



Case report

Clinical study of endoscopic mucosal resection for digestive tract early cancer and precancerous lesions treatment

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Abstract: The clinical effect of endoscopic mucosal resection (EMR) on the digestive tract of early cancer and precancerous lesions was analyzed. 63 patients with early gastrointestinal cancer and precancerous lesions treated in our hospital from January 2013 to May 2015 were recruited for this study. Patients were randomly divided into the observation group (32 cases) and the control group (31 cases). The control group underwent conventional surgical treatment, while the observation group underwent EMR. Both groups were observed for the clinical effect. The curative resection rate was 100.0% ($P > 0.05$). The postoperative complication rate was 3.1% (1/32) in the observation group and 25.8% (8/31) in the control group. The operation time for the observation group was significantly shorter than the control group ($P < 0.05$). Subjects were followed up for 1 year. Both groups showed no primary tumor metastasis and recurrence ($P > 0.05$). EMR treatment showed good effect and significantly fewer complications in patients.

Keywords: Endoscopic mucosal resection; Early gastrointestinal cancer; Precancerous lesion;

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Introduction

Gastrointestinal cancer has a high incidence in China. Gastric cancer, colorectal cancer, and esophageal cancer ranked 1st, 4th, and 6th, respectively^[1]. Early cancer in the gastrointestinal tract is confined to the tumor cells that infiltrate the mucosa, submucosa of gastrointestinal tumors, including early colorectal cancer, esophageal cancer, and gastric cancer^[2]. Traditional surgical treatment of early gastrointestinal cancer and precancerous lesions can effectively alleviate the condition of the patient. However, surgery causes large injuries to the patient. Endoscopic mucosal resection (EMR) is widely used for the treatment of early gastrointestinal cancer and precancerous lesions, as it was used in the present study. The clinical effect was reported below.

Materials and methods

General Information

Sixty-three patients who received treatment in Beijing 307 Hospital (Affiliated to the Academy of Military Medical Sciences) from January 2013 to May 2015, were recruited in this study. They were diagnosed with suspicious lesions via endoscopic gastroscopy. Through gastrointestinal endoscopy stains, pathological findings suggested precancerous lesions or early gastrointestinal cancer. Exclusion criteria included abnormalities in blood clotting, heart and lung function, and the

presence of contraindications to surgery patients. Patients were randomly divided into the observation group (32 cases) and control group (31 cases). 20 male and 12 female with a mean age of 50.2 ± 10.2 (30–65 years old) comprised the observation group, among which 16 were diagnosed with esophageal cancer, 10 with gastric cancer, and 6 with colon cancer. Data were analyzed using statistical analysis; $P < 0.05$ indicated a statistically significant difference.

Methods

The control group underwent conventional surgical resection treatment. Besides fasting before surgery, the bowel of early gastrointestinal cancer patients were cleaned up using polyethylene glycol electrolytes. Surgical procedures were carried out by experienced surgeons. The observation group underwent EMR treatment. Epinephrine and methylene blue (1:10,000) were injected into the mucosal lesions. The basement and lesions were separated and lesions (maximum diameter 2 cm) were removed using snare resection. Lesions with a diameter > 2 cm were removed via excision.

Observation and Evaluation Index

1) Curative resection rate; 2) no cancer cells invading vasculature or surrounding the lesion margins; 3) Operation time; 4) Incidence of postoperative complications, and 5) A one-year follow-up, during which primary lesion metastasis and recurrence were observed for both groups.

Statistical Analysis

Data were analyzed using SPSS v19.0. Data were presented as mean \pm standard deviation and analyzed using χ^2 test. Two groups were compared using t-test. $P < 0.05$ was considered statistically significant.

Results

Curative Resection Rate

The curative resection rate in both groups was 100.0%. No significant difference ($P > 0.05$) was found between two groups.

Incidence of Postoperative Complications

The postoperative complication rate was 3.1% (1/32) in the observation group and 25.8% (8/31) in the control group (Table 1), which was a significant difference ($P < 0.05$).

Table 1. Comparison of adverse reactions between control and observation groups

| Group | Number (case) | Gastroesophageal reflux (cases) | Perforation (cases) | Bleeding (cases) | Incidence (%) |
|-------------|---------------|---------------------------------|---------------------|------------------|---------------|
| Observation | 32 | 1 | 1 | 1 | 3.1 |
| Control | 31 | 3 | 3 | 2 | 25.8 |

Note: $\chi^2 = 4.91$, $P < 0.05$

Surgery duration

The duration of surgery was (84.2 ± 25.2) min in the observation group and (185.0 ± 60.5) min in the control group. The former was significantly shorter than the latter ($t = 8.681$, $P < 0.05$).

Follow-up

After a one-year follow-up, there were no primary tumor metastasis and recurrence in both groups. No significant difference ($P > 0.05$) was observed between the two groups.

Discussion

Endoscopic techniques are widely used in clinical diagnosis and treatment of early gastrointestinal cancer and precancerous lesions^[3]. EMR is a less invasive surgery that causes less pain and trauma to patients compared to traditional surgery^[4].

EMR requires comprehensive experience, skill, and equipment to determine the number, size, and invasion of lesions. EMR duration depends on technical proficiency of the surgeon, and depth and extent of lesions in patients. Intraoperative complications include perforation and bleeding. Surgical indications need to be strictly followed in order to reduce the incidence. As such, EMR treatment is not suitable for patients if the lesions do not swell after transmucosal injection. During electrosurgical excision, the coagulation intensity should not be too high to avoid damage to patients' tissues. Postoperative wounds need to be closely observed and larger wounds need to be clamped using titanium clips.

Previous research showed that EMR therapy was effective for patients with early cancer and precancerous lesions^[5]. Endoscopic ultrasonography was used to track the origin of lesions, depth of invasion, and to analyze the adjacent anatomical relationships. In the present study, we compared the clinical efficacy of conventional surgical resection with EMR treatment; the curative resection rate was 100.0% for both groups. After 1-year postoperative follow-up, the two groups showed no primary tumor metastasis and recurrence ($P > 0.05$). The results confirmed the efficacy of EMR and surgical treatment. The postoperative complication incidence was 3.1% for those who accepted EMR treatment and 25.8% for those accepted conventional surgical resection ($P < 0.05$). In addition, surgery duration of the EMR treatment was significantly shorter than that of the control group ($P < 0.05$). Therefore, EMR treatment could effectively reduce surgery time and complication incidence.

In conclusion, EMR treatment should be introduced to patients with early gastrointestinal cancer and precancerous lesions for better effect and fewer complications.

Conflict of interest

The author declares no potential conflict of interest with respect to the research, authorship, and/or publication of this article.

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