



## Case report

## Lipoma causing ileocecal intussusception and its endoscopic resection

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## ABSTRACT

**Introduction:** In adults, intussusception is a rare disorder, and it might lead to acute mechanical intestinal obstruction, (AMIO) which is not typically considered in the differential diagnosis. Our case report presents a rare, fully endoscopic management of an ileocecal intussusception without any further surgical intervention. Endoscopic manipulations of such distant lesions under correct indications will surely avoid unnecessary surgery and increase patient comfort.

**Case description:** A 58-year-old male was admitted with complaints of nausea, vomiting, abdominal pain, and distention. Physical examination, blood tests and radiological assessments revealed the patient was suffering from AMIO. The cause of AMIO was ileocecal intussusception due to an ileal lipoma. After intussuscepted segment was uncluttered by endoscopic pneumatic reduction(ER), ileal lipoma was resected colonoscopically. The patient was discharged without any complications.

**Discussion:** Intussusception may appear because of benign or malignant etiologies. Cases in which malignancy is ruled out, endoscopic resection can be utilized safely in diagnosis and treatment. Endoscopic resection will also save the patient from unnecessary and costly surgical interventions.

## 1. Introduction &amp; clinical significance

Intussusception is obstruction of the intestinal passage after the protrusion of an intestinal segment into the lumen of another segment located at a distal section. It is a rare cause of AMIO in adults. It may cause nonspecific symptoms and may have a severe clinical course with acute onset [1]. Radiological examinations are critical in differential diagnosis [1]. Clinicians may prefer a surgical procedure, or an endoscopic approach based on the status of the intussusception segment [2]. In this case, we describe a case of AMIO that occurred following an ileocecal intussusception originating from an ileal lipoma and a rare endoscopic approach. This case report has been reported in line with the SCARE Criteria [3].

## 2. Case presentation

A 58-year-old man was admitted to our tertiary clinic with nausea, vomiting, abdominal pain, and distention. The detailed history of our patient revealed he suffered similar episodes, admitted to another hospital one year earlier but recovered after non-operative treatment, and

discharged without further evaluation due to patient refusal. Patient didn't describe further personal or family history. In his physical examination, auscultation indicated increased metallic bowel sounds located in the right lower quadrant; abdominal distension, tenderness, and rigidity were observed in all quadrants. Blood tests resulted with leukocytosis (white blood cells [WBC]:  $12.4 \times 10^9/L$ ) and a normal C-reactive protein level (1,9 mg/L).

An ultrasonographic examination (US) was performed initially. However, it was nondiagnostic due to posterior acoustic shadowing caused by intestinal air. Because of exacerbation of the symptoms in a short period of time, another imaging study was considered. An abdominopelvic CT scan with oral, rectal, and intravenous contrast was performed. The CT scan detected the intussusception of an intestinal segment nearly 8 cm(cm), located at the ileocecal valve(Figs. 1–3). Between these intestinal segments, a lipoid mass of 2.5 cm was observed. Proximal segments of this region were dilated up to 4,5 cm, with air–fluid levels consistent with AMIO. After the decompression treatment, a colonoscopy was conducted. During the colonoscopy, the terminal ileum was intubated, the intussusception segment was visualized, and the obstructed segment was entirely uncluttered by using pneumatic reduction, respectively. The mass lesion was located 20 cm proximal to

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**Abbreviations**

AMIO	Acute mechanical intestinal obstruction
ER	Endoscopic pneumatic reduction
US	Ultrasonographic examination
CT	Computerized tomography
MRI	Magnetic resonance imaging



Fig. 1. Sagittal CT view of the ileocecal intussusception.



Fig. 2. Transverse CT view of the ileocecal intussusception.

the ileocecal junction as the CT scan showed (Fig. 4). The submucosal mass lesion was totally resected with a snare (Fig. 4). No complications occurred during the procedure. A histopathological examination of the 3 × 3 × 2.4-cm mass lesion showed a lipoma (Fig. 5).

After the endoscopic reduction and resection, the patient's physical examination, laboratory and radiologic findings returned to normal drastically. To minimize the risk of perforation and bleeding, the patient was hospitalized for 72 h, oral uptake was stopped, and parenteral



Fig. 3. Transverse CT view of lipoma and accompanying AMIO.

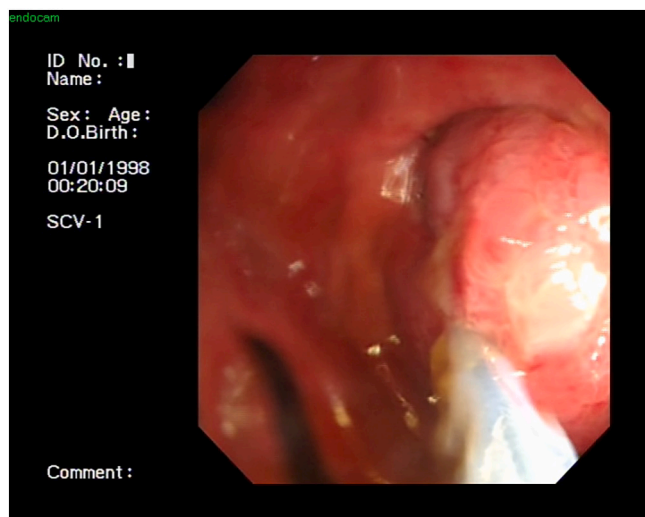
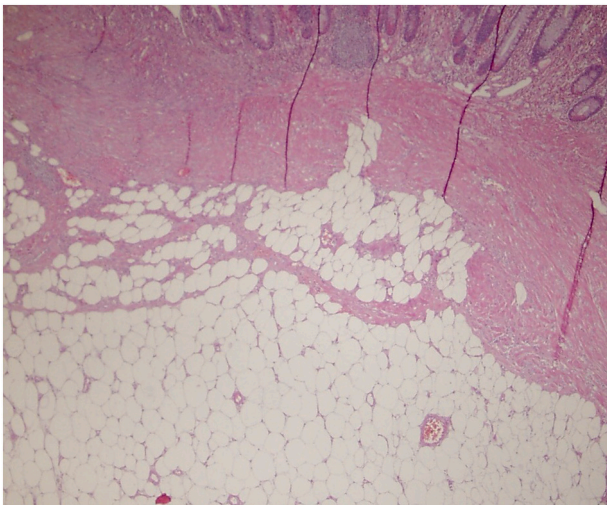


Fig. 4. Endoscopic image of the submucosal resection of the lesion.

nutrition was admitted. Intravenous ciprofloxacin 500 mg 2 × 1 and metronidazole 500 mg 3 × 1 were selected as initial antibiotherapy. A control CT with oral and rectal contrast showed that gastrointestinal passage was normal and continuous, and there was no pneumoperitoneum or fluid collection in the intraperitoneal cavity. The patient was discharged without any complications and recalled for follow-up after 4 days to check for the risk of delayed hemorrhage. The patient called for further examinations at two weeks' time, third month and one year after the initial process, and no complication emerged after the follow-up.

**3. Clinical discussion**

Intussusception is not a common etiological cause of AMIO in adults, and the diagnosis may be difficult because of the nonspecific symptoms. Abdominal pain and tenderness, nausea and vomiting, and constipation-like symptoms are often reported by patients. Adult intussusception cases account for less than 5 % of all intussusceptions and less than 1 %



**Fig. 5.** Histopathologic section of the submucosal lipoma, Hematoxylin and eosin stain, x40 Magnification.

of all AMIO cases [4]. Hanan et al [5] reported only 16 cases in an analysis of AMIO case group over 10 years, and Honjo et al [6] defined only 44 cases for 16 years.

In contrast to pediatric patients, benign or malignant masses are the main cause of intussusception in adults. Benign lesions include submucosal lipoma, leiomyoma, adenoma, hamartoma, polypoid structures observed in Peutz-Jeghers syndrome, and inflammatory polyps; and malignant conditions include lymphoma, leiomyosarcoma, adenocarcinoma, and carcinoid tumors [4]. Anatomic variations such as Meckel diverticulum, appendix mucocele, adhesions and fibrotic patches, bezoars, and parasitic infestations may also lead up to intussusception [7]. Benign lesions such as lipoma and leiomyoma may mimic malignant masses [8]. It is believed that these lesions create a predisposition to intussusception by affecting bowel peristalsis [1,7]. Whereas a benign etiology is more common in small intestinal intussusceptions, malignant masses are more prevalent in cecal and colonic intussusceptions.

Chronic and nonspecific symptoms reported by patients make intussusception a difficult entity to diagnose. Long term abdominal pain, nausea, vomiting, alterations in bowel habits, hematochezia, and distension are common symptoms. Patients can also be admitted to the hospital with clinical manifestations of AMIO. However, clinical findings of acute abdomen develop in only 20 % of cases [6]. On the other hand, some patients may remain asymptomatic despite their lesions and they might be identified coincidentally [1,8].

Diagnosis solely based on laboratory findings is inadequate for intussusception, and radiological imaging is extremely valuable for differential diagnosis of AMIO. Clinicians were only able to diagnose one-thirds of intussusception-related obstructions correctly prior to the introduction of radiological tests. Today, with the radiological advances and widespread use of radiological examinations, the accuracy of diagnoses increased dramatically [9]. Unlike in pediatric population, the use of ultrasonography is quite limited in adults because of intestinal gas and obesity [1,5]. A three-layer image of the proximal intussusception segment, mesenteric components, and distal segment can be obtained by a contrast-enhanced CT scan, and an accurate diagnosis rate of 58 to 100 % has been reported in the literature [1,9]. Honjo et al. detected 95 % of cases using CT scans, whereas abdominal radiography diagnosed only 50 % of the cases [6]. MRI, passage radiography, enteroclysis, enteroscopy, and capsule endoscopy may be particularly useful for examination of intraluminal pathology in idiopathic cases.

After the correct diagnosis, surgeons must decide the appropriate approach based on the level of intussusception. Shenoy [10] suggests that all colonic intussusceptions be resected en-bloc without reduction, whereas a more selective approach may be applied for enteroenteric

intussusceptions. Resection without reduction was preferred for colonic intussusceptions due to the high incidence of malignancy [6]. However, there are conflicts between clinicians on this approach nowadays. Some physicians advocated resection without reduction in enteric intussusception because of the risk of underlying malignancy [4,6,7]. Ischemia, inflammation, perforations, anastomosis-related complications, tumoral seeding and dissemination emerged as potential causes that lead surgeons to prefer resection without reduction of the intussusception segment [9]. However, some surgeons suggest reduction before resection, to shorten the resection site if the intussusception segment is long [5-7]. In the current era of laparoscopy, laparoscopic reduction and resection is preferred by surgeons since it has many advantages, such as minimal invasiveness, less pain, earlier return to work, and lower incidence of surgical site infection. However, there is still no overall consensus about the use of laparoscopy for intussusception. Shimazaki et al. reviewed 14 ileal lipoma cases causing intussusception treated laparoscopically and indicated that most of the cases (78.6 %) were preoperatively diagnosed as ileal lipoma [11]. Shenoy identified 10 intussusception cases in 11 patients by CT and/or colonoscopy [10]. Only one of eight patients requiring surgery underwent laparoscopic reduction, as malignancy had been excluded. Takahashi et al. detected a high-grade tubular adenoma in a female patient 70 years of age who underwent laparoscopy-assisted manual reduction and ileocecal resection with the diagnosis of ileocolonic intussusception [12].

In the current clinical practice, endoscopic interventions performed concurrently with radiological testing have gained significance for diagnosis and treatment. With the use of ER, patients can avoid the complications of surgical intervention. Thus, the length of hospital stay is reduced, and treatment costs are decreased. On the other hand, ER may prevent emergency operations, thus providing suitable conditions for patients in whom elective operations are scheduled (nutrition and laxative preparation) [6]. Moreover, endoscopic biopsies can help the physician to make a correct diagnosis and choose the correct treatment modality. Experienced endoscopists may even achieve curative outcomes. However, there are disagreements among clinicians about ER. Some physicians do not prefer therapeutic interventions because of complications related to endoscopy, such as perforation and hemorrhage.

Our case is fairly unique in terms of resecting a lipoma endoscopically which was located at the far side of terminal ileum, and one of the very few according to our knowledge. Most of the small intestine related lesions causing intussusception are preferred to be treated surgically in the current literature. However, with the help of correct instruments and an experienced endoscopist, ileal lesions can be removed safely with minimal risk of complications. We hope our case will encourage clinicians to prefer endoscopy for eligible patients under favorable conditions.

#### 4. Conclusions

Intussusception should be considered as a possible cause of AMIO. It may occur as a result of both benign and malignant etiologies. Use of reduction in the management of intussusception is still controversial. However, malignancies can be excluded to a great extent because of the recent advances in radiological techniques. In cases where malignancy is ruled out, ER has many advantages, such as diagnosis, treatment, and even obstruction and can be safely performed by experienced endoscopists.

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#### Ethics approval and consent to participate

The patient had signed a written consent prior to his hospitalization

and treatment which included his approval of using the clinical data obtained from this case for medical publication.

#### Consent for publication

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

#### Research registration

N/A.

#### Guarantor

Suleyman Demiryas

#### CRediT authorship contribution statement

Both authors contributed to all phases of this report.

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#### Declaration of competing interest

Authors declare that they do not have any competing interests.

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