

Case Report

A deadly twist detorted

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Abstract:

Intestinal obstruction secondary to sigmoid colon volvulus in pregnancy is a rare but serious complication of pregnancy with significant maternal and fetal mortality. We report the first case in this institution of volvulus of the sigmoid colon in a pregnant patient on her 30th week age of gestation that was successfully managed conservatively with flexible colonoscopic decompression and detorsion. The presenting signs and symptoms seen in this patient are the same as with a nonpregnant patient and are often nonspecific. Hence, a high level of suspicion is essential for early diagnosis. Fetal and maternal mortality rates are higher during pregnancy if the diagnosis is delayed.

Keywords:

Colonoscopy, decompression, detorsion, volvulus

Introduction

Volvulus is a condition wherein a loop of the intestine rotates around itself and the mesentery that supports it, causing acute, subacute, or chronic bowel obstruction. The onset of symptoms may be gradual or rapid; symptoms may include episodes of abdominal pain, distension, obstipation, and constipation. Outcomes may include bowel ischemia, necrosis, gangrene, perforation, peritonitis, preterm delivery, and both fetal and maternal death.^[1]

In pregnancy, it has been postulated that the development of sigmoid volvulus can occur as a result of a redundant or abnormally mobile sigmoid colon, displaced and led to twisting around its point of fixation by the enlargement of the uterus; the fact that most reported cases occurred during the third trimester of pregnancy corroborates this hypothesis.^[2]

Intestinal obstruction is a rare but serious complication of pregnancy with significant maternal and fetal mortality. The reported incidence of intestinal obstruction complicating pregnancy varies widely, from 1 in 66,431 to 1 in 1500 deliveries. However, there is no report on local incidence. In this institution, this is the first reported case of intestinal obstruction secondary to sigmoid colon volvulus that was conservatively managed through flexible colonoscopic detorsion and decompression.

The main objective of this case report is to demonstrate the importance of a high index of suspicion that will prompt diagnostic modalities and early intervention.

Case Report

This is the case of a 26-year-old, Gravida 2 Para 1 (1-0-0-1) on her 30th week age of gestation (AOG), married, Filipino, Roman Catholic from Manila with a chief complaint of abdominal pain.

The patient has a history of constipation since her teenage years, with bowel movements every 2–3 days. She was previously diagnosed with mechanical obstruction secondary to sigmoid volvulus in 2015 and underwent proctosigmoidoscopy with

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detorsion in another medical center. She is a nonsmoker, nonalcoholic beverage drinker with a family history of hypertensive disease on her maternal side. The patient is a nonhypertensive and nondiabetic with no history of other comorbidities such as bronchial asthma and thyroid disease. She denies allergies to any food and medications.

She is regularly menstruating since she was 14 years old, lasting for 3 days consuming 3 pads per day, moderately soaked without dysmenorrhea. She only has one sexual partner and is presently married in a single monogamous relationship with her husband for 9 years. She denies any history of dyspareunia, postcoital bleeding, vaginal discharge, and vaginal pruritus. She was on oral contraceptive pills (Ethinyl Estradiol + Levonorgestrel + Ferrous Fumarate) from 2012 to 2019.

Her first pregnancy was unremarkable. She delivered in 2011 to a live, term, female, through low transverse cesarean section for non-reassuring fetal status with unrecalled birth weight in another hospital. This is her second pregnancy. Her last menstrual period was on October 23, 2019.

Her first prenatal visit with her previous attending physician was on her 18th week AOG. Laboratory tests done revealed normal complete blood count, urinalysis, fasting blood sugar, nonreactive hepatitis B surface antigen, Venereal Disease Research Laboratory, and Human Immunodeficiency Virus tests. Her first ultrasound revealed a "single, live, intrauterine pregnancy, 19 weeks and 2 days age of gestation, breech with normal amniotic fluid volume (Single Vertical Pocket of 3.7 cm). There was a hyperechogenic mass seen at the lower uterine segment measuring, 4.2 cm × 3.6 cm × 4.2 cm with consideration for myoma. The expected date of delivery based on biometric measurements is July 30, 2020." She was started on prenatal medications and advised prenatal follow-ups.

She was diagnosed with gestational diabetes mellitus on her 26th week's AOG with an elevated 1st h 75 g Oral Glucose Tolerance Test at 199 milligram/deciliter. She was advised to diet modification. There was neither capillary blood glucose monitoring advised nor a referral to an endocrinologist. Her latest ultrasound was done on her 30th weeks' AOG revealing "single, live, intrauterine pregnancy, 31 weeks by sonographic aging, in cephalic presentation, good cardiac and somatic activity, placenta posterior, high lying, grade II, normohydramnios (Amniotic fluid index of 15.7 centimeters), the sonographic estimated fetal weight of 1598 grams—appropriate for gestational age."

The succeeding prenatal consults were unremarkable with no history of upper respiratory tract infection,

blood pressure elevation, urinary tract infection, and vulvovaginitis.

The condition started 4 days before admission on her 29th week's AOG, when the patient started to experience generalized abdominal pain associated with occasional hypogastric pain, cramping in character, radiating to the lower back, 4-5/10 in severity, with good fetal movement. No other associated symptoms noted such as vaginal bleeding, watery vaginal discharge, abnormal vaginal discharge, dysuria, and fever. No consult was done and no medications were taken. The said condition persisted intermittently.

One day before admission, still with the above condition, and with no bowel movement for 3 days, the patient consulted with her previous attending physician. She was, however, advised to consult at a tertiary hospital for further evaluation and management.

A few hours prior to admission, due to the persistence of abdominal pain, the patient consulted in our institution for further evaluation and management and was subsequently admitted with consideration of intestinal obstruction.

The patient came in conscious, coherent, not in cardiorespiratory distress with stable and normal vital signs. The blood pressure was 130/80 mm of mercury (mmHg), stable cardiac rate and respiratory rate, afebrile, with clear and equal breath sounds. She had adynamic precordium with a normal rate and regular rhythm. Her abdomen was globularly distended with an abdominal girth of 106 cm fundic height of not appreciated, fetal heart tones (FHTs) at 140 beats/min (bpm), with a computed estimated fetal weight of 3100 g. She was noted to have uterine contractions every 5–7 min apart, lasting for 30 s, mild to moderate. On speculum examination, the cervix was violaceous, smooth, with no erosions, with moderate whitish vaginal discharge, no bleeding, no pooling of fluid noted. On internal examination, the vagina admits two fingers with ease, cervix soft with external os open, closed internal os, at mid-position. On the digital rectal examination, external hemorrhoids were palpated, the rectal vault was empty, the rectal wall was smooth, there were no dilated vessels nor mass noted, and with good sphincteric tone.

Upon admission to the high-risk unit, the patient's vital signs were monitored. She was temporarily put on nothing per oreum (NPO) and was started on intravenous hydration and tocolysis with mainline of 5%Dextrose (D5) in lactated ringers solution 1 l just to keep vein open and a side drip of D5Water 500 ml with 4 ampules of isoxsuprine at 20 drops/min to be titrated to control contractions. Antenatal steroids,

dexamethasone 6 mg intramuscular every 12 h for 4 doses and ranitidine 50 mg intravenously once a day while on NPO was started. She was immediately referred to gastroenterology, endocrinology, infectious disease, and general surgery services for further evaluation and management. A nasogastric tube was inserted to help decompress the stomach. Ancillaries, whole abdominal X-rays, and computed tomography (CT) scans were done. The complete blood count and thyroid function tests were all within normal limits. Urinalysis revealed bacteriuria. SARS-CoV-2 immunoglobulin M (IgM) and IgG and subsequent reverse transcription-polymerase chain reaction test were negative. The whole abdominal radiological examination revealed "markedly gas-distended bowel loops in the upper abdomen. Paucity of the bowel gas noted in the distal colonic segments. Intestinal obstruction considered." Cefuroxime 2 g intravenously was started for asymptomatic bacteriuria. The patient was eventually sent to room with irregular uterine contractions, 1 mild uterine contraction every 2 h lasting for 20 s.

On the second hospital day, the patient still experienced intermittent abdominal pain with an abdominal girth of 107 cm. Intravenous tocolysis was continued and titrated accordingly. Cardiotocogram was done revealing FHTs at 140 bpm, with accelerations, no decelerations, with good fetal movement, and no uterine contractions noted in a 21-min observation. CT scan of the whole abdomen revealed "dilatation of the redundant transverse colon and descending colon (diameter of up to 7.2 cm), with apparent abrupt diminution of bowel caliber at the sigmoid, where twisting of mesenteric vessels in the left lower quadrant (L3 level) causes a "whirlpool" configuration associated with "coffee-bean" appearance of the involved large bowel loop. Findings of concern for sigmoid volvulus causing large bowel obstruction. Single intrauterine pregnancy in left occiput presentation." She was then scheduled for emergency colonoscopic decompression and detorsion with rectal tube insertion, after receiving obstetrics and cardiopulmonary clearance. Intraoperatively, FHT was monitored continuously. Intraoperative findings revealed: "The sigmoid mucosa was pinkish in color but with loss of vascular markings [Figure 1]. The first whirl sign of the distal twist of the volvulus was noted at 40 cm from the anal verge [Figure 2]. The scope was advanced onto and through proximal twists of the volvulus or the second whirl sign until a dilated descending colon was reached [Figure 3]. Fluoroscopy was done showing the untwisting of the sigmoid volvulus [Figure 4]." The patient had an unremarkable postoperative and recovery room stay. She was eventually transferred back to the room. The vital signs, FHTs, and contractions were continuously monitored.

On the third hospital day, 1st postoperative day, the patient had no subjective complaints and the vital signs were stable. Physical examination revealed a soft,

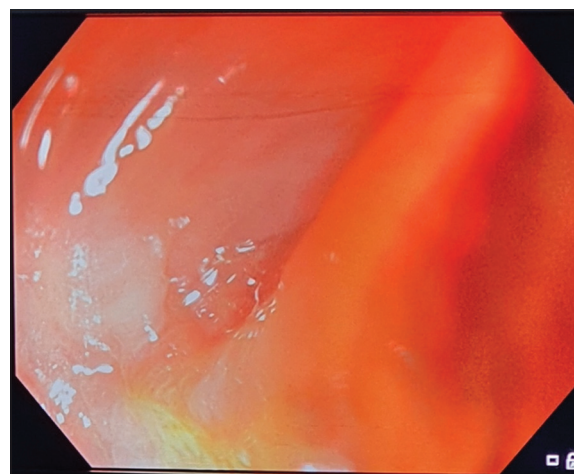


Figure 1: Sigmoid mucosa pinkish in color, noted loss of vascular markings

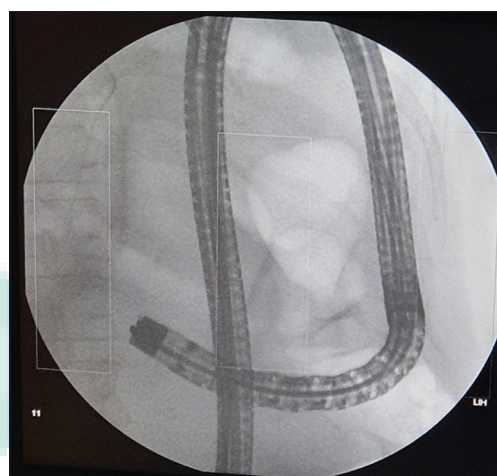


Figure 2: Reversed alpha loop configuration of the sigmoid colon, colonoscope inside the distal twist

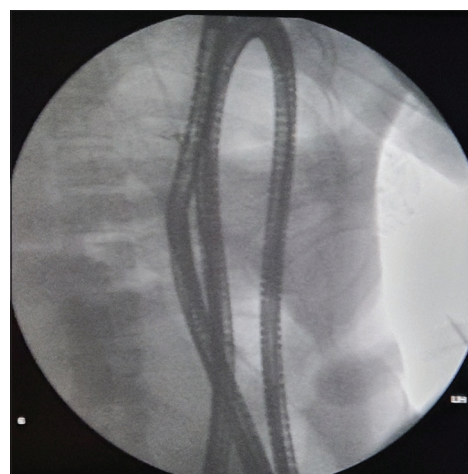


Figure 3: Tip of the colonoscope inside the descending colon passing through the second whirl sign inside the proximal twist of the sigmoid colon

non-tender abdomen with normoactive bowel sound, tympanic on all quadrants with an abdominal girth of 101 cm. She was maintained on NPO. The rectal tube was

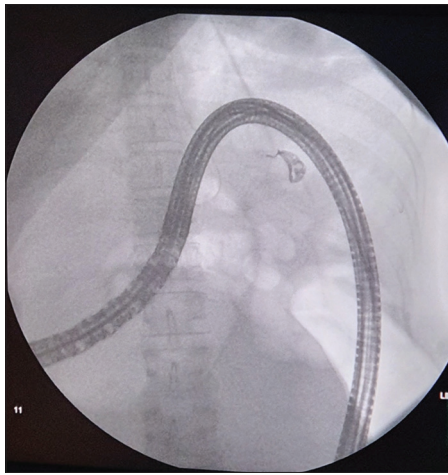


Figure 4: Postdecompression and detorsion image of the colon

noted to have minimal fecal output. Non-stress test was reactive, there were no uterine contractions seen at 21 min observation, FHTs at 140 bpm showing accelerations, no decelerations, with good fetal movement. On internal examination, the cervix was soft, long, and closed.

On the fourth hospital day, 2nd postoperative day, the patient had stable and normal vital signs with an abdominal girth of 95 cm. Nasogastric tube and rectal tube were removed. She tolerated diet progression. Non-Stress Test (NST) was reactive, with no uterine contractions noted at 21 min' observation, Fetal Heart Tones (FHT) at 135–145 bpm showing accelerations and no decelerations, with good fetal movement. On internal examination, the cervix remained long and closed.

The rest of the hospital stay was uneventful and she was discharged on the 5th hospital day with the following diagnoses: Gravida 2 Para 1 (1-0-0-1), pregnancy uterine, 30 weeks' and 5 days' AOG, previous CS I for non-reassuring fetal heart rate pattern, cephalic, in threatened preterm labor, controlled, mechanical obstruction secondary to sigmoid volvulus, status post colonoscopic decompression and detorsion with rectal tube insertion under sigmoidoscopy; gestational diabetes, controlled, asymptomatic bacteriuria, improved.

Discussion

Volvulus refers to twisting or torsion of the intestine within its mesentery. The term "volvulus" comes from the Latin "volvere" meaning twist. It was first described by Rokitsansky in 1836.^[4] The risk factors for colonic volvulus include anatomic factors such as a long redundant colon with a narrow mesenteric attachment, constipation, colonic dysmotility, and prior abdominal surgery.^[5] In this case, her history of chronic constipation predisposed her to volvulus. Sigmoid volvulus presents with a clinical triad of abdominal distension,

low abdominal cramping pain with constipation, and vomiting.^[6] This triad, was, however, absent in this case. She presented only with intermittent abdominal pain and constipation. Volvulus of the sigmoid colon is the most common cause of intestinal obstruction complicating pregnancy, accounting for up to 44% of cases.^[7]

Intestinal obstruction in pregnancy was first reported by Houston in 1830. Colonic volvulus is the first or second leading cause of organic bowel obstruction in pregnant women, although in very few cases, about a hundred have been reported in the literature.

In pregnancy, it has been postulated that the development of sigmoid volvulus can occur in the presence of a redundant or abnormally mobile sigmoid colon, as a result causing displacement leading it to twist around its point of fixation by the enlargement of the gravid uterus, possibly explaining its high incidence during the third trimester,^[3] as had happened in this case. Both pregnant and non-pregnant women, volvulus can present with the same symptoms such as constipation, persistent abdominal pain, distension, nausea, and vomiting.

The diagnosis of bowel obstruction in pregnancy is often delayed because the symptoms mimic typical pregnancy-associated complaints. Diagnosing sigmoid volvulus in pregnancy requires a high index of suspicion in a patient who presents with complaints of abdominal pain and evidence of bowel obstruction.^[8] In this case, the history of intestinal obstruction in 2015 prompted the suspicion that the condition might have recurred. This high index of suspicion prompted the previous attending physician to immediately refer the patient to a tertiary center. Given the rarity of this condition in pregnancy, utilizing imaging studies for the diagnosis of sigmoid volvulus in pregnancy is still controversial. But will the risk of radiation exposure to the unborn child outweigh the benefits of timely diagnosis? Certainly not. There are two lives at stake and the choice was to prevent potential deaths. Maternal and fetal prognosis is both worsened by delay in diagnosis that can lead to colonic necrosis in 23% of cases. Plain abdominal films demonstrate typical patterns of obstruction in 91% of the cases. Radiographic pathognomonic findings are usually dilated large bowel with an abnormal gas pattern and a coffee bean appearance. CT scan findings often show dilated colon with minimal air or fluid level and the "whirl sign" which represents a twisted colon and mesentery suggesting a sigmoid volvulus. All of these were present in the radiographic and CT scan studies of this patient, thus confirming the admitting impression. Informed consent was obtained prior to the procedures and careful explanation to the patient that the imaging studies would not harm her unborn child. At the usual dose of 0.001 rad per film, even serial films

obtained for follow-up of the patients with suspected bowel obstruction carries a negligible risk for the fetus in the third trimester. The accepted cumulative dose of ionizing radiation during pregnancy is 5 rad, and no single diagnostic study exceeds this maximum. For an abdominal X-ray, the exposure is just 0.245 rad and it will take 20 views to achieve 5 rads. In this case, a total of only 6 views were taken. It was explained to the patient that the most sensitive time period for central nervous system teratogenesis is between 10 and 17 weeks of gestation.

The management of intestinal obstruction in pregnant women is similar to that of nonpregnant women. Conservative management should initially be attempted in the absence of peritonitis. Since intra-abdominal surgery can lead to premature uterine contractions, tocolytic agents are administered prophylactically.^[9] For uncomplicated sigmoid volvulus, endoscopic detorsion is recommended, as has been done in this case. Other nonsurgical management includes therapeutic methods such as barium enema, sigmoidoscopy, and colonoscopy through decompression have a success rate of 92.9%.^[10] Definitive surgery is recommended after childbirth, especially in cases of recurrent volvulus with redundant bowel.

Summary

Sigmoid volvulus is a rare and potentially fatal condition in pregnancy with significant maternal and fetal morbidity and mortality. The high index of suspicion as to the presence of intestinal obstruction, in this case, prompted imaging studies that resulted in early intervention with colonoscopic decompression and detorsion with rectal

tube insertion under sigmoidoscopy. This prompt action prevented the serious sequelae that could have happened had there been a delay in diagnosis and intervention.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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