

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

Peng Huiji

Beijing 307 Hospital Affiliated to the Academy of Military Medical Sciences, Beijing, China

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 treatment. Both groups were observed for the clinical effect. The curative resection rate was 100.0% ($P > 0.05$). The postoperative complication rate in the observation group was 3.1% (1/32) and 25.8% (8/31) in the control group. The operative time for the observation group was significantly shorter than the control group ($P < 0.05$). Study 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 with early gastrointestinal cancer and precancerous lesions.

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

Introduction

Gastrointestinal cancer has a high incidence rate in China—gastric cancer, colorectal cancer, and esophageal cancer were 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. In the present study, EMR was used to treat patients with early gastrointestinal cancer and precancerous lesions. The clinical effect of the treatment was reported below.

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Materials and methods

General Information

Sixty-three patients with early gastrointestinal cancer and precancerous lesions were recruited in this study. Patients

received treatment in Beijing 307 Hospital Affiliated to the Academy of Military Medical Sciences from January 2013 to May 2015. The patients were diagnosed with suspicious lesions via endoscopic gastroscopy. Through gastrointestinal endoscopy stains, pathological findings suggest precancerous lesions or early gastrointestinal cancer. Exclusion criteria include patients with 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). In the control group, 20 patients were men and 12 women with a mean age of 50.2 ± 10.2 years (30–65 years old); including 16 patients with esophageal cancer, 10 patients with gastric cancer, and 6 patients with colon cancer. Data from the two groups of patients were analyzed using statistical analysis; ($P < 0.05$) shows statistically significant difference.

Methods

The control group underwent conventional surgical resection treatment. Besides fasting before surgery, the bowel of early gastrointestinal cancer patients need to be cleaned using polyethylene glycol electrolytes. Surgical procedures were carried out by experienced doctors. The observation group underwent EMR treatment. Epinephrine and methylene blue (ratio of 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, curative criteria include no vascular invasion of cancer cells and no residual cancer cells surrounding the lesion margins; 2) Operation time; 3) Incidence of postoperative complications; and 4) Patients were followed up for 1 year; primary lesion metastasis and recurrence were observed for both groups.

Statistical Analysis

Data were analyzed using SPSS 19.0 software. 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 showed 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). The difference was statistically significant between the two groups ($P < 0.05$).

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. Surgery time in the observation group was significantly shorter than the control group ($t = 8.681$, $P < 0.05$).

Follow-up

After 1 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 minimally invasive surgery that causes less pain and trauma to patients compared to traditional surgery^[4].

Previous research showed that EMR therapy is effective for patients with early cancer and precancerous lesions^[5]. Endoscopic ultrasonography was used to track the origin of lesions, depth of invasion, and analyze the adjacent anatomical relationships. EMR requires comprehensive experience, skill, and equipment to detect number, size, and invasion of lesions. EMR duration depends on technical proficiency of 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 of complications. 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 large to avoid damage to patients' tissues. Postoperative wounds need to be closely observed and larger wounds need to be clamped using titanium clips. In our 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 rate was 3.1% in the observation group and 25.8% in the control group. Surgery duration of the observation group was significantly shorter than that of the control group ($P < 0.05$). This demonstrated that EMR can effectively reduce surgery time and complication rate.

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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