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CASE REPORT

Delayed diagnosis and management of second trimester abdominal pregnancy

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SUMMARY

Second trimester abdominal ectopic pregnancies are rare and life threatening. Early diagnosis and treatment are paramount in reducing maternal morbidity and mortality. We describe an unusually late diagnosis of abdominal pregnancy despite multiple ultrasounds beginning in early pregnancy. A 28-year-old G2P1001 sought pregnancy termination at 22 weeks' gestation after fetal anomalies were noted on an 18-week ultrasound during evaluation for elevated maternal serum alpha-fetoprotein. Due to abortion restrictions in her home state, she travelled over 500 miles for abortion care. During dilation and evacuation, suspected uterine perforation led to the finding of a previously undiagnosed abdominal pregnancy. At laparotomy, she underwent left salpingo-oophorectomy and removal of abdominal pregnancy and placenta. A multidisciplinary team approach was paramount in optimising the patient's outcome. Abortion restrictions requiring travel away from the patient's home community interrupted her continuity of care and created additional hardships, complicating management of an unexpected, rare and life-threatening condition.

BACKGROUND

Abdominal ectopic pregnancy is rare and life threatening with an estimated frequency of 9–11 per 1000 ectopic pregnancies and a mortality rate ranging from 0.5% to 20%.^{1 2} While uncommon, it is important to understand the diagnostic criteria and management.

Classic diagnostic criteria include ultrasound findings of normal fallopian tubes and ovaries, lack of an intrauterine gestation and pregnancy adjacent to the peritoneal surface.^{3 4} Typically, abdominal ectopic pregnancy is recognised on early first-trimester ultrasound. Late presentation to care or inadequate ultrasound may result in failure to make the correct diagnosis. Although unusual, increased clinical suspicion may be warranted in the setting of elevated maternal serum alpha-fetoprotein (MSAFP), placental and/or fetal abnormalities, and a deviated cervix on pelvic examination. When abdominal ectopic pregnancy is suspected, coordination of care with a multidisciplinary team of experienced physicians may improve patient outcomes.

This case describes the rare event of a second trimester abdominal ectopic pregnancy diagnosed during dilation and evacuation for a presumed anomalous intrauterine pregnancy. Our case is unique in that the patient desired termination of pregnancy for fetal anomalies seen on ultrasound completed

by maternal fetal medicine (MFM) specialists. Abortion restrictions in the patient's home state, compounded by the patient's perception of her home state physicians' ethical objections to abortion, had an impact on the patient's care.

CASE PRESENTATION

A 28-year-old G2P1001 at 22 weeks 3 days' gestation travelled out of state for pregnancy termination 4 weeks after diagnosis of multiple fetal anomalies. She was healthy, had no medical or surgical history and had one prior uncomplicated vaginal delivery at term; she received early prenatal care for this highly desired pregnancy.

Initial abdominal ultrasound at 12 weeks demonstrated an intrauterine pregnancy with fetal heart motion present. Early genetic screening demonstrated elevated MSAFP at 9.2 multiples of the mean. The patient was referred to a MFM specialist where she underwent comprehensive level II abdominal ultrasound and amniocentesis at 18 weeks and 5 days. Ultrasonography revealed appropriate fetal growth but a thickened posterior placenta previa with 'multiple venous placental lakes' and multiple structural fetal anomalies including an abnormally shaped spine and head, small chest, echogenic cardiac focus and clubbed feet. Amniocentesis revealed grossly bloody amniotic fluid with normal AFP level, normal fluorescence in situ hybridisation and slightly elevated acetyl cholinesterase level. MFM ultrasound was repeated at 20 weeks and 5 days with similar findings. The extrauterine location of the pregnancy was not detected on either ultrasound or during amniocentesis.

The patient received counselling about poor fetal prognosis due to multiple fetal anomalies and abnormal MSAFP. She opted for pregnancy termination via dilation and evacuation. Legal restrictions in her home state banned abortion after 20 weeks unless maternal health was compromised. She self-referred to the closest facility providing abortion services, over 500 miles away in another state. The patient described emotional distress, feeling judged by the obstetric providers in her home community for her decision to terminate the pregnancy.

TREATMENT

After extensive counselling at the out-of-state facility, she received 200 mg of oral mifepristone and 2 mg of transabdominally administered intrafetal digoxin. Fetal demise was confirmed by



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ultrasound the following day. On attempted laminaria insertion for cervical preparation, the provider was unable to adequately visualise the cervix. Given the advanced gestational age, posterior placenta previa and difficulty visualising the cervix, the provider transferred the patient to a local tertiary-care university teaching hospital with specialists in family planning.

At the university hospital, pelvic examination demonstrated a posterior and left-deviated cervix. Bedside transabdominal ultrasound confirmed fetal demise and gestational age of 22 weeks. The patient reaffirmed her choice for dilation and evacuation, and synthetic cervical dilators were placed under intravenous and local anaesthesia.

Attempt at dilation and evacuation under general anaesthesia commenced 12 hours later. Synthetic cervical dilators were removed; the cervix was serially dilated to accommodate Bierer forceps. Under continuous real-time bedside abdominal ultrasound guidance, a pass of the Bierer forceps yielded a small piece of yellow tissue consistent with omentum, prompting suspicion of uterine perforation. An attending radiologist was called to perform real-time ultrasonography and apparent intrauterine position of the forceps was verified. Given high clinical suspicion for uterine perforation, diagnostic laparoscopy was performed with finding of a large cystic abdominopelvic mass with densely adherent sigmoid colon. Laparotomy was performed with the assistance of gynaecological oncology and general surgery. After extensive adhesiolysis, the uterus was found to be 8 weeks' size with lateral and posterior perforations from the Bierer forceps. On initial examination, the pregnancy appeared to originate from the left adnexa. However, on closer inspection, and later pathological confirmation, the pregnancy and placenta were located within a dense capsule in the abdomen-pelvis extending into the left broad ligament and posterior cul-de-sac with no attachment to adnexal structures or the uterus. The sigmoid colon and mesentery were adherent to the superior and anterior surface of this mass. The right ovary, right fallopian tube, small bowel, ascending and transverse colon, and the upper abdomen appeared normal. Meticulous dissection separated the bowel from its dense adhesions to the capsule enclosing the pregnancy, the amnion was entered and the fetus delivered. The left utero-ovarian ligament and left infundibulopelvic ligament were suture ligated for haemostasis. The placenta was then removed with adequate haemostasis. The pregnancy capsule was left in situ as some remained attached to the sigmoid colon and could not be completely dissected free from its attachment to the large bowel. No distinct left ovary or fallopian tube was identified. The uterine perforations were repaired in layers. The estimated blood loss for all procedures was 1000 mL. Due to uncertainty about the integrity of the colon following extensive dissection and significant blood loss, a temporary abdominal closure system was placed. The patient recovered overnight in the intensive care unit (ICU) on prophylactic antibiotics, and one unit of packed red blood cells was transfused for acute blood loss anaemia.

The next day, the patient returned to the operating room for exploratory laparotomy and primary abdominal closure with the same surgical teams present, followed by postoperative extubation in the ICU. The patient's recovery was complicated by ileus and slow return to ambulation; she was ultimately discharged home on postoperative day 11.

OUTCOME AND FOLLOW-UP

The patient returned to her home state and continued to recover physically and emotionally. Due to the more than 500-mile distance, she was unable to follow up with her surgeons and

received postoperative care from a local MFM specialist uninvolved in her prior care. During her unexpected 11-day out-of-state hospital stay, she described the constant stress of coordinating childcare with family in her home state, missed employment for her spouse who remained with her in the hospital and the psychological burden of uncertainty about insurance coverage for her hospitalisation given exclusion of abortion care as a covered benefit. The patient was also grieving the loss of a highly desired pregnancy. Additionally, the patient expressed ongoing distress that obstetric providers in her home state had allowed their ethical objections to abortion to influence the timeline for diagnosis of the 'fetal anomalies' such that she was beyond the legal gestational age limit for abortion in that state.

The patient has now made a full physical recovery and is doing well with her family at home.

DISCUSSION

With hindsight, the patient exhibited several findings suspicious for abdominal ectopic pregnancy, but the diagnosis was missed on at least three ultrasound examinations, including an intra-operative ultrasound performed by an attending radiologist when a pregnancy-related procedural complication was strongly suspected. The 'structural fetal anomalies' on second trimester ultrasound were most likely misdiagnosed images of a fetus constricted by its extrauterine location. A paediatric dysmorphologist and pathologist examined the fetus immediately following abdominal removal and found no gross structural abnormalities.

Abdominal pain, vaginal bleeding, nausea and emesis, and decreased or absent fetal movement are symptoms of abdominal pregnancy; however, women are often asymptomatic at diagnosis.^{1,5} As previously discussed, elevated MSAFP, placental and/or fetal abnormalities, and deviated cervix may also point to the diagnosis. Postoperative review of the patient's home community documentation noted 'persistent constipation' on the review of systems (ROS). In retrospect, constipation was another factor raising suspicion of abdominal ectopic pregnancy. It highlights the importance of repeating a complete ROS several times during a patient's prenatal care.

Surgical treatment of abdominal pregnancy includes preparation for massive haemorrhage. The risk is high due to abnormal placental attachment to extrauterine structures including large vessels.² In a review of 225 case reports, mean blood loss was 1450 mL (range 50–7500 mL) and 25% of women required blood transfusion.³ Uterine and pelvic artery embolisation, availability of the range of blood products with assistance from massive transfusion protocols and participation of gynaecological oncologists skilled in managing invasive masses with high risk of haemorrhage are all strategies supported by the literature to reduce risk of bleeding, morbidity and mortality.⁵ Our patient required blood product transfusion as well as multidisciplinary surgical management.

Management and removal of the placenta in abdominal pregnancy is debated in the literature. Given demise of the fetus resulting in decreased blood flow to the placenta, our surgical team felt removal of the placenta was possible without necessitating bowel resection or disturbing the integrity of the bowel. Prior evidence concludes that immediate removal of the placenta is preferable to decrease a woman's postoperative morbidity and mortality.⁶ Leaving the placenta in situ has been associated with infection, necrosis and the need for further procedures or surgery.

Our patient's decision to terminate the pregnancy likely prevented catastrophic intra-abdominal rupture. She decided to terminate the pregnancy despite two major barriers: the perceived disapproval of her home state obstetric providers and the legislative barriers imposed by the state. Although moral objections to abortion lie within the scope of individual conscience, physicians have an ethical duty to provide patient-centred, non-judgemental care or to refer to another physician who can provide that care.⁷ Legislation limiting access to abortion may have a negative impact on women's health. Seventeen states currently have 20-week abortion bans,⁸ timing that often coincides with final diagnosis of genetic and/or fetal anomalies, leaving women without time for critical decision-making.⁹ These laws disproportionately affect low-income women who cannot afford travel, childcare and other costs incurred in seeking less restricted care remote from their home. Restrictive legislation also affected continuity of care and safety for our patient; multiple hand-offs between providers across state lines and inadequate access to medical records, including prior imaging, laboratories, interventions and counselling. OB/GYN physicians experienced in abortion care may be more likely than those without abortion training to recognise and manage abortion complications such as uterine perforation during D&E.

This case demonstrates the difficulty in diagnosing abdominal ectopic pregnancies but also highlights the importance of abortion training in OB/GYN residencies as recommended by the Council on Resident Education in Obstetrics and Gynecology (CREOG). The Accreditation Council for Graduate Medical

Education Obstetrics and Gynecology Program Requirements require all OB/GYN residencies to offer abortion training. The CREOG includes D&E for intrauterine fetal demise as a core procedure. The Ryan Residency training programme is a national initiative to 'integrate and enhance family planning training for obstetrics and gynecology residents'.¹⁰ Of 256 OB/GYN residency programmes, only 82 have Ryan Residency training programmes. Our institution with both a Ryan Residency training programme and a Fellowship in Family Planning was fortunate to assemble a team including specialists in family planning, gynaecological surgery and general surgery to provide expert and compassionate care in this complex case.

Contributors KT was the lead author for this manuscript. She was responsible for initial planning and conception of this case report, one of several authors of the first draft and has helped with numerous revisions of the paper. NRB and KT are immediate mentors for the project. They oversaw and contributed to the first draft of the paper as well as have been editors for its newer revisions. KT and NRB have both been in contact with the patient during the writing process. EC was involved in drafting the discussion for the initial draft and has been a contributor to newer revisions of the paper. EE was the lead mentor. She and KT initially conceived of the idea of writing this up as a case report. She has been instrumental in terms of her mentorship and editing of every iteration of the manuscript. All four authors were directly involved in this patient's care.

Competing interests None declared.

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Learning points

- ▶ Abdominal ectopic pregnancy is rare and should be considered in the setting of elevated maternal serum alfa-fetoprotein, placental and/or fetal abnormalities, and a deviated cervix. Early diagnosis and management can decrease morbidity and mortality.
- ▶ Uterine perforation at the time of dilation and evacuation procedure should prompt transition to the operating room for laparoscopy or laparotomy with a multidisciplinary team-based approach to care.
- ▶ Massive haemorrhage is common; preparation includes availability of blood products, interventional radiology and highly skilled surgeons. Removal of the placenta in some cases, especially in the setting of a demised fetus, may be considered.
- ▶ Full-spectrum women's healthcare includes abortion care. Ethical objections and legal restrictions may have a negative impact on women's healthcare. Continued training of OB/GYN residents in accordance with Council on Resident Education in Obstetrics and Gynecology objectives is critical.

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