Postprint of Nursing Research on Cold Snare Resection and Endoscopic Mucosal Resection for Colonic Polyps

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Abstract

Objective To analyze the efficacy of endoscopic mucosal resection (EMR) and cold snare polypectomy (CSP) in the treatment of colonic polyps. Methods A total of 200 patients with colonic polyps admitted to Dongfang Hospital of Beijing University of Chinese Medicine between January 2020 and December 2020 were selected as the study subjects and divided into an EMR group (100 cases, 172 polyps) and a CSP group (100 cases, 154 polyps) using the random number table method. The polypectomy time, complication rate, complete resection rate, specimen retrieval rate, polyp recurrence rate, and de novo polyp formation rate were compared between the two groups. Results The CSP group resected 154 polyps and the EMR group resected 172 polyps. There was no statistically significant difference in the complete resection rate and specimen retrieval rate between the two groups ($P>0.05$). The polypectomy time in the CSP group was shorter than that in the EMR group ($P<0.05$). There was no statistically significant difference in the complication rate between the two groups ($P>0.05$). At 6 months postoperatively, there was no statistically significant difference in the rates of polyp recurrence and de novo polyp formation between the two groups ($P>0.05$). Conclusion CSP for the treatment of colonic polyps can reduce operative time, with similar complete resection rates, recurrence rates, de novo polyp formation rates, and safety profile compared to EMR.

Full Text

Nursing Study of Cold Snare Polypectomy and Endoscopic Mucosal Resection for Colon Polyps

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Abstract

Objective: To analyze the efficacy of endoscopic mucosal resection (EMR) and cold snare polypectomy (CSP) in the treatment of colon polyps.
Methods: A total of [NUMBER] colon polyp patients admitted to Dongfang Hospital of Beijing University of Chinese Medicine were selected as study subjects and divided into EMR group ([NUMBER] polyps) and CSP group ([NUMBER] polyps) according to the random number table method. The two groups were compared and analyzed in terms of polyp resection time, complication rate, complete resection rate, specimen recovery rate, polyp recurrence rate, and polyp regeneration rate.
Results: There was no statistically significant difference in the number of polyps removed between the CSP group and EMR group ($P>0.05$). The polyp resection time in the CSP group was significantly shorter than that in the EMR group ($P<0.05$). There was no statistically significant difference in the complete resection rate and specimen recovery rate between the two groups ($P>0.05$). The difference in complication rates between the two groups was not statistically significant ($P>0.05$). Six months postoperatively, there was no significant difference in the incidence of polyp recurrence and polyp regeneration between the two groups ($P>0.05$).
Conclusion: CSP for colon polyps can shorten operation time, with similar complete resection rate, recurrence rate, polyp regeneration rate, and safety profile compared to EMR.

Keywords: colon polyps; EMR; cold snare polypectomy

Introduction

Colon polyps are a common disease in gastroenterology. With recent changes in dietary structure and lifestyle, their incidence has been increasing. Clinically, the treatment principle for colorectal polyps should be early detection and early removal. Endoscopic mucosal resection and high-frequency electrocoagulation snare resection are currently the most commonly used methods for treating colorectal polyps in clinical practice. Colon polyps may be asymptomatic in early stages, but as the disease progresses, they can evolve into colorectal malignancies. Statistics show that the canceration rate of adenomatous colon polyps is [PERCENTAGE]%, endangering patients' lives. Therefore, timely and effective removal of colon polyps is of great significance.

Endoscopic mucosal resection and cold snare polypectomy are commonly used surgical procedures for treating polyps in clinical practice, with advantages of minimal trauma, rapid postoperative recovery, and low treatment costs. This study selected [NUMBER] colon polyp patients as research subjects to further compare the efficacy of EMR and CSP.

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1. Materials and Methods

1.1 Study Design and Participants A total of [NUMBER] colon polyp patients admitted to Dongfang Hospital of Beijing University of Chinese Medicine from [START DATE] to [END DATE] were selected as research subjects. According to the random number table method, they were divided into EMR group ([NUMBER] polyps) and CSP group ([NUMBER] polyps). The EMR group included [NUMBER] females and [NUMBER] males, with an average age of ($\bar{x}\pm s$) years and average polyp diameter of ($\bar{x}\pm s$) mm. The CSP group included [NUMBER] females and [NUMBER] males, with an average age of ($\bar{x}\pm s$) years and average polyp diameter of ($\bar{x}\pm s$) mm. Baseline data (age, gender, polyp diameter) were comparable between the two groups ($P>0.05$).

1.2 Inclusion and Exclusion Criteria **Inclusion criteria:** (1) Patients provided informed consent and voluntarily signed the consent form; (2) Diagnosis of colon polyps confirmed by electronic colonoscopy; (3) Clear surgical indications.

Exclusion criteria: (1) Previous history of colorectal resection; (2) Inflammatory bowel disease or familial hereditary polyposis; (3) Inadequate bowel preparation affecting observation and operation; (4) Combined malignant tumors in other locations; (5) Incomplete clinical data.

1.3 Surgical Procedures **Equipment:** Electronic colonoscope (Fujifilm, EC-[MODEL]), high-frequency electrosurgical unit (ERBE, [MODEL]), snare (Boston Scientific CAPTIVATOR-[MODEL]), injection needle (Boston Scientific Interject).

All patients underwent routine blood and urine tests, liver and kidney function tests, and ECG examinations before surgery. Colonoscopy was performed to record basic information such as polyp number, size, location, and morphology. Preoperative communication was conducted with patients and their families. Patients consumed a liquid diet for [NUMBER] days before surgery, took [NUMBER] box(es) of compound polyethylene glycol electrolyte powder after dinner, and fasted after dinner on the day before surgery.

EMR Procedure: The EMR group underwent submucosal injection of indigo carmine-glycerin fructose mixture at the colon polyp site, followed by high-frequency electrocautery resection at [POWER] W for [DURATION] seconds

per activation. The colonoscope was inserted to locate the polyp. After confirming the location, the injection needle was inserted from the edge of the polyp into the submucosal layer. Indigo carmine-glycerin fructose mixture was injected submucosally, with the dose controlled at [NUMBER] ml. For larger polyps, repeated injections could be performed. After the lesion was fully elevated, the injection needle was removed, the snare was looped around the polyp and tightened, and mixed current was applied to resect the polyp. For oversized polyps, piecemeal resection could be employed.

CSP Procedure: The CSP group had the snare delivered through the biopsy channel to ensnare the polyp, capturing [NUMBER] cm of normal tissue beyond the polyp edge before gradually tightening and excising the polyp. The wound was then irrigated with normal saline. All resected polyps in both groups were collected as specimens and sent for pathological examination.

1.4 Outcome Measures **Polyp Resection Status:** Recorded the number of polyps removed, polyp resection time (from equipment preparation to specimen collection), complete resection rate, and specimen recovery rate.

Complications: Recorded the incidence of intraoperative bleeding (bleeding lasting more than [NUMBER] minutes during surgery) and postoperative delayed bleeding (hematochezia within [NUMBER] weeks after surgery).

Follow-up: Colonoscopy was performed at [NUMBER] months postoperatively to 统计 polyp recurrence rate and polyp regeneration rate.

1.5 Statistical Analysis Data were analyzed using SPSS [VERSION] statistical software. Measurement data were expressed as $\bar{x}\pm s$ and analyzed using t-test. Count data were expressed as percentages and analyzed using ^{2} test. $P<0.05$ was considered statistically significant.

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2. Results

2.1 Polyp Resection Status A total of [NUMBER] polyps were removed in the CSP group and [NUMBER] polyps in the EMR group. The polyp resection time in the CSP group was ($\bar{x}\pm s$) seconds, significantly shorter than ($\bar{x}\pm s$) seconds in the EMR group (t=[VALUE], $P<0.05$). There was no statistically significant difference in complete resection rate and specimen recovery rate between the two groups ($P>0.05$).

Table 1: Comparison of Polyp Resection Status Between Two Groups

Group	Complete Resection Rate (%)	Specimen Recovery Rate (%)
CSP Group	[VALUE]	[VALUE]
EMR Group	[VALUE]	[VALUE]

2.2 Complication Rates There was no statistically significant difference in complication rates between the two groups (P>0.05). Cold snare polypectomy, as an emerging technique in recent years, uses simple instruments. During operation, the polyp is positioned at the lower part of the endoscopic field. After assessment, the snare is placed [NUMBER] cm from the polyp edge. The sheath is advanced to form an angle with the snare, which is then slowly tightened to resect the polyp. The resection damage is limited to the mucosal layer, which can reduce the probability of delayed bleeding.

Table 2: Comparison of Complication Rates Between Two Groups

Group	Intraoperative Bleeding	Postoperative Delayed Bleeding
CSP Group	[NUMBER] cases	0 cases
EMR Group	[NUMBER] cases	[NUMBER] cases

2.3 Follow-up Results There was no statistically significant difference in polyp recurrence rate and polyp regeneration rate between the two groups at 6 months postoperatively (P>0.05).

Table 3: Comparison of Follow-up Results Between Two Groups

Group	Polyp Recurrence Rate (%)	Polyp Regeneration Rate (%)
CSP Group	[VALUE]	[VALUE]
EMR Group	[VALUE]	[VALUE]

3. Discussion

Colon polyps are lesions located on the colonic mucosa with a high rate of canceration. Colon cancer is a common digestive tract tumor with increasing incidence in recent years. It is generally believed that most colon cancers originate from adenomas, and adenomatous polyps are precancerous lesions. The probability of adenoma canceration is related to its size, gross shape, degree of atypical hyperplasia, and pathological type. Generally, adenomas >[NUMBER] cm, villous tubular type, severe atypical hyperplasia, and broad-based adenomas have higher canceration probability.

EMR for polypectomy is a more cost-effective and safer option than surgery, but residual or recurrent polyps at the resection site are the main factors limiting its application. With the development of endoscopic technology, colonoscopy screening and endoscopic treatment can effectively block the canceration pathway of polyps, thereby reducing the incidence of colon cancer. Small colorectal polyps <[NUMBER] mm are commonly treated with EMR, which is a type of hot resection. In recent years, increasing studies have shown that CSP is

superior to hot resection in efficacy and safety. The European Society of Gastrointestinal Endoscopy (ESGE) guidelines for colorectal polypectomy recommend CSP for small polyps <[NUMBER] mm. This technique is simple to operate, has short resection time, requires no electrocautery device, has high complete resection rate, provides adequate tissue samples, and has low complication rates. Related studies have found that compared with hot resection, cold resection can significantly reduce postoperative bleeding incidence, save [PERCENTAGE]% treatment time, and save [PERCENTAGE]% hospital stay time. In this study, the polyp resection time in the CSP group was shorter than that in the EMR group, with statistically significant difference ($P<0.05$), consistent with the above research results.

Common complications after polypectomy include bleeding and perforation. Postoperative complications increase hospital costs and reduce patient satisfaction. Both intraoperative and postoperative delayed bleeding require active treatment to prevent serious impact on patient recovery. EMR can increase the probability of postoperative delayed bleeding, which is related to electrothermal effects damaging the deep submucosal layer rich in blood vessels. Cold resection lacks the electrothermal coagulation effect on the resection margin, making wound oozing almost inevitable and resulting in higher intraoperative bleeding rates. This study showed [NUMBER] cases of intraoperative bleeding in the CSP group, with no postoperative delayed bleeding; [NUMBER] cases of postoperative delayed bleeding occurred in the EMR group, with no perforation. There was no statistically significant difference in complication rates between the two groups ($P>0.05$). Cardiovascular disease, hypertension, polyp size >[NUMBER] mm, and right-sided colon polyps are significant risk factors for delayed bleeding. EMR can combine high-frequency electrosurgical knives and injection needles to effectively resect polyps, especially larger ones. The operation is simple, does not directly contact the polyp, causes minimal damage, and facilitates recovery of lesion tissue. During operation, care must be taken to avoid electrosurgical knife burns to patients. When patients experience significant bleeding during surgery, titanium clips should be applied for hemostasis to effectively control risks during treatment.

Reports have shown that the cumulative recurrence rate of polyps [NUMBER] years after polypectomy is as high as [PERCENTAGE]%. The cause may be related to gender, age, environmental and genetic factors. Regular colonoscopy 复查 after polypectomy plays an important role in preventing polyp recurrence and regeneration. This study showed no statistically significant difference in polyp recurrence rate and polyp regeneration rate between the two groups, possibly related to the short postoperative follow-up time.

In summary, CSP for colon polyps can shorten operation time, with similar complete resection rate, recurrence rate, polyp regeneration rate, and safety profile compared to EMR.

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Note: Figure translations are in progress. See original paper for figures.