



## Case report

## Ileocolic intussusception caused by giant submucosal colonic lipoma: A rare case report

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## ABSTRACT

**Introduction:** An adult intussusception is associated with a pathological lesion involving a lead point, such as a benign polyp, enlarged mesenteric lymph node, lipoma, Meckel's diverticulum, lymphoma, gastrointestinal stromal tumor, primary, or metastatic adenocarcinoma. A lipoma is usually asymptomatic, however, lipomas >2 cm may cause intussusception by forming a lead point.

**Presentation of case:** A 46-year-old South Korean man was admitted and presented with a two-week history of intermittent abdominal pain and discomfort. Abdominal pelvic computed tomography scan revealed that about 6.5 cm of fat attenuation mass is present in the ascending colonic loop with about 15 cm of ileal loop pulled into the ascending colonic loop through the ileocecal valve. Mechanical obstruction with ileocolic intussusception was found in distal ileum. The colonoscopy detected a huge mass in the mid-ascending colon blocking the passage of the colonoscope. The patient was diagnosed with an ileocolic intussusception which was suspected to be a huge lipoma. Laparoscopic assisted right hemicolectomy was performed and the follow-up pathologic examination showed that it is a submucosal lipoma.

**Conclusion:** The present case report concerns a 46-year-old male with a long segment ileocolic intussusception due to a giant lipoma arising from the ascending colon and whose intussusception was surgically resected.

## 1. Introduction

Early diagnosis of adult intussusception is difficult because most cases present with nonspecific signs and symptoms over a chronic, sub-chronic, or acute course unlike children intussusception. The symptoms of adult intussusception include nausea, vomiting, gastrointestinal bleeding, changes in bowel habits, and abdominal distension/obstruction [1]. Intussusception is an uncommon phenomenon in adults. It takes up 5 % of all cases of intussusception and only 1–5 % of intestinal obstruction [2]. An adult intussusception is associated with a pathological lesion involving a lead point, such as a benign polyp, enlarged mesenteric lymph node, lipoma, Meckel's diverticulum, lymphoma, gastrointestinal stromal tumor, primary, or metastatic adenocarcinoma [3]. Therefore, adult intussusception requires surgical intervention for removing the lead point with the lesion [4]. The present case report concerns a 46-year-old male with a long segment ileocolic intussusception due to a giant lipoma arising from the ascending colon and whose intussusception was surgically resected. This case report has been

reported in line with the SCARE Criteria [5].

## 2. Case report

A 46-year-old South Korean man visited to emergency room by walk and presented with a two-week history of intermittent abdominal pain and discomfort. The patient had no specific medical and surgical history. He had light diffuse abdominal pain with intermittent obstructive symptoms. The physical examination revealed mild tenderness and no rebound tenderness, nontender palpable intra-abdominal mass at right-sided abdomen. The vital sign of patient was stable (i.e., blood pressure 114/67 mmHg, heart rate 68 bpm) and body temperature was 36.9 °C. Laboratory testing revealed a white blood cell count of 8160 cells/mm<sup>3</sup> and hemoglobin count of 13.6 g/dL with no other specific findings. Abdominal pelvic computed tomography (CT) scan revealed that about 6.5 cm of fat attenuation mass is present in the ascending colonic loop with about 15 cm of ileal loop pulled into the ascending colonic loop through the ileocecal valve. Mechanical obstruction with ileocolic

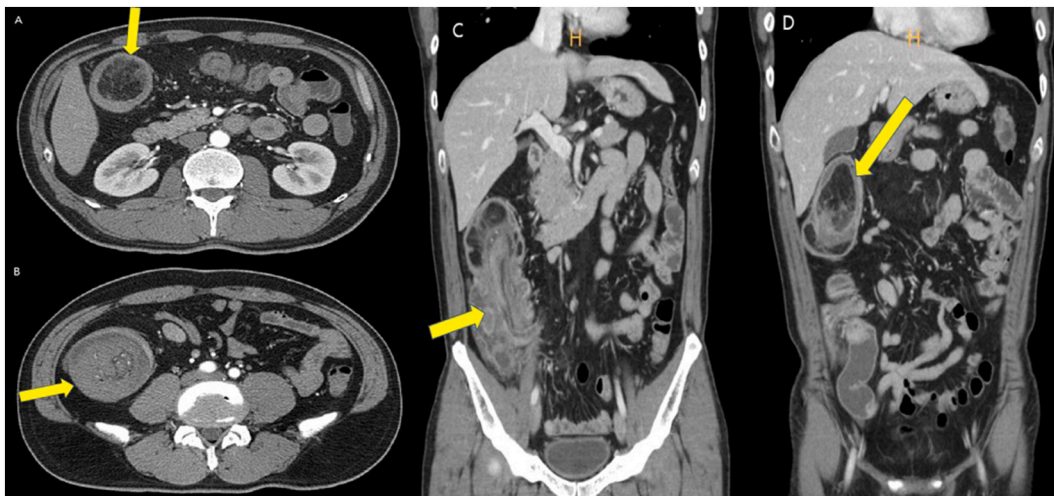
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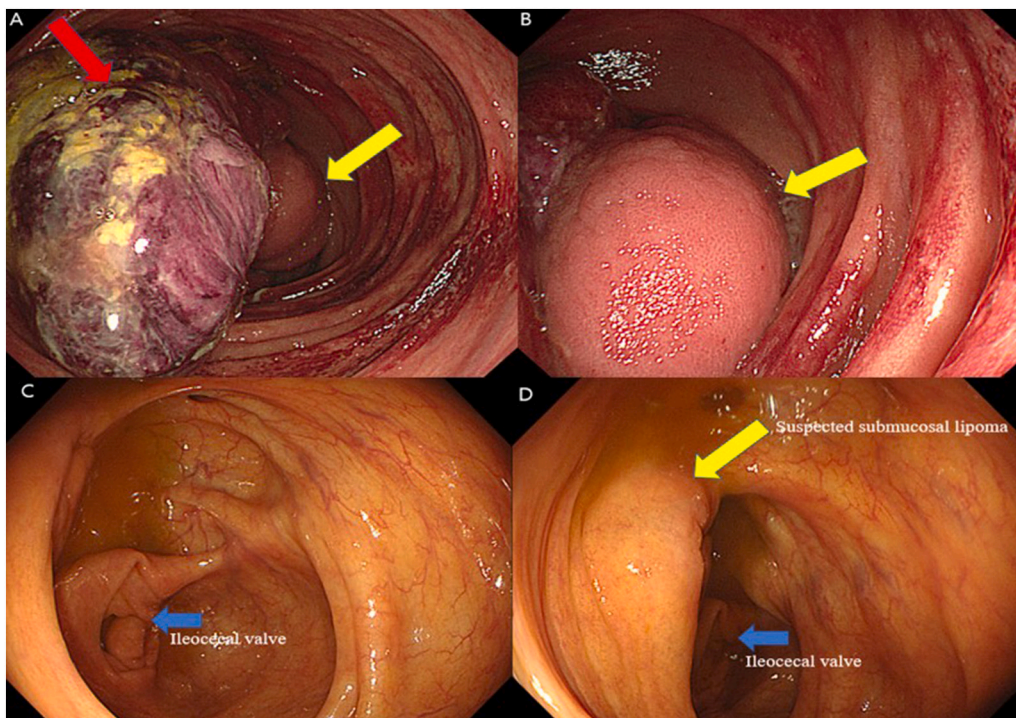
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**Fig. 1.** Abdominal pelvic CT scan – ileocolonic intussusception with mechanical obstruction in distal ileum, A) large sized fat containing mass (lipoma), B & C) ileocolic intussusception, D) coronal view, Large sized fat containing mass (lipoma).

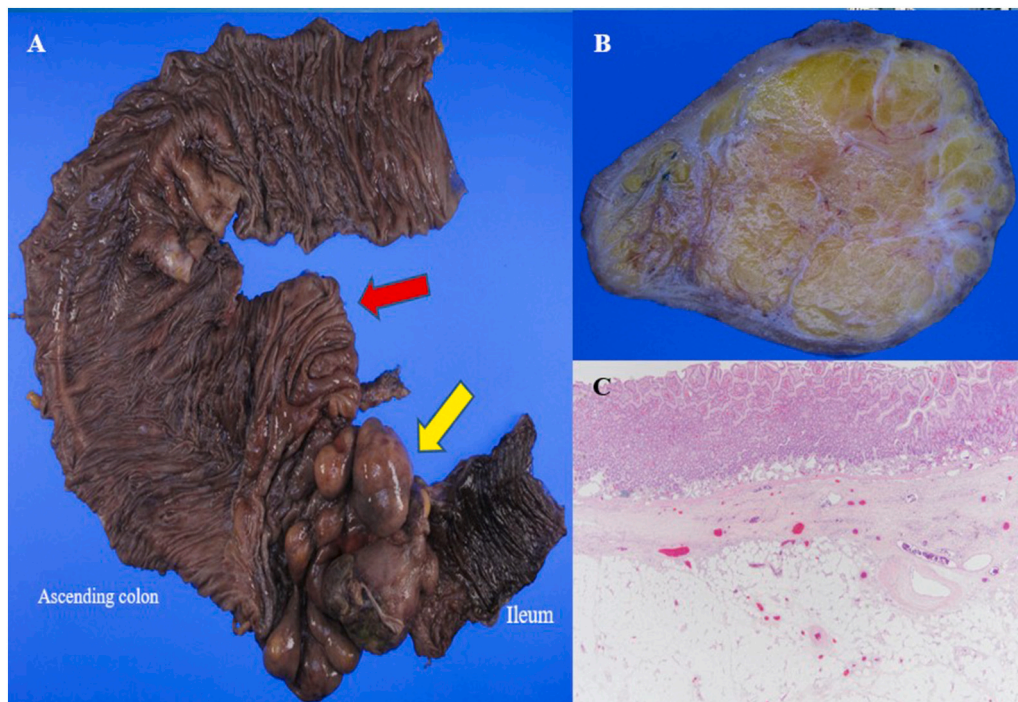


**Fig. 2.** Colonoscopy at the time of intussusception (A, B) and colonoscopy from 4 years ago (C, D): A) inflammatory huge mass in mid ascending colon (red arrow), B) scope could not pass due to neck of large mass (yellow arrow), C) normal structure at cecum and ileocecal valve (blue arrow), D) suspected submucosal lipoma at proximal ascending colon (yellow arrow) and normal ileocecal valve (blue arrow). (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

intussusception was found in distal ileum (Fig. 1). The colonoscopy detected a huge mass in the mid-ascending colon blocking the passage of the colonoscope (Fig. 2). The preoperative biopsy was performed and it reported that the result was an inflammatory lipoma, but cancer could not be excluded. The patient was diagnosed with an ileocolic intussusception which was suspected to be a huge lipoma. Laparoscopic right hemicolectomy with lymph node dissection was performed by the experienced colorectal surgeon and found a severe ileocolic intussusception caused by a large mass in the ascending colon and the submucosal ovoid masses (8.0 × 6.0 cm) (Fig. 3). The follow-up pathologic examination showed that it is a submucosal lipoma. After a resection surgery, the patient recovered well and discharged on postoperative eighth day. The patient returned to a normal life.

### 3. Discussion

Intussusception is the invagination of a segment of the intestine into the lumen of another immediately adjacent segment. The sliding bowel within the bowel is propelled by intestinal peristalsis and may lead to intestinal obstruction and ischemia. Intussusceptions can be classified into four types depending on its location: (1) entero-enteric (or involving the small intestine), (2) ileo-cecal (or involving the ileo-cecal valve as the lead point), (3) ileo-colic (or involving the terminal ileum and ascending colon), and (4) colo-colic (or involving the large intestine) [6]. In the present case, a giant submucosal lipoma of the terminal ileum was the lead point for the ileo-colic (or terminal ileum and ascending colon) intussusception. Most common cause of intussusception in adults is a malignant lesion (65 % to 75 %), followed by a benign lesion such as lipoma, polyp, or lymphangioma (15 %–20 %) [7].



**Fig. 3.** A) Surgical specimen; huge lipoma (yellow arrow), intussusception (red arrow), B) cutting surface of lipoma, C) pathologic finding: submucosal ovoid lipoma. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

Intussusception in adults usually needs to be treated with surgical intervention whereas intussusception in children could be resolved by reduction with air or hydrostatic materials without a surgical procedure [8].

Lipomas are the second most common type of benign gastrointestinal neoplasm, followed by adenomas in terms of the incidence rate [9]. A lipoma is usually asymptomatic, however, lipomas >2 cm may cause bowel obstruction, abdominal cramps, bleeding, diarrhea, or may cause intussusception by forming a lead point [10]. With these symptoms, lipoma in colon is diagnosed by barium enema, abdominal computed tomography, or colonoscopy. Especially, colonoscopy and biopsy can be the best diagnostic tools. Colonic submucosal lipoma has a few unique features in endoscopy which is distinct from other submucosal tumor such as gastrointestinal stromal tumor. Submucosal lipoma shows a pillow sign which refers to a soft lesion in the mucosal surface, like a pillow cushion, that can be easily pressed with an endoscopic forcep. Also, submucosal lipoma shows a naked fat sign which refers to an extrusion of fat after biopsy [11].

Smaller lipomas (diameter < 2 cm), as well as those with a pedunculated morphology having a thin stalk, are generally removed by endoscopy. A surgical resection is commonly recommended to remove a lead point, such as lipomas larger than 2 cm in diameter [12]. In the present case, the lipoma was about 8 cm in diameter and it was removed surgically. Laparoscopic assisted right hemicolectomy was performed because the intussusception almost reached to the hepatic flexure. Moreover, the possibility of malignancy such as liposarcoma could not be ruled out at the time of the surgery. The final diagnosis showed that it was a benign submucosal lipoma with mucosal necrosis.

The case of the present study was regarding a giant lipoma which was over 8 cm, and there were no specific symptoms and signs until the intussusception occurrence. Intermittent abdominal pain and obstruction signs were reported after the onset of intussusception [12]. Even though the size of the lipoma was huge enough to develop the symptom of obstruction, the lipoma had grown gradually over time, protruding along the lumen of the ascending colon. Also, a tumor growing in the right-sided colon has less symptoms than the one in the left-sided colon

and it might have contributed to the advancement of the lipoma. This is because the stool is mushier and the size of cecum is wider in the right-sided colon than in the left-sided colon [13].

In conclusion, a giant colonic submucosal lipoma can occur with various complications such as bleeding, obstruction, and intussusception. In this occasion, abdominal computed tomography or colonoscopy is helpful for the diagnosis of lipoma, choosing the right therapeutic option between endoscopic and surgical approaches, and determining the extent of the surgery. The histologic confirmation is also important to rule out the malignancy through a surgical resection.

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#### Ethical approval

This manuscript is a case report retrospectively and also is not a clinical study. The ethical approval is not necessary.

#### Author contribution

Nahyeon Park contributed to writing the paper and data collection.  
Dae Ro Lim contributed to conceptualization and writing – review & editing.  
Jung Cheol Kuk contributed to conceptualization and data collection.  
Su Sie Chin contributed to conceptualization and data collection.  
Eung Jin Shin contributed supervision and data collection.

#### Registration of research studies

This manuscript is a case report retrospectively and also is not a clinical study.

**Guarantor**

The corresponding author is guarantor of this study.

**Provenance and peer review**

Not commissioned, externally peer-reviewed.

**Consent**

The patients have provided written informed consent for publication of the case.

**Declaration of competing interest**

The authors declare that they have no conflicts of interest with respect to this work.

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