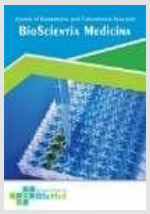
eISSN (Online): 2598-0580



Bioscientia Medicina: Journal of Biomedicine & Translational Research

Journal Homepage: www.bioscmed.com

Ileoileal Intussusception Secondary to Meckel's Diverticulum: A Case Report

Sylvia Noviani Saing[1*], Eriska Geriana Permatasari Saing[2]

[1]Department of Surgery, Siti Fatimah General Hospital, Palembang, Indonesia

[2]General Practitioner, Siti Fatimah General Hospital, Palembang, Indonesia

ARTICLE INFO

Keywords:
Ileoileal
Intraoperatively
Intussusception
Meckel's diverticulum

***Corresponding author:**
Sylvia Noviani Saing

E-mail address:
sylviasaing@gmail.com

All authors have reviewed and approved the final version of the manuscript.

https://doi.org/10.37275/bsm.v7i10.875

A B S T R A C T

Background: The most frequently documented aetiology of Meckel's related obstructions is volvulus or intussusception of the small bowel with the presence of Meckel's diverticulum as the lead point. This study presents a case of small bowel obstruction caused by intussusception due to Meckel's diverticulum, which led to an obstruction of the small intestine. **Case presentation:** A 17-year-old male patient visited the hospital's emergency room complaining of worsening abdomen pain for two days. It was associated with abdominal distention, fever, nausea, and vomiting. There was no roving's sign or psoas sign and no rebound tenderness. There is no history of gastrointestinal cancer in his family or previous abdominal surgery. The white blood cell count was 18,400 c/mm, and the electrolytes, liver function tests (LFTs), and urinalysis were all within normal ranges. Ultrasonography imaging of right lower quadrant (RLQ): thickening tubular structure with target sign view and enteric intussusception with the possibility of appendix component. **Conclusion:** A 17-year-old male went to the emergency room complaining of acute abdominal pain and was diagnosed with ileoileal intussusception intraoperatively.

1. Introduction

Intussusception is the invagination of one intestinal segment into the next bowel segment. Intussusception is unusual among adults and more commonly affects the small intestine than the colon.[1] Since intussusception occurs in fewer than 1 in 1300 abdominal procedures performed on adults, it is frequently misdiagnosed at first.[2] In adults, intussusception occurs at an average age of 50, regardless of gender. The pathogenic starting place of an intussusception might be intraluminal, mural, or extramural. Surgery, frequently including bowel resection, is the standard method of treating intussusception-related blockage in adults, as compared to non-operative management in children.[3] Symptoms usually subside within a few days to a few weeks, although occasionally they might persist for years. Rarely does the classic triad of abdominal pain, palpable mass, and bloody stool characterise the clinical presentation of intussusception. Signs of a small or large bowel obstruction are what patients report instead. Abdominal discomfort is the most common initial sign, and other associated symptoms such as nausea, vomiting, obstipation, gastrointestinal bleeding, altered bowel habits, constipation, or bloating are also indicative of a partial obstruction.[4] Adult intussusception is difficult to identify due to its similarity to other conditions. Serious consequences might arise from an incorrect diagnosis, negatively impacting patient outcomes. Surgical intervention is the definitive treatment, and successful outcomes depend on early diagnosis and the involvement of a multidisciplinary team.[5] Intussusception due to Meckel's diverticulum is an unusual but potentially life-threatening cause of acute abdominal pain. The most frequently documented

aetiology of Meckel's related obstructions is volvulus or intussusception of the small bowel with the presence of Meckel's diverticulum as the lead point. We present a case of small bowel obstruction caused by intussusception due to Meckel's diverticulum, which led to an obstruction of the small intestine.[6] A 17-year-old male went to the emergency room complaining of acute abdominal pain and was diagnosed with ileoileal intussusception intraoperatively.

2. Case Presentation

A 17-year-old male patient visited the hospital's emergency room complaining of worsening abdomen pain for two days. It was associated with abdominal distention, fever, nausea, and vomiting. Constipation, diarrhoea, per-rectal bleeding, or urinary symptoms were denied. Initial observations revealed a body temperature of 38.5 degrees, a regular pulse of 107 beats per minute, blood pressure of 120/76 millimeters of mercury, a respiratory rate of 20 breaths per minute, and oxygen saturation of 96 percent on room air. Deep palpation on the lower abdomen (most prominent in the right iliac fossa) with guarding and tenderness was found during the physical examination. There was no roving's sign or psoas sign and no rebound tenderness. There is no history of gastrointestinal cancer in his family or previous abdominal surgery. The white blood cell count was 18,400 c/mm, and the electrolytes, liver function tests (LFTs), and urinalysis were all within normal ranges. Ultrasonography imaging of right lower quadrant (RLQ): thickening tubular structure with target sign view and enteric intussusception with the possibility of appendix component. (Figure 1).

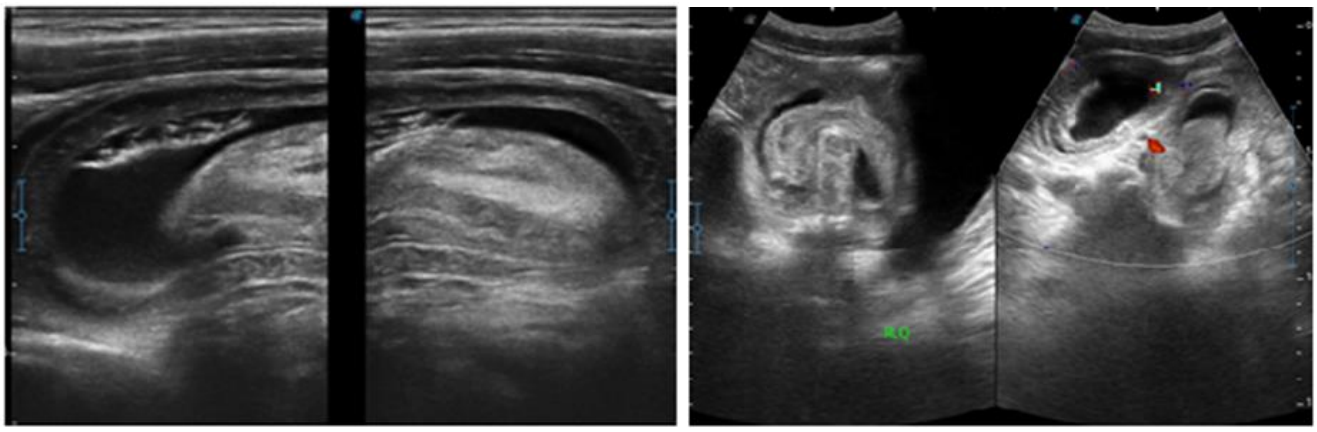


Figure 1. The sonographic findings were suggestive of intussusception.

After resuscitated and given broad-spectrum antibiotics, the patient was taken surgery. We did infraumbilical midline laparotomy incision and got dilated loops of small bowel. It has been meticulously tracked down to the suspected gastrointestinal obstruction. At 70 centimetres from the ileocecal junction, it revealed an ileoileal intussusception with impending perforation. We did a bowel resection with hand sewn primary ileoileal anastomosis. Necrotic ileum and a necrotic Meckel's diverticle were discovered in the resected surgical specimen (Figure 2). The surgery was well tolerated, and the patient was discharged. Intraoperative findings were suggestive of ileoileal intussusception in the current case, which presented with acute abdominal pain. Histopathology confirmed the diagnosis of inflammatory pathology.

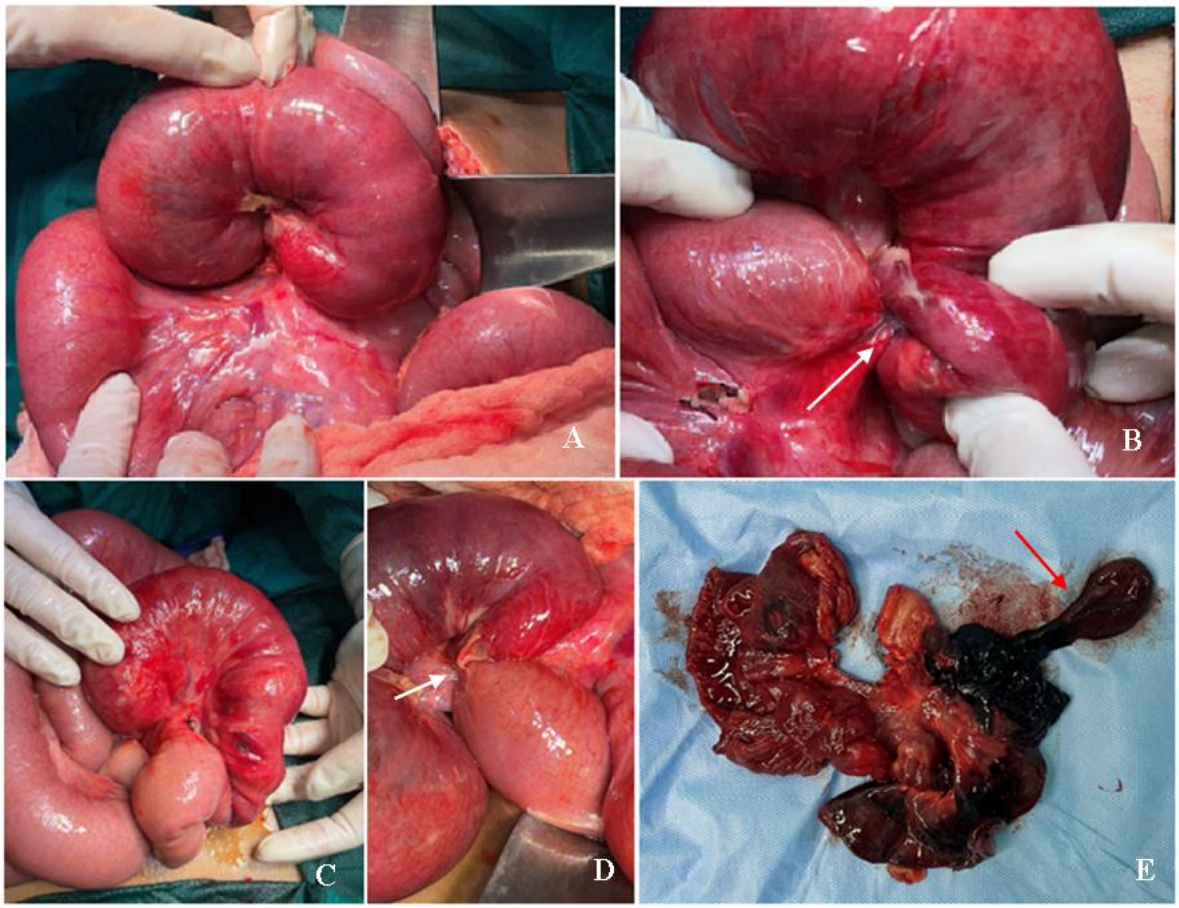


Figure 2. Intraoperative photographs (A-D) → A&C; show congested and inflamed ileum with proximal small bowel obstruction in a 17-year-old male with ileoileal intussusception. B&D; show intussusceptum prolapse to intussuscipien (white arrow). E; shows necrosed enteric and necrosed Meckel's diverticle within resected surgical specimen, which is part of intussusceptum (red arrow).

3. Discussion

Adult intussusception occurs in only about two or three cases per one million each year. In adults, it is mainly secondary to abnormal peristaltic movement linked to a pathologic lead point inside the bowel. In adults, intussusception typically manifests with a subacute or chronic course. Less than 20% of patients experience sudden bowel obstruction. Only between 7 and 42 percent of cases have a palpable abdominal mass. Adults with intussusception may experience a variety of symptoms, including intermittent abdominal pain, nausea, vomiting, diarrhoea, constipation, melena, and even weight loss.[7] Costs to the patient can be reduced if this diagnosis can be considered, as well as the radiologist colleagues increasing their expertise. In order to diagnose intussusception, ultrasound is the first-line imaging modality. The ultrasonographic findings include a typical target sign or pseudo-kidney appearance.[8] Target sign defined by concentric layers with dissimilar echogenicity due to congested intestinal wall showing thickening hypoechoic layer and central invaginated mesenteric fat showing hyperechoic layer. Ultrasound for adult intussusception more difficult because by overlying intestinal gas and abdominal fat.[9]

According to the length of symptoms, Wang et al. categorised clinical presentation in a retrospective study of 41 patients with adults intussusceptions. In their cohort study, 24.4% of patients presented with acute symptoms, 24.4% with subacute symptoms, and 51.2% with chronic symptoms.[10] Idiopathic or asymptomatic intussusception has become

increasingly common in recent years due to improvements in diagnostic imaging techniques and the widespread use of computed tomography. However, in adults, intussusceptions are typically caused by pathology etiology. Surgical exploration should be performed for patients who present with a palpable mass, obstruction, gastrointestinal bleeding, or a lead point on computed tomography.[11]

Table 1. Lesions associated with intussusception.[11]

Benign	**Malignant**	
	Primary	**Metastatic**
Crohns disease Celiac disease Lipoma Leiomyoma Neurofibromatosis Fibro-epithelial polyps Henoch-Schonlein purpura Human immunodeficiency virus Post-operative adhesions Endometriosis Meckel's diverticulum	Adenocarcinoma Gastrointestinal stromal tumor Carcinoids Leiomyosarcomas Lymphoma	Melanoma Lung Renal cell cancer Breast

Intussusception was classified as (1) enteroenteric (small bowel), (2) ileocecal (ileocecal valve leads intussusception), (3) ileocolonic (ileum invaginates through ileocecal valve), (4) colocolonic (intussusception is limited to the large bowel), (5) colorectal (colon invaginates through rectum).[12] In a retrospective review, Zubaidi A. et al. 2006, from 22 cases of adult intussusception. The majority were small bowel or enteroenteric type (64%).[13] Similar to a study from wang et al. 2009, the most common type of adult intussusception was enteric intussusception (45,5%) in 41 patients.[10]

Large autopsy and surgical studies report a prevalence of 2–4% for Meckel's diverticulum. Most cases of Meckel's diverticulum are asymptomatic and are found inadvertently if they are not difficult, and there is some disagreement regarding how to treat such cases.[14]

Clinical examination of such cases may include radiography, ultrasound, CT scan of the abdomen, barium enema, and colonoscopy. The plain abdominal radiography is rarely diagnostic and often demonstrates nonspecific signs of intestinal obstruction. Barium enema shows the intussusception as an intraluminal crescent or round-filling defect. A barium enema is often used as a therapeutic procedure for intussusception in children. The ultrasound appearance of a typical intussusception is highly characteristic and has been well described in the literature. A peripheral hypoechoic ring with central echogenicity, known as the target sign (in transverse view) and pseudo kidney sign (in longitudinal view), corresponds to the bowel wall surrounding the hyperechoic mesenteric fat contained within the intussusception. While ultrasound carries no radiation risks and is readily available, in our opinion, this mode of examination is operator-dependent and requires an experienced examiner.[15] Due to the high incidence of underlying malignancy in colonic intussusception and the inability to discern non-operatively between benign and malignant causes of enteric intussusceptions, numerous studies have advised laparotomy as the preferred method of treatment.[14]

Patients with intussusception who present with symptoms of small bowel obstruction should be looked an overall clinical picture (history, physical examination, laboratory, and imaging studies) before deciding for surgical intervention. In addition, if Meckel's diverticulum is found to be the cause of

intussusception during surgery, the intussusception must be reduced, tissue viability must be determined, and diverticulectomy or segmental resection must be performed. There is now widespread agreement, both in the scientific literature and in clinical practice, that intussusception caused by a Meckel's diverticulum is best treated by diverticulectomy or segmental resection.

4. Conclusion

The challenges of early diagnosis of adult intussusception are the topic of this case report. Due to the lack of specificity in clinical presentation and duration, preoperative diagnosis continues to be difficult. The optimal course of treatment is debatable and subject to variation based on of the underlying disease and the necessity of surgical intervention. For the best possible postoperative outcome, it is crucial to have appropriate awareness and appropriate examinations to ensure quick diagnosis and treatment. Our goal in writing this article is to help other emergency room doctors treat patients with acute abdominal pain by keeping this uncommon differential diagnosis in mind.

5. References

1. Marsicovetere P, Ivatury SJ, White B, Holubar SD. Intestinal intussusception: Etiology, diagnosis, and treatment. Clinics in Colon and Rectal Surgery. 2017; 30(01): 030-9.
2. Green N, Krantz W, Tadros A. Adult ileocolic intussusception from the appendix. Case Reports in Emergency Medicine. 2019; 2019.
3. Elm'hadi C, Tarchouli M, Khmamouche MR, Tanz R, Elfahssi M, Kettani F, et al. Intestinal intussusception in a young woman: Unusual cause and specific management. World Journal of Surgical Oncology. 2015; 13(1): 1-5.
4. Uyulmaz S, Zund M, Caspar U, Diebold J, Slankamenac K. Ileoileal intussusception in unspecific recurrent abdominal pain in adult: A case report. SAGE Open Medical Case Reports. 2018.
5. Aydin N, Roth A, Misra S. Surgical versus conservative management of adult intussusception: Case series and review. International Journal of Surgery Case Reports. 2016; 20: 142-6.
6. Schaedlich DS, Borges PC, Lacombe A, Moron RA. Intestinal intussusception of Meckel's diverticulum, a case report and literature review of the last five years. Einstein (São Paulo). 2023; 21.
7. Orhan A, Demiryas S. Lipoma causing ileocecal intussusception and its endoscopic resection. International Journal of Surgery Case Reports. 2022; 98: 107605.
8. Yousefi F, Darvish A, Alamdaran A. Ultrasound findings of appendico-cecal invagination: A case report and literature review. International Journal of Pediatrics. 2019; 7(8): 9793-8.
9. Rafailidis V, Phillips C, Yusuf G, Sidhu P. A case of adult intussusception with greyscale, contrast-enhanced ultrasound and computerised tomography correlation. Ultrasound. 2017; 25(2): 120-5.
10. Wang N, Cui XY, Liu Y, Long J, Xu YH, Guo RX, et al. Adult intussusception: A retrospective review of 41 cases. World journal of gastroenterology: WJG. 2009; 15(26): 3303.
11. Shenoy S. Adult intussusception: A case series and review. World Journal of Gastrointestinal Endoscopy. 2017; 9(5): 220.
12. Álvarez-Bautista FE, Moctezuma-Velázquez P, Pimienta-Ibarra AS, Vergara-Fernández O, Salgado-Nesme N. Adult intussusception: Still a challenging diagnosis for the surgeon. Revista de Gastroenterología de México (English Edition). 2022.
13. Zubaidi A, Al-Saif F, Silverman R. Adult intussusception: A retrospective review. Diseases of the colon & rectum. 2006; 49: 1546-51.
14. Evola G, Caramma S, Caruso G, Schillaci R, Reina C, Reina GA. Intestinal obstruction and ischemia by necrotic annular Meckel's

diverticulum: case report and review of the literature. International Journal of Surgery Case Reports. 2021; 82: 105897.

15. Shimoyama H, Ueno K, Samizo M. Successful treatment of adult cecorectal intussusception caused by cecum cancer with mobile cecum: a case report. Surgical Case Reports. 2021; 7: 1-5