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Adult colo-colonic intussusception caused by congenital bands: A case report and literature review



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ABSTRACT

INTRODUCTION: Intussusception refers to the telescoping of a segment of bowel into the lumen of an adjacent segment. While pediatric intussusception is common and generally idiopathic, adult intussusception is exceedingly rare and is usually attributable to a pathologic lead point.

PRESENTATION OF CASE: 37-year-old man who presented with abdominal pain, and was preoperatively diagnosed with a colo-colonic intussusception. Intraoperatively, the lead point was found to be congenital bands, and there was no evidence of underlying malignancy. He underwent a laparoscopic-assisted extended right hemicolectomy with side-to-side ileo-colic anastomosis.

DISCUSSION: Colo-colonic intussusception is a rare cause of intestinal obstruction in adults. Patients generally present with subacute abdominal pain and obstructive symptoms, rendering the clinical diagnosis challenging. Computed tomography has been shown to be the most accurate diagnostic imaging modality. Due to the high incidence of underlying malignancy in adult colo-colonic intussusception, en-bloc resection of the involved bowel segment remains the standard of care.

CONCLUSION: Congenital bands can serve as a lead point in colo-colonic intussusception, particularly in younger adults. Prompt surgical intervention remains paramount to limit morbidity.

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1. Introduction

Intussusception refers to the telescoping of a segment of bowel into the lumen of an adjacent segment. Adult intussusception is rare, accounting for only 5% of all cases of intussusception and 1–5% of cases of intestinal obstruction in adults [1]. Almost 90% of adult intussusceptions are associated with a pathologic lead point, such as a gastrointestinal malignancy, intestinal polyp, or benign neoplasm [2,3]. The literature on adult colo-colonic intussusception is limited to few case reports. To our knowledge, this is the first description of an adult colo-colonic intussusception caused by congenital bands.

2. Case presentation

A 37-year-old man, with a history of Wolff–Parkinson–White syndrome, alcohol abuse and no previous abdominal surgery, presented with a 10-day history of right upper quadrant pain radiating to the back associated with nausea and vomiting. He denied any constipation, hematochezia, melena, fever or constitutional symptoms.

At time of presentation, his temperature was 36.5 °C, blood pressure 140/89, pulse 83, respiratory rate 18, oxygen saturation 97% on room air. On abdominal examination, he had a tender, palpable right upper quadrant mass, with no peritoneal signs. Laboratory tests were within normal limits, including a white blood cell count of 10.3. Computed tomography (CT) scan revealed a colo-colonic intussusception with the cecum and ascending colon extending into the distal transverse colon, and no identifiable lead point (Fig. 1). There was a small-moderate amount of intraperitoneal free fluid, but no evidence of bowel ischemia or perforation. The small bowel loops were dilated to approximately 3.5 cm.

Upon diagnostic laparoscopy, we confirmed the diagnosis of colo-colonic intussusception. We noted the presence of dense fibrous congenital bands in the subhepatic region. The duodenum was slightly more lateral and superior than usual, suggesting a possible partial malrotation. We performed a laparoscopic-assisted extended right hemicolectomy with side-to-side ileocolic anastomosis (Fig. 2). The patient's postoperative course was complicated by a few episodes of hematochezia, which were self-limited and likely secondary to anastomotic bleeding. He was discharged home in good condition on postoperative day 4. Histopathological examination revealed colonic mucosa with ulceration and areas of necrosis, consistent with a chronic ischemic process. There was no evidence of malignancy, and 13 benign lymph nodes were resected (Fig. 3).

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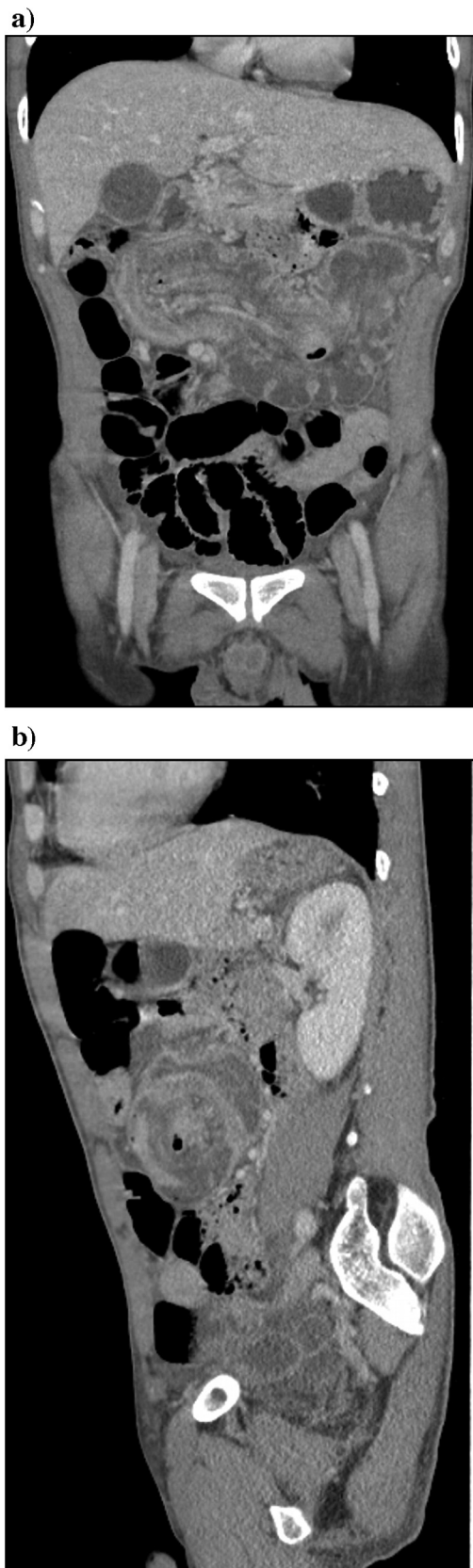


Fig. 1. Computed tomography scan demonstrating a colo-colonic intussusception with the cecum and ascending colon extending into the transverse colon. (a) coronal view (b) sagittal view.



Fig. 2. Intra-operative depiction of the colo-colonic intussusception after exteriorization through a mini-laparotomy.

3. Discussion

Intussusception represents the leading cause of intestinal obstruction in children [4]. In the pediatric population, intussusception is usually idiopathic, and may be related to enlarged lymphoid tissue following an infection. Treatment with hydrostatic or pneumatic reduction constitutes the standard of care [5]. In contrast, adult intussusception is exceedingly rare, accounting for only 1% of all bowel obstructions. The classical pediatric triad of acute onset crampy abdominal pain, bloody diarrhea and palpable tender mass is infrequently observed. Instead, adults generally present with subacute or chronic abdominal pain and vague obstructive symptoms, rendering the clinical diagnosis challenging [6].

Intussusception can be classified into four categories based on its anatomic location: enteric, ileo-colic, ileo-cecal and colo-colonic. Colo-colonic intussusception is generally considered to be the least common type [7]. In contrast to pediatric intussusception, approximately 90% of intussusceptions in adults are associated with an identifiable lead point [1,2]. The majority of lead points in the small intestine are benign entities, such as lipomas, inflammatory lesions, Meckel's diverticula, and duplication cysts. On the other hand, the vast majority of colonic intussusceptions are associated with an underlying malignancy, most commonly, colonic adenocarcinoma (60%) [8]. A literature review of benign causes of adult colo-colonic intussusception reveals that colonic lipomas are the most common cause (Table 1). In this patient, congenital bands were found to be the lead point of his colo-colonic intussusception. These bands are formed from fibrous peritoneal tissue, and can cause abnormal mesenteric fixation. While anomalous congenital bands have been associated with intestinal malrotation and midgut volvulus in children, this is the first description of its role in the development of adult colo-colonic intussusception.

With improvement in cross-sectional imaging modalities, the accuracy of preoperative diagnosis of adult intussusception has significantly improved. Computed tomography is regarded as the most useful imaging technique, with a diagnostic accuracy of 58–100% [7,9]. CT is not affected by body habitus or the presence of intraluminal gas, both of which commonly limit ultrasonographic diagnosis. Differentiating between benign lesions, such as lipomas, and malignant processes is most readily achieved with CT, and allows for optimal surgical planning.

Table 1
Review of benign cases of adult colo-colonic intussusception.

Author	Year	Age	Sex	Etiology	Location	Reduction	Treatment
Alventosa et al. [12]	2016	55	M	Adenomatous polyp	Spl. flexure	N	Endoscopic
Mouaqit et al. [13]	2013	55	M	Colon lipoma	Ascending	F	Laparoscopy
Amoruso et al. [14]	2013	46	F	Idiopathic	Ascending	F	Laparotomy
Howard et al. [15]	2012	49	F	Colon lipoma	Spl. flexure	F (C)	Laparotomy
Atmatzidis et al. [16]	2012	34	F	Colon lipoma	Ascending	N	Laparotomy
Ongom et al. [17]	2012	64	F	Colon lipoma	Transverse	S	Laparotomy
Grasso and Guastella [18]	2012	54	F	Colon lipoma	Descending	N	Laparotomy
Miloudi et al. [19]	2012	79	M	Colon lipoma	Transverse	N	Laparoscopy
Yang and Liang [20]	2011	47	F	Colon lipoma	Transverse	N	Laparoscopy
Gupta et al. [21]	2011	38	M	Colon lipoma	Ascending	S	Laparotomy
		43	F	Colon lipoma	Descending	S	Laparotomy
		45	F	Colon lipoma	Descending	S	Laparotomy
Paskauskas et al. [22]	2010	53	F	Colon lipoma	Ascending	N	Laparotomy
Ho et al. [23]	2010	32	M	Post colonoscopy	Ascending	S	Laparoscopy
Wang et al. [24]	2009	39	M	Cecal polyp	Ascending	S	Laparotomy
		38	M	Colon lipoma	Ascending	S	Laparotomy
		51	F	Colon lipoma	Ascending	N	Laparotomy
		71	M	Idiopathic	Descending	N	Laparotomy
Esaki et al. [25]	2009	27	M	Inflammatory polyposis	Ascending	S (C)	Endoscopic
Wild et al. [26]	2008	82	M	Colon lipoma	Sigmoid	N	Endoscopic
Gurses et al. [27]	2007	38	F	Colon lipoma	Ascending	N	Laparotomy
Twigt et al. [28]	2007	44	F	Colon lipoma	Sigmoid	N	Laparotomy
Fatima et al. [29]	2007	64	M	Colon lipoma	Transverse	N	Laparotomy
Abou-Nukta et al. [30]	2006	55	F	Colon lipoma	Transverse	N	Laparotomy
Eglinton et al. [31]	2005	49	M	Colon lipoma	Descending	N	Laparotomy
Jaremko and Rawat [32]	2005	19	M	Peutz-Jeghers polyp	Descending	N	Laparotomy
Ghidirim et al. [33]	2005	51	F	Colon lipoma	Ascending	N	Laparotomy
Maldonado et al. [34]	2004	27	M	Giant pseudopolyp	Spl. flexure	N	Laparotomy
Chiba et al. [35]	2002	61	M	Colon lipoma	Ascending	N	Laparotomy
Rogers et al. [36]	2002	45	F	Colon lipoma	Transverse	F (C)	Laparotomy
Dolan et al. [37]	1998	47	M	Colon lipoma	Descending	N	Laparotomy
Box et al. [38]	1997	–	–	Eosinophilic colitis	Descending	–	–
Alponat et al. [39]	1996	57	F	Colon lipoma	Ascending	N	Laparotomy
Wulff and Jespersen [40]	1995	45	F	Colon lipoma	Transverse	F (C)	Laparotomy
		32	M	Colon lipoma	Ascending	N	Laparotomy

S: successful; F: failed; N: not attempted; (C): colonoscopy.

The standard treatment of adult intussusception involves surgery. Because of the high incidence of underlying malignancy, particularly in colo-colonic intussusception, en-bloc resection of the involved segment is usually undertaken. Controversy remains as to whether the intussusception should be reduced prior to resection. Due to the risk of bowel perforation and of dissemination of malignant cells with excessive manipulation, most surgeons agree that en-bloc resection is preferred for colonic intussusception, particularly if the underlying diagnosis is unknown [10]. If a benign etiology is suspected, however, it may be reasonable to attempt preoperative (endoscopic) or intraoperative reduction to limit the extent of bowel resection. Careful radiologic and endoscopic assessment can aid in identifying intussusceptions with evidence of strangulation, which will likely be unsuitable for preoperative reduction. For colo-colonic intussusception caused by a colonic lipoma, endoscopic resection can be performed in select cases, although larger lesions are associated with higher procedural complication rates. Most published cases of adult intussusception have described using a traditional laparotomy incision. Provided adequate surgeon expertise, minimally invasive techniques are safe, feasible and may allow for decreased postoperative pain and enhanced recovery [11].

3. Conclusion

Adult intussusception is rare, and differs significantly from pediatric intussusception with regards to etiology and management. Because colo-colonic intussusception in adults is usually associated with a malignant lead point, treatment typically consists of en-bloc resection of the involved segment of bowel. However, clinicians should be aware that benign conditions, such as congenital

bands, can also act as lead points, particularly in younger adults. Timely diagnosis and surgical intervention remain paramount. Provided adequate surgeon experience, laparoscopic techniques can be safely used and may allow for enhanced recovery.

Informed consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. Patient-identifying knowledge was not presented in this report. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Conflicts of interest

Dr. Arena is a consultant for Covidien, Canada. The authors declare that they have no conflicts of interest.

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Ethical approval

The patient provided informed written and signed consent for publication of this case report and accompanying images for academic purposes.

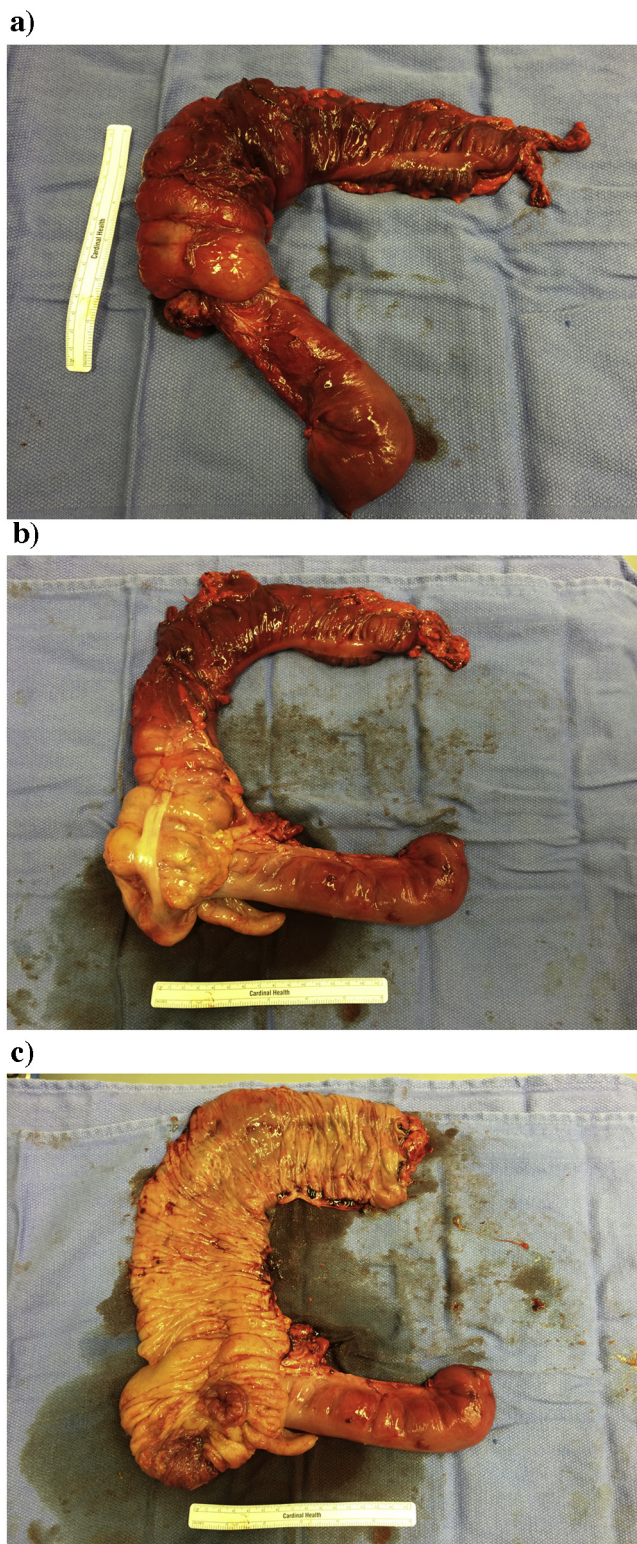


Fig. 3. (a) En-bloc resection of the intussusception. (b) Reduction of the intussusception on the back table. (c) No gross intraluminal lesion seen.

Author contribution

Yifan Wang: study design, data collection, data interpretation, manuscript writing.

Stephen Gowing: study design, data interpretation, manuscript writing.

Goffredo Arena: study design, data collection, data interpretation, manuscript writing.

Guarantor

Dr. Goffredo Arena.

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