Massive Endoluminal Bleeding from the Invaginated Appendiceal Stump after Appendectomy; a Unique Case of Gastrointestinal Bleeding

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ABSTRACT

INTRODUCTION
Lower gastrointestinal bleeding is defined as bleeding that occurs distant to the ligament of Treitz. It is less common and less severe than upper gastrointestinal bleeding and carries a mortality rate of 2%-4%, which, however, increases to 21% in cases of massive hematochezia and hemodynamic instability. The most common source of the bleeding is the colon, with diverticular disease and angiodysplasia being the most common causes. In this article we present the case of a 64-year-old male patient who suffered from massive lower gastrointestinal bleeding from the invaginated appendiceal stump twenty days after the appendectomy.

CASE REPORT
A 64-year-old male patient presented in the emergency department complaining about melena, followed by massive hematochezia, which started one hour ago, accompanied by hemodynamic instability, a hematocrit value of 30.9% and a hemoglobin value of 10 g/dl. He was subjected to appendectomy due to acute appendicitis, twenty days ago. After initial resuscitation, the patient underwent emergency colonoscopy, which revealed a single, sessile polyp in the caecum. Biopsies from the polyp showed no evidence of malignancy. Afterwards, the patient was subjected to exploratory laparotomy, colotomy and local excision of the polyp. Rapid biopsy of the specimen revealed a hyperplastic fold of cecal mucosa with ulceration, chronic inflammation and underlying foreign body inflammatory reaction as a result of surgical stitches. These findings led to the conclusion that the stitches of the invaginated appendiceal stump resulted in foreign-body-type chronic inflammation and ulceration of the colonic mucosa causing the massive Endoluminal bleeding.

CONCLUSION
Massive lower gastrointestinal bleeding from the invaginated appendiceal stump is an extremely rare complication of appendectomy, with fewer than thirty cases reported in the literature. This condition can be managed either surgically or endoscopically. A high degree of clinical suspicion is required in such cases in order to avoid an unnecessary operation, such as right hemicolectomy.
KEYWORDS: Rectal bleeding, Polyp, Appendectomy, Complication

INTRODUCTION

Lower gastrointestinal bleeding is defined as bleeding that occurs distant to the ligament of Treitz, with the colon being the most common source of the hemorrhage [1]. Lower gastrointestinal bleeding represents 20% to 25% of all gastrointestinal bleedings and occurs more often in men than in women and more frequently in the elderly than in the young subjects, with the average age of the patients being 70.4 years [2, 3]. It is less severe than upper gastrointestinal bleeding and carries a mortality rate of 2-4% [2]. Based on the severity of the hemorrhage, lower gastrointestinal bleeding is classified into three categories:

1. Occult bleeding, which is slow and chronic and presents as microcytic, hypochromic anemia,
2. Moderate bleeding, which presents with hematochezia or melena but does not compromise hemodynamic stability and
3. Severe bleeding, which presents with prominent hematochezia and hemodynamic instability, carrying a mortality rate of 21% [1]. Regarding its etiology, between 60 and 80% of lower gastrointestinal bleeding originates in the colon and rectum [2]. The most common causes are diverticular disease and angiodysplasia, which have a high incidence in the elderly [2]. Other less common causes include ischemic colitis, inflammatory colitis, polyps and colorectal cancers and small intestinal lesions, such as Meckel’s diverticulum, Crohn’s disease and small bowel tumors [2].

In this article we present the case of a 64-year-old male patient who suffered from massive lower gastrointestinal bleeding from the invaginated appendiceal stump twenty days after the appendectomy. According to our review of the literature, less than thirty cases of such an incident have been reported so far.

CASE REPORT

A 64-year-old male patient presented in the emergency department complaining about melena followed by massive hematochezia, which started one hour ago, accompanied by bloating and borborygmi, lacking pain or vomiting. The patient was subjected to appendectomy due to acute appendicitis twenty days earlier. He had a known medical history of type II diabetes mellitus for which he was on 1g of metformin twice a day and 12 IU of a combination of insulin degludec and liraglutide once per day. He had also suffered an ischemic stroke thirteen years ago for which he was on 75mg of clopidogrel daily. The patient was afebrile, with an arterial blood pressure of 120/80 mmHg, a heart rate of 145 beats per minute, an oxygen saturation of 97% and a respiratory rate of 27 cycles per minute. The clinical examination revealed no abdominal tenderness with present bowel sounds, while the digital examination of the rectum revealed the presence of fresh blood in it. His laboratory results showed a hematocrit value of 30.9% and a hemoglobin value of 10 g/dl. Notably, a full blood count conducted twelve days ago, showed a hematocrit value of 43.1% and a hemoglobin value of 13.8 g/dl.

The patient was admitted in the internal medicine department where he was transfused with two units of compact erythrocytes. However, his vital signs did not improve, and a new full blood count six hours later revealed a further decrease in the hematocrit and hemoglobin value, which were 27.9% and 9.4 g/dl respectively. Transfusion with two units of fresh frozen plasma and one unit of compact erythrocytes followed, and the patient was scheduled for gastroscopy and colonoscopy. The first revealed no evident source of bleeding in the stomach, while the colonoscopy showed a polypoid, pulsing, ulcerated lesion in the caecum, in close proximity to the ileocecal valve. Multiple biopsies were taken but polypectomy was not performed due to the polyp being sessile. The histopathologic report revealed inflammatory granulomatous tissue with parts of normal colonic mucosa and signs of chronic inflammation. No evidence of malignancy was found. However, worsening of the laboratory findings to a hematocrit value of 25.7% and a hemoglobin value of 8.4 g/dl required a transfusion of two more units of fresh frozen plasma. Consequently, the patient was scheduled for surgical removal of the polyp.

Under general anesthesia, access in the peritoneal cavity was achieved through a supra-infra-umbilical midline incision. The ileocecal valve was identified, and the lesion was palpated in the caecum. The latter appeared as a benign lesion due to being easily movable, soft and not fixed to the adjacent tissue. Colotomy was performed on the anterior taenia coli of the caecum and the lesion, covered in blood clots, was identified. Afterwards, it was grasped with an Alice forceps and excised using a 65 mm Endo-Gia linear stapler device (figure 1). The specimen was sent for rapid biopsy which revealed a hyperplastic fold of cecal mucosa with ulceration, chronic inflammation and underlying foreign body inflammatory reaction as a result of surgical stitches (figure 2). No evidence of malignancy was found. These findings led to the conclusion that the stitches of the invaginated appendiceal stump resulted in foreign-body-type chronic inflammation and ulceration of the colonic mucosa causing the massive endoluminal bleeding. A drainage tube was placed in the Douglas’ pouch, hemostasis was achieved, and the patient was extubated and led to the floor.
The patient had an uneventful recovery. Oral intake started on the first post-operative day. The drainage tube was removed a day later and he was discharged on the fourth post-operative day.

**DISCUSSION**

Appendectomy performed either laparoscopically or via an open approach are one of the most common surgical procedures and the safest and most effective treatment of acute appendicitis [4]. Short-term and long-term complications are quite rare, with a mean rate of 4.6% and 3.3% respectively, and include intra-abdominal abscesses, stump leakage, stump appendicitis, surgical site infections, seromas, wound rupture, intestinal damage, medical complications, small bowel obstruction due to the formation of adhesions and paralytic ileus [5-7]. Specifically, the prevalence of ileus is 1.0% over a period of 4.6 years, with incisional hernia’s being 0.7% over a period of 6.5 years. Meanwhile, the prevalence of ulcerative colitis is decreased in patients who undergo appendectomy as opposed to the increased one of Crohn’s disease, when compared to the general population [5, 6]. The overall mortality rate following appendectomy is 0.28% [7].

Rectal bleeding as a result of an ulcerated appendiceal stump is a very rare complication. According to our review of the literature, less than thirty articles have been published describing such incidents, with all of them being case reports. The first reported case came from Foster et al in 1971, regarding a 32-year-old female patient who presented with massive rectal bleeding seven years after appendectomy, accompanied by a hematocrit value of 14%. In this case, the source of the bleeding was a vascular malformation of the inverted appendiceal stump. During the exploratory laparotomy, a cecotomy was performed and the area of the appendiceal stump was excised. In her twenty-one-day hospitalization, a transfusion of twenty four units of compact erythrocytes was required [8]. In 1985, Marinez Ubiento et al reported a case of massive rectal bleeding in an eighteen-year-old patient subjected to appendectomy two years ago. Here, the cecotomy revealed a tumour of benign appearance which was submucosally resected, exposing a black silk stitch corresponding to the former ligature of the appendicular vessels. The histopathologic report showed a small ulcerated area where the normal colonic mucosa had been substituted by Granulomatous tissue, with it being the source of the bleeding, as in our case [9]. In the same year, Choi et al reported a case of a 32-year old female patient who suffered from rectal bleeding nine years after an appendectomy, where the appendiceal stump was not inverted. Preoperative colonoscopy revealed a suspicious angiomatous lesion in the caecum and the patient underwent right hemicolecctomy. Histopathologic report revealed a small area of ulceration with Granulomatous tissue, at the end of the residual appendix [10].
A different cause of appendiceal stump bleeding was reported by Nørgaard et al in 1994, where the bleeding originated from an intramural branch to the appendix from the posterior cecal artery that had not been included in the primary appendiceal ligature [11]. In the past, appendiceal stump bleeding has been misdiagnosed with ulcerated tumor of the ceacum eventually leading to laparoscopic cecectomy or right hemicolecotomy [12, 13]. Nowadays, the role of endoscopic treatment of bleeding from the inverted appendiceal stump using hemoclips has been well advocated in the literature [14, 15].

Rectal bleeding following appendectomy has been attributed to many causes. Some of them include continued infection in the vicinity of the stump, failure to ligate the appendiceal artery and excessive operative trauma during difficult mobilization of a retrocecal appendix, while recent literature implicates stump erosion, granuloma formation and slippage of the ligature from the appendiceal stump [12]. In our case, a foreign body-type inflammatory response triggered by the stitch used to invaginate the appendiceal stump, which resulted in ulceration of the colonic mucosa and eventually bleeding.

In conclusion, rectal bleeding from an appendiceal stump following appendectomy is a rare complication, which can occur within days or years after the operation. A variety of methods, such as endoscopic hemostasis, laparoscopic and open surgical procedures have been reported in the literature, for the treatment of the bleeding. A high degree of clinical suspicion is required in patients with a known history of appendectomy and bleeding from a seemingly benign lesion in the ceacum, in order to avoid an unnecessary intervention like right hemicolecotomy. The only precaution in order to avoid this complication is to perform a simple ligation of the appendix without inversion of the appendiceal stump [16-18].

CONCLUSIONS

In this article we report the case of 64-year-old male patient who suffered from massive and life-threatening rectal bleeding twenty days after an appendectomy for acute appendicitis. The origin of the bleeding was an ulceration of the inverted appendiceal stump, which resulted from a foreign-type body inflammatory process caused by the stitch used to invert the appendiceal stump. The patient was managed surgical with local excision of the ceacum eventually leading to laparoscopic cecectomy or right hemicolectomy [14].

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REFERENCES


