

Rare Complication of Uterine Fibroid during Pregnancy Threatened a Primigravida Life a Case Report

Nawal Alharbi*, Hala Abdelmomen, Samah Mohamed

Department of Obstetrics and Gynecology, King Saud Medical City, Riyadh, Saudi Arabia

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***Corresponding author:** Nawal Alharbi, Department of Obstetrics and Gynecology, King Saud Medical City, Riyadh, Saudi Arabia

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ABSTRACT

This is a rare case of mechanical small bowel obstruction caused by multiple sub-serous uterine fibroids in a 40-year-old primigravida at 32 weeks' gestation, with no history of prior surgeries. The patient developed severe hypovolemia, electrolyte imbalance, and severe lactic acidosis, she was resuscitated and intubated, then the emergency cesarean section with exploration laparotomy was done which revealed bowel ischemia, however, no bowel resection was done as the bowel was not necrotic, and myomectomy was done during the operation to relieve the bowel obstruction. Postoperative she was still hypotensive supported by 2 inotropic, lactic acidosis due to bowel ischemia (dusky bowel) which was not improving by conventional management, however, she improved dramatically after intravenous administration of thiamin therapy.

Intestinal obstruction during pregnancy must be considered in cases of uterine fibroid during pregnancy as the delayed diagnosis can lead to serious morbidity and mortality.

Keywords: acute intestinal obstruction, pregnancy, uterine leiomyoma, myomectomy during CS, lactic acidosis, thiamine therapy.

INTRODUCTION

Intestinal obstruction during pregnancy is a rare life-threatening condition with high morbidity and mortality. The small bowel is involved in approximately 80 percent of cases of mechanical intestinal obstruction.^[1] Mechanical small bowel obstruction is caused by intraluminal or extra-luminal mechanical compression. In developed countries, adhesion is the most common cause, followed by hernias, neoplasms, and various other infectious and inflammatory disorders.^[2] Less frequent causes of obstruction include Crohn's disease (3 to 7%)^[3], gallstones (2%), volvulus (4 to 15%).^[4] The patient was primigravida with no prior surgery, she developed intestinal obstruction during 32 weeks' gestation due to small bowel entrapment between pedunculated multiple sub-serous uterine fibroids.

It is difficult to diagnose intestinal obstruction during pregnancy as vomiting, and abdominal distension are commonly associated with pregnancy. On the other hand, uterine fibroid and can develop red degeneration

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during pregnancy which manifests in vomiting and abdominal pain, that makes the diagnosis of intestinal obstruction more challenging.

The patient is complicated by thiamin deficiency due to decreased intake with repeated vomiting. Thiamin deficiency with the presence of bowel ischemia caused by hypo-perfusion causes increased lactate levels and developed severe metabolic acidosis with electrolyte imbalance which adds more challenge to treating our case.

CASE REPORT

A 40-year-old lady, Primigravida at 32 weeks' gestation, who presents to the emergency room at Maternity Hospital KSMC, consent was taken from the patient for reporting. She was complaining of continuous vomiting, abdominal pain, and absolute constipation for 4 days. She was admitted to another hospital for 3 days and diagnosed as UTI and was given antibiotics but, she did not improve there so, she discharged herself against medical advice and came to KSMC. She is known to have uterine fibroids. She had no history of previous medical illness or surgeries.

On arrival to emergency room: the patient was dehydrated, not pale or jaundiced. Vital signs were normal (pulse: 97/min, blood pressure: 120/55, Temperature: 36.8°C, respiratory rate: 20/min, and O₂ Sat 99% at room air). The urine dipstick showed Acetone +3, Glucose – NIL, and Protein – NIL. Abdominal examination revealed a distended abdomen, generalized tenderness but no guarding or rebound tenderness, and bowel sound heard as sluggish, fundal height was equivalent to 34 weeks' size, longitudinal lie, cephalic presentation, and fetal heart heard normal. She received IV fluids, analgesia (IV Paracetamol) & anti- emetics.

The patient was admitted with a primary diagnosis of pregnancy with red degeneration of fibroid, and the differential diagnosis of urinary tract infection, pyelonephritis, cholecystitis.

Initial investigations included complete blood picture, liver, and kidney function tests were normal (Hemoglobin level: 11.6 g/dl, WBC: 9.6, Na: 134 mmol/l, K: 4.5 mmol/l). CTG was reactive. Obstetrics ultrasound showed a single viable fetus at 32/52 gestation with cephalic presentation, the placenta was upper, BPP 8/8 and Doppler umbilical artery was normal. Expected fetal weight about 2.06 kg. Uterine fibroid left lateral size 15 x 10 cm & posterior 4 x 4 cm. Urine analysis and culture were negative. Ampicillin IV was started on admission for the suspicion of UTI.

The patient started to deteriorate within <17 hours of admission, she became hypotensive & tachycardia (blood pressure: 60/49 & pulse: 118/min) Temperature: 36.5°C. respiratory rate: 20/min, O₂ saturation 99% at room air. She was fully conscious & oriented and resuscitated with IV fluids and her vitals improved, and urgent upper abdomen USS revealed multiple dilated fluid filled bowel loops, and moderate free fluid in peritoneal cavity.

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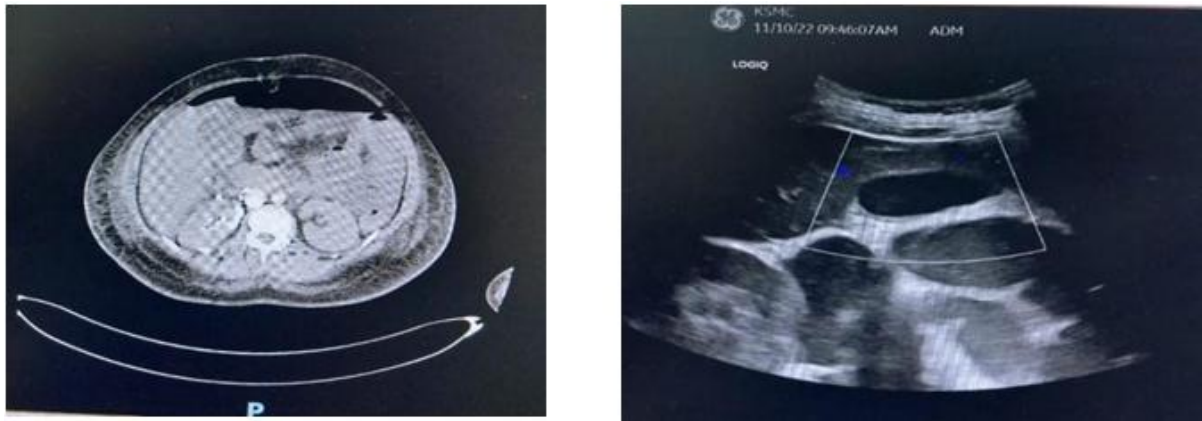


Figure 1, 2: Upper abdominal ultrasound reveals: multiple dilated fluid filled bowel loops, and moderate free fluid in peritoneal cavity.

The General Surgeon on call evaluated the patient and insert a nasogastric tube which drained about 300mL of greenish fluid with fecal smell was drained and he suspected: Intestinal obstruction or, Perforated viscus, Pancreatitis. She was transferred to ICU, as the patient was deteriorating rapidly: (Pulse: 132/min, blood pressure: 95/44, Temperature: 36.8, respiratory rate: 20/min, O₂ saturation 96% at room air), with decreased urine output less than 50 ml/hr. Arterial blood gases reveal severe metabolic lactic acidosis: PH: 6.97, severe hypokalemia: 2.9 mmol/l, HCO₃: 15.2 mmol/l, Lactate: 3.1 mmol/l) and Septic shock was suspected. In ICU, she was intubated and started on inotropes, potassium replacement was started, septic screening was sent & antibiotics started (Tazocin). Multidisciplinary team evaluated the patient including Obstetrician, general surgeon, intensive care doctor, and Anesthetist, and Emergency C/S and exploratory laparotomy was decided.

The operation started within 1 hour, with a vertical midline incision, and the caesarian section was done as usual with blood loss of about 700 ml. unfortunately, the baby came out stillbirth. There was large amount of greenish-yellow serous fluid in the peritoneal cavity and two large sub- serous & pedunculated uterine fibroids were found, one left lateral $\approx 10 \times 15$ cm with degeneration and the second one was $\approx 4 \times 3$ cm posterior just above utero-sacral ligament, with others multiple small anterior wall fibroids (sub-serous & intramural). Myomectomy was done for the two large fibroids as they were pedunculated (with short pedicles). The uterine tone was maintained by utero-tonic (Haemabate intramural, Pabal injection).

The general Surgeon examined all abdominal organs, it was found that loop of small bowel 30cm long was dilated & dusky, however, empty collapsed bowel below the obstruction level. No perforation was found. After washing with warm normal saline the bowel color improved & peristalsis exist so, no bowel resection was needed. The impression was mechanical small bowel obstruction with ischemia without necrosis due to entrapment in between fibroids.

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Figure 2: Uterus found with 2 big sub-serous pedunculated fibroids at posterior uterine wall, biggest is 10 x 15 cm in upper left lateral posterior uterine wall, and another one 4x 4 cm in lower part of the posterior uterine wall.

The patient was transferred back to MICU on mechanical ventilation & on two inotropes (noradrenaline and vasopressin). In spite of conventional management of Lactic acidosis & electrolytes correction, the patient's condition was not improving for 5 days with persistent high lactate. Post-operative PH was: 7 (corrected within 2 days), Serum lactate was rising to 5mmol/l, Urea: 9 mmol/l, and serum Creatinine level: 60 μ mol/l & Creatinine clearance was \uparrow 120ml/min. AST and ALT were rising: 221 u/l, 95 u/l. She was in DIC with a high INR of 2.5, PTT and PT also increased. Her blood pressure was maintained by two inotropes (noradrenaline & vasopressin (max. doses).

She could not be weaned off the ventilator & was febrile; Patient was followed up also by the general surgeon team, she was kept NPO for 5 days on the 5th day she was started oral fluid through the nasogastric tube. she was seen by a neurologist (C.T. scan & MRI brain were normal). She was seen also by a cardiologist & echocardiogram was normal. She was seen by the infection department team; all culture results were negative antibiotics were changed to Imipenem & Vancomycin.

However, she improved dramatically after starting intravenous thiamine therapy (100 mg BID). Her blood pressure started to improve within 8 hours & inotropes dose was decreased gradually. on the next day, one of the inotropic was discontinued and the lactate level continued to decrease gradually to a normal level over several days. Her liver and renal function improved within 5 days and DIC was corrected 6 days later. She was improving gradually & extubated on the day 12 postoperative day. The patient was discharged in good condition on multivitamins, oral thiamine continued for one month, and physiotherapy.

DISCUSSION

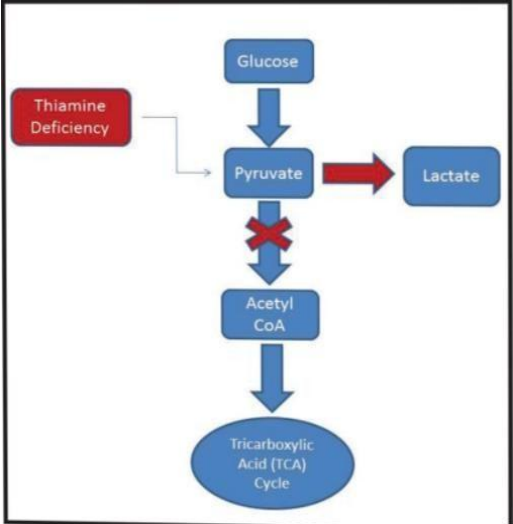
Leiomyomas are the most common benign tumor in childbearing age women, The incidence of fibroid in pregnancy increases with age. Between 10 and 30% of women with fibroids will develop a pregnancy complication.^[5] Fibroids can also cause pressure symptoms, preterm labor, placental abruption, and double the

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risk of placenta Previa in pregnancy, and cesarean sections, were significantly higher in those with fibroids.^[6] Myomectomy during pregnancy or at delivery is potentially harmful (hemorrhage, uterine rupture, miscarriage, or preterm delivery). Myomectomy should be avoided during pregnancy and at delivery. Uncontrollable hemorrhage during myomectomy may necessitate a hysterectomy. Rarely, myomectomy of pedunculated or subserosal fibroids has been performed antepartum for management of an acute abdomen or obstruction, and myomectomy may be required at cesarean delivery to close the hysterotomy.^[7] Uterine leiomyomas may compress the bowel leading to obstruction either from their extensive size or as a result of their associated complications. Leiomyomas must be considered as the etiology of intestinal obstruction in female patients.^[8] Intestinal obstruction is a serious complication with significant maternal and fetal mortality. It is recorded in the American Journal of Surgery that intestinal obstruction with pregnancy is about 1/1500 deliveries, the most common cause recorded with 58% due to mechanical obstruction due to adhesion, 24% due to volvulus, and 5% intussusception. The management of obstruction is essential. Laparotomy, sometimes resection, and anastomosis in some cases with fetal mortality of up to 26% and maternal mortality of 6% in this study.^[9] Bowel ischemia as a complication of bowel obstruction is seen in 7 to 42 percent of bowel obstructions and significantly increases mortality associated with bowel obstruction.^[10] Intestinal obstruction in pregnancy cases presents with similar symptoms and signs to non-pregnant patients: abdominal pain due to distention due to accumulation of gases (swallowed air + bacterial growth) and fluids (ingested food, gastric, intestinal juice, bile secretions,) and constipation, which results in dehydration (reduced intake, vomiting, reduced absorption), electrolytes disturbance, and metabolic acidosis. This can be complicated by: Hypovolemic which causes hypotension, and even the heart not able to pump enough blood), Toxic materials and toxemia (lead to sepsis), Cardiopulmonary dysfunction (atelectasis), Renal failure, Shock and death. Abdominal imaging (plain radiographs, computed tomography) is generally needed to confirm a diagnosis of mechanical bowel obstruction, identify the location of the obstruction, judge whether the obstruction is partial or complete, identify complications related to obstruction (ischemia, necrosis, perforation), and determine the potential etiology. Abdominal ultrasonography may be useful for the diagnosis of small bowel obstruction in patients who cannot undergo CT scanning due to contrast allergies, pregnant patients, and critically ill.^[11] Abdominal Magnetic Resonance Imaging (MRI) is an option for the assessment of small bowel obstruction in pregnant women.^[12] Delay diagnosis of intestinal obstruction due to difficult diagnosis and differential diagnosis, give chance for rapid deterioration and serious complication. The improved mortality and morbidity are attributed to early diagnosis and treatment of intestinal obstruction including fluid therapy, electrolyte correction, acidosis, and sepsis which are important causes of mortality.^[13] Elevated lactate level is found in critically ill patients, most often due to hypo-perfusion. Thiamin deficiency as a cause of lactic acidosis in the critical care setting may be under-diagnosis.^[14] In this particular case study, the patient was admitted to the hospital with 3 risk factors of thiamin deficiency (persistent vomiting, malnutrition, and bowel ischemia). The patient developed a rapid drop of lactate after thiamine injection.^[14] Causes of high lactate in this patient: 1- hypo-perfusion due to hypovolemia as a result of excessive vomiting and less intake. 2- bowel ischemia due to mechanical obstruction cause the local release of lactate. 3- sepsis- due to accumulation of bowel content in the dilated bowel. Intravenous administration of Thiamin is associated with a rapid reversal of lactic acidosis and greater than 50% in lactic acid level within 8 hrs. (7 to 2.4 mmol/l).

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withdrawal of inotrope gradually started with lactate level decreasing. Then the patient was extubated after few days' post thiamin injection.^[14]

Table 1: Risk Factors for Thiamine Deficiency. ^[14]	Thiamine deficiency impair the entry of pyruvate into the TCA cycle which lead to lactic acidosis. ^[14]
<ul style="list-style-type: none"> • Persistent vomiting Bariatric surgery with persistent vomiting. Hyperemesis gravidarum / Chronic vomiting / gastroparesis. • Anorexia nervosa • Hunger strikers • Starvation/malnutrition or patients deprived of nutrients for a prolonged period of time for any reason. • Parenteral nutrition without added vitamins • Unexplained lactic acidosis • Alcoholism 	 <pre> graph TD Glucose --> Pyruvate Pyruvate --> Lactate Pyruvate --> AcetylCoA[Acetyl CoA] AcetylCoA --> TCA[Tricarboxylic Acid (TCA) Cycle] ThiamineDeficiency[Thiamine Deficiency] -.-> Pyruvate Pyruvate -.-> Blocked AcetylCoA </pre>

CONCLUSION

To consider intestinal obstruction in patients who have uterine fibroids when presented with abdominal pain and vomiting particularly during pregnancy. To consider thiamine therapy in cases of refractory lactic acidosis which is not responding to the conventional therapy (including bicarbonate, IV fluid, O₂, or antibiotics) in patients with excessive vomiting due to hyperemesis gravidarum, intestinal obstruction or other causes. It is inexpensive and easy to treat.

Conflict of Interest: All authors has no conflict of interest.

Contributions: All authors have equal contribution for reviewing the literatures

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