A case of postoperative recurrent intussusception associated with indwelling bowel tube

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Key words: Intussusception; Recurrence; Feeding tube; Ileus tube; Small intestine

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Furuya Y, Wakahara T, Akimoto H, Long CM, Yanagie H, Yasuhara H. A case of postoperative recurrent intussusception associated with indwelling bowel tube. World J Gastrointest Surg 2010; 2(3): 85-88 Available from: URL: http://www.wjgnet.com/1948-9366/full/v2/i3/85.htm DOI: http://dx.doi.org/10.4240/wjgs.v2.i3.85

INTRODUCTION

Intussusception is a rare cause of postoperative intestinal obstruction in adults[1,2] and recurrent intussusception seldom occurs in patients who have undergone surgical resection[3]. We present here the case of a patient with small bowel intussusception induced by jejunal feeding tube placement and with re-intussusception induced by an ileus tube inserted after operative reduction of intussusception. Finally, both the part of the jejunum with re-intussusception including adhesion and the place where the previous reduced intussusception had occurred was resected.

CASE REPORT

A 76-year-old man was transferred to our hospital with a chief complaint of dyspnea. He had a history of chronic obstructive pulmonary disease (COPD) combined with emphysema, bronchial asthma and distal gastrectomy for gastric ulcer. After being given artificial respiration for 1...
Recurrent intussusception associated with indwelling bowel tubes

Furuya Y et al. Recurrent intussusception associated with indwelling bowel tubes

mo because of deterioration in dyspnea, unexpected dysphagia appeared, the cause of which could not be detected by computed tomography and gastrointestinal fibroscope. A Witzel jejunostomy was carried out to allow feeding because of the impossibility of swallowing and his small residual stomach, and early enteral nutrition was begun on the 3rd postoperative day. About 3 wk after the initial feeding tube placement, the patient had occasional episodes of vomiting and abdominal pain without palpation of an abdominal mass. As an X-ray of the abdomen revealed distention of the proximal jejunum, a nasogastric tube was inserted into the stomach to decompress the jejunal gas. Because we assumed there was postoperative adhesion of the jejunum, we performed an X-ray examination using a water-soluble contrast medium from the nasogastric tube and jejunal feeding tube. This revealed the retention of contrast medium from the stomach to the proximal jejunum and normal caliber of the distal jejunum. Judging from the small bowel series results, we did not suspect intussusception associated with the feeding tube but rather postoperative adhesive bowel obstruction or torsion around the tube. We therefore performed exploratory laparotomy. A fleshy sausage-like tubular intestinal mass 10 cm in length (arrowhead), showed slightly edematous changes without necrosis, and started at a site about 15 cm distal from the entry of the jejunal feeding tube; B: Schematic diagram of the intussusception.

DISCUSSION

It is generally believed that any lesion in the bowel wall or irritant within the bowel lumen that alters normal peristaltic activity is able to initiate an invagination\(^{10,11}\). On the oth-
er hand, uneven return of peristalsis after surgery, with possible local spasms or edema of the bowel, is a plausible explanation in cases without obvious lead points. Ein et al. claimed that postoperative intussusceptions are likely to be caused by altered peristalsis following prolonged and excessive manipulation with drying and bruising of the bowel, extensive preperitoneal dissection, abdominal serum electrolyte levels, local hypoxia, anesthetic agents, postoperatively administered drugs, or neurogenic factors. In our case, the location of the ‘re-intussusception’ was different from that of the first intussusception that had been reduced. The main cause of the ‘re-intussusception’ may have been the ileus tube and adhesion, whilst the first intussusception was caused by the feeding tube and adhesion. In the present case, there were no pathological problems, such as a tumor, in our resected specimen. The probable causes of this intussusception are believed to be: (1) restriction of peristalsis due to adhesion of mesentery or bowel in front of or behind the tip of the tube; (2) excessive dilatation of the small intestine before decompression; (3) a decrease in the degree of freedom of the small intestine due to the presence of a tube in the bowel which acts as a stent; (4) rise of abnormal abdominal pressure due to coughing; (5) abnormal and irregular peristalsis without cooperation; and (6) functional disorder of ganglion cells or neuron transmission after expanded bowel etc. However, the mechanism of intussusception that occurs following the placement of an ileus tube or jejunal feeding tube is still unknown.

All patients with enteric lesions who have not had a previous laparotomy should undergo resection without reduction because of the high incidence of associated malignancy. Especially in cases of colonic intussusception, many researchers recommend resection without reduction. On the other hand, the argument for initial resection in small bowel intussusception may not be as convincing as for large bowel intussusception, because the incidence of malignancy ranges from 1%-40% and the vast majority of these are metastasis. Eisen et al. stated that small bowel intussusception should be reduced only in patients in whom a benign diagnosis has been made preoperatively or in patients in whom resection may result in short gut syndrome. If we consider our case only, resection, rather than reduction, was necessary for our intussusception to prevent ‘re-recurrent intussusception’ as the proximal jejunum had become dilated due to the restriction of bowel movement, and there was hard adhesion of the mesentery or the bowel around the place of the first intussusception. While recurrence rates of 3% (after surgical reduction) to 10% (after hydrostatic reduction) have been reported following treatment of primary intussusception, no recurrence has been recorded following surgical reduction of post operative intussusception after up to 20 years follow-up. Yang et al. concluded that recurrent intussusception seldom occurred in patients who underwent surgical reduction. Three case reports have reported ‘recurrent small bowel intussusception after operation of small bowel intussusception’ (Table 1). The recurrent rate of ‘small bowel intussusception’ is only about 0.2% in English publications, according to the results of our searches on PubMed.

The classic pediatric symptoms of intussusception such as abdominal pain, mass, and blood per rectum are rarely found in adults, in whom the predominant symptom is bowel obstruction. Consequently, intussusception is often initially misdiagnosed in the adult population. As mentioned above, we first misdiagnosed the patient with postoperative adhesive bowel obstruction or torsion around the tube because there was no palpable abdominal mass and the only symptoms of intestinal obstruction that had appeared were abdominal pain and vomiting. Aware of the difficulty of diagnosing intussusception from symptoms and contrast medium studies, because we had experienced intussusception in this patient before and despite a negative study using contrast medium, ‘re-intussusception’ was later suspected when he reported intermittent abdominal pain. This diagnosis was confirmed by using CT. Our experience in this case confirms earlier reports that the diagnosis of intussusception is difficult to make before surgery. Some researchers have claimed that a diagnosis of intussusception was suspected preoperatively in 14%-75% of patients. Abdominal CT is the most sensitive radiologic method for confirming a diagnosis of intussusception, with a reported diagnostic sensitivity of 71.4%-87.5%. Even though high resolution CT is now widely used in many institutions, misdiagnoses may occur due to human error when clinicians do not have experience of ‘intussusception’, limiting how many correct preoperative diagnoses can be made. Abdominal ultrasonography (US) is also a very useful and
appropriate technique in the diagnosis of intussusception in adults\(^2\)\(^,\) while contrast medium studies of the small intestine were able to confirm the diagnosis of intussusception preoperatively in only 17% of patients\(^3\)\(^,\). In obese cases or those with full bowel gas, it is difficult to accurately detect intussusception using US. Given these facts, a plural examination including CT, US, contrast studies, and Magnetic Resonance Imaging (MRI) is necessary to improve the diagnosis of intussusception.

In conclusion, the mechanism of the relationship between intussusception and a feeding or ileus tube has not been well understood. There may be complicating factors, such as adhesion, abnormal peristalsis, and the tube itself. When encountering a hard adhesion, inflammation on the bowel surface or a mesenteric obstruction in a patient who has had an intussusception, it is necessary to operate on the patient to resect the intussusception, including the adhesion, in order to prevent 're-intussusception', even if it is predicted that the resected bowel will be long.

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Table 1 Summary of recurrent intussusception after operation of small bowel intussusception in adults

| Authors (year) | Age (yr) | Preoperative diagnosis | Diagnosis method | Surgical Treatment | Nature of Lesion |
|---------------|---------|------------------------|------------------|--------------------|-----------------|
| Felix et al\(^1\) (1976) | 34 | Acute abdomen | Exploratory laparotomy | Resection | Lymphoma nodule (Burkitt’s lymphoma) |
| Dong et al\(^2\) (2004) | 25 | Mechanical obstruction | Barium meal | Resection | No tumor |
| Akimaru et al\(^3\) (2006) | 41 | Intussusception | Not described | Resection | Hamartoma |
| Felix EL | 76 | Ileus | Exploratory laparotomy | Reduction | No tumor (Feeding tube and adhesion) |
| Our case | 76 | Intussusception | CT | Reduction | No tumor |

1st: Intussusception at the first time; 2nd: Recurrent intussusception.

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S- Editor Li LF L- Editor Hughes D E- Editor Yang C