal and early colorectal cancers can occasionally be detected by cautious observation. Chromoendoscopy may improve the early diagnosis of gastrointestinal cancer. It is generally accepted that iodine staining of the esophagus facilitates the detection of esophageal squamous cancer.<sup>19</sup> Chromoendoscopy with indigo carmine is useful not only for identification of flat or small lesions, but also for differentiation between adenomatous and hyperplastic polyps when combined with high-resolution colonoscopy.<sup>20</sup> In this patient, we used 3% Lugol's iodine (12 g of I

and 24 g of KI in 1000 mL of water) and 0.2% indigo carmine to identify the esophageal and colon cancers, respectively. After dyeing, we were able to observe and visualize the colon cancer more clearly.

In conclusion, EMR is an effective method for early esophageal and colorectal cancers. It is the method of choice of less invasive treatment for aging patients. Intensive follow-up endoscopy is necessary after EMR.

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