

A CASE REPORT OF A CHILD WITH ACUTE ABDOMEN WHO BENEFITED FROM POINT-OF-CARE-ULTRASOUND TO CONFIRM URGENT SURGICAL DIAGNOSIS IN HOMA BAY HOSPITAL, KENYA.

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INTRODUCTION

Key Words: Ascaris Lumbricoides, Bowel Obstruction, Bowel Perforation, POCUS (Point of Care Ultrasound)

Ascariasis is one of the most common helminthic infections worldwide. Children in endemic areas are particularly predisposed, and early detection can be challenging as patients may be asymptomatic or have only mild abdominal discomfort. Mass treatment campaigns and presumptive treatment with albendazole/mebendazole are effective in highly endemic areas, but parasitological stool examination can also be performed. Whereas early infection can cause limited inflammatory pulmonary conditions, more advanced infections can cause serious intra-abdominal complications such as intestinal or biliary obstruction, cholangiohepatitis, pancreatitis, acute appendicitis, and malnutrition, among other potentially fatal conditions.

CASE DESCRIPTION

We present a case of a 9-year-old female patient who was admitted to an MOH hospital in Homa Bay County after being unwell for 1 week with a history of intermittent fevers, abdominal discomfort, vomiting, and loss of appetite. The symptoms worsened 4 days prior to her admission with abdominal pain, distension, and constipation. The mother reported an episode of stool and vomitus containing worms. There was no significant past medical history. On presentation to the hospital, her vital signs showed a temperature of 36.5°C, a heart rate of 98 beats per minute, a respiratory rate of 20 breaths per minute, and saturation at 100% in room air. On exam, she was ill-looking, with tense, generalized abdominal tenderness without palpable masses.

After an enema, the patient passed non-bloody mucoid stool containing worms. The next morning, she had diffused, distended, abdominal tenderness with resonant percussion and reduced bowel sounds. Laboratory workup showed HB 10.9 g/dl, PLT 695, WBC of 10.8/l, and lymphocytes of 1.6. Since the patient met criteria for partial bowel obstruction secondary to helminthic infection, she was started empirically on IV Ceftriaxone plus Metronidazole IV, Mebendazole 100 mg, and IV fluid maintenance with Mix solutions (RL-D5%) and NPO (nil per oral).

Clinicians performed a POCUS FAST exam, to evaluate for free abdominal fluid, and a focused acute abdomen scan, to evaluate for signs of intestinal obstruction. Free fluid was visible throughout the peritoneal cavity. An intestinal scan showed adult worms in the intestinal lumen [Image 1]. Distended proximal bowel loops [Image 2] were visualized, demonstrating obstruction. Distally, collapsed bowel lumens without fluid or stool content were visualized [Image 3]. The combination of clinical history and exam plus ultrasound findings suggested perforated bowel, likely due to helminthic infection.

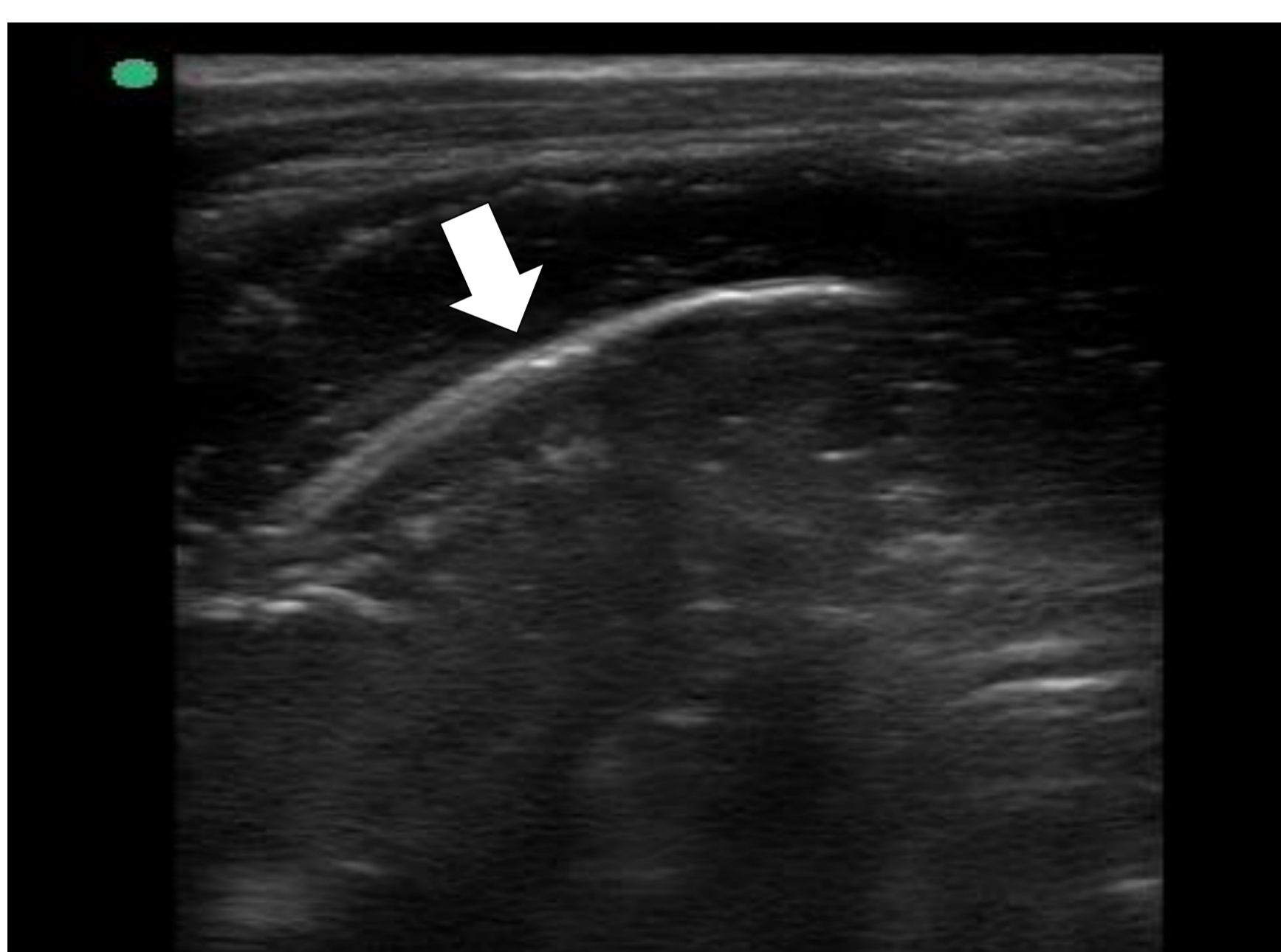


Image 1. Adult worm (arrow) seen to be moving within bowel loop during real-time evaluation

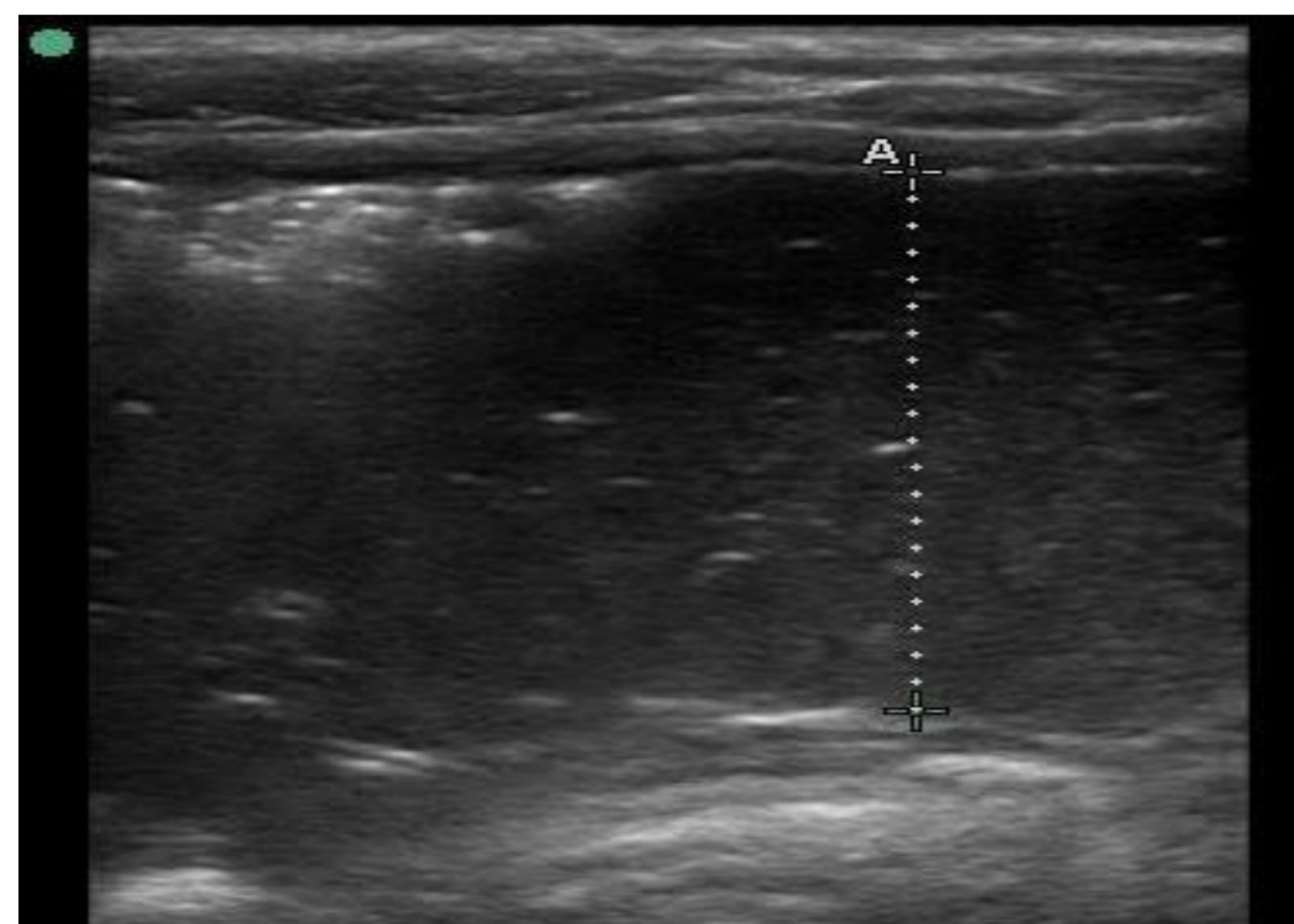


Image 2. Longitudinal image of dilated bowel loop 2.62 cm in the same region, suggestive of bowel obstruction

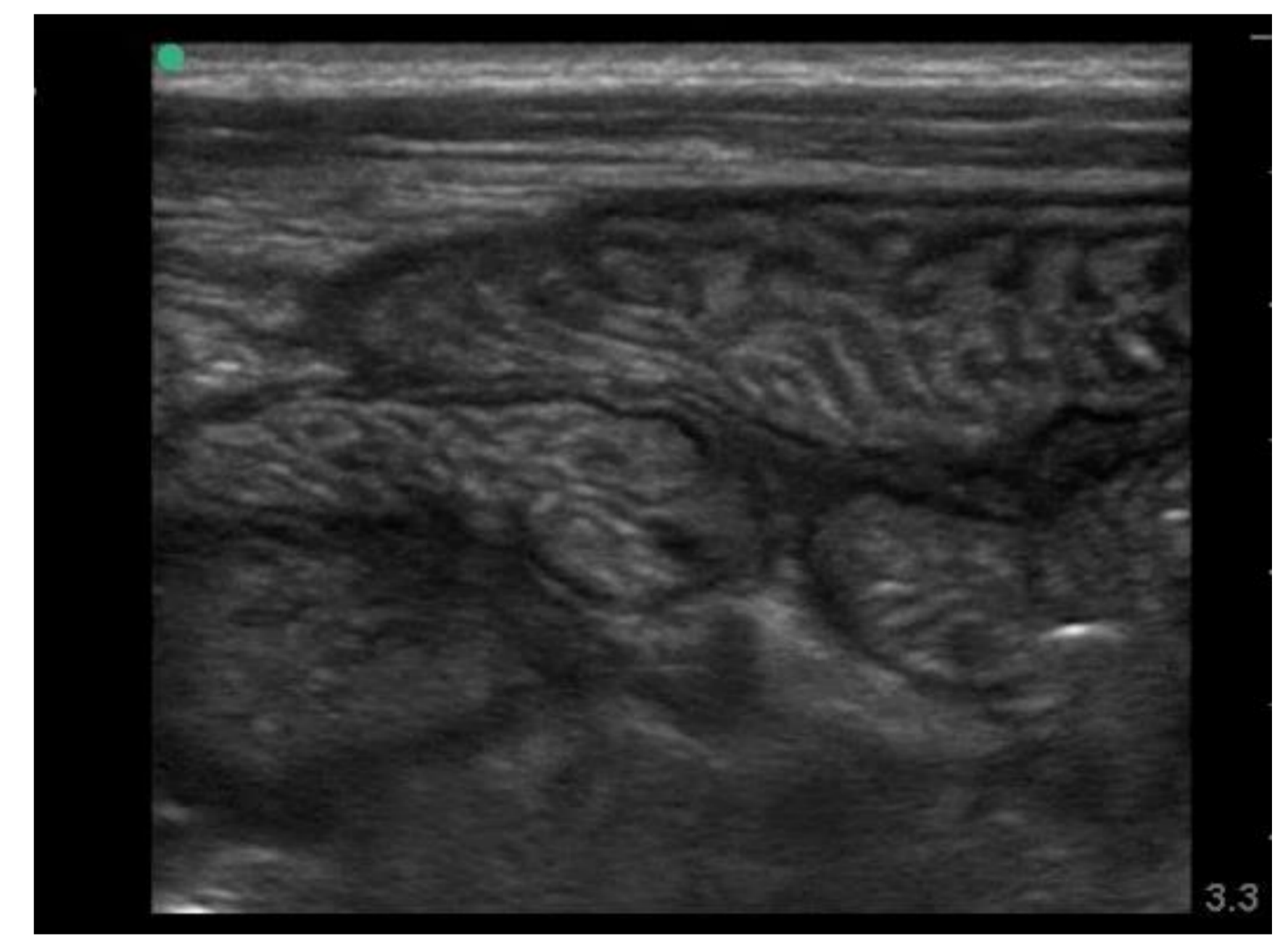


Image 3. Collapsed bowel loop without stool or liquid contents

DISCUSSION

Clinicians discussed the urgent findings of intestinal perforation with the surgeon on call, who prioritized the patient for emergency laparotomy. Intraoperative findings confirmed ileum perforation with purulent fluid and Ascaris worms. The patient received an ileostomy, and was discharged home in stable condition. In this case, the presence of an ultrasound machine and staff trained to perform simplified POCUS exams to identify urgent findings, was extremely beneficial. As always, the key was the ability to connect findings with the overall clinical picture, and communicate that to other providers.

From a quality of care perspective, both of the patient's parents were present for the POCUS exam. They were able to see and understand the findings in real-time, and subsequently felt involved and informed in her care, and quickly gave consent for the complex surgical procedure. Additionally, the POCUS results helped persuade the surgeon to expedite the choice to surgically intervene, and helped predict complexity of the procedure, even in a resource limited setting where difficult choices had to be made about who needed surgery most urgently.

In conclusion, POCUS by trained users, when integrated with the clinical case, can play an important role in the evaluation of specific acute paediatric abdominal emergencies such as bowel obstruction. This diagnostic adjunct may benefit clinical care by providing real-time rapid assessment, optimizing time to narrow differential diagnoses, and accelerating decision-making and interventions, as witnessed in this case.

Finally, because POCUS is a user-dependent skill, the case reinforces the importance of training bedside clinicians not only in the technical skill, but also the larger integration into clinical decision-making, so that the outcome is improved care for our most vulnerable patients.

ETHICS STATEMENT

This study has been reviewed and approved by the Institutional Review Board (IRB) or Ethics Review Board (ERB) of my institution and has local ethics approval or permission in the study country, in accordance with local requirements.

Informed consent: A written, and oral informed consent was obtained from the patient's caretaker.

Conflict of interest statement: The authors declare not to have a conflict of interest.