



ORIGINAL ARTICLE

Outcomes of endoscopic submucosal dissection for early gastric cancer and precancer lesion: Experience from a center in Southern Taiwan



Yung-Yu Hsieh ^{a,b}, I-Lin Lee ^c, Kuo-Liang Wei ^{a,b},
Te-Sheng Chang ^a, Shui-Yi Tung ^{a,b}, Cheng-Shyong Wu ^{a,*},
Yi-Hsiung Lin ^d

^a Department of Gastroenterology and Hepatology, Chang Gung Memorial Hospital, Chiayi, Taiwan

^b College of Medicine, Chang Gung University, Taoyuan, Taiwan

^c Lee's Endoscopic Clinic, Taipei, Taiwan

^d Department of Health Care Administration, Taiwan Shoufu University, Tainan, Taiwan

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KEYWORDS

Early gastric cancer;
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Summary *Background:* Limited data are available on the interval of disease-free status after endoscopic submucosal dissection (ESD) for early gastric cancer and precancer lesion in Taiwan. In this long-term (2–105 months) follow-up study, we analyzed the risk factors that affect the local recurrence and noncurative resection (non-CR) of these lesions.

Methods: We retrospectively studied 65 consecutive treatment-naïve patients with 69 EGC lesions who were selected to be treated by ESD. A total of 56 lesions (48 CR lesions and 8 non-CR lesions) were analyzed for local recurrence after ESD.

Results and Discussion: ESD was curative for gastric epithelial tumors in 51 (73.9%) but not in 18 (26.1%) lesions. Unfortunately, five (8.93%) of these 56 lesions in 53 patients had local recurrence. None of the patients died from gastric cancer-associated diseases during follow-up. In our studies, the cumulative local recurrence rates were 5.3% in the CR group and 56.7% in the non-CR group ($p = 0.0091$). The disease-free status was high (94.7%) with CR. The risk factors that affect the non-CR were tumor location ($p = 0.013$), deeper invasion ($p < 0.001$), undifferentiated histopathology ($p < 0.001$), and ulcer presence ($p = 0.045$).

* Corresponding author. Department of Gastroenterology and Hepatology, Chang Gung Memorial Hospital, Number 6, Section West, Chia-Po Road, Putz City, Chiayi 613, Taiwan.

E-mail address: ivan@adm.cgmh.org.tw (C.-S. Wu).

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Conclusion: ESD offers good outcome after treatment for EGC. To decrease the risk of local recurrence, preoperative diagnosis of tumor extent and accurate postoperative pathological evaluation are very important.

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Introduction

Early gastric cancer (EGC) is defined as a cancer confined to the mucosal or the submucosal (SM) layer, irrespective of lymph node metastases (T₁, any N) [1]. The incidence of EGC varies among different countries. Interestingly, the rate of gastric cancer in Japan is > 50% [2], whereas the rate is < 5% in the West [3]. The reason for this difference in incidence rate between Japan and the West may be due to diagnostic discrepancy, because mucosal cancer, as defined in Japan, is often diagnosed as dysplasia in the West. However, this situation is gradually resolving after pathologists reached a consensus at a meeting held in Vienna [4].

According to the guidelines of International and Japanese Gastric Cancer Associations [5], indications for endoscopic mucosal resection (EMR) are differentiated adenocarcinoma, intramucosal cancer, lesions < 20 mm, and depressed lesions without ulceration or scarring. However, these aforementioned criteria may be too strict to avoid unnecessary surgery. Based on the analysis of the risk of lymph node involvement in EGC, Gotoda et al [6] proposed extended criteria for endoscopic resection in the endoscopic SM dissection (ESD) era, which include the following: mucosal cancers without ulcer, regardless of lesion size; mucosal lesions with ulcer < 30 mm; minute (< 500 μm from the muscularis mucosae) SM invasive cancers < 30 mm. Isomoto et al [7] reported no difference in outcomes between treatments based on the aforementioned guideline and the expanded criteria [7].

Aims

The ESD technique was first developed in Japan [8] and has become the treatment of choice for endoscopic resection of EGC. In previous long-term follow-up studies, risk factors for local recurrence, such as EGC location, EGC size, complete resection rate, and pathological diagnosis after ESD (poorly differentiated adenocarcinoma and EGC invasion depth) have been discussed. However, only limited data are available on the interval of disease-free status after ESD for EGC in Taiwan [9]. In this long-term follow-up study, we analyzed the risk factors that affect the local recurrence and noncurative resection (non-CR) of lesions during 2–105 months of follow-up after ESD.

Methods

Patients

The patients were enrolled based on the guideline criteria for EMR and expanded criteria for ESD, as described earlier

[5,6]. Patients with an EGC who did not fall into these categories were excluded from the study and received gastrectomy with lymph node removal. We retrospectively studied 162 consecutive treatment-naïve patients with gastric neoplasm for whom the Department of Gastroenterology (Chang Gung Memorial Hospital, Chiayi, Taiwan) had recommended ESD treatment between August 2004 and December 2009. After excluding the benign lesions according to the pathological report of specimens, 65 consecutive treatment-naïve patients with 69 EGC lesions were selected. The study protocol was approved by the Clinical Research Committee of the Chang Gung Memorial Hospital. The diagnosis of EGC was confirmed by pathological examination. We only included EGCs with a pathological result confirming high-grade dysplasia, carcinoma *in situ*, or adenocarcinoma. The clinical data were reviewed, and the following parameters were recorded: sex, age, location, macroscopic appearance, biopsy result, pathological result, endoscopic ultrasonography finding, EGC size, specimen size, procedure time, hospital stay, complication, endoscopic follow-up period, local recurrence status, and survival status.

ESD technique

ESD was performed after the patients were sedated with midazolam titration. The procedure began with the identification of the lesion and marking a zone 5–10 mm outside the margin of the target lesion with a precut needle knife (CD-1L; Olympus) and electro-surgical coagulation current (forced coagulation, 20 W). The electro-surgical unit ERBE ICC 350 (ERBE Elektromedizin, Tübingen, Germany) was used for this purpose. Glycerol (10%), diluted epinephrine (1:100,000), and diluted indigo carmine were then injected into the SM layer to lift the mucosa. An initial incision was made with a conventional needle knife. Next, a circumferential mucosal incision was made around the lesion using an insulated-tip knife (IT knife) with an electro-surgical current (Endocut mode, effect 3, 80 W). Lesions were completely removed by SM dissection using an IT knife.

Histopathological evaluation

All resected specimens were flattened and fixed in formalin solution. The fixed specimens were sectioned into 2-mm-thick slices and classified by a pathologist according to the Vienna classification [4]. The sizes of the resected specimens were measured at the greatest width of the lesion. The resected margin and depth of tumor invasion were observed carefully and recorded.

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