Adult intussusception with cecal adenocarcinoma: Successful treatment by laparoscopy-assisted surgery following preoperative reduction

Tsutomu Namikawa, Ken Okamoto, Takehiro Okabayashi, Masamitsu Kumon, Michiya Kobayashi, Kazuhiro Hanazaki

Abstract
We report a case of adult intussusception caused by cecal adenocarcinoma that was treated by laparoscopy-assisted ileocecal resection following reduction by contrast enema and preoperative colonoscopy. A 68-year-old male with cecal cancer was admitted to our hospital because of colicky abdominal pain after taking a laxative. His abdomen was distended, and a mass was palpable in the right upper quadrant, which appeared as a target- or sausage-shaped lesion by ultrasonography and computed tomography. A contrast enema using water-soluble material showed a cup-shaped filling defect characterized by intussusception in the ascending colon. This round defect with a clear margin was pushed gradually back into the cecum by the enema pressure. Re-occurrence of the intussusception is easily released by colonoscopy. We performed laparoscopy-assisted ileocecal resection of a protruding tumor measuring 6.5 cm × 5.0 cm × 3.5 cm from the cecum, with D3 lymph node dissection. Histological examination revealed a well-differentiated adenocarcinoma that had invaded the serosa without permeating the lymphatic or venous capillaries, as well as lymph node metastasis. The postoperative course was uneventful, and the patient has been well without evidence of disease recurrence for 5 years following the operation. Preliminary reduction of adult colonic intussusception before surgical resection is therefore an option in cases of an early and correct diagnosis of intussusception.

Key words: Adult intussusception; Cecal cancer; Enema reduction; Colonoscopy; Laparoscopy-assisted surgery

INTRODUCTION
Intestinal intussusception is relatively common in children whereby a proximal bowel segment invaginates into the lumen of a distal bowel segment; however, adult in-
Intussusception of the bowel is defined as the telescoping of a proximal segment of the gastrointestinal tract within the lumen of an adjacent segment. Intussusception in the adult is a rare entity that differs greatly in etiology compared with that seen in the pediatric population. We successfully treated a case of adult intussusception due to cecal adenocarcinoma using contrast enema and colonoscopy for reduction followed by laparoscopy-assisted ileocecal resection.
Sonographic or radiographic studies may distinguish between intussusception and other more common causes of intestinal obstruction. Intussusception can be confidently diagnosed on CT because of its virtually pathognomonic target-sign or sausage-shaped appearance. It appears as a complex soft tissue mass, consisting of the intussuscepted mesenteric fat and a soft tissue rim representing the opposing walls of the intussusciptens and the intussusceptum. Accordingly, CT is very useful and less invasive in the diagnosis of adult intussusception with intestinal obstruction and peritoneal irritation.

Intestinal intussusception can be classified according to location (small intestine or colon) or according to the underlying etiology [neoplastic (benign or malignant), non-neoplastic, or idiopathic]. In adults, 80%-90% of intussusceptions are secondary to an underlying pathology, with approximately 65% due to benign or malignant neoplasm. The incidence of malignancy is particularly high with colonic intussusception, at 50%-71%. Intussusception in the colon and the presence of anemia are also regarded as independent preoperative predictors of malignancy. When intussusception is suspected, water-soluble contrast enema is useful for diagnosis, on finding the characteristic cup-shaped filling defect, and for treatment due to the enema pressure.

The optimal therapeutic management of adult intussusception remains controversial due to the differing etiology between pediatric and adult populations. A precipitating lesion is found in 90% of adult intussusception cases, but in only 10% of pediatric patients. Thus, a major point of controversy in adult intussusception is whether to reduce the intestine before resection of the bowel. Preoperative diagnosis is often difficult or delayed because of the nonspecific nature and varying duration of symptoms, thus treatment usually requires formal resection of the involved bowel segment. Accordingly, several studies have recommended surgical resection of the intussusception without reduction as the preferred treatment in adults, because of the high risk of primary adenocarcinoma.

The downsides of reduction prior to resection include the theoretical risk of intralumenal tumor seeding, reduction of externally viable bowel despite mucosal necrosis, venous embolization of malignant cells, spillage of succus through inadvertent perforation, and anastomotic complication in cases of an edematous and weakened bowel. However, while there are theoretic concerns, no rigorous studies have satisfactorily resolved this issue. In the present case, we chose preoperative reduction before resection due to the short time between symptom presentation and diagnosis as intussusception. As result, the patient was able to undergo laparoscopy-assisted surgery, and has been well without evidence of complications of recurrence for 5 years following the operation.

It should be noted, however, that because most patients with intussusception present with long-standing and varied symptoms, reductions prior to resection are probably suitable only in a limited number of cases, such as in adult colonic intussusception presented at an early stage. Most cases will require treatment by conventional open surgery.

In conclusion, intussusception occurs rarely in adults. It has a characteristic appearance by ultrasonography and CT, and comprises edematous bowel wall and lumenal mesentery. This study indicates that cases of short-duration adult intussusception, even at colonic sites, could be effectively treated by preoperative reduction followed by minimally invasive surgery using laparoscopy, thus avoiding extensive and invasive resection.

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