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# Colo-colonic intussusception with post polypectomy electrocoagulation syndrome: A case report

Moon JY *et al.* Colo-colonic intussusception with PPES

Jae Young Moon, Min-Ro Lee, Sung Kyun Yim, Gi Won Ha

## Abstract

### BACKGROUND

Post-polypectomy electrocoagulation syndrome (PPES) can occur after colonoscopic polypectomy and is usually treated conservatively with a positive prognosis. Nevertheless, there can be cases when complications emerge.

### <sup>1</sup>CASE SUMMARY

A <sup>4</sup>58-year-old woman, who have no previous medical history, visited to the Emergency Department of another hospital with symptoms of abdominal pain and fever, 1 d after multiple colonoscopic polypectomies. The patient's abdominopelvic computed tomography (CT) scan demonstrated colo-colonic intussusception, and she was transferred to our hospital to consider an operation. The patient's CT showed colo-colonic intussusception with PPES and no evidence of obstruction. The patient's physical examination showed localized mild tenderness on the right sided abdomen. The patient fasted and was admitted for treatment with <sup>8</sup>intravenous antibiotics (piperacillin/tazobactam 4.5 g each <sup>8</sup>h, Ornidazole 500 mg each 12 h). After admission, the symptoms of patient got better and a follow-up CT scan <sup>10</sup>demonstrated resolution of the PPES and intussusception. The patient was discharged on hospital day 9.

### CONCLUSION

Colo-colic intussusception can occur under PPES, and it can be properly treated conservatively.

**Key Words:** Intussusception; Endoscopy; Colonoscopy; Colonic polyps; Intestinal polyps; Case report

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**Core Tip:** Post-polypectomy electrocoagulation syndrome (PPES) can occur after colonoscopic polypectomy and is usually treated conservatively with a good prognosis. We report herein a rare case of colo-colonic intussusception with PPES in a previous history-free female. The patient had no severe clinical signs and was treated conservatively without surgical intervention.

## **INTRODUCTION**

Colonoscopy is the golden standard for colorectal cancer screening. Polypectomies performed during colonoscopies are generally safe. Post-polypectomy electrocoagulation syndrome (PPES) is an infrequent complication after endoscopic polypectomy. PPES is additionally an electrocoagulation injury of the colonic wall that causes a transmural burn and localized peritonitis<sup>[1]</sup>. Patients with PPES can develop abdominal pain and/or signs of peritoneal irritations, fever, and leukocytosis, which are like bowel perforation; however, no perforation was seen on imaging study of abdomen<sup>[2-5]</sup>. Most cases of PPES are associated with a good prognosis. Patients with less severe symptoms can be treated on an outpatient basis and rarely develop advanced complications<sup>[6-8]</sup>.

## **CASE PRESENTATION**

### ***Chief complaints***

A 58-year-old female visited to the Emergency Department of another hospital with abdominal pain and fever. Her abdominopelvic computed tomography (CT) scan demonstrated colo-colonic intussusception, and she was transferred to our hospital for considering an operation.

### *History of present illness*

The patient had multiple colonoscopic polypectomies in the right sided colon, especially in the Hepatic flexure colon, and a polyp was lifted by submucosal saline injection and a polypectomy was done by electrocoagulation polypectomy (Figure 1) at another hospital one day before admittance, and symptoms started that night.

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### *History of past illness*

The patient had no medical history.

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### *Personal and family history*

The patient had no personal and family history.

### *Physical examination*

Visiting our hospital, the body temperature was 38 °C, heart rate was 70 bpm, respiratory rate was 20 breaths per minute, and blood pressure was 123/76 mmHg. The abdominal physical examination of patient showed mild tenderness in the abdomen on the right side.

### *Laboratory examinations*

Routine laboratory data demonstrated an elevated white blood cell count  $11.84 \times 10^3/\text{L}$  with a predominance of neutrophils (83%). The erythrocyte sedimentation rate was normal at 10 mm/h, and the serum C-reactive protein was elevated at 66.18 mg/L. The blood biochemistries were normal.

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### *Imaging examinations*

An initial imaging evaluation with abdominopelvic CT revealed a target-like lesion in the right-side colon with bowel and fatty mesentery inside, which indicated colocolonic intussusception. The lesion and proximal colon showed wall thickening with submucosal swelling and highly attenuated infiltration of adjacent pericolic fat. A

transmural air bubble was in the wall of a lesion. There was no definite leading point (Figure 2).

The colon lesion was further evaluated with abdominopelvic CT. The latter, which was taken at hospital day (HD) 5 after the initial one, revealed no evidence of colo-colonic intussusception. There was no colon wall thickening and no air bubble in the colon wall (Figure 3).

The colon lesion was further evaluated with abdominopelvic CT. The latter, which was taken at hospital day (HD) 5 after the initial one, revealed no evidence of colo-colonic intussusception. There was no colon wall thickening and no air bubble in the colon wall (Figure 3).

### **FINAL DIAGNOSIS**

The final diagnosis for the current case was colo-colonic intussusception with post polypectomy electrocoagulation syndrome.

### **TREATMENT**

The patient was started on intravenous antibiotics therapy with piperacillin/tazobactam 4.5 g every 8 h, Ornidazole 500 mg every 12 h. The patient fasted and was admitted to the general surgery department.

After follow-up CT at HD 5, the patient started sips of water at HD 6. A soft-blended diet started at HD 7. The patient had no discomfort after starting the diet. The patient was discharged to home at HD 9.

### **OUTCOME AND FOLLOW-UP**

The patient was transferred to our hospital for consideration of an operation but had no surgical treatment. At a follow-up visit 2 wk after discharge, the patient was asymptomatic and had no complaints.

### **DISCUSSION**

PPES, also known as post-polypectomy syndrome (PPS) or post-polypectomy coagulation syndrome (PPCS), is a relatively rare complication of polypectomy with

electrocoagulation that may cause perforation or bleeding. Transmural thermal injury can happen after electrocoagulation polypectomy when electrical current applied during polypectomy which extends into the serosa and muscularis propria. As a result, a transmural burn and localized peritoneal inflammation can be occurred. CT is the gold-standard imaging for PPES patients, as it shows focal mural thickening with a stratified enhancement pattern, low attenuation with perilesional submucosal edema, and high attenuated infiltration of adjacent pericolic fat without extraluminal air<sup>[9]</sup>. Up to 5 d after the colonoscopic procedure, patients can develop localized abdominal pain, fever, signs of peritoneal irritation, and leukocytosis without perforation<sup>[10]</sup>.

The rate of PPES ranges from 0.003% to 0.100%, while the incidence of perforation and hemorrhage are 0.3% and 0.6%, respectively<sup>[11]</sup>. In large multicenter study, risk factors correlated with PPES included large size of lesion (> 2 cm), non-polypoidal lesions, lesions on the right sided colon (attributed to decreased thickness of bowel wall), and hypertension<sup>[8,10]</sup>. Our patient's multiple right-sided treated lesions featured high-risk factors. Lacking information about the shape and size of lesions, we could not find other risk factors.

There was a specific finding in our case that should be noted. Colo-colonic intussusception was presented in our case without definite evidence of obstruction. A review of the literature showed of 1214 adult patients with intussusception, 63% of adult intussusception was related to a tumor, where 50% of which were malignant. Further, a malignant tumor was demonstrated to be the etiology in 48% of patients with colo-colonic intussusception<sup>[12]</sup>. But our patient had a full colonoscopy and had no evidence of a remnant tumor lesion that could be a leading point. Colon wall thickening due to PPES might induce colo-colonic intussusception.

There are several ways to prevent PPES during an endoscopic procedure. First, during hot snare polypectomy, we pull the polyp toward the central area of the lumen immediately before electrocoagulation so that the submucosa is pulled away from the muscularis propria and serosa as the current is applied<sup>[13]</sup>. In addition, using a hot snare and not using hot biopsy forceps because the hot biopsy technique

increases the risk of thermal injury to the submucosa<sup>[14,15]</sup>. Second, use submucosal fluid injections for large polyps. Elevating a large polyp by injecting saline (or an alternative solution) into the submucosa before polyp transection may reduce the incidence of PPES, but there are no large studies to substantiate this hypothesis<sup>[10,16,17]</sup>. A submucosal fluid injection before polypectomy should theoretically decrease the incidence of transmural burn by enlarging the submucosal layer<sup>[2]</sup>. Third, we could use alternative polypectomy techniques. Cold snare polypectomy is not associated with PPES, and the available data suggest that the cold snare technique may be a safe and effective option for lesions that are  $\geq 1$  cm, located in the right colon, or have a non-polypoid shape<sup>[18,19]</sup>.

Similar to this case, Plumptre *et al*<sup>[13]</sup> reported a case of PPES with a radiology report suggesting ileocolic intussusception. In that case, the patient's clinical signs worsened after 24 h and the patient underwent unnecessary diagnostic laparoscopy and was, as a result, exposed to possible operation related complications unnecessarily<sup>[20]</sup>. In this case, the patient's clinical signs got better and showed no sign of obstruction, and we managed the patient conservatively and did not consider surgical intervention. <sup>2</sup> This case demonstrates the necessity of combining a clinical <sup>2</sup> scenario with a radiologic finding to reach a differential diagnosis and optimal management plan.

Colo-colic intussusception can occur under PPES, and it can be properly treated conservatively.

**Figure 1 Colonoscopic polypectomy.** A: Colonoscopy showing villous polyp; B: Submucosal saline injection under villous polyp; C: Electrocoagulation polypectomy done on lifted polyp.

**Figure 2 Initial Contrast-enhanced computed tomography.** A: Axial portal phase image shows target-like lesion in right side colon with bowel and fatty mesentery

inside and colon wall thickening with submucosal swelling and highly attenuated infiltration of adjacent pericolic fat; B: Coronal portal phase image shows invagination of the right side colon.

**Figure 3 Follow-up contrast-enhanced computed tomography scan.** A: Axial portal phase shows resolved state of previously seen colon wall swelling and target-like lesion; B: Coronal portal phase image shows resolved state of previously seen invagination.

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