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Case Report

Small bowel obstruction due to *Ascaris lumbricoides* in a child: A case report from Northwest Ethiopia ☆☆☆

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ABSTRACT

Ascaris lumbricoides is the most common soil-transmitted helminth affecting humans, predominantly in low-income countries. Although usually asymptomatic, heavy infestation can lead to serious complications such as intestinal obstruction, particularly in children whose narrower intestinal lumen predisposes them to luminal blockage by worm boluses. A 6-year-old male child presented to the surgical emergency department of Tibebe Ghion Specialized Teaching Hospital, Northwest Ethiopia, with 3 days of severe crampy, centrally located abdominal pain and frequent vomiting. Examination revealed classic signs of intestinal obstruction. Laboratory tests showed leukocytosis with marked eosinophilia. Abdominal radiography demonstrated multiple air–fluid levels consistent with small bowel obstruction. After preoperative stabilization, exploratory laparotomy revealed massively distended, congested small bowel filled with *Ascaris* worms, necessitating enterotomy with extraction of 59 live worms, as milking was unsuccessful due to dense impaction and thinning of the bowel wall. Postoperatively, the patient recovered uneventfully. Ascariasis should be considered in children presenting with intestinal obstruction in endemic regions. Early recognition and timely surgical intervention are essential for favorable outcomes.

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Introduction

Ascariasis, caused by the intestinal nematode *Ascaris lumbricoides*, is the most prevalent soil-transmitted helminth infection worldwide and remains a major public health concern in low-income countries where sanitation and access to clean

water are inadequate. It is estimated that more than 800 million people are infected globally, with the highest burden occurring in tropical and subtropical regions [1,2].

Transmission occurs through ingestion of infective eggs present in contaminated soil, food, or water, making children particularly susceptible due to frequent environmental exposure and inadequate hygiene practices. Most infections are

Abbreviations: BPM, beats per minute; mEq, mili equivalent; SBO, small bowel obstruction; μ L, microliter.

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asymptomatic or produce only mild gastrointestinal symptoms. However, heavy worm burden may lead to significant complications, including intestinal obstruction, volvulus, intussusception, biliary obstruction, pancreatitis, and intestinal perforation [3,4].

Intestinal obstruction is among the most severe and well-recognized complications, accounting for a substantial proportion of surgical emergencies in endemic areas, particularly among pediatric populations whose narrower intestinal lumen predisposes them to luminal blockage by worm boluses [5,6]. Small bowel obstruction caused by ascariasis typically results from mechanical blockage by a dense mass of worms, often accompanied by intestinal spasm and local inflammatory responses. In severe cases, delayed diagnosis and management may result in bowel ischemia, perforation, or peritonitis, significantly increasing morbidity and mortality [7–9].

Here, a rare case of complete small bowel obstruction due to massive *Ascaris lumbricoides* infestation presented in a 6-year-old child from Northwest Ethiopia that required emergency surgical intervention.

This report emphasizes the importance of early recognition of parasitic causes of intestinal obstruction in endemic regions and emphasizes the need for continued public health measures aimed at prevention and control.

Case presentation

A 6-year-old male child presented to the surgical emergency department of Tibebe Ghion Specialized Teaching Hospital, Northwest Ethiopia, with 3 days of severe crampy, centrally located abdominal pain and frequent vomiting. The vomiting was initially of ingested matter but later became bilious. He also had abdominal distension and failure to pass stool for 2 days, along with intermittent low-grade fever, anorexia, headache, and fatigue. His family reported the use of unfiltered river water in their rural village in South Gondar zone. There was no history of trauma, prior abdominal surgery, or foreign body ingestion. He went to a nearby zonal hospital where pediatric surgical services were unavailable and was referred to Tibebe Ghion Specialized Teaching Hospital for operative intervention.

On examination, the child appeared acutely ill with signs of dehydration. Vital signs: pulse 120 bpm, temperature 37.7°C. Anthropometric measures were appropriate for age. Abdominal exam revealed gross distension with visible peristalsis, a soft, nontender abdomen, no palpable mass, and hyperactive bowel sounds. Digital rectal examination showed no stool, mass or blood.

Laboratory evaluation revealed a hematocrit of 36%, a leukocyte count of 12,500/ μ L with 12% eosinophils, and mild hypokalemia (3.0 mEq/L). Abdominal radiograph demonstrated multiple air-fluid levels and paucity of gas in the pelvis, consistent with small bowel obstruction (Fig. 1). Abdominal ultrasonography was performed, but visualization of the bowel was significantly limited by excessive gaseous distension. No characteristic sonographic features of intestinal ascariasis, including the railway track, bull's-eye, or winding highway signs, were identified. Further imaging like CT was not performed

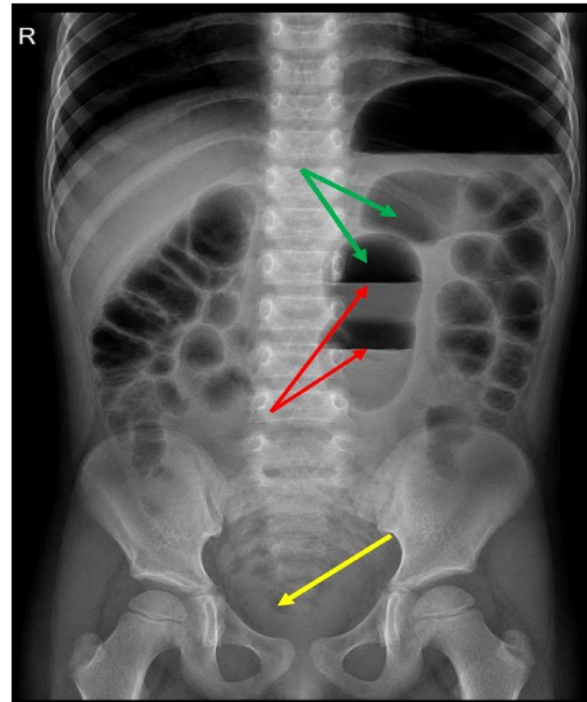


Fig. 1 – Erect abdominal X-ray demonstrating centrally located dilated small bowel loops (green arrow) with multiple air-fluid levels (red arrow) and relative paucity of gas in the rectum (yellow arrow) and a distended stomach containing an air-fluid level, consistent with complete mechanical small bowel obstruction.

because the diagnosis of complete mechanical small bowel obstruction had already been established based on the patient's clinical presentation together with erect plain abdominal radiography.

After preoperative stabilization with fluid resuscitation, electrolyte correction, nasogastric decompression, antibiotics, and informed parental consent, exploratory laparotomy was performed via right supraumbilical transverse incision. Intraoperatively, the small intestine from the ligament of Treitz to the ileocecal junction was markedly distended, congested, and filled with *Ascaris* worms (Fig. 2), while the large bowel was collapsed. Milking was unsuccessful due to dense impaction and thinning of the bowel wall. Enterotomy was performed 30 cm proximal to the ileocecal junction, and 59 live worms, measuring 10–25 cm in length, were extracted (Fig. 3). After extraction, ileal repair was performed. Otherwise, no areas of ischemia or perforation were identified, and the appendix appeared normal. The abdomen was closed in layers.

Postoperatively, bowel sounds returned on postoperative day 2, and oral feeding was initiated on the same day. The postoperative course was uneventful, and the patient was discharged home on postoperative day 6 in good clinical condition. No surgical site infection or other postoperative complications were observed. At follow-up, the child remained asymptomatic, with no evidence of recurrent intestinal obstruction. Albendazole 400 mg was administered at sixth postoperative day, with a repeat dose given 4 weeks later. In ad-



Fig. 2 – Intraoperative photograph demonstrating markedly dilated and congested small bowel loops (ileum) caused by an impacted intraluminal bolus of *Ascaris lumbricoides* worms resulting in complete small bowel obstruction.

dition, all household members were advised to undergo deworming, and the family provided counselling on personal hygiene and sanitation to reduce the risk of reinfection.

Discussion

Intestinal ascariasis remains an important cause of small bowel obstruction in regions where soil-transmitted helminth infections are endemic. The obstruction typically occurs when a large number of worms aggregate within the intestinal lumen, forming a compact worm bolus that mechanically blocks the passage of intestinal contents. In addition to mechanical obstruction, worm-induced intestinal spasm and inflammatory reactions may further compromise bowel motility and luminal patency [3,6].

Children are particularly vulnerable to this complication because their intestinal lumens are smaller and they tend to harbor higher parasite loads due to repeated exposure and inadequate hygiene practices. Consequently, ascariasis-related bowel obstruction is most commonly reported in pediatric populations between the ages of 3 and 10 years in endemic regions [1,4].

The clinical presentation of intestinal obstruction caused by *Ascaris lumbricoides* is often indistinguishable from other causes of small bowel obstruction. Typical symptoms include abdominal pain, vomiting, abdominal distension, and constipation or failure to pass stool and flatus. Bilious vomiting, as



Fig. 3 – Multiple live adult *Ascaris lumbricoides* worms extracted through enterotomy following surgical relief of the small bowel obstruction.

observed in our patient, is commonly reported in proximal intestinal obstruction [10]. Peripheral eosinophilia may provide a clue to parasitic infection but lacks specificity and may not always be present.

Radiological evaluation plays a central role in diagnosing intestinal ascariasis presenting as small bowel obstruction, particularly when clinical findings are nonspecific. In endemic regions, ascariasis should be considered in children presenting with acute intestinal obstruction [4,6,9]. Plain abdominal radiography remains the initial imaging modality in emergency and resource-limited settings, typically demonstrating centrally dilated small bowel loops, multiple air-fluid levels, and paucity of distal bowel gas, as in our case, which is consistent with mechanical obstruction. Although worms may occasionally appear as serpiginous soft-tissue opacities, radiographs usually demonstrate indirect rather than direct signs of infestation [4,6,11]. Ultrasonography is valuable for identifying characteristic features such as the “railway-track,” “bull’s-eye,” and “winding highway” signs and can assess worm motility and associated complications. However, its diagnostic utility is often limited in advanced obstruction because marked bowel distension and excessive intraluminal gas obscure visualization, as occurred in the present case [4]. CT can accurately localize the obstructing worm bolus and evaluate bowel viability or complications but is generally reserved for diagnostically uncertain cases. In the present case, CT was not performed because complete mechanical bowel

obstruction had already been established clinically and radiographically, necessitating immediate surgical intervention [4,6]. In resource-constrained settings, careful clinical assessment combined with plain radiography remains the cornerstone of diagnosis, enabling timely management and reducing the risk of bowel ischemia, perforation, and other life-threatening complications [6,8,9,12].

The radiologic differential diagnosis of pediatric small bowel obstruction includes intussusception, malrotation with midgut volvulus, incarcerated hernia, adhesive bowel obstruction, foreign body obstruction, intestinal tuberculosis, and *Ascaris lumbricoides* infestation. Intussusception typically demonstrates the characteristic “target” sign on ultrasonography, whereas malrotation with volvulus is suggested by the “whirlpool” sign or abnormal bowel positioning on upper gastrointestinal contrast studies. Adhesive obstruction is usually associated with previous abdominal surgery, while incarcerated hernia is often evident on clinical examination and imaging. In endemic regions, intestinal tuberculosis should also be considered when chronic constitutional symptoms or ileocecal involvement are present. In contrast, intestinal ascariasis may demonstrate tubular intraluminal structures on ultrasonography or CT, although these findings are frequently obscured by marked bowel distension [4,6,12,11]. In the present case, the absence of previous surgery or hernia, together with clinical and radiographic evidence of complete obstruction, prompted emergency laparotomy, which confirmed a densely impacted bolus of 59 *Ascaris lumbricoides* worms causing complete ileal obstruction.

Management of ascariasis-related intestinal obstruction depends largely on the severity of obstruction and the patient's clinical condition. Conservative management—including nasogastric decompression, fluid resuscitation, electrolyte correction, and administration of anthelmintic therapy—may be successful in cases of partial obstruction [6]. However, surgical intervention becomes necessary when there is complete obstruction, failure of conservative therapy, or evidence of complications such as bowel ischemia, perforation, or peritonitis [7,12].

During surgery, various operative techniques may be employed depending on intraoperative findings. Gentle milking of worms toward the colon may relieve obstruction in some cases, but when worm impaction is dense or the bowel wall is significantly compromised, as in our case, enterotomy with worm extraction is recommended [5].

Prevention remains the most effective strategy for reducing the burden of ascariasis. Public health measures such as improved sanitation, access to safe drinking water, health education, and periodic mass deworming programs are essential for controlling soil-transmitted helminth infections [8,9]. Early recognition of ascariasis as a potential cause of acute abdomen in children living in endemic regions is also critical to ensure timely diagnosis and appropriate management.

Conclusion

This case emphasizes the clinical significance of *Ascaris lumbricoides* infection as a cause of small bowel obstruction in

children from endemic regions. Early recognition, resuscitation, and timely surgical intervention are vital to prevent morbidity and mortality. Public health interventions targeting prevention remain essential.

Author contributions

Nebiyu Shitaye: The author was involved in patient management, data collection, literature review, and manuscript preparation. The author read and approved the final manuscript.

Ethics approval

Waived for case reports according to the College of Medicine and Health Sciences, Bahir Dar University policy.

Patient consent

Written informed consent was obtained from the patient's parent for publication of this case report and accompanying images. All identifying information has been removed to ensure patient anonymity. A copy of the consent is available for review by the Editor-in-Chief upon request.

REFERENCES

- [1] Bethony J, Brooker S, Albonico M, Geiger SM, Loukas A, Diemert D, et al. Soil-transmitted helminth infections: ascariasis, trichuriasis, and hookworm. *Lancet* 2006;367(9521):1521–32. doi:10.1016/S0140-6736(06)68653-4.
- [2] Centers for Disease Control and Prevention Ascariasis. accessed on 26.06.24]. <https://www.cdc.gov/sth/about/ascariasis.html>.
- [3] Khuroo MS. Ascariasis. *Gastroenterol Clin North Am* 1996;25(3):553–77. doi:10.1016/S0889-8553(05)70263-6.
- [4] Lamberton PHL, Jourdan PM. Human ascariasis: diagnostics update. *Curr Trop Med Rep* 2015;2(4):189–200. doi:10.1007/s40475-015-0064-9.
- [5] Bhatt PN. Acute intestinal obstruction due to *Ascaris*. *Med Phoenix* 2017;1(1):39–40. doi:10.3126/medphoenix.v1i1.17887.
- [6] Hefny AF, Saadeldin YA, Abu-Zidan FM. Management algorithm for intestinal obstruction due to ascariasis: a case report and review of the literature. *Ulus Travma Acil Cerrahi Derg* 2009;15(3):301–5.
- [7] Darlington CD, Anitha GFS. Ascaridial volvulus: an uncommon cause of ileal perforation. *Iran J Med Sci* 2018;43(4):432–5.
- [8] De Silva NR, Brooker S, Hotez PJ, Montresor A, Engels D, Savioli L, et al. Soil-transmitted helminth infections: updating the global picture. *Trends Parasitol* 2003;19(12):547–51. doi:10.1016/j.pt.2003.10.002.
- [9] Jourdan PM, Lamberton PHL, Fenwick A, Addiss DG. Soil-transmitted helminth infections. *Lancet* 2018;391(10117):252–65. doi:10.1016/S0140-6736(17)31930-X.

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- [10] Sulmiati, Nurmantu F, Ahmadwirawan, Mariana N, Habar TR, Faruk M, et al. Acute intestinal obstruction due to ascariasis in a child: a case report. *Int J Surg Case Rep* 2023;104:107923. doi:[10.1016/j.ijscr.2023.107923](https://doi.org/10.1016/j.ijscr.2023.107923).
- [11] Stojanovic M, Slavkovic A, Stojanovic M, Marjanovic Z, Bojanovic M. Intestinal obstruction due to ascariasis: a rare case. *Open Med (Wars)* 2011;6(3):390–4. doi:[10.2478/s11536-011-0028-y](https://doi.org/10.2478/s11536-011-0028-y).
- [12] Liyew EF, Tollera G, Mengistu B, Chernet M, Gidey B, Maddren R, et al. Small bowel obstruction due to ascariasis in a child from southern Ethiopia: a case report. *J Med Case Rep* 2025;19:56. doi:[10.1186/s13256-025-05082-9](https://doi.org/10.1186/s13256-025-05082-9).