CASE REPORT

Post Colonoscopy Colonic Intussusception Reduced via a Laparoscopic Approach

Mindy M. Ho, MD, John J. Park, MD, Leela M. Prasad, MD

ABSTRACT

Intussusception occurs when a mass in the bowel is pulled forward by normal peristalsis, with resultant invagination of the involved bowel wall. In the absence of a mass, intussusception may be caused by functional disturbances without gross mural abnormality. Colo-colonic intussusception in adult is relatively rare and usually secondary to a definable lesion, the majority of which are malignant in nature. Idiopathic intussusception in adults is rare and its pathogenesis is poorly understood.

We present a case report of an adult colo-colonic intussusception occurring after colonoscopy, which was treated successfully with laparoscopic reduction. We speculate that the intussusception was induced by post-polypectomy mucosal edema acting as a lead point and therefore can be treated without resection.

Key Words: Intussusception, Laparoscopic reduction, Colonoscopy.

INTRODUCTION

Intussusception occurring after colonoscopy is rare, with only one case having been reported.[1] We present herein the case of an adult colo-colonic intussusception that occurred after colonoscopy. The patient's condition was successfully treated by laparoscopic reduction.

CASE REPORT

A 32-year-old man with no past medical or surgical history presented to our emergency department with acute abdominal pain. The patient underwent an elective colonoscopy the day before because of a strong family history of colon polyps. Colonoscopy to the cecum was uneventful. A small polyp in the mid ascending colon was identified and removed easily with snare cautery without complication **(Figure 1)**. The patient was discharged in good condition. At 6:00 pm, after having a regular diet, the patient felt severe right lower abdominal pain and vomiting.

He arrived to a nearby hospital where a CT scan of the abdomen demonstrated a target sign in the ascending colon. Based on these images, colo-colonic intussusception was diagnosed. He underwent barium enema, which was unsuccessful in reducing the intussusception, and the patient was transferred to us for further management.

On examination, he was afebrile, vital signs were stable, he had nausea, but no vomiting. The patient had a small passage of barium mixed stool and flatus. The abdomen was distended with normoactive bowel sounds, tenderness in the right lower quadrant with moderate guarding and rebound. His white blood cell count was 10 800/mm. A repeat CT scan of the abdomen demonstrated persistent colo-colonic intussusception in the ascending colon **(Figure 2)**.

An emergency laparoscopy was performed. A 12-mm Hasson trocar was inserted through the umbilicus into the abdominal cavity. Three additional ports were inserted under direct vision. A 5-mm port was placed at the suprapubic location. Two 5-mm ports were placed in the left lower quadrant and epigastric region. There was persistent cecal intussusception into the ascending colon with-

Department of Colon and Rectal Surgery, Metropolitan Group Hospitals Residency in General Surgery, Lutheran General Hospital, Park Ridge, Illinois, USA (all authors).

Address correspondence to: John Park, MD, Department of Surgery, Advocate Lutheran General Hospital, 1550 N. Northwest Highway, Suite 107, Park Ridge, IL 60068, USA. Telephone: (847) 759-1110, E-mail: jpark18@aol.com

DOI: 10.4293/108680810X12924466008727

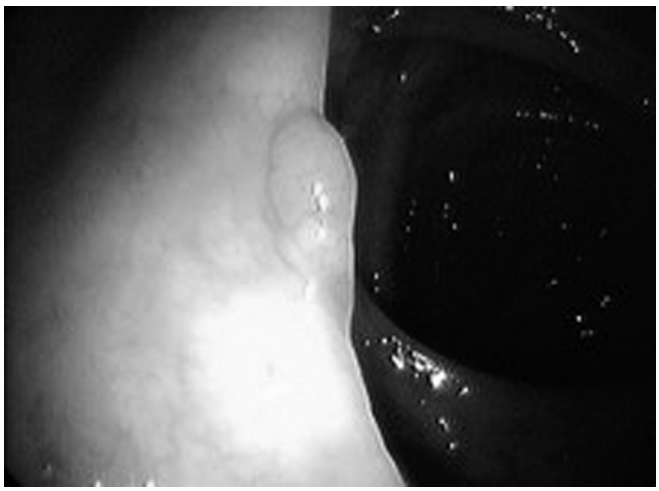

Figure 1. Colon polyp.

out evidence of small bowel intussusception. No lesion was found in the ileum on inspection. Mobilization of the ascending colon was performed by incising the peritoneum along the cecum. The appendiceal and terminal ileal attachments were divided. The bowel was then reflected from the retroperitoneum. The dissection was extended upward to the hepatic flexure, and the intussusception was gently reduced by using bowel graspers. Complete reduction was accomplished. There were mild ischemic changes on the serosa of the mid ascending colon, which returned to a normal color after 10 minutes. An intraoperative colonoscopy was performed to inspect the mucosa of the colon. The examination showed mild mucosal inflammation, but no ischemic damage was noted. No evidence of air leakage through the wall of the colon was noted during the colonoscopy after the abdomen was irrigated with saline. We did not suture pexy the right colon onto the lateral wall.

The postoperative course was uneventful, and the patient was discharged on the fifth postoperative day once bowel function returned. After 3 years, no recurrent intussusception has occurred.

DISCUSSION

Intussusception occurs when a mass in the bowel is pulled forward by normal peristalsis, with resultant invagination of the involved wall. In the absence of a mass, intussusception may be caused by functional disturbances without gross mural abnormality. Colo-colonic intussusception in the adult is relatively rare and almost always secondary to a definable lesion.[1,2] In a literature review of 160 surgically diagnosed adult intussusceptions, 48% originated in the small bowel and 52% in the colon.[1] In contradistinction to these surgical series, a recent study[4] of adult intussusception detected by CT or MR imaging showed 88% of intussusceptions to be enteroenteric, with only 12% involving the colon. Intussusception in the large bowel is more likely to

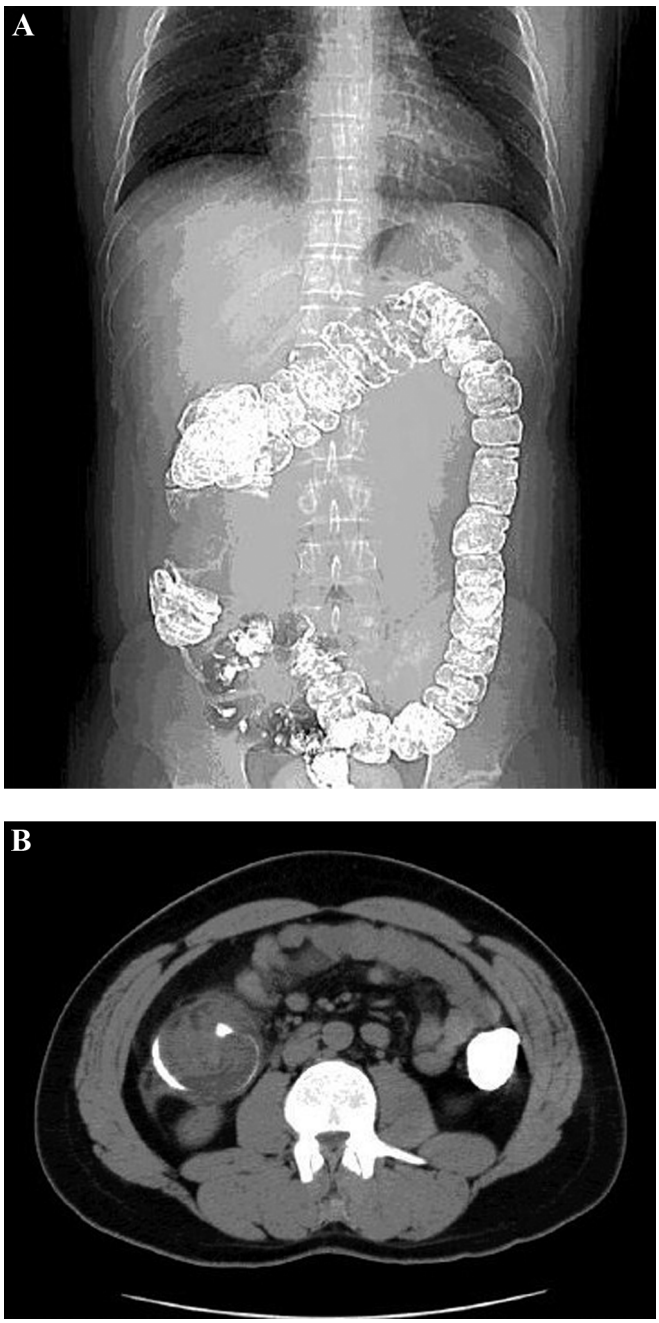

Figure 2. Computed tomographic scan showing intussusception in the right lower quadrant, with lack of intraluminal contrast.

have a malignant etiology (50% to 60%).[1,5] This reflects the greater prevalence of malignant tumors in the colon compared with the small bowel.[1,6] Primary malignant lesions (adenocarcinoma and lymphoma) are the most common underlying malignant lesions in the colon. Benign lesions constitute about 30% and include neoplasms, such as lipoma, leiomyoma, adenomatous polyp, endometriosis (appendiceal), and previous anastomosis. Idiopathic intussusception occurs less often than in the small bowel (<5%).[1]

Intussusception following abdominal surgery may be related to a variety of predisposing factors, including intestinal anastomotic suture lines, adhesions, submucosal bowel edema, intestinal dysmotility. Idiopathic intussusception in adults is extremely rare, and its pathogenesis is poorly understood.[1] Because no tumor-related cause was found, the diagnosis in our patient was idiopathic intussusception. In this case, we speculate that the intussusception was induced by postpolypectomy mucosal edema acting as a lead point. Hyperperistalsis, which would vent gas and empty the insufflated colon after colonoscopy, is a suggested mechanism for the unclear pathogenesis of idiopathic intussusception in adults.[2] Intussusception is often not considered clinically in the differential diagnosis of adult patients with abdominal complaints after colonoscopy. With the widespread use of CT in the evaluation of nonspecific abdominal pain, the diagnosis is nowadays most often made by the radiologist, because the CT features of intussusception are virtually pathognomonic.[4,7,8] Neither reduction nor resection has been universally agreed on as the correct treatment for idiopathic colonic intussusception. Definitive surgical resection is the recommended treatment in nearly all cases.[3,4,5,9] In the colon, strict adherence to resection without manipulation or reduction is advocated owing to the high association of malignant pathology.[9,10]

Attempts at preoperative hydrostatic reduction with barium or air should not be performed in the adult patient.[3,9,11,12] In theory, reduction of an intussusception at surgery before resection of the underlying pathologic lesion has the advantage of requiring a smaller resection.

Opponents of such preresection reduction, however, point to the risk of potential intraluminal seeding or venous embolization of tumor during manipulation of malignant intussusceptions and to the risk of perforation and peritoneal soiling when there is bowel ischemia.[9,13] Most authors in the surgical literature recommend treating colonic intussusception with primary resection without prior reduction, especially if there is a known neoplasm or if the cause of the intussusception is not known.[9,14]

Colonoscopy and the use of a transanal drainage tube have made it possible to avoid emergency surgery and temporary colostomy in cases of colonic intussusception causing large-bowel obstruction.[15] Cases have been reported of successful reduction by air insufflation via an endoscope.[16] An attempt to proceed with hydrostatic or endoscopic reduction in cases of idiopathic intussusception before surgery may be appropriate with the intention of avoiding a potentially unnecessary bowel resection.

CONCLUSION

This is a unique case of colo-colonic intussusception in an adult with successful laparoscopic reduction. It is important to recognize that most colonic intussusceptions in older children and adults are due to a malignant lesion and therefore primary resection without prior attempts at reduction is the recommended treatment. In this particular adult case, the lead point for the intussusception is thought to be due to the edema at the polypectomy site. Laparoscopic reduction of intussusception was successfully performed and extensive dissection of the retroperitoneum on the right side would scar down with retroperitoneal fibrosis and prevent recurrent intussusceptions. Alternatively, you can perform suture colopexy onto the lateral wall. We conclude that in select cases, where the cause is unlikely to be due to malignancy, the laparoscopic approach offers both a diagnostic and therapeutic option for colon intussusception in the adult, which has not yet been reported in literature.

References:

1. Begos DG, Sandor A, Modlin IM. The diagnosis and management of adult intussusception. *Am J Surg*. 1977;173:88–94.

2. Yamazaki T, Okamoto H, Suda T, et al. Intussusception in an adult after colonoscopy. *Gastrointest Endosc*. 2000;51(3):356–357.

3. Weilbaecher D, Bolin JA, Hearn D, Ogden W. Intussusception in adults: review of 160 cases. *Am J Surg*. 1971;121:531–535.

4. Warshauer DM, Lee JK. Adult intussusception detected at CT or MR imaging: clinical-imaging correlation. *Radiology*. 1999; 212:853–860.

5. Felix EL, Cohen MH, Bernstein AD, Schwartz JH. Adult intussusception: case report of recurrent intussusception and review of the literature. *Am J Surg*. 1976;131:758–761.

6. Azar T, Berger DL. Adult intussusception. *Ann Surg*. 1997; 226:134–138.

7. Huang BY, Warshauer DM. Adult intussusception: diagnosis and clinical relevance. *Radiol Clin N Am*. 2003;41:1137–1151.

8. Gayer G, Zissin R, Apter S, Papa M, Hertz M. Adult intussusception—a CT diagnosis. *Br J Radiol*. 2002;75:185–190.

9. Nagorney DM, Sarr MG, McIlrath DC. Surgical management of intussusception in the adult. *Ann Surg*. 1981;193:230–236.

10. Bellows CF, Haque S, Jaffe BM. Two unusual cases of adult intussusception. *Dig Surg*. 2002;19(3):241–244.

11. Eisen L, Cunningham J, Aufses A. Intussusception in adults: institutional review. *J Am Coll Surg*. 1999;188:390–395.

12. Sebbag H, Brunaud L, Marchal F, Collinet-Adler S, Grosdidier G. Intestinal intussusception in adults, treat it like a cancer. *Oncol Rep*. 2000;7:1359–1361.

13. Reijnen HA, Joosten HJ, de Boer HH. Diagnosis and treatment of adult intussusception. *Am J Surg*. 1989;158:25–28.

14. Takeuchi K, Tsuzuki Y, Ando T, et al. The diagnosis and treatment of adult intussusception. *J Clin Gastroenterol*. 2003; 36(1):18–21.

15. Kitahara H, Horiuchi A, Nakayama Y. Retrograde intussusception caused by a sigmoid colonic tumor reduction by the use of a transanal drainage tube. *Gastrointest Endosc*. 2005;61(3): 482–484.

16. Kitamura K, Kitagawa S, Mori M, Haraguchi Y. Endoscopic correction of intussusception and removal of a colonic lipoma. *Gastrointest Endosc*. 1990;36:509–511.