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Case Report

Colo-colic intussusception secondary to a giant lipoma: A case report ☆,☆☆

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ABSTRACT

Intussusception in adults is a rare condition often associated with a pathological lead point, which is frequently malignant but can occasionally be benign, such as colonic lipomas. We report the case of a 60-year-old male who presented with colicky abdominal pain, and a computed tomography (CT) revealed a colo-colic intussusception caused by a 6 cm lipoma in the transverse colon, accompanied by ischemic changes in the colonic mucosa. The patient underwent a right hemicolectomy, and histopathology confirmed the benign nature of the lesion. This case highlights the importance of early recognition and surgical intervention to prevent complications and rule out malignancy, especially in rare presentations like intussusception caused by lipomas.

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Introduction

Intussusception is the invagination of a bowel segment (the “intussusceptum”) along with its mesenteric fold, into an adjacent segment (the “intussusciens”) due to peristalsis [1].

Intussusception primarily affects children and often presents with acute abdominal pain. In adults, however, intussusception is rare, accounting for only 5% of all cases of intussusception and 1% of all bowel obstructions [2,3].

Unlike pediatric cases, where 90% of cases are idiopathic, 70%-90% of adult intussusceptions are associated with an underlying pathological lead point [4]. In the presence of a gastrointestinal lead lesion, peristalsis pulls the lesion forward, explaining why intraluminal polypoid lesions often cause intussusception. In colonic intussusceptions specifically, the lead point is malignant in the majority of cases [2], while benign lesions, such as lipomas, are rare causes.

This report presents a rare case of colo-colic intussusception in an adult caused by a benign colonic lipoma.

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Case presentation

Clinical presentation

A 60-year-old male with no significant medical, surgical, or family history presented with a 1-week history of isolated colicky abdominal pain. He denied any changes in bowel habits, unintentional weight loss, or melena. On examination, he was afebrile and hemodynamically stable. His abdomen was distended with generalized tenderness, but no palpable masses were noted, and bowel sounds were present. Laboratory findings on admission were as follows: normal red blood cell count ($5.42 \times 10^6/\mu\text{L}$), normal white blood cell count ($8.39 \times 10^3/\mu\text{L}$), and normal platelet count ($236 \times 10^3/\mu\text{L}$). His blood clotting profile was also within normal limits.

A computed tomography (CT) scan of the abdomen and pelvis revealed a 14 cm-long transverse colo-colic intussusception extending to the right colon, with a 6×5 cm intraluminal fat-density structure, consistent with a large lipoma in the distal part of the transverse colon. Moderate adjacent fat stranding was noted, but no evidence of upstream bowel distension was found.

Diagnostic and surgical procedure

After the imaging diagnosis, the patient underwent laparotomy performed by the general surgery team. A right hemicolectomy with side-to-side anastomosis was performed, including lymph node resection for frozen section analysis. The postoperative recovery was uneventful.

Pathology findings

Macroscopic examination

The resected colon measured 35 cm in length and included a 5 cm portion of terminal ileum. A disease-free 7 cm appendix was also excised. The area of intussusception contained a 6 cm submucosal lipoma. Proximal to the mass, the colonic mucosa was dilated and friable, while the mucosa distal to the mass appeared dark brown.

Microscopic examination

Histopathology confirmed a 6 cm submucosal lipoma, covered by necrotic and hemorrhagic mucosa. Ischemic changes were noted in the proximal colonic mucosa, but the distal mucosa, the terminal ileum and the appendiceal margins showed no abnormalities. No evidence of malignancy was present, and lymph node examination revealed moderate nonspecific lymphadenitis with no signs of metastatic disease.

Discussion

Intussusception is a rare condition in adults, accounting for only 5% of all intussusception cases and 1% of all bowel obstruction [2]. It may occur in various parts of the gastrointestinal tract, including the ileo-colic, ileo-ileal, ileo-cecal and colo-colic areas [1].

In children, most intussusception cases involve the ileo-colic region, likely due to the anatomy of the region and the large amount of lymphoid tissue in the terminal ileum. The ileo-cecal valve, which connects the terminal ileum to the colon, is thought to act as a site of weakness that facilitates “telescoping” of the ileum into the colon at an early age [5].

In adults, however, the distribution of intussusception primarily depends on the location of the underlying pathology. Unlike pediatric intussusception, which is idiopathic in 90% of cases, 70%-90% of adults' intussusceptions are secondary to identifiable pathological lead points. Small bowel intussusceptions are more commonly caused by benign lesions (63%), whereas 58% of colo-colic intussusceptions are due to malignant lesions, with adenocarcinomas as the most common cause. However, benign lesions, such as lipomas, can also act as the lead point in colo-colic intussusception, though this is much rarer [4].

Gastrointestinal lipomas are rare, with an incidence ranging from 0.2% to 4.4% based on autopsy studies [6]. They are slow-growing, benign mesenchymal adipocytic tumors. Macroscopically, they appear as yellowish smooth fatty lesions. On imaging, and specifically on computed tomography they appear as homogeneous, well-circumscribed fat-density lesions [7]. A large retrospective study conducted by Roknsharifi et al. on more than 2000 patients undergoing CT colonography for colon cancer screening demonstrated that most colonic lipomas are located in the ascending colon [8]. However, a more recent and targeted literature review by Bacha et al., demonstrated that in cases of colo-colic intussusception, the majority of lipomas are found in the transverse colon [9]. Our case aligns with this, as the lipoma was located in the transverse colon. This discrepancy between findings could be explained by the fact that, although lipomas are more frequent in the ascending colon, they are more likely to cause colo-colic intussusception when located in the transverse colon, possibly due to anatomical and motility factors.

Although typically benign and asymptomatic, symptoms occur in about 25% of cases, increasing to 75% with larger lesions exceeding 2 cm [10], as seen in this case. The term ‘giant lipoma’ refers to a lipoma with a maximum diameter greater than 5 cm, as in our case [11–13].

The clinical presentation of intussusception in adults is often nonspecific and tends to present less acutely than in children. As opposed to the pediatric population, who typically present with a triad of abdominal pain, vomiting and bloody diarrhea [14], adults may have intermittent abdominal pain, vomiting, or signs of partial bowel obstruction over a longer period [15]. These symptoms may include bleeding, pain, or malignancy-like signs. Severe complications, such as perforation or colo-colic intussusception, can pose life-threatening risks. In the reported case, the patient presented with a week of colicky abdominal pain and without other accompanying symptoms.

Imaging plays a crucial role in the diagnosis of intussusception. Indeed, as previously mentioned, intussusception is rarely encountered in adulthood and therefore rarely expected. CT is the gold standard for diagnosing intussusception in adults, as it not only confirms the diagnosis but also provides insight into the underlying cause. Prompt diagnosis is vital to reduce vascular compromise complications and avoid

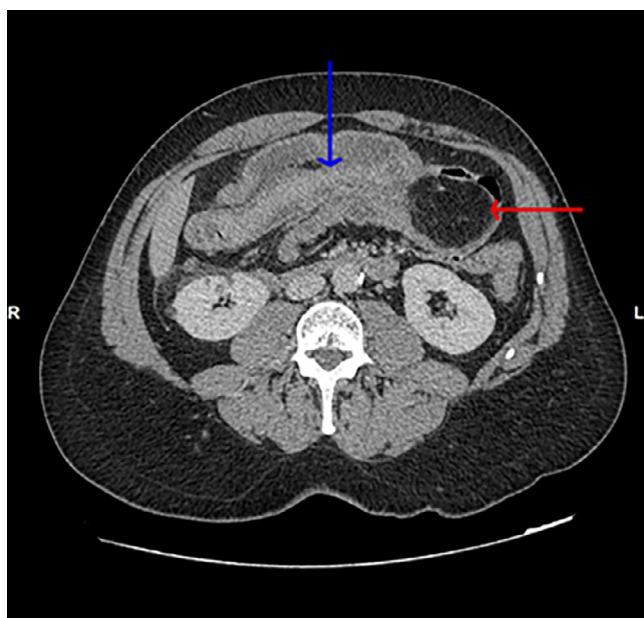


Fig. 1 – Axial cut of the abdominal CT scan showing the sausage-shaped appearance of intussusception (blue arrow), and the enclosed lipoma (red arrow).



Fig. 2 – Coronal cut of the abdominal and pelvic CT scan illustrating the frontal view of the colo-colic intussusception.

bowel resection. The characteristic findings of intussusception on CT include the "sausage-shaped" mass, which represents the telescoping of bowel segments, and the "target sign" or "bull's eye sign," which indicates the intussuscepted bowel within the bowel lumen, as seen in [Figures 1-3](#). The appearance of an intussusception is also influenced by factors such as the presence of a lead point, the shape of the lead mass, the extent of bowel wall edema and the volume of invaginated mesenteric fat which in turn leads to vein engorgement [1]. In this report, computed tomography revealed a large colo-



Fig. 3 – Sagittal cut of the abdominal and pelvic CT scan demonstrating the "target sign" typical of intussusception ("doughnut sign" or "bull's eye" sign).

colic intussusception extending into the right colon, with a distinct fat-density "lead" lesion measuring 6 cm, which was consistent with a submucosal lipoma. The lack of significant upstream bowel dilatation indicated that the condition had not yet progressed to complete obstruction, though ischemic changes were likely present and had already begun based on the pathology findings.

Surgery is the definitive treatment for adult intussusception due to the high likelihood of an underlying pathology [16]. Unlike pediatric cases, where nonsurgical reduction may be attempted [4] reduction under radiological guidance using hydrostatic or pneumatic pressure is not advised in adults because of the high incidence of underlying organic causes, and resection is often necessary in adults to exclude malignancy [11,17]. A key consideration is whether the intussusception should be reduced before resecting the affected bowel segment. Some studies suggest reducing the lesion first to avoid extensive bowel resection and potential complications such as short bowel syndrome [4]. Others advocate for resection without reduction to minimize the risk of spreading malignant cells if cancer is present [2]. Reduction before resection remains a reasonable option in cases of post-traumatic or idiopathic intussusception, or in any situation where the obstruction is not caused by malignancy, such as in our case of a lipoma-led lesion. However, the optimal approach continues to be debated [16,17].

In this patient, histopathology confirmed a 6 cm submucosal lipoma with overlying necrotic mucosa, consistent with ischemic changes likely due to compromised perfusion. No malignant features were identified, and the lymph node sampling showed no evidence of metastatic disease, confirming the benign nature of the lead lesion. As this case demonstrates, while lipomas are benign findings, their size and location can lead to significant complications, with the lipoma

serving as the lead point for intussusception and resulting in early ischemia.

A right hemi-colectomy with side-to-side anastomosis was therefore performed. The decision to resect part of the gastrointestinal tract is often based on the size of the lipoma, the length of the intussuscepted bowel, and the presence of ischemic changes, as seen in our case.

This case highlights several important considerations for the management of adult intussusception. First, due to its rarity in adults, physicians should maintain a high index of suspicion, especially in patients presenting with intermittent severe abdominal pain. Second, imaging is crucial in identifying intussusception by revealing pathognomonic features, assessing complications, and identifying the underlying cause. Finally, although gastrointestinal lipomas are uncommon, they should be considered as potential lead points in adult intussusception, particularly when imaging reveals a fat-density mass within the intussuscepted bowel.

Conclusion

Adult intussusception is a rare condition, particularly when caused by benign lesions such as colonic lipomas. Diagnosis is challenging due to its nonspecific clinical presentation, often leading to delayed recognition. Abdominal CT is essential for diagnosis and surgical planning. Early recognition and prompt surgical intervention are critical to prevent serious complications such as bowel ischemia, perforation, and sepsis, and to exclude malignancy.

Patient consent

Written informed consent was obtained from the patient for the publication of this case report. All identifying information has been anonymized to protect patient confidentiality in compliance with journal and ethical standards.

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