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Case Report

Early first trimester diagnosis and total laparoscopic management of rudimentary uterine horn pregnancy ☆

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ABSTRACT

Rudimentary uterine horn pregnancy is rare, with a reported incidence of 1 in 76,000 to 1 in 150,000. This report aims to advance knowledge regarding this rare condition, importance of MRI imaging in characterizing congenital uterine anomalies and the feasibility of a total laparoscopic management approach. A 26 year old female presented with new onset abdominal pain at 6 weeks gestation. Ultrasound imaging initially suggested that the pregnancy was located within a unicornuate uterus. However further imaging (ultrasound and MRI) instead located the pregnancy within a noncommunicating right-sided rudimentary uterine horn, with a left-sided unicornuate uterus. This uterine anomaly was newly diagnosed in early pregnancy and required a multidisciplinary approach to determine optimal management. A total laparoscopic approach was successfully used to excise the right uterine horn and fallopian tube to prevent recurrence and future complications including tubal ectopic pregnancy.

Introduction

Rudimentary uterine horn pregnancy is rare, with a reported incidence of 1 in 76,000 to 1 in 150,000 [1]. First described in 1669, rudimentary horn pregnancy usually presents as a life-threatening emergency due to uterine rupture, which occurs by the second trimester in ~90% cases [2]. Diagnosis prior to clinical symptoms occurs in only 14% cases [3]. We present a case of rudimentary uterine horn pregnancy diagnosed early

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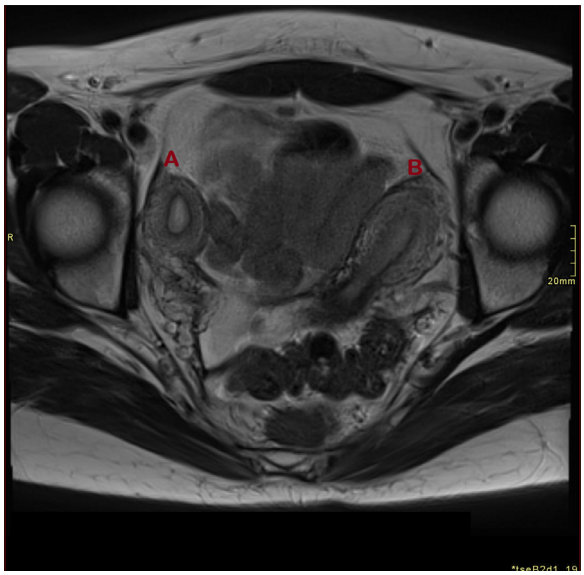

Fig. 1 – Magnetic resonance image demonstrating a left-sided unicornuate uterus (B) with a widely separated, noncommunicating horn on the right, containing functioning endometrial tissue but no haematometra (A).

in the first trimester with only mild clinical symptoms, managed by a total laparoscopic approach.

Case report

A 29-year-old female, secundigravida and nulliparous were admitted to the early pregnancy unit at 6 weeks gestation with new onset abdominal pain. The patient experienced a spontaneous miscarriage 4 months previously, whereby she was noted to have a single, left sided kidney on ultrasound (US) examination. A subsequent magnetic resonance (MR) scan (Figs. 1 and 2) and ultrasound scan (Fig. 3) revealed a left-sided unicornuate uterus with a widely separated, noncommunicating horn on the right, containing functioning endometrial tissue but no hematomata and a solitary left kidney. Prior to this imaging being actioned, the patient presented again with a spontaneous conception. On initial presentation, the patient had a transvaginal and transabdominal US scan which reported the known unicornuate uterus as an anteverted uterus with no separate horns, containing a small cystic structure with no content within. The patient's serum β human-chorionic gonadotropin (βhCG) level was 28,853 IU/L, increasing by 36% to 39,241 IU/L 48 hours later. A repeat US scan revealed a left-sided unicornuate uterus with a noncommunicating horn on the right side. Within the right horn, there was a singleton pregnancy with fetal heartbeat around 6 week's gestation (Fig. 4A). This was confirmed by a repeat ultrasound 7 days later, revealing a singleton gestation sac with fetal heartbeat in right uterine horn at 7 + 2 weeks gestation. The left horn was normal in appearance (Fig. 4B).

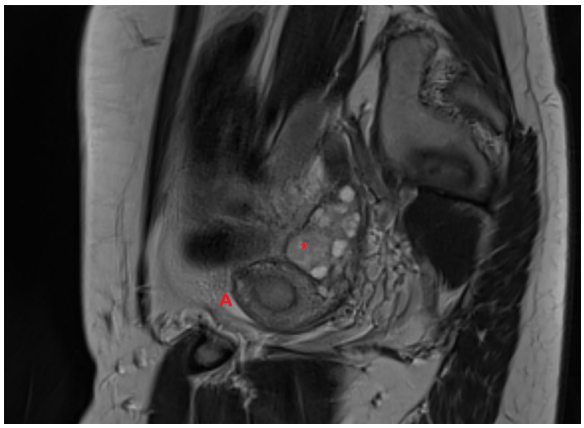

Fig. 2 – Sagittal view of Magnetic resonance image demonstrating the right noncommunicating horn (A) and right ovary (*).

A multidisciplinary discussion involving a Gynecological radiologist and Gynecologist with expertise in Paediatric and Adolescent Gynecology recommended elective excision of the rudimentary horn, considering the risks of uterine rupture, major hemorrhage and maternal mortality, which only increases with advancing gestation. Fetal intracardiac potassium chloride to discontinue the pregnancy and mitigate the above risks was discussed, however the patient declined this option.

Laparoscopy was performed using the Veress needle technique via an intraumbilical incision. A 5 mm left iliac fossa port and a 12 mm suprapubic was inserted under direct vision. Both fallopian tubes and ovaries were normal, but an unruptured pregnancy in the right uterine horn was identified (Fig. 4).

Surgical steps for hemi-hysterectomy and ipsilateral salpingectomy were performed using the Voyant advanced energy device. The right uterine horn and tube were removed in an endobag via an extended suprapubic port. The left ureter was visualised, whilst the right ureter was noted to be absent. A single spot of endometriosis was noted in the pouch of Douglas, which was ablated with bipolar. The patient was discharged home on the same day.

Discussion

First trimester US imaging often misses the diagnosis of rudimentary uterine horn pregnancy, making early diagnosis extremely challenging, as confirmed in our case report. Despite US being the first choice of imaging modality in early pregnancy, its sensitivity for detecting rudimentary horn pregnancy is only 26%. It is therefore unsurprising that preoperative diagnosis of rudimentary horn pregnancy is achieved in only 5% of reported cases [4]. More accurate ways of diagnosing rudimentary horn pregnancy utilize 3-dimensional ultrasound or MR imaging, as endorsed by The European Society of Human Reproduction and Embryology (ESHRE) and European Society of Gynecological Endoscopy (ESGE) [5].

If detected preconception, MR imaging can characterize the anatomy and decrease mortality rates from 23% to 0.5%. A

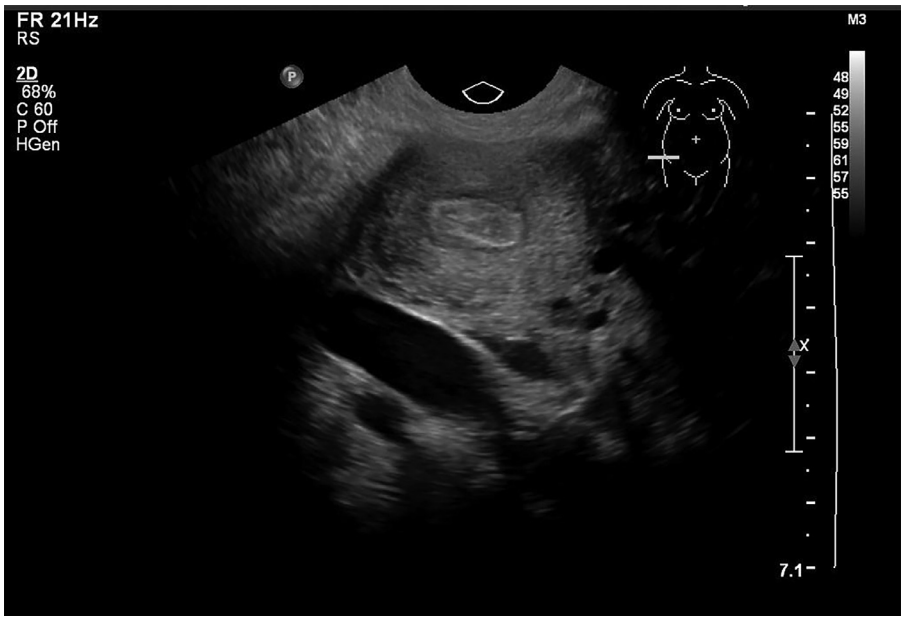

Fig. 3 – Ultrasound image showing non communicating horn and normal endometrium in right adnexa.

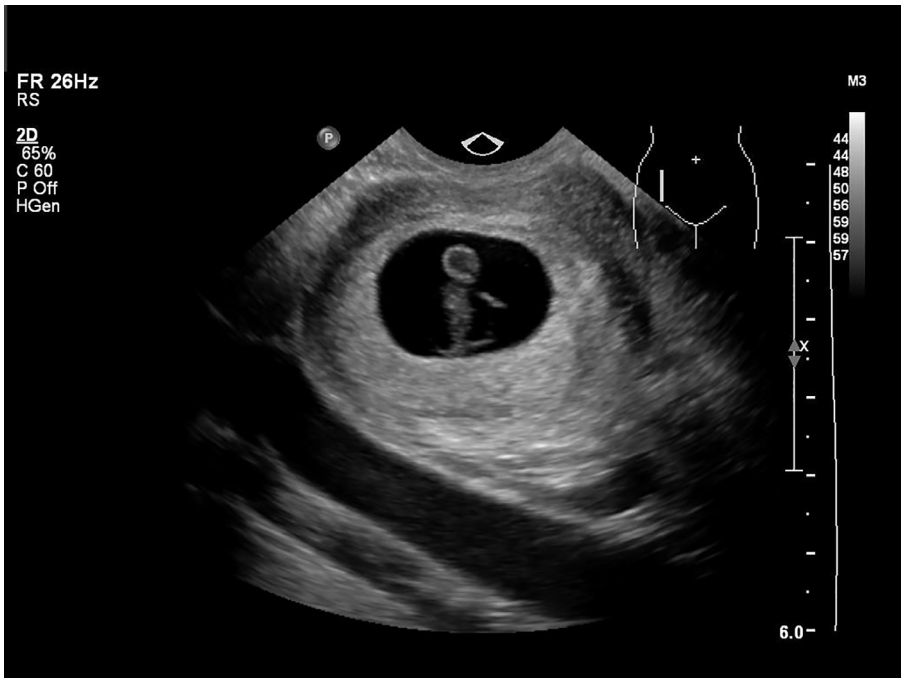

Fig. 4A – Ultrasound image showing singleton intrauterine pregnancy in the right horn of the uterus (noncommunicating horn).

combination of MR and transvaginal US imaging prior to pregnancy can be helpful in differentiating between a bicornuate uterus and unicornuate uterus with rudimentary horn, as the rudimentary horn is classically smaller in size compared to a normal uterus.

Noncommunicating rudimentary horn pregnancies are believed to arise by transmigration of peritoneal sperm or fertilized ovum. Standard treatment for rudimentary horn pregnancy involves excision of the pregnant rudimentary horn and removal of the ipsilateral fallopian tube. This prevents reoccurrence of pregnancy in the rudimentary horn, further tubal ectopic pregnancy, possible endometriosis and may eliminates the cause of dysmenorrhea. With the advancement of minimal access surgery, laparoscopic excision of the rudimentary horn is recommended in haemodynamically stable patients, as described in our case. Bleeding is the major risk

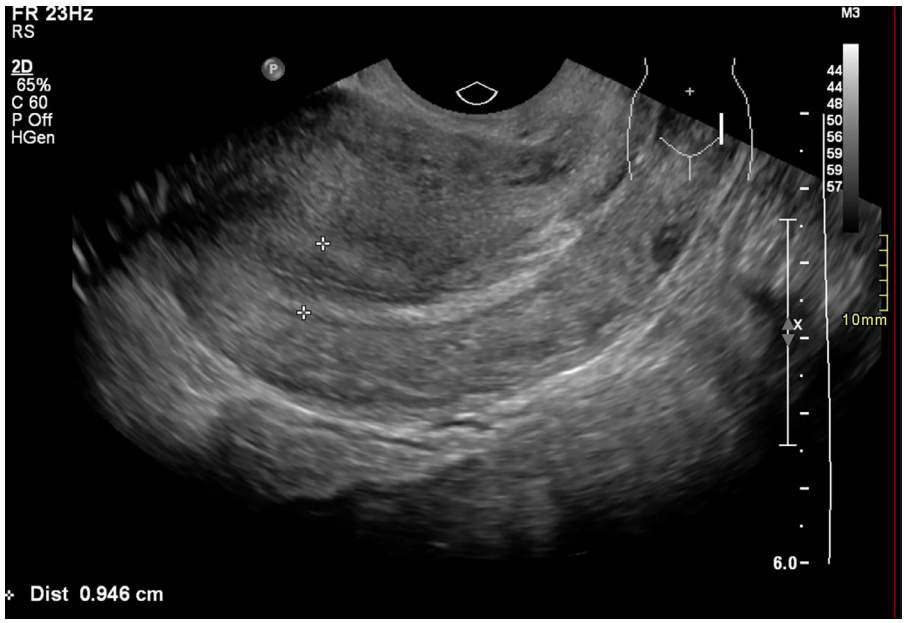

Fig. 4B – Normal appearance of left unicornuate horn and cervix.

associated with the resection because of the abundant blood flow to the pregnant uterus. To reduce this risk, medical treatments such as methotrexate injection either locally or systematically have been suggested prior to resection of the rudimentary horn.

High clinical suspicion of rudimentary horn pregnancy is key to early diagnosis, successful and safe management via a minimal access approach. The presence of a single kidney should alert clinicians to investigate for associated uterine Müllerian duct uterine anomalies. The widespread introduction of 3D ultrasound in early pregnancy units would undoubtedly facilitate earlier diagnosis.

Patient consent

Consent has been obtained from the patient to permit anonymized use of her information and images.

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