

## CASE REPORT

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# Mesenteric venous thrombosis causing acute mesenteric ischemia in the first trimester of pregnancy

Youssef Zohdy, Ziad Ahmed

## ABSTRACT

**Introduction:** Acute mesenteric ischemia is a rare complication of thromboembolic diseases in the mesenteric vessels, which was noted to occur due to the hypercoagulable circulation associated with pregnancy.

**Case Report:** This paper presents a case report of acute mesenteric ischemia in a 9 weeks pregnant female, who was diagnosed late due to the nonspecific presentation of the disease yet was adequately treated with an acceptable result. **Conclusion:** Early detection and treatment of such disease prevents further deterioration of the mother's condition, thus ensuring a favorable outcome for both the mother and the fetus.

**Keywords:** Acute abdomen in pregnancy, Acute mesenteric ischemia, Intestinal resection, Mesenteric venous thrombosis

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## INTRODUCTION

Mesenteric venous thrombosis (MVT) is a rare cause of intestinal ischemia. Yet, when it happens in pregnancy it becomes a life-threatening condition to both the mother and the fetus making early diagnosis crucial. However, due to the vague abdominal symptoms during pregnancy and the preferability to avoid radiological investigations, diagnosis of MVT becomes challenging [1].

## CASE REPORT

A 31-year-old female, gravida 4 para 3, 9 weeks gestational age, presented to the emergency room (ER) complaining of severe lower abdominal pain. The patient was admitted due to the onset of vomiting which was diagnosed as hyperemesis gravidarum.

On examination, the patient showed severe pelvi-abdominal tenderness. Ultrasound (US) was performed showing single viable fetus with average crown-rump length (CRL)  $\pm$ 9 weeks, and moderate pelvi-abdominal collection noted up to Morison pouch. Blood pressure (BP) was 90/60 and the pulse was 140/min and faint. Complete blood picture was done showing: hemoglobin level of 11.3 g/dL, platelet count of 226,000/ $\mu$ L, and white blood cell count of 16,000/ $\mu$ L. US-guided aspiration from the Morison pouch was performed revealing bloody fluid.

The decision to perform a midline exploratory laparotomy was taken. Vital signs before receiving general anesthesia showed: BP: 90/60 and pulse: 130/min. After opening the skin, subcutaneous tissue, muscle, and peritoneal layers, gangrenous bowel loops were noted and 750 cc of bloody fluid collection was suctioned. At first application of hot foment to the gangrenous loops was applied several times, however no signs of revitalization were noted. A segment of 2.5 meters of small bowel loops, 40 cm apart from the duodenojejunal junction, was resected and end-to-end anastomosis was performed. The patient was then transferred to the ICU for postoperative observation.

Intraoperative photographs were taken demonstrating the gangrenous nonviable small bowel loops before resection, shown by the clear demarcation in color change (Figure 1). During resection and anastomosis, a mesenteric venous branch was found to have a localized firm segment. Upon dissection of this vessel segment, a 1.5 cm venous thrombus was discovered occupying the lumen and was extracted (Figure 2).



Figure 1: Loops of gangrenous bowel before resection, intraoperative photographs were taken demonstrating the gangrenous nonviable small bowel loops before resection, shown by the clear demarcation in color change.

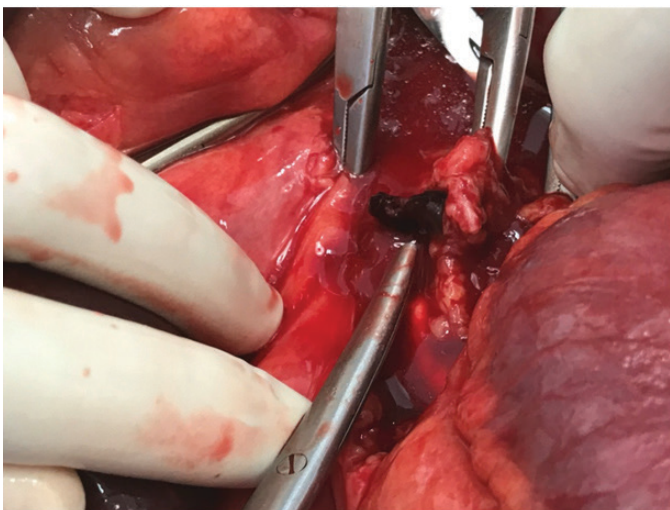


Figure 2: Thrombus extraction from a mesenteric vessel. During resection and anastomosis, a mesenteric venous branch was found to have a localized firm segment. Upon dissection of this vessel segment, a 1.5 cm venous thrombus was discovered occupying the lumen and was extracted.

## Follow-Up

Three days later the patient was stable, no postoperative complications presented, and she was

discharged from the ICU and advised to return for constant follow-ups. The course of the pregnancy continued without any complications. At 34 weeks, the patient presented with preterm labor pain (PTLP) and upon consultation a decision was made to terminate the pregnancy. A cesarean section operation was performed, the baby was delivered and transferred to the neonatal intensive care unit (NICU) and was discharged four days later. Both the mother and the baby were then stable and were discharged from the hospital.

## DISCUSSION

Mesenteric venous thrombosis was first differentiated and described as a cause of acute mesenteric ischemia by Warren and Eberhard in 1935 [2]. A lack of recent epidemiological studies was noticed, however in 2015 a retrospective study reported an incidence rate of acute mesenteric ischemia of 7.3/100,000 person per year. Acute mesenteric ischemia occurs due to arterial occlusion in 65% of cases, venous occlusion in 28% while 7% were due to nonocclusive causes [3].

The hypercoagulable state associated with pregnancy puts the female at an increased risk of developing thromboembolic diseases [4]. In fact, it was documented that the hypercoagulable state in normal pregnancy causes an approximate increase in incidences of venous thromboembolism (VTE) by six folds [5].

In 2017, a few cases of acute mesenteric ischemia in pregnancy were published, some cases showed some sort of pathology that could have been a predisposing factor to the thromboembolic disease as antiphospholipid syndrome or following surgery, however other cases showed no additional predisposing factor rather than the pregnancy itself [6–9].

With a rate of 1 in every 635 pregnancies, acute abdomen during pregnancy was found to be caused by both obstetrical, non-obstetrical, gynecological, and non-gynecological causes making its management challenging [10, 11]. Therefore, relying solely on the clinical presentation and abdominal examination for the diagnosis of non-obstetrical and non-gynecological causing of an acute abdomen in pregnancy is to some extent inconclusive due to the physiologic changes associated with pregnancy that can mimic some types of pathology [11]. Moreover when it comes to the use of radiology [e.g., computed tomography (CT)] to aid in reaching the diagnosis, the Society of Obstetricians and Gynecologists recommends the use of CT and gadolinium contrast agents, when the benefits outweigh the potential risks, through evidence released in 2014, level III-C [12]. However, the diagnosis of AMI in pregnancy remains challenging due to the various differential diagnoses for acute abdomen and the preferability to avoid using CT with contrast [13, 14].

## CONCLUSION

Early diagnosis and treatment of acute intestinal ischemia caused by MVT is critical for the survival of both the mother and the fetus. Nevertheless, late presenting cases could also be rescued in the hands of well-trained medical personal. Though the rarity of such diagnosis, gastrointestinal lesions should be more often investigated in gravid females with acute abdomen or vague gastrointestinal symptoms. Additionally, the diagnosis of MVT should be considered more often within the differential diagnosis of acute abdomen in pregnancy. Radio-imaging methods may aid in reaching the diagnosis, and their use is not absolutely contraindicated when weighing its benefits according to the guidelines. Finally, laparoscopy or laparotomy should be considered when presented with a case of acute abdomen with rapid deterioration during pregnancy to help in obtaining a more favorable outcome.

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## Author Contributions

Youssef Zohdy – Conception of the work, Design of the work, Acquisition of data, Drafting the work, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Ziad Ahmed – Acquisition of data, Analysis of data, Interpretation of data, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

## Guarantor of Submission

The corresponding author is the guarantor of submission.

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## Consent Statement

Written informed consent was obtained from the patient for publication of this article.

## Conflict of Interest

Authors declare no conflict of interest.

## Data Availability

All relevant data are within the paper and its Supporting Information files.

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