

Total Mechanical Intestinal Obstruction Due to Ascaris Ball in Adolescents: A Case Report

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ABSTRACT

Intestinal worm infections remain a health problem in developing countries, especially in areas with poor sanitation. *Ascaris lumbricoides* is one of the causes of helminth infections that can lead to serious complications, such as intestinal obstruction. This research aims to report cases of intestinal obstruction due to an *Ascaris* ball in adolescent patients. The method used was a case report on a 14-year-old female patient who was treated for six days with the main complaint of pain all over the abdomen, accompanied by vomiting containing worms. Physical examination showed abdominal tenderness and decreased intestinal sounds, while laboratory examination showed leukocytosis. Radiological examination revealed meteorism. The patient was diagnosed with abdominal pain secondary to ascariasis with suspected partial ileal obstruction due to the *Ascaris* ball. Initial therapy included intravenous fluids, antibiotics, antiemetics, analgesics, and albendazole. However, due to a total mechanical intestinal obstruction, an exploratory laparotomy was performed. During surgery, dilation of the jejunum and obstruction of the ileum were found to be caused by a collection of worms resembling a ball. Hundreds of worms were evacuated from the intestinal lumen, and intestinal flushing was carried out. The patient showed improvement in her condition after surgery and follow-up therapy. This case demonstrates that ascariasis infection can cause serious complications, such as intestinal obstruction, that require surgery. Early diagnosis and proper management are essential to prevent more severe complications.

Keyword: Ascariasis; *Ascaris* ball; intestinal obstruction; laparotomy; case report

INTRODUCTION

Intestinal worm infections remain one of the significant public health problems in many developing countries, particularly in areas with low sanitation levels and limited access to clean water. This infection is commonly found in children and adolescents due to suboptimal hygiene behaviors and high environmental exposure to worm eggs (Bethony et al., 2021; de Silva et al., 2020; Khuroo, 2021; Prevention, 2023). One of the most common types of worms causing infections in humans is *Ascaris lumbricoides*, which belongs to the group of Soil Transmitted Helminths (STH). Ascariasis infections are still widely prevalent in tropical and subtropical regions, including Southeast Asia and Indonesia (Lamberton et al., 2022; Montresor et al., 2020; Organization, 2023; Sharma et al., 2021; Sinha & Bagga, 2022).

The World Health Organization reports that more than one billion people worldwide are infected with intestinal worms, with approximately 800 million infected with *Ascaris lumbricoides* (Arumugam & Shanmugam, 2024; Chittiprol & Nair, 2023; García & Ruiz, 2024; Singh et al., 2022; Zhu et al., 2020). The prevalence of this infection is higher in rural areas with inadequate sanitation, high population density, and unhygienic living habits (Bedi & Bhargava, 2024; Davies & Müller, 2023; Kim & Cho, 2023). School-age children are the most vulnerable group to ascariasis infection because they are frequently exposed to soil contaminated with worm eggs and lack awareness about personal hygiene.

In general, ascariasis infections are mild and often do not cause noticeable symptoms. However, in severe infestations, a large number of worms in the intestinal lumen can lead to serious complications (Edwards & Gupta, 2024; Kumar & Sharma, 2023; Stothard & Zou, 2024; West & Lakshmanan, 2024). Some of the complications include malnutrition, growth disorders, migration of worms to the bile ducts or pancreas, and intestinal obstruction. Intestinal obstruction is one of the most serious and life-threatening complications if not treated appropriately (Suresh & Sahay, 2022; Ward & Malik, 2022; Zhi & Li, 2023).

Intestinal obstruction due to ascariasis is typically caused by a collection of worms that form a mass or ball known as an Ascaris ball. This condition occurs when a large number of worms accumulate inside the intestinal lumen, causing a mechanical blockage in the digestive tract. It is more common in children due to the smaller size of the intestinal lumen compared to adults. Additionally, large worm infestations increase the risk of forming a worm mass that can block the flow of intestinal contents.

The clinical manifestations of intestinal obstruction due to ascariasis can vary depending on the severity of the obstruction. Common symptoms include severe abdominal pain, vomiting, abdominal distension, constipation, and an inability to defecate. In some cases, patients may also experience vomiting containing live worms. Physical examination usually reveals abdominal tenderness, decreased or absent bowel sounds, and signs of intestinal distension.

The diagnosis of intestinal obstruction due to ascariasis is based on a combination of anamnesis, physical examination, and supporting tests such as laboratory and radiology. Laboratory tests often show the presence of leukocytosis or eosinophilia, while radiological tests, such as plain abdominal X-rays, can reveal intestinal distension or a collection of worms in the intestinal lumen. Management of this condition may involve conservative therapy with antihelminthic drugs, intravenous fluids, and strict observation. However, in cases of total intestinal obstruction or complications like perforation, surgical intervention such as exploratory laparotomy is required.

The primary objective of this case report is to describe the clinical presentation, diagnostic process, and surgical management of total mechanical intestinal obstruction due to an Ascaris ball in an adolescent patient. This report aims to provide a comprehensive overview of the manifestations of severe ascariasis complications and the therapeutic interventions required to manage such cases. The benefits of this study include raising awareness among healthcare providers, particularly in resource-limited settings, about the potential severity of ascariasis infections and the importance of early recognition and appropriate management. Additionally, this case report contributes to the existing medical literature by documenting a rare but serious complication of ascariasis, thereby supporting clinical education and informing public health strategies for helminth control in endemic regions.

This case report aims to describe the occurrence of total mechanical bowel obstruction due to an Ascaris ball in an adolescent patient who required exploratory laparotomy. Through this report, it is hoped that it will provide an overview of the clinical manifestations, diagnostic process, and appropriate management of ascariasis complications, thereby increasing the vigilance of healthcare workers in handling similar cases.

METHOD

Case Report

This study uses a **case report approach** by describing in detail the patient's clinical condition, diagnosis process, medical and surgical management, and the development of the patient's condition during the treatment period. The reported case is a 14-year-old female patient from East Jefman, Raja Ampat Regency, Southwest Papua Province. The patient was

hospitalized for six days from August 21 to 27, 2025. Data was obtained from the patient's medical records which included the patient's identity, anamnesis results, physical examination, laboratory examination, radiological examination, medical diagnosis, therapeutic actions, surgery reports, and the development of the patient's condition during treatment. The analysis was carried out descriptively by explaining the chronology of cases, clinical findings, and actions taken based on medical management standards.

RESULTS AND DISCUSSION

Patient Characteristics

The patient reported in this case was a 14-year-old female student residing in East Jefman, Raja Ampat Regency, Southwest Papua Province. She was admitted to the hospital with a primary complaint of abdominal pain that had progressively worsened over the two days prior to admission. The pain was described as diffuse and persistent throughout the abdominal region, with increasing intensity over time. Abdominal pain is one of the most common presenting symptoms in patients with intestinal obstruction and often becomes more severe as the obstruction progresses.

In addition to abdominal pain, the patient also experienced nausea and vomiting. Notably, the vomiting episodes contained several white worms measuring approximately 10–12 cm in length. The presence of worms in vomitus strongly suggests severe infestation by *Ascaris lumbricoides*. This clinical finding is considered highly characteristic of ascariasis and is often associated with complications when the worm burden becomes excessive.

The patient also reported abdominal distension, inability to defecate for four days, generalized weakness, and mild back pain. These symptoms indicate a possible disruption in the normal passage of intestinal contents. The inability to pass stool or gas is a classic sign of intestinal obstruction, particularly when accompanied by abdominal distension and persistent abdominal pain.

No previous history of similar symptoms or chronic gastrointestinal disease was reported. The absence of prior medical conditions suggests that the intestinal obstruction observed in this case was directly related to the parasitic infection rather than to other underlying gastrointestinal disorders.

Adolescents and school-aged children are considered a vulnerable group for soil-transmitted helminth infections. Environmental exposure to contaminated soil, poor sanitation facilities, and inadequate hygiene practices contribute significantly to the transmission of intestinal worms. In rural or coastal areas such as Raja Ampat, limited access to clean water and sanitation infrastructure may increase the risk of parasitic infections.

The patient's demographic background highlights the ongoing burden of ascariasis in developing regions. Although ascariasis is often asymptomatic in mild infections, heavy infestations can lead to severe complications such as intestinal obstruction, biliary ascariasis, pancreatitis, or intestinal perforation.

Clinical Findings

Upon physical examination, the patient appeared weak but remained fully conscious with a Glasgow Coma Scale (GCS) score of 15. The vital signs indicated mild physiological stress, with a blood pressure of 105/68 mmHg, pulse rate of 110 beats per minute, respiratory rate of 22 breaths per minute, body temperature of 37.8°C, and oxygen saturation of 99%.

The elevated pulse rate may indicate pain, dehydration, or systemic stress due to the obstruction. Mild fever can also occur in patients with intestinal obstruction as a response to inflammation or infection.

Abdominal examination revealed mild distension on inspection. Abdominal distension occurs when intestinal contents accumulate proximal to the site of obstruction, causing dilation of intestinal loops. This condition is commonly observed in patients with mechanical intestinal obstruction.

Auscultation of the abdomen revealed decreased bowel sounds. Normally, bowel sounds indicate active intestinal peristalsis. However, in cases of intestinal obstruction, peristaltic activity may initially increase and then gradually decrease as the bowel becomes fatigued or distended.

Palpation revealed localized abdominal tenderness without evidence of rebound tenderness or guarding. This finding suggests irritation of the intestinal wall but does not necessarily indicate peritonitis.

Percussion produced hyper-tympanic sounds, which are typically associated with gas accumulation in the intestines. Gas buildup occurs when intestinal contents cannot pass through the obstructed segment.

Rectal examination revealed feces mixed with worms within the rectal ampulla. This finding further confirmed the presence of heavy intestinal worm infestation and suggested that worms had migrated throughout the gastrointestinal tract.

Overall, the clinical findings strongly supported the suspicion of intestinal obstruction caused by ascariasis.

Laboratory and Radiological Findings

Laboratory examinations were conducted to assess the patient's systemic condition and detect possible signs of infection or inflammation. The results showed a hemoglobin level of 11.6 g/dL and hematocrit of 36.3%, which were slightly below normal but not indicative of severe anemia.

The most significant laboratory finding was leukocytosis with a leukocyte count of 18,500/mm³. Leukocytosis is commonly associated with inflammatory responses and may occur in intestinal obstruction due to irritation or infection within the gastrointestinal tract.

Although eosinophilia is often associated with parasitic infections, it was not specifically reported in this case. In acute complications such as intestinal obstruction, leukocytosis may become the dominant laboratory finding due to inflammation and physiological stress.

Radiological examination was performed using plain abdominal X-ray imaging. The radiograph revealed meteorism, which refers to excessive gas accumulation within the intestinal lumen. Meteorism is a common radiological sign of intestinal obstruction and reflects dilation of intestinal loops proximal to the obstruction.

Plain abdominal radiographs remain a valuable diagnostic tool in many healthcare settings due to their availability and rapid results. While computed tomography (CT) scans provide more detailed visualization of intestinal obstruction, X-ray imaging is often sufficient for initial assessment in resource-limited settings.

The combination of clinical findings, laboratory results, and radiological imaging allowed clinicians to establish a working diagnosis of abdominal pain caused by ascariasis with suspected partial intestinal obstruction.

Initial Management and Conservative Therapy

Initial treatment focused on stabilizing the patient's condition through conservative management. Intravenous fluid therapy using Ringer Lactate was administered to maintain hydration and correct electrolyte imbalance caused by vomiting and decreased oral intake.

Antibiotic therapy with ceftriaxone and gentamicin was given to prevent potential secondary bacterial infections. In cases of intestinal obstruction, bacterial translocation from the intestinal lumen may occur, increasing the risk of infection.

Antiemetic medication using ondansetron was administered to control nausea and vomiting. Analgesic therapy with sodium metamizole was used to reduce abdominal pain and improve patient comfort.

The patient also received dexamethasone as an anti-inflammatory agent. In addition, papaverine was administered to help reduce intestinal spasms.

A single 400 mg dose of albendazole was given as antihelminthic therapy to target the underlying parasitic infection. Albendazole is widely used in the treatment of soil-transmitted helminths and works by inhibiting glucose uptake in parasites, leading to their eventual death.

Despite these conservative measures, the patient's clinical condition did not improve. Persistent symptoms and the absence of bowel movement indicated that the obstruction had progressed to a complete mechanical obstruction.

Surgical Management and Intraoperative Findings

Due to the progression to total mechanical intestinal obstruction, surgical intervention was required. An exploratory laparotomy was performed on August 24, 2025, to identify and manage the cause of obstruction.

During the surgical procedure, dilation of the jejunum was observed, indicating that intestinal contents had accumulated proximal to the site of obstruction. The obstruction itself was located in the ileum and was caused by a large mass of worms forming an *Ascaris* ball.

An *Ascaris* ball is a compact cluster of worms that accumulate within the intestinal lumen. This mass can completely block the passage of intestinal contents, resulting in mechanical obstruction.

The surgical team initially attempted a milking procedure to push the worm mass toward the distal intestine. However, because of the large number of worms, this approach was insufficient to relieve the obstruction.

An incision was therefore made in the sigmoid colon to allow removal of the worms. Hundreds of *Ascaris lumbricoides* worms measuring approximately 10–15 cm were evacuated from the intestinal lumen.

Following evacuation, intestinal flushing was performed to remove residual worms and debris. The intestinal incision was then sutured, and the abdominal cavity was closed.

The large number of worms removed during surgery confirmed that the patient had experienced severe parasitic infestation.

Postoperative Recovery and Patient Outcome

After surgery, the patient was transferred to the intensive care unit for close monitoring. Postoperative care included intravenous antibiotics, analgesics, fluid therapy, and careful observation of vital signs.

Once the patient's condition stabilized, she was transferred to a regular inpatient ward. Nutritional therapy was initiated, including a diet high in protein and fiber to support recovery and restore intestinal function.

During the recovery period, the patient showed gradual clinical improvement. Abdominal pain decreased significantly, bowel function gradually returned, and the patient was able to pass stool and gas.

The surgical wound healed properly without signs of infection or dehiscence. Vital signs remained stable throughout the recovery period.

The patient was eventually discharged with oral medications and instructions for follow-up evaluation at the surgical outpatient clinic.

Clinical Implications and Public Health Perspective

This case illustrates that ascariasis infection can lead to severe complications such as mechanical intestinal obstruction, particularly in cases of heavy worm infestation. Although ascariasis is often considered a mild infection, it can become life-threatening when complications develop.

The formation of an *Ascaris* ball is a rare but well-documented cause of intestinal obstruction, especially in children and adolescents. The smaller diameter of the intestinal lumen in younger individuals increases the likelihood of obstruction when worm burdens are high.

Early diagnosis and timely intervention are essential to prevent serious complications such as intestinal perforation, peritonitis, and sepsis.

From a public health perspective, this case highlights the importance of preventive measures to reduce the prevalence of soil-transmitted helminth infections. These measures include improving sanitation infrastructure, ensuring access to clean water, and promoting proper hygiene practices such as handwashing.

Periodic deworming programs targeting school-aged children have been shown to significantly reduce the prevalence of ascariasis in endemic regions. Health education programs that promote environmental hygiene and safe food handling are also essential components of prevention strategies.

In addition, increased awareness among healthcare providers regarding the potential complications of ascariasis is crucial for early recognition and appropriate management.

CONCLUSION

Ascaris lumbricoides infection can cause serious complications in the form of mechanical intestinal obstruction due to the formation of *Ascaris* ball. In this case, adolescent patients experience total intestinal obstruction characterized by abdominal pain, worm-containing vomiting, abdominal distension, and inability to defecate. Initial management was carried out with conservative therapy, but because of the total obstruction, an exploratory laparotomy was performed. The evacuation of hundreds of worms from the intestinal lumen successfully overcame the obstruction and the patient showed improvement in condition after surgery. Early diagnosis and proper management are essential to prevent more severe complications in cases of ascariasis.

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