Research Article

Adult Intussusception: A Case Series Exploring Varied Lead Points, Diagnostic Strategies, and Surgical Approaches

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Abstract

Background Adult intussusception is a rare cause of intestinal obstruction often linked to a pathological lead point, posing significant diagnostic and management challenges Objective This study aims to illustrate the diagnostic and management challenges of adult intussusception through a retrospective case series. Methods Three cases from 2023–2025 were retrospectively analyzed, detailing their clinical presentation, imaging findings, surgical intervention, and histopathological findings. Results The three patients (mean age 50 years; range 26–62) presented with intussusception stemming from distinct lead points: a Peutz-Jeghers syndrome (PJS) hamartomatous polyp, a subserosal lipoma, and an inflammatory fibroid polyp. All cases were accurately diagnosed preoperatively via CT imaging. Management varied, including manual reduction and polypectomy for the PJS case and segmental resection for the others, all resulting in favorable outcomes. Conclusion Adult intussusception necessitates a high index of clinical suspicion, confirmation through CT imaging, and a tailored surgical approach determined by the underlying lead point pathology. Lifelong surveillance is crucial for syndromic etiologies, such as PJS.

Keywords: Adult intussusception, Peutz-Jeghers syndrome, subserosal lipoma, inflammatory fibroid polyp, computed tomography.

1. Introduction

Intussusception is the invagination of a proximal bowel segment (intussusceptum) into an adjacent distal segment (intussuscipiens), causing obstruction and potential ischemia [1]. In adults, intussusception represents a rare cause of intestinal obstruction, comprising roughly 1–5% of all cases. Unlike pediatric intussusception, adult forms differ in both their underlying causes and clinical management [2, 3]. While childhood intussusception often occurs without a detectable cause and may resolve without surgery, adult cases usually arise from a defined structural or pathological lead point that necessitates operative treatment. [4, 5].

The clinical presentation of adult intussusception is often nonspecific and intermittent, leading to diagnostic delays [6]. CT imaging has become central to preoperative diagnosis, as it can depict the typical concentric 'target' or elongated 'sausage' appearance of intussusception and help identify the underlying lesion. [7, 8]. The pathological lead points vary widely, including benign polyps, lipomas, inflammatory conditions, and malignant neoplasms [9, 10].

This case series presents three adult patients with intussusception caused by distinct benign etiologies: Peutz-Jeghers syndrome (PJS) hamartomatous polyps, subserosal lipoma, and inflammatory fibroid polyp (IFP). We discuss the diagnostic approach, surgical management, and follow-up strategies for each condition.

Case Presentations

Case 1: Jejuno-jejunal Intussusception Secondary to Peutz-Jeghers Syndrome

A 26-year-old male with mucocutaneous pigmentation and a family history of polyposis presented with acute abdominal pain, vomiting of 2-day duration. Physical examination revealed characteristic melanotic spots on the lips and buccal mucosa. CT abdomen demonstrated a large jejunal polyp causing jejuno-jejunal intussusception with multiple additional polyps throughout the small and large bowel.

Emergency exploratory laparotomy was performed with manual reduction of the intussusception and enterotomy polypectomy of the lead-point polyp. The bowel was viable post-reduction, allowing for bowel-sparing surgery. Postoperative colonoscopy and upper gastrointestinal endoscopy identified 15 colonic polyps and 8 small bowel polyps, which were removed endoscopically over multiple sessions (Fig.1a-c).

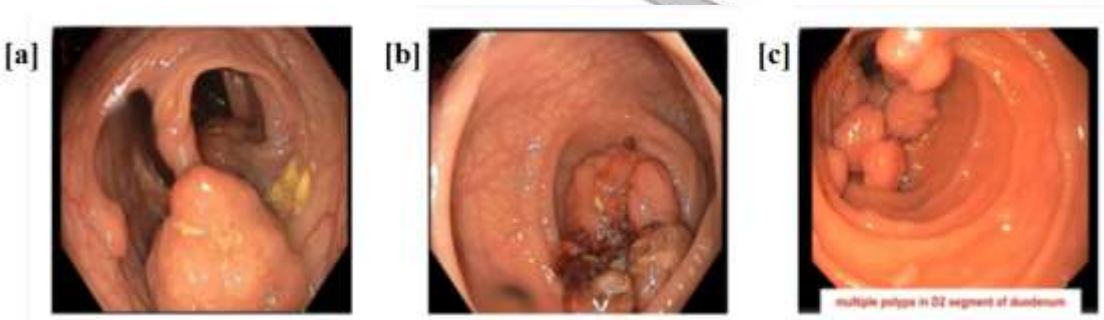


Fig. 1: (a) Large pedunculated polyp in the colon, **(b)** Colonic polyps displaying stigmata of recent hemorrhage, **(c)** Multiple polyps observed in the second part of the duodenum and deep duodenum.

Histopathological examination confirmed hamartomatous polyps with characteristic smooth muscle cores without dysplasia or malignancy. The patient recovered uneventfully and was enrolled in a comprehensive surveillance program including biannual endoscopic evaluations and age-appropriate cancer screening given the elevated malignancy risk in PJS [11, 12].

Case 2: Small Bowel Intussusception Due to Subserosal Lipoma

A 62-year-old male presented with a one-week history of intermittent abdominal pain without associated symptoms. Physical examination was unremarkable. Contrast-enhanced CT demonstrated a well-defined fat-density lesion in the left lumbar region with classic target and sausage signs consistent with ileo-ileal intussusception caused by a subserosal lipoma (fig.2 a)

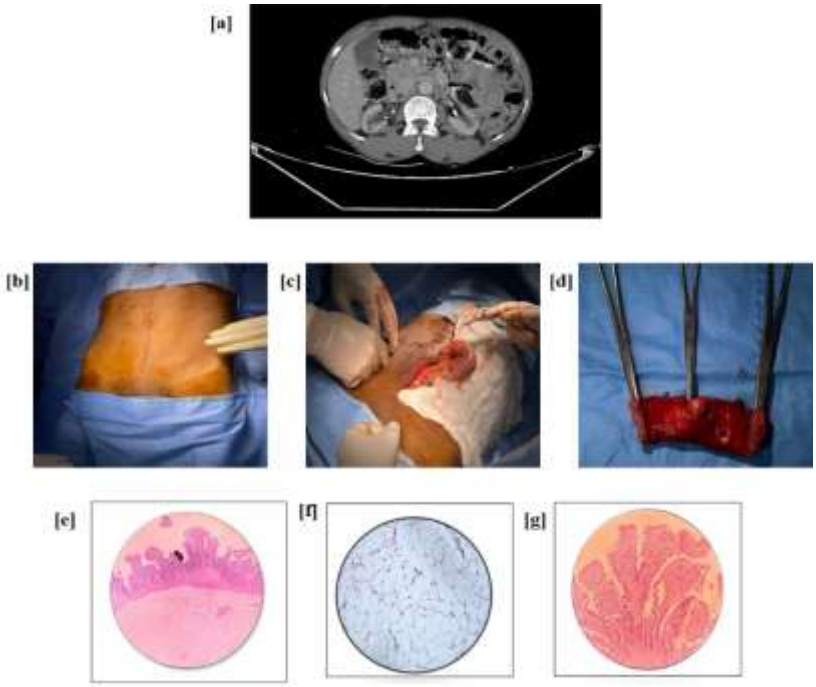


Fig. 2: [a] Contrast-enhanced computed tomography of the abdomen showing ileo-ileal intussusception in the left lumbar region. Intraoperative image showing [b] a sausage-shaped lump in the left iliac fossa post general anesthesia, [c] Intraoperative image displaying the site of intussusception, and [d] Resected bowel segment with visible lead-point lesion (lipoma). Histopathological shows [e] Sub-serosal well-circumscribed neoplasm, [f] Histopathology slide showing mature adipocytes in lobules, with interspersed blood vessels, and [g] shows Overlying mucosa, serrated glands with increased goblet cells and mucin.

Exploratory laparotomy confirmed the imaging findings, revealing a subserosal lipoma located proximal to the ileocecal junction, acting as the lead point (Fig. 2 b-d). Given the patient's age and the inability to exclude malignancy, segmental resection with primary end-to-end anastomosis was definitively performed rather than attempting reduction [13, 14].

Gross examination showed a well-encapsulated, yellow, fatty mass. Figure 2 (e-g) confirmed the histopathology of a

benign subserosal lipoma composed of mature adipose tissue with associated hyperplastic mucosal changes. The postoperative course was uncomplicated, with discharge on postoperative day 5. Follow-up at 6 months showed complete symptom resolution.

Case 3: Ileo-ileal Intussusception from Inflammatory Fibroid Polyp

A 62-year-old female presented with a 10-day history of progressive lower abdominal pain, intermittent vomiting, and constipation. Physical examination revealed mild abdominal distension with tenderness in the right lower quadrant. CECT abdomen showed ileo-ileal intussusception causing incomplete small bowel obstruction (Fig.3a) [15].

Surgical exploration revealed an intussuscepted ileal segment with a firm, submucosal nodule as the lead point. Gentle reduction was attempted but was unsuccessful due to bowel edema. Segmental resection of the ileum with primary anastomosis was performed (Fig.3 b-e).

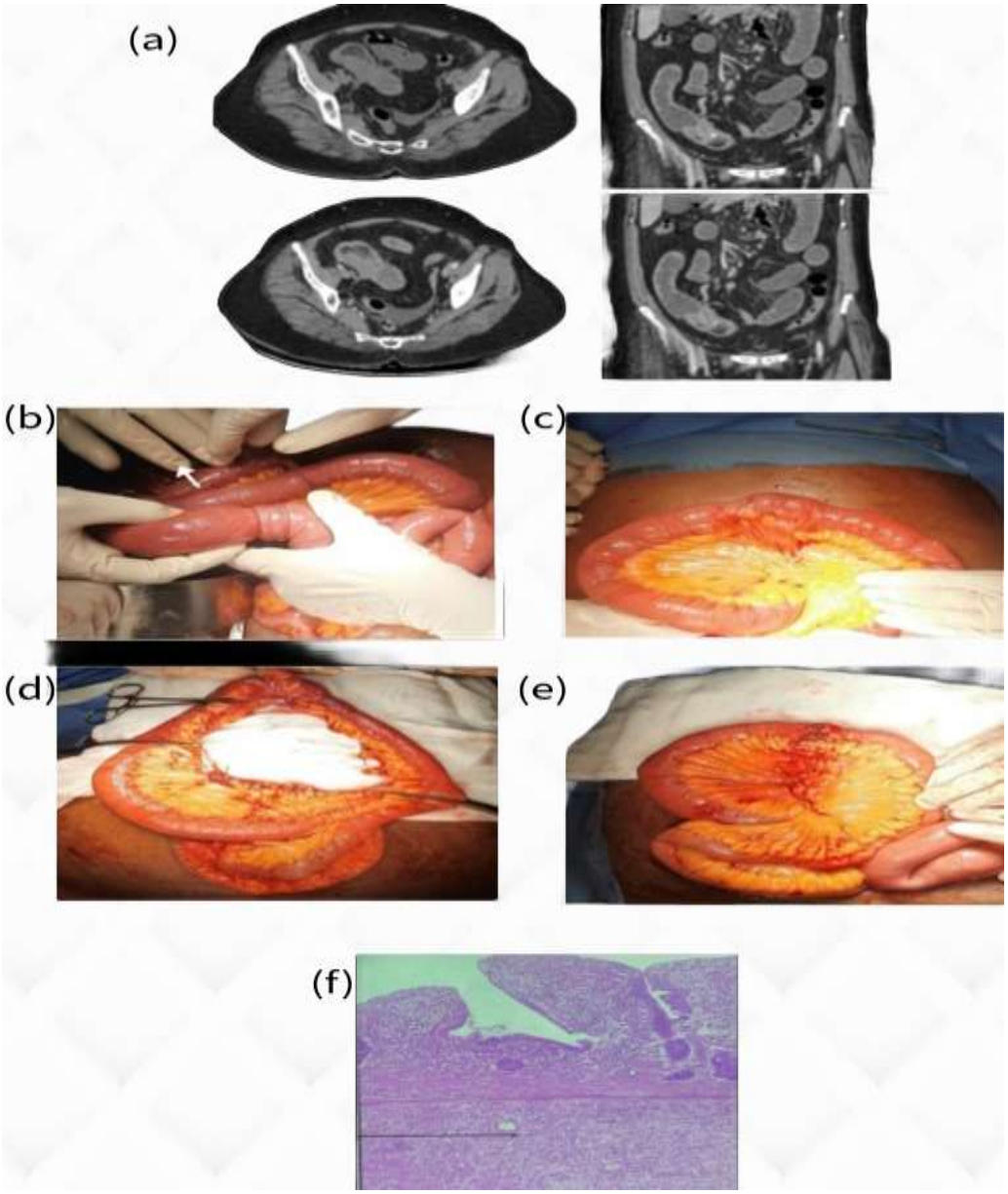


Fig. 3: (a) Contrast-enhanced computed tomography of the abdomen showing small Ileo-ileal intussusception in the right iliac fossa for an approximate length of 6cms causing incomplete small bowel obstruction. (b) Intraoperatively ileo-ileal intussusception was noted. (c) A firm lesion of size 3x3cms was noted in the ileum, which was the lead point. (d) & (e) Resection of the lesion along with adequate margin was done, followed by ileo-ileal anastomosis, and (f) Histopathological report showing a Lesion centred in the submucosa with focal eosinophilic infiltration into the lamina

propria.
Histopathological examination revealed an inflammatory fibroid polyp centered in the submucosa, characterized by spindle cell proliferation and prominent eosinophilic infiltration (Fig.3f). Immunohistochemistry was positive for CD34, confirming the diagnosis. The patient had an uneventful recovery with resolution of obstructive symptoms.

Discussion

This case series illustrates the diverse spectrum of benign pathological lead points causing adult intussusception and highlights key diagnostic and therapeutic considerations (tables 1 & 2). Each case demonstrates unique clinical features that guided individualized management approaches.

Table 1: Summary of Patient Demographics, Clinical, Diagnostic, and Management Data

	Case 1	Case 2	Case 3
Age/Sex	26/M	62/M	62/F
Duration of Symptoms (Days)	2	7	10
Clinical Signs	Pigmentation, Anemia	Normal	Abdominal distension
Primary Imaging	CT abdomen	CECT abdomen	CECT abdomen
Intussusception Type	Jejuno-jejunal	Small Bowel	Ileo-ileal
Lead Point	Hamartomatous Polyp	Subserosal Lipoma	IFP (Submucosal)
Surgical Procedure	Reduction + Polypectomy	Segmental Resection+ Anastomosis	Segmental Resection+ Anastomosis
Resection Length	No Bowel Resection	Small Bowel	Ileum
Hospital Stay (Days)	7	5	6
Final Diagnosis	PJS Hamartomatous Polyp	Subserosal Lipoma	Inflammatory Fibroid Polyp (IFP)

Table 2: Comparative Analysis of Case Series Findings with Literature

	Age (years)	Sex	Location	Lead Point Etiology	Management	Malignancy Risk
Case 1 (This Series)	26	Male	Jejuno-jejunal	Peutz-Jeghers Polyp (Benign)	Reduction+Polypectomy	High (Syndrome)
Case 2 (This Series)	62	Male	Ileo-ileal	Subserosal Lipoma (Benign)	Segmental Resection	Low
Case 3 (This Series)	62	Female	Ileo-ileal	Inflammatory Fibroid Polyp (Benign)	Segmental Resection	Low
Chand et al. [1]	Variable	Variable	Colonic	Malignancy (Most common)	Resection (Usually En Bloc)	High
Suleiman et al. [7]	Adult	Variable	Colo-colic	Lipoma (Benign)	Resection	Low

Hilal et al. [6]	Adult	Variable	Ileocecal/Colonic	Adenocarcinoma (Malignant)	Oncologic Resection	High

Diagnostic Considerations

A computed tomography is considered the most reliable diagnostic tool for adult intussusception, with reported sensitivity rates of approximately 95%[7]. CT typically demonstrates concentric 'target' and 'sausage-shaped' sign on coronal section. CT also provides valuable information about the lead point, with fat-density lesions suggesting lipomas and soft-tissue masses raising concern for neoplasms [8].

In Case 1, the large size of the jejunal polyp and positive family history strongly suggested PJS, which was confirmed by histopathology and genetic counseling. Case 2 demonstrated the classic CT appearance of a lipoma with characteristic fat attenuation values. Case 3 presented diagnostic challenges as IFPs lack specific imaging characteristics, requiring histopathological confirmation .

Surgical Management Strategies

The surgical approach to adult intussusception varies based on multiple factors, including location, lead point characteristics, and intraoperative findings [1, 7]. Current literature supports surgical resection as the standard of care due to the high incidence of underlying pathology, particularly malignancy in colonic cases [4, 10].

Whether to reduce or resect the involved bowel remains debated. Reduction may be reasonable when malignancy seems improbable, the bowel is healthy, and preservation of intestinal length is clinically important. [14]. In our series, reduction was successful in Case 1, allowing for bowel-sparing enterotomy polypectomy, which is particularly important in PJS patients who require multiple interventions throughout their lifetime

An En bloc resection without reduction is preferred when: (1) malignancy cannot be excluded, (2) the bowel is ischemic or friable, or (3) the intussusception involves the colon [2, 3]. This approach was taken in Cases 2 and 3, where the patients' age and inability to exclude malignancy preoperatively favored definitive resection.

Pathological Lead Points and Follow-up

Peutz-Jeghers Syndrome: Peutz-Jeghers syndrome (PJS) is an autosomal dominant condition marked by distinctive mucocutaneous pigmentation and multiple hamartomatous polyps throughout the gastrointestinal tract. [5]. Patients have a significantly elevated lifetime risk of gastrointestinal and extraintestinal malignancies, necessitating comprehensive surveillance protocols [11].

Subserosal Lipomas: Benign lipomas of the intestine are uncommon and may precipitate intussusception, particularly when they are pedunculated or exceed two centimeters in diameter. [9, 8]. Complete surgical excision is curative, and recurrence is extremely rare [12].

Inflammatory Fibroid Polyps: IFPs are rare benign submucosal lesions characterized by spindle cell proliferation and eosinophilic infiltration [14]. They are typically sporadic and do not have malignant potential [7]

Conclusion

Adult intussusception presents unique diagnostic and therapeutic challenges requiring individualized management based on clinical presentation, imaging findings, and underlying pathology. This case series demonstrates that:

1. High clinical suspicion is essential given the nonspecific symptoms.
2. CT continues to be the preferred diagnostic tool for confirming intussusception and assessing its underlying cause.
3. Surgical strategy should be tailored based on the likelihood of malignancy and bowel viability.
4. Histopathological confirmation is crucial for guiding long-term management.
5. Surveillance protocols must be individualized, particularly in syndromic conditions like PJS.

Early recognition, appropriate imaging, and timely surgical intervention result in excellent outcomes for adult intussusception. The multidisciplinary approach involving surgeons, gastroenterologists, and geneticists is particularly important for syndromic cases to optimize long-term care and cancer prevention.

Declarations

Ethics Approval and Consent to Participate: Institutional review board approval was obtained from SRM Medical College Hospital and Research Center. Written informed consent was obtained from all patients for publication of their cases and accompanying images.

Consent for Publication: Written informed consent for publication was obtained from all patients included in this case series.

Availability of Data and Materials: The datasets used and analyzed during the current study are available from the corresponding author on reasonable request.
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