

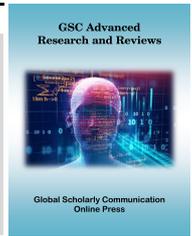


Available online at [GSC Online Press Directory](#)

GSC Advanced Research and Reviews

e-ISSN: 2582-4597, CODEN (USA): GARRC2

Journal homepage: <https://www.gsconlinepress.com/journals/gscarr>



(CASE REPORT)



Post-polypectomy syndrome: An infrequent complication

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Publication history: Received on 13 August 2020; revised on 22 August 2020; accepted on 28 August 2020

Article DOI: <https://doi.org/10.30574/gscarr.2020.4.2.0068>

Abstract

Post-polypectomy syndrome is a rare complication of polypectomy with electrocautery and is characterized by a transmural burn of the colon wall. Patients typically present within 12 hours after the procedure with symptoms mimicking colonic perforation. We present the case of a 45-year-old female who developed abdominal pain seven hours after colonoscopy during which polypectomy was performed using electrocoagulation. CT imaging of the abdomen revealed circumferential thickening of the wall of the colon without evidence of free air. The patient was treated conservatively as and had resolution of his pain over the following days. Recognition of the diagnosis and understanding of the treatment are important to avoid unnecessary exploratory laparotomy or hospitalization.

Keywords: Colonoscopy; Intestinal Polyposis; Complications

1. Introduction

It is known that the gold standard for colorectal cancer screening is colonoscopy, which is routinely performed by gastroenterologists, colorectal surgeons and endoscopists at different hospital centers. In the United States alone, approximately 14 million procedures are registered annually (1). Among the different procedures that can be carried out during a colonoscopy is polypectomy, which is performed to analyze and detail one or multiple intra-luminal lesions using histopathology, polypectomy also reduces the incidence of colorectal cancer by 70-80% (2). It is a relatively safe procedure, but it is not free of complications.

Among the most frequent complications related to polypectomy are intestinal perforation (the most severe and feared), bleeding, and very rarely, post-polypectomy syndrome. The clinical manifestations related to this pathology are abdominal pain, fever, leukocytosis, signs suggestive of peritoneal irritation with no obvious perforation, appearing after a colonoscopy with electrocoagulation polypectomy (2,3).

This review presents a case related to this complication and discusses its most important aspects, such as epidemiology, pathophysiology, diagnosis, treatment and follow-up. This pathology should be considered within the differential diagnosis in every patient manifesting acute abdominal pain after colonoscopy and polypectomy.

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2. Case report

A 45-year-old female patient with a history of positive smoking, sulfas and hydrocortisone allergies, previous laparoscopic appendectomy, myomectomy, resection of a ganglion cyst on the right ankle and total abdominal hysterectomy secondary to uterine myomatosis. The patient went to the emergency department for presenting a day before his admission oppressive abdominal pain in epigastrium and right hypochondrium, nausea and two vomiting episodes, decreased stool consistency and fever.

A physical examination is performed and the patient complains from abdominal pain on palpation of the colonic area along positive Murphy's sign, laboratories show slight leukocytosis ($11,900 \times 10^3/uL$), both liver function tests and abdominal ultrasound seemed normal, abdominal CT showed sigmoid diverticulosis. The patient was admitted in order to perform a panendoscopy (polyps of fundic appearance were found along erythematous gastropathy in gastric antrum) and a colonoscopy (after bowel preparation using 3 doses of polyethylene glycol), its findings are described in Figure 1.

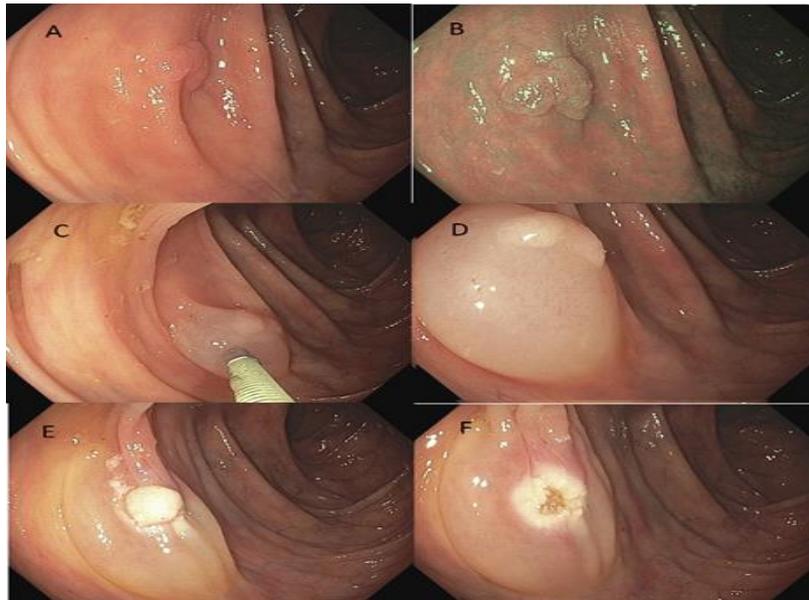


Figure 1 Colonoscopy + endoscopic mucosal resection. A. Kudo IIIs polyp located in ascending colon. B. Kudo IIIs polyp in ascending colon observed using NBI filter. C and D. Mucosal dissection with epinephrine solution injection. E and F. Posterior polyp base after endoscopic mucosal resection using electrocoagulation histopathology report serrated adenoma.

Approximately 7 hours after the procedure the patient suffers tachycardia, fever, right hemi abdominal pain, with no signs of peritoneal irritation and hematochezia. Laboratory tests are carried out once again, showing 6.1 mmol/L lactate, and leukocytosis ($14.5 \times 10^3/uL$). A new abdominal CT scan was performed, where changes in the colonic wall and peri colonic region are observed, these are detailed in Figure 2.

Following these findings, antimicrobial therapy with 1 gram of IV ceftriaxone every 12 hours and 500 mg of IV metronidazole every 8 hours is initiated, fasting is kept and analgesic treatment is added. The pain in the right hypochondrium persists, Boyden's test is performed, which results positive, diagnosing Biliary dyskinesia, after the diagnose has made a laparoscopic cholecystectomy was performed, with no complications. The following day, the patient resumed oral intake, adequate tolerance was observed, and the patient maintained good clinical progress, therefore the patient was discharged.

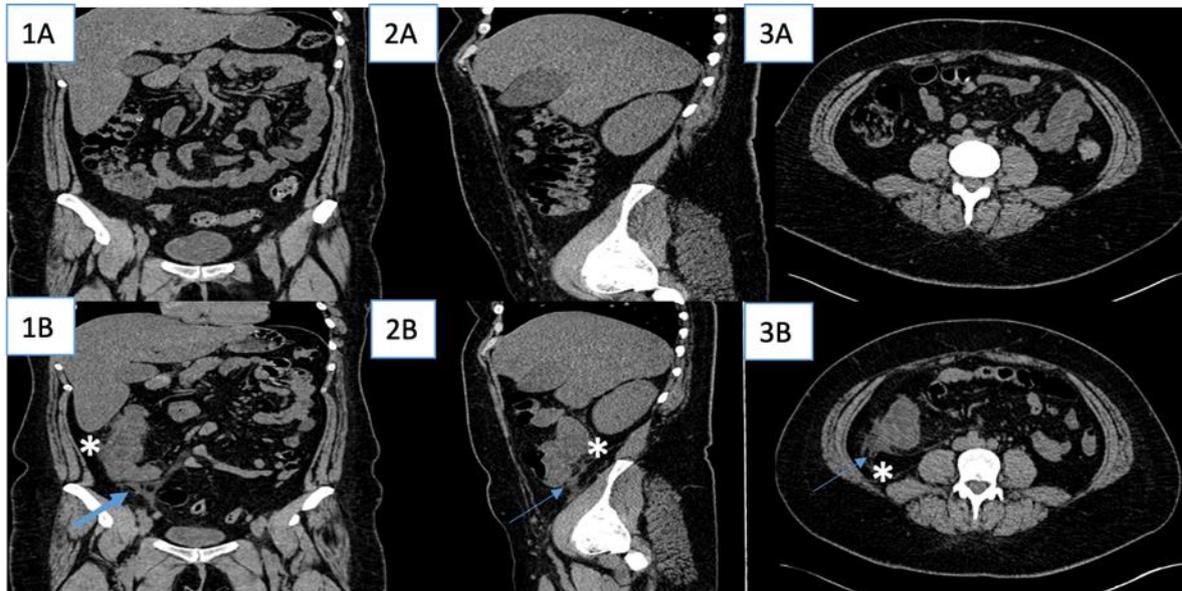


Figure 2 Pre and post-polypectomy abdominal CT. 1ST, 2ND AND 3RD. Coronal, sagittal and transversal CT scan planes prior to mucosal endoscopic resection, showing no alterations in ascending colon. 1B, 2B AND 3C. Coronal, sagittal and transversal CT scan planes after mucosal endoscopic resection. Ascending colon wall thickness increase (asterisk) up to 19 mm, loss of haustral markings, peri colonic free fluid is observed from right parieto-colic gutter and iliac fossa (blue arrows) to pelvic cavity.

3. Discussion

Post-Polypectomy Syndrome is defined as the presence of fever, leukocytosis and abdominal pain along peritoneal irritation signs occurring posterior to a colonoscopy (associated with polypectomy, endoscopic mucosal resection or endoscopic submucosal dissection) with electrocoagulation, with no obvious bowel perforation observed by abdominal X-ray and/or CT scan (3).

Also known as post-polypectomy electrocoagulation syndrome (PPCS), transmural burn syndrome, occurs when, posterior to polypectomy, electric current is transmitted to muscularis propria and serosa, causing a transmural burn lesion at the site of resection (4).

It occurs in approximately 1% of all colonoscopies with polypectomy (5). Cha et al. reported that, out of 47,083 colonoscopy polypectomies, only 34 patients suffered this complication and required hospitalization (0.07%) (2). Kim reports an approximate incidence ranging from 0.003% to 0.1% (6). Shin et al. mention an incidence that ranges from 0.5% to 1.2% (7). The highest incidence among all colonoscopic procedures is within the endoscopic submucosal dissection Group (7% - 8%) (3).

It develops during the first 6 -12 hours to 5-7 days after polypectomy. It manifests as generalized abdominal pain (88.2% of patients), fever (64.7% of patients) and tachycardia. On Physical examination, pain is evidenced close to the site of polypectomy, along abdominal guarding and signs of peritoneal irritation in up to 20% of cases. Laboratories reported leukocytosis, and increased C-reactive protein (100% sensitivity) (1, 2, 4).

This complication, can be classified into two large groups, depending on its severity: minor and major. Minor PPCS manifest a characteristic clinical symptomatology, which responds satisfactorily to conservative management. On the other hand, major PPCS is different as in addition to the symptomatology described, shock is suffered and it also requires ICU admission, urgent surgery and could be considered life-threatening (2).

It has been found that PPCS occurs more frequently posterior to the resection of large (>10mm) sessile polyps, which usually require larger amounts of thermal energy for a longer period of time (2), it is also more frequent in non-polypoid lesions, localized in the ascending colon (secondary to thinned intestinal wall, 2–3 mm with insufflation) (2), and in patients with hypertension, who more frequently suffer from endothelial dysfunction and atherosclerosis, which could be contributing factors (6,7). Nivatvongs shows that in 83% of patients suffering from PPCS, had polyps in the ascending colon, and that all polyps were sessile (8).

Pathophysiology can be in part explained by the fact that, when the procedure is being performed, adjacent healthy mucosa is inadvertently taken within the coagulation loop, which conditions the resection of the polyp and healthy mucosa (5). Correspondingly, electrocautery biopsy forceps (used in polyps >7–8 mm) have been reported to increase the risk when compared to loop resection. Steel polypectomy snares have a higher rate of complications compared to the use of tungsten snares. (9)

Diagnosis is suspected in patients presenting the characteristic clinical symptomatology, along the laboratory alterations which were previously described, it is confirmed by imaging studies. Abdominal CT scan is the preferred study (7,10), the findings are focal bowel wall thickening, peri colonic fat stranding, as well as the occurrence of a mural defect containing fluid, without free gas within the peritoneal cavity or retroperitoneum. The main differential diagnosis that should be kept in mind is colonic perforation (which has an incidence of 0.07 % - 0.3%) (7).

Treatment is, in most cases, conservative. It consists of IV hydration, analgesics, gradual oral intake depending on the patient's tolerance, with/without antibiotics vs gram (-) and anaerobic pathogens. In mild cases, extra-hospital management can be chosen, using oral antibiotic therapy and a clear liquids diet for 1 to 2 days. (1,4,10). The average fasting time according to Cha (2) is 3 days, hospitalization for 5.5 days and for antibiotic treatment for 7 days. In case the patient does not respond to conservative management or in case of clinical deterioration, it is necessary to re-evaluate the patient and consider major complications, such as intestinal perforation.

Symptoms disappear around 2 to 5 days and has an excellent prognosis. Up to 2.9% of patients may suffer from major complications (ICU admission or death) a mortality of 0% is described in the multi- center, case-control and retrospective study carried out by Cha et al (2). In those patients with complete transmural burn, late perforation is more likely to occur.

Studied prevention measures for this adverse effect have been described, multiple compounds and solutions submucosal injection (0.9% saline with/without epinephrine, sodium hyaluronate, 50% dextrose, glycerol, among others) in order to separate the mucosa and submucosa from the rest of the colon layers, if electrocautery is going to be used, especially in >1.5 cm polyps located in the right colon. No significant differences between these solutions have been reported (1,11).

Some of the described maneuvers that can be used are the traction of the polyp towards the center of the colonic lumen in order to separate the submucosa from the muscularis propria and serosa. In pedunculated lesions, early energy application and closure of the polypectomy loop to one-third or one-half of the polyp's base has been recommended. For lesions in the right colon, gas suction is performed after placing the loop, reducing the bowel wall tension, increasing its width and increasing the amplitude of the polyp. (12) The skill and experience of the physician performing the procedure, after evaluating the case and selecting the appropriate therapy, will largely define the incidence or prevention of PCCS.

Posterior to PCCS, late intestinal perforation, between 1 to 9 days after the procedure, secondary to visceral wall necrosis may occur. It is more likely to occur in submucosal endoscopic dissection, around 0.1%-0.4% (3). The patient, therefore, will show peritonitis symptomatology that increases in severity and does not respond to expectant treatment, which will require an evaluation by a surgeon and an emergency surgical intervention (5), as well as a higher morbidity/mortality if not detected or treated timely.

4. Conclusion

In all patients with abdominal pain, fever, peritoneal irritation and/or tachycardia, up to 7 days after a polypectomy by colonoscopy procedure, colon perforation or Post-Polypectomy Syndrome should be suspected. It is vitally important to know the existence of this syndrome and how to timely diagnose it, in order to avoid emergency surgeries and unnecessary laparoscopies/laparotomies.

Compliance with ethical standards

Disclosure of conflict of interest

There are no conflicts of interest.

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