

A RARE CASE OF INTRAMURAL ECTOPIC PREGNANCY: DIAGNOSTIC CHALLENGES AND MEDICAL MANAGEMENT USING MULTI-DOSE METHOTREXATE

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BACKGROUND

Intramural ectopic pregnancy is a rare form of ectopic pregnancy, defined by implantation of gestational sac entirely within the myometrium, separate from the uterine cavity and fallopian tubes. It is extremely uncommon, accounting for less than 1% of ectopic pregnancies with limited cases reported in literature [1]. Consequently, diagnosis is often challenging and management options include expectant, medical and surgical approaches.

INTRODUCTION

The exact aetiology of intramural ectopic pregnancy is unclear but it is speculated that implantation occurs secondary to microscopic defect in the endometrium and myometrium. Thus, patients who have had prior uterine surgeries, uterine manipulation during surgeries, adenomyosis and implantation after assisted reproductive techniques are at higher risk of the condition. It is still extremely uncommon, accounting for less than 1% of ectopic pregnancies with limited cases reported in literature [2].

Clinical presentation varies from case to case; from incidental findings on ultrasound in early pregnancy to presenting later in pregnancy with amenorrhoea, abdominal pain and vaginal bleeding which are non-specific and can mimic ectopic pregnancies in other sites. Missed or delayed diagnosis can be catastrophic and life-threatening if complications such as uterine rupture arise [1].

Transvaginal ultrasound is first-line imaging modality for diagnosis of intramural ectopic pregnancies. Typical sonographic features include a gestational sac surrounded entirely by myometrium with no connection to endometrial cavity, which could sometimes be challenging to identify and misinterpreted as interstitial, cornual or caesarean-scar ectopic pregnancies. MRI is a useful non-invasive imaging tool when ultrasound is inconclusive as it can better delineate the relationship between gestational sac and endometrial-myometrial junction. More invasive approaches such as hysteroscopy and laparoscopy can serve both diagnostic and therapeutic purposes as they allow tissue sampling for histopathological confirmation of diagnosis [2].

There is no universally accepted protocol for management of intramural ectopic pregnancies and treatment should be individualised depending on gestational age, size and location of ectopic pregnancy, hemodynamic stability, fertility plan and Beta HCG hormone levels.

Management options are same with other ectopic pregnancies and include:

1. Expectant management – This is less commonly used due to risk of uterine rupture.
2. Medical management - Systemic or local methotrexate injection has been used for small, early and unruptured ectopic pregnancies in hemodynamically stable patients.
3. Surgical management – Hysteroscopy, laparoscopy and laparotomy approaches can be used to excise ectopic pregnancies. Hysterectomy may be necessary in cases of advanced gestation, uncontrollable haemorrhage or complication such as uterine rupture has occurred [2].

CASE DESCRIPTION

A 40-year-old woman (Gravida 5, Para 0) with a history of infertility, who had previously undergone multiple laparoscopies for stage II endometriosis and D&Cs for recurrent miscarriage, conceived via intrauterine insemination. Her 7-week ultrasound showed an irregular gestational sac with no growth and absent foetal cardiac activity, confirming a missed miscarriage. She had an ultrasound guided suction curettage but no product of conception was obtained during the procedure. Hysteroscopy confirmed an empty uterine cavity and the diagnostic laparoscopy showed a bulky anterior uterus with no other abnormal findings. Given suspicion for intramural ectopic pregnancy, she was transferred to a tertiary centre for further management.

Patient was well, hemodynamically stable and pain was well-controlled on transfer. Her Beta HCG on the day of transfer was 18,775 and haemoglobin was 121 on full blood examination. The tertiary ultrasound demonstrated an anterior fundal intramural ectopic pregnancy measuring 42 x 39 x 36 mm containing a trophoblast, a gestational sac with a yolk sac, amniotic sac and a small 3mm embryonic tissue, separate from the endometrial cavity. After thorough counselling on different options for management, patient elected to proceed with medical management of intramural ectopic pregnancy. She wanted to avoid surgical management which would likely involve a wedge resection and may have implications on future fertility. She underwent a multi-dose methotrexate regimen which involved administering intramuscular methotrexate injections at 1mg/kg dose with alternate daily folinic acid injections. She received three doses of methotrexate injections as inpatient after which her Beta HCG level decreased to 14,749 (greater than 15% decline over 48 hours). She was subsequently discharged home with a plan for weekly outpatient follow up until her Beta HCG becomes negative. During the first week following discharge, patient experienced significant abdominal pain and heavy vaginal bleeding with presumed passage of pregnancy tissue.

Her Beta HCG decreased to 381 approximately one month after treatment. A follow-up ultrasound demonstrated persistence of intramural ectopic pregnancy, now size 38x31x28 mm, which was a reduction in volume from 30 ml to 17 ml. The case was discussed at a multi-disciplinary team (MDT) meeting and the consensus was to continue expectant management rather than administer a fourth dose of methotrexate given patient remained clinically well and the ectopic pregnancy was decreasing in size. Surgical management was also re-discussed with patient, while acknowledging that it could be a challenging wedge resection due to fundal location of the ectopic pregnancy. Her serial Beta HCG continued to downtrend and a further follow up ultrasound performed one month later demonstrated a stable size and volume of ectopic pregnancy with reduced vascularity. Her Beta HCG level at the time was 259. The case was rediscussed in MDT and plan was to continue Beta HCG monitoring until negative and to not repeat ultrasound unless new clinical concerns arose as the gestational sac was expected to persist for a long period. Patient’s Beta HCG levels continued to steadily decline and finally approached baseline (31) five months after treatment. Her normal menses subsequently resumed, follow-up was concluded and the patient continued her fertility care privately.

DISCUSSION

Due to its rarity and non-specific clinical presentation, diagnosing intramural ectopic pregnancy is often challenging. In this case report, the initial diagnosis of missed miscarriage and failure to retrieve products of conception during a D&C highlighted an important diagnostic clue that prompted further investigation. High-quality imaging played an important role in establishing diagnosis in this case. In a systematic review and meta-analysis of 82 cases from 27 countries, ultrasound was performed in 97.56% of cases. However, only 43.9% of reported ultrasound findings were diagnostic or suggestive of intramural pregnancy. In these cases, additional diagnostic modalities such as MRI (21.9%), diagnostic hysteroscopy (26.8%) and laparoscopy – both diagnostic and therapeutic (43.9%) were often required. Histopathological examination, most commonly performed after surgery, remains the gold standard for definitive diagnosis [3].

There is no standardised management protocol for intramural ectopic pregnancy and current available evidence is limited. In a retrospective study evaluating 56 cases of intramural ectopic pregnancy, 76.8% were managed surgically (via laparotomy or laparoscopy), 7.1% underwent medical management with methotrexate and 5.4% were managed expectantly. Uterine rupture occurred in nine patients, eight of whom required hysterectomies. Advancing gestational age, especially beyond 10 weeks, and fundal location of ectopic pregnancy were associated with a significantly increased risk of uterine rupture, highlighting the morbidity associated with this condition. Despite these risks, fertility outcomes were favourable, with six out of ten patients who desired fertility achieving subsequent pregnancies; four of whom progressing beyond 34 weeks’ gestation [1].

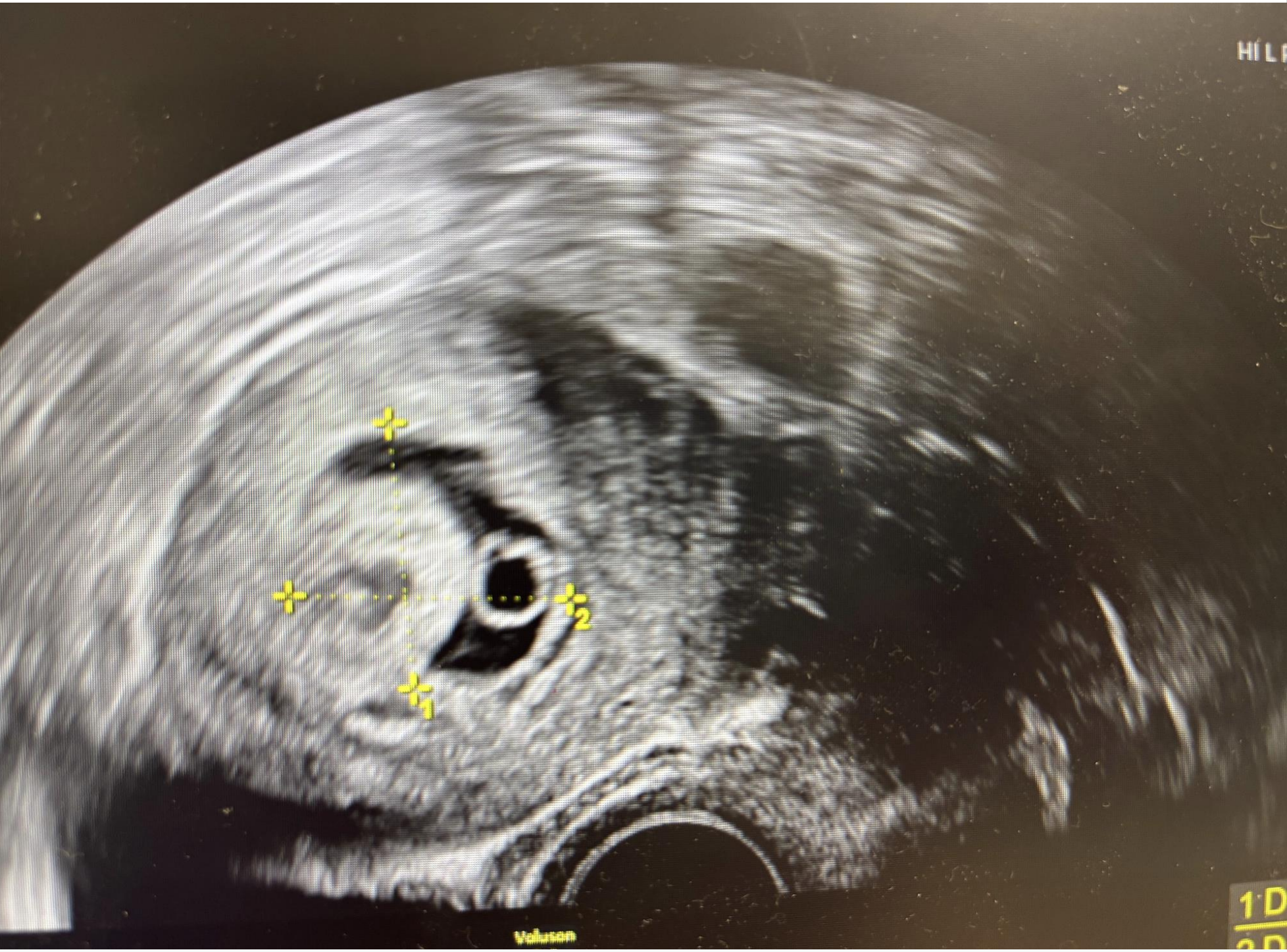


Figure 1: USS 5 months after treatment

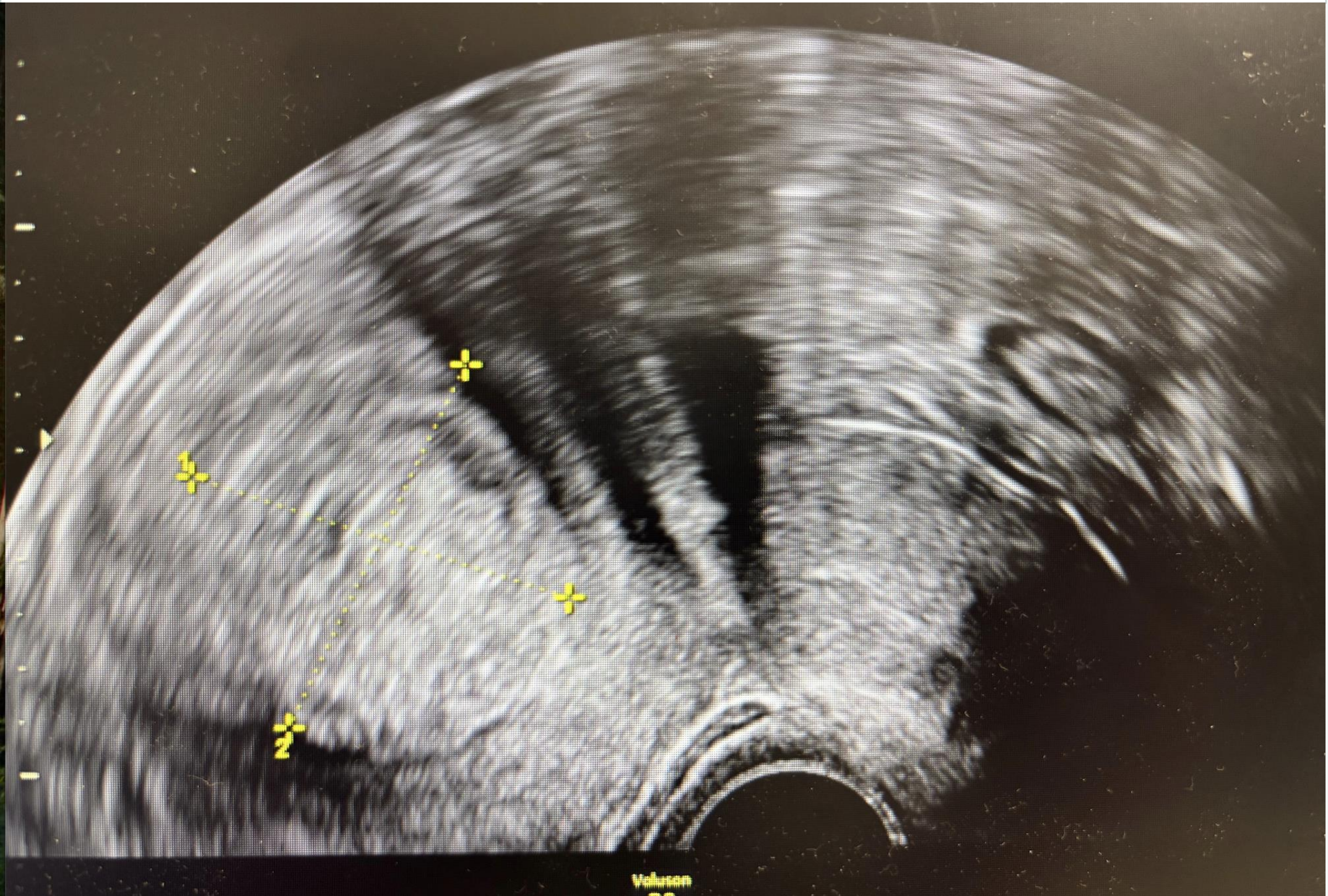


Figure 2: USS approximately 1 year after treatment

CONCLUSION

This case highlights the important role of high-quality imaging and multidisciplinary collaboration in the timely diagnosis of intramural ectopic pregnancy. It aims to contribute to the growing body of evidence that supports medical management as a safe and effective treatment option in carefully selected and clinically stable patients, particularly those with complex fertility histories.

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