

INTRODUCTION:

Ascaris Lumbricoides can be accurately described as a parasitic nematode (roundworm). It is the most common parasitic infection worldwide but has become increasingly uncommon in developed countries such as the United States of America¹. Infected patients are typically asymptomatic and therefore, are usually diagnosed through a combination of labs which may show eosinophilia and imaging showing “tubular filling defects”³. The diagnosis can be confirmed with a stool sample showing the presence of worms under the microscope⁴. Symptomatic patients most often present with non-specific symptoms like dry cough, wheezing, and abdominal pain early on which may progress to anorexia³. Ascariasis can have serious complications including nutritional deficiency, bowel obstruction (usually at the ileocecal valve), pancreatic or biliary tree obstruction, volvulus, intussusception, or even with hepatic abscess^{5,6}. The preferred treatment is with anti-helminth medications, most commonly Albendazole or pyrantel pamoate, and is indicated even in asymptomatic patients. Rarely, complicated cases may also require surgery⁷.

Case report

An 18-year-old male presented as a level 1 trauma after a fall from a 12-foot roof. CT scans from his trauma workup showed a grade 5 liver laceration, shattered right kidney, and a small perisplenic hematoma. The patient was unstable and therefore, was taken to the operating room for an exploratory laparotomy and hepatorrhaphy. During the exploratory laparotomy, he was incidentally found to have intestinal ascariasis when his small bowel was being evaluated for any trauma. 3 motile worms were noted 1cm from the ileocecal valve, which could be felt and seen through the serosa. His abdomen was intentionally left open in the index case, with a plan for cholecystectomy and cholangiogram in 48 hours post-operatively. During the second operation, the decision was made to not directly remove or manipulate the worms since this was an asymptomatic 18-year-old male, and treatment is well-researched. He was given albendazole post-operatively to eliminate the worms and showed no signs of complications related to the worms during his hospital stay. The patient was subsequently discharged in stable condition with a plan for outpatient follow-up.

Discussion

A review of the literature showed that there are few cases similar to this, where ascariasis was incidentally discovered during an unrelated procedure following trauma⁸. A summary of these cases and their management can be found in Table 1 below. The majority of these cases initially presented as a trauma, where the worms were then subsequently discovered during an exploratory laparotomy similar to what happened with the case we present. Differences in these cases lie in the management after the worms were discovered. In our case, the decision was made to only treat the parasitic infection post-operatively with albendazole. In other cases, the worms were removed intra-operatively with similar outcomes. The majority of patients with incidental ascariasis survive and do well, whether they had the worms removed or were treated with an anti-helminthic. The decision on what to do following the worms’ discovery is dependent on whether the patient is symptomatic, as well as the apparent worm burden which is especially relevant in pediatric cases. The fatalities reported in our literature review^{9,10} were a result of not discovering an obstructed airway in time or severe smoke inhalation injury. The patients were also geographically spread across both endemic and non-endemic areas for ascariasis. Although it is more common in developing countries, the increased rates of immigration may contribute to an increased incidence in developed countries as well⁸. A few of these reported cases were discovered following intubation or extubation therefore, a high index of suspicion should be exercised in such patients with a history of travel to endemic areas and then suffer from sudden airway compromise during or following these procedures. If identified, rapid improvement follows the simple removal of the worm obstructing the airway^{11–14}. Patients with purely asymptomatic ascariasis seem to be adequately managed with albendazole only as established in the literature.

Conclusion

Our literature review shows that the majority of ascariasis cases are routine, not severe, and adequately resolve with anti-helminthic therapy. Few reported cases of incidental discovery occurred only after the worms caused an acute airway obstruction and sudden patient deterioration.

In this case report, we presented a case of Blunt Abdominal Trauma with an incidental finding of ascariasis. The intraoperative decision not to explore the small bowel was made because the patient had no symptoms of obstruction before his presentation, in addition to the well-studied efficacy of medical management with Albendazole¹⁶. Of note, the patient did well post-operatively and has been seen in the trauma clinic with acceptable recovery progress since the initial trauma. He will continue to be followed closely for monitoring and to confirm the resolution of his intestinal ascariasis.

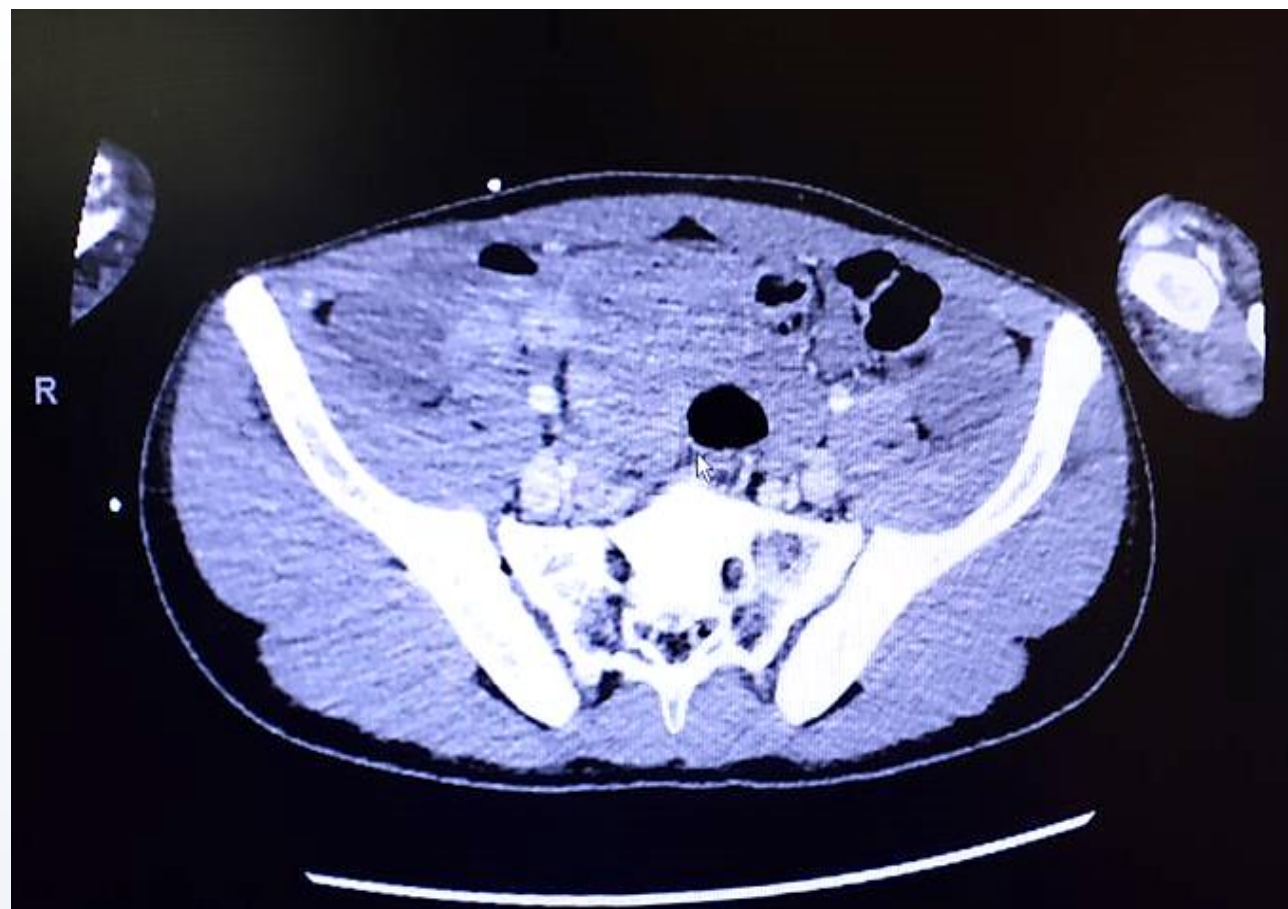


Figure 1. CT of the pelvis with signs of *Ascaris* worms highlighted.

Table 1. Review of literature showing incidental findings of ascariasis in patients hospitalized for trauma.

Reference	Study design	Location	Presentation & Findings	Intervention	Outcome
W. Kang et al., 2019 ⁸	Case Report (n=1)	S. Korea	Single worm on colonoscopy.	Endoscopically removed with forceps. Follow-up colonoscopy found no worms.	Stable
A. Alhamid et al., 2018 ⁹	Case Report (n=1)	Syria	Single worm seen on gallbladder US.	Treated with albendazole. Worm debris led to acute cholecystitis.	Stable
M. Eshkani et al., 2016 ¹¹	Case Report (n=1)	Iran	Multiple worms seen during Es-lap following gunshot injuries.	Worms & debris removed during surgery. Treated with albendazole.	Stable
P. Sathar et al., 2015 ¹²	Case Report (n=1)	India	Multiple worms on abdominal US.	Treated with albendazole.	Stable
R. Gan et al., 2014 ¹³	Case Report (n=1)	UK	Oral suctioning extracted a single worm.	Treated with mebendazole.	Stable
K. Fimoes, 2013 ¹⁴	Case Report (n=1)	Afghanistan	Worm found protruding from the mouth.	Removed by forceps.	Stable
F. Cabrera et al., 2011 ¹⁵	Case Report (n=1)	Peru	Single worm found during R-nephrectomy & hemicolectomy.	Removed intraoperatively & albendazole also given.	Stable
A. Niang et al., 2011 ¹⁶	Case Report (n=1)	Senegal	Single worm spontaneously exited the patient's mouth while in the ER.	Treated with mebendazole.	Stable
J. Bailey et al., 2010 ¹⁷	Case Report (n=1)	USA	Small worm protruding from the oral cavity. Larger worm found obstructing ET tube.	Small worm removed & mebendazole given.	Stable
C. Masumoto et al., 2010 ¹⁸	Case Report (n=1)	Dem. Rep. of Congo	22 worms found during emergent ex-lap for multiple gunshot wounds.	All worms extracted through enterotomy & mebendazole also given.	Stable
P. Mohite et al., 2010 ¹⁹	Case Report (n=1)	India	Worm discovered in intercostal chest tube drainage bag.	Misplaced drain repositioned and diaphragm repaired.	Stable
L. Prant et al., 2007 ²⁰	Case Report (n=1)	Israel	Multiple worms seen on CT for penetrating trauma from a bomb.	Removed intra-operatively.	Stable
O. Lapid et al., 1999 ²¹	Case Report (n=1)	Israel	Worm discovered during laparoscopy.	Removed by forceps.	Stable
C. Perry et al., 1999 ²²	Case Report (n=1)	USA	Single worm discovered in the NG tube when it was removed after 2 days.	Treated with mebendazole.	Stable
K. Schorfenke et al., 1998 ¹¹	Case Report (n=1)	USA	Worm regurgitated by the patient upon extubation, following a 2-hr surgery.	Treated with mebendazole.	Stable
J. Heggervet et al., 1995 ²³	Case Reports (n=3)	USA	Worms discovered in 3 children with smoke inhalation injuries.	All 3 patients treated with mebendazole.	2 Stable & 1 Deceased
L. Imholts, 1984 ²⁴	Case Report (n=1)	Brazil	Single worm obstructing ET tube. Not discovered until autopsy.	The patient died after acute respiratory distress & cardiac arrest.	Deceased
G. Polgorny, 1967 ²⁴	Case Report (n=1)	USA	2 large worms found in small bowel during Es-lap following gunshot injuries.	Removed intra-operatively.	Stable