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The Discrepancy Dilemma: Spontaneous Reduction of Adult Jejunal Intussusception and the Challenge of the Negative Laparotomy

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Abstract

Background: Adult intussusception is a rare clinical entity, accounting for only 1% to 5% of all mechanical bowel obstructions. Unlike paediatrics cases, which are predominantly idiopathic and managed conservatively, adult intussusception is historically associated with pathological lead points—including malignancies—making operative intervention the definitive standard of care. Contrast-enhanced computed tomography (CECT) serves as the diagnostic gold standard. However, transient or spontaneously reducing intussusceptions create a profound clinical dilemma. When definitive radiological evidence of intussusception is accompanied by markers of critical illness and impending ischemia, surgeons must weigh the necessity of immediate exploratory laparotomy against the morbidity of a retrospectively negative exploration.

Case Presentation: A 58-year-old male presented in extremis with severe metabolic derangements, persistent vomiting, and profound lethargy requiring endotracheal intubation. Following initial fluid resuscitation and metabolic stabilization, persistent hyperlactatemia raised high clinical suspicion for acute bowel ischemia. Urgent abdominal CECT revealed a classic "target sign" in the proximal jejunum, diagnosing an adult jejunal intussusception with suspected vascular compromise. An emergency exploratory laparotomy was undertaken. Intraoperatively, neither active intussusception, luminal mass, nor bowel necrosis was identified; findings were limited to an oedematous bowel and minimal reactive free fluid, suggesting spontaneous reduction.

Conclusions: This case highlights the therapeutic friction inherent in managing critically ill patients with CECT-proven adult intussusception. While spontaneous reduction can result in a "negative" laparotomy, the presence of ischemic markers such as intractable hyperlactatemia unequivocally justifies emergent operative exploration. In such high-stakes scenarios, negative surgical exploration should be viewed not as a diagnostic failure, but as a mandatory diagnostic exclusion to prevent catastrophic ischemic bowel complications.

Introduction

Adult intussusception is an uncommon gastrointestinal phenomenon, representing merely 1% to 5% of all mechanical bowel obstructions and 5% of all intussusceptions [1, 2]. The pathophysiology and clinical management of this condition differ drastically depending on patient age. While paediatrics intussusception is overwhelmingly idiopathic and frequently resolved via non-operative reduction techniques, adult presentations are driven by an identifiable pathological lead point in 70% to 90% of cases [1, 5, 6]. Because a significant proportion of these lead points are malignant—particularly in colonic variants—routine surgical resection without prior reduction has traditionally been the absolute standard of care to prevent tumour seeding or perforation.

Contrast-enhanced computed tomography (CECT) has revolutionized the diagnosis of this condition, acting as the gold standard imaging modality. CECT boasts an accuracy rate of over 80%, readily identifying the pathognomonic "target" or "sausage" signs while assessing for vascular compromise

and establishing the exact anatomical location [3]. However, the high sensitivity of modern CT imaging has increasingly captured transient, spontaneously reducing intussusceptions.

This radiological precision introduces a complex clinical dilemma when imaging findings clash with intraoperative reality. Retrospectively "negative" laparotomies following positive CECT scans are highly frustrating, carrying inherent surgical morbidity for the patient. Yet, when definitive radiological evidence is coupled with a deteriorating clinical picture—such as escalating hyperlactatemia or refractory metabolic acidosis suggestive of acute mesenteric ischemia—the threshold for surgical intervention drops drastically.

We present a challenging case of a 58-year-old critically ill male with CECT-proven jejunal intussusception who underwent emergency exploration for presumed bowel ischemia, ultimately yielding a negative laparotomy due to spontaneous reduction. This report explores the intersection of radiological accuracy and surgical decision-making, emphasizing that in the presence of critical ischemic parameters, a negative laparotomy remains an acceptable and necessary diagnostic step rather than a clinical failure.

Case Presentation

A 58-year-old male with a history of uncontrolled diabetes mellitus and chronic kidney disease presented with a three-day history of progressive dyspnoea, persistent vomiting, severe lethargy, and poor oral intake. On initial clinical evaluation, the patient was in severe respiratory distress and impending hemodynamic collapse. Laboratory investigations revealed profound metabolic acidosis and marked hyperglycaemia, consistent with severe diabetic ketoacidosis (DKA). Due to rapid clinical deterioration, he was immediately intubated for airway protection, admitted to the intensive care unit (ICU), and commenced on intravenous noradrenaline alongside aggressive fluid resuscitation and an insulin infusion.

Following intensive medical management, the patient's glycaemic control and acid-base derangements improved significantly. However, despite adequate hemodynamic optimization, he developed a refractory hyperlactatemia, peaking at 8.4 mmol/L. This discordant, persistent lactic acidosis raised a high clinical suspicion for acute mesenteric ischemia. An urgent contrast-enhanced computed tomography (CECT) of the abdomen was performed, revealing two distinct segments of small bowel telescoping at the mid-jejunal level, measuring 1.5 cm and 6.6 cm in length (Image 1). There was no evidence of an enhancing intraluminal mass to suggest a pathological lead point, nor were there late radiological signs of irreversible ischemia such as pneumatosis intestinalis, portal venous gas, or



Figure 1: CECT finding showing classic target sign

pneumoperitoneum. Given the compelling correlation between the CECT findings and the critical biochemical profile, surgical intervention was deemed mandatory.

Following overnight medical optimization in the ICU, the patient underwent an emergency exploratory laparotomy. Intraoperative exploration revealed an edematous bowel and a minimal volume of reactive intraperitoneal free fluid. Notably, there was no evidence of active intussusception, overt bowel ischemia, or any gross neoplastic lesion, suggesting the spontaneous reduction of the enteroenteric intussusception.

The patient was subsequently returned to the ICU for close postoperative monitoring. His clinical trajectory was highly favorable; serum lactate levels steadily normalized, and he remained entirely free of gastrointestinal symptoms. He recovered uneventfully and was successfully stepped down to the general ward.

Discussion

The clinical management of adult intussusception remains heavily influenced by the traditional surgical dogma that operative intervention is mandatory due to the high incidence of underlying neoplastic lead points [1, 2]. However, the ubiquitous use of high-resolution multi-detector computed tomography (MDCT) in emergency settings has led to a paradigm shift, inadvertently capturing an increasing number of transient, spontaneous small bowel intussusceptions [3, 4]. This case underscores the complex "discrepancy dilemma" modern acute care surgeons face: reconciling positive high-resolution imaging with acute physiological deterioration, which ultimately led to a retrospectively negative, yet prospectively essential, laparotomy.

Historically, adult intussusceptions were presumed to

be secondary to a pathological lead point in 70% to 90% of cases, making primary en bloc resection without reduction the gold standard to avoid tumour dissemination or the risk of perforating ischemic bowel [1, 5, 6]. Yet, isolated small bowel (enteroenteric) intussusceptions possess a different clinical profile. Studies show that small bowel intussusceptions lacking a discernible mass or lead point on CT imaging—especially those measuring less than 3.5 cm in length—are often self-limiting and resolve spontaneously [4, 7]. In a stable patient, these findings might warrant conservative management. However, in our patient, one of the telescoping segments measured a concerning 6.6 cm. When coupled with the patient's profound critical illness and physiological instability, conservative observation based purely on anatomical criteria became clinically untenable [8].

The defining catalyst for surgical exploration in this case was the patient's refractory hyperlactatemia (8.4 mmol/L) despite the successful medical optimization of his diabetic ketoacidosis (DKA) and hemodynamic status. Serum lactate remains a critical, albeit non-specific, biomarker for systemic hypoperfusion and acute splanchnic ischemia [9]. Relying solely on late radiological signs of irreversible transmural ischemia—such as pneumatosis intestinalis or portal venous gas—is a hazardous strategy, as these findings often represent end-stage necrosis associated with exceedingly high mortality [10]. According to the World Society of Emergency Surgery (WSES) guidelines, an elevated lactate level combined with a high index of clinical suspicion and an abnormal CT scan strongly indicates impending bowel infarction [10]. The combination of a classic CECT "target sign" and unresolved metabolic acidosis left no safe margin for conservative management.

The intraoperative discovery of an oedematous bowel and reactive free fluid—without a mass or active telescoping—confirms that the intussusception underwent spontaneous reduction between the imaging acquisition and surgical intervention. The localized bowel edema was likely the physiological footprint of transient vascular compromise caused by the temporary telescoping [8, 10]. While a "negative" laparotomy carries inherent surgical morbidity, it must be contextualized within the high-stakes environment of acute care surgery [6]. The WSES emphasizes that when acute mesenteric ischemia is strongly suspected, early exploratory laparotomy is the definitive diagnostic and therapeutic tool; delayed surgery yields catastrophic mortality rates [10].

Conclusion

In conclusion, this case highlights that while high-resolution CT imaging can accurately capture transient anatomical abnormalities, surgical decision-making must remain anchored to the patient's physiological parameters.

In critically ill patients presenting with CECT-proven adult intussusception and intractable ischemic biomarkers, a negative surgical exploration should not be viewed as a diagnostic failure. Rather, it is a mandatory, life-saving diagnostic exclusion to prevent fatal ischemic bowel complications.

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