CASE REPORT

A case of rudimentary horn pregnancy diagnosed after failed attempts at pregnancy termination

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Abstract

We report a case of rudimentary horn pregnancy at 12 weeks gestation with fetal demise misdiagnosed ultrasonographically as an intrauterine pregnancy in a private clinic. The patient was referred to a tertiary care hospital after failed attempts at terminating her pregnancy. A definitive diagnosis was made with ultrasonography and magnetic resonance imaging (MRI) before uterine rupture ensued. Excision of the rudimentary horn and the ipsilateral fallopian tube was carried out by laparotomy. Failure to terminate pregnancy after several attempts should alert the physician about the possibility of a uterine anomaly and a pelvic MRI scan may help in the diagnosis of a suspected rudimentary horn pregnancy.

Key words: Müllerian anomalies, pregnancy termination, rudimentary horn pregnancy, unicornuate uterus

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Introduction

Congenital anomalies of the uterus are most commonly asymptomatic and are not recognized at early stages of life. A unicornuate uterus is a rare developmental anomaly of the Müllerian ducts with an estimated incidence of 0.4%.[1] It is more commonly reported to be found in infertile patients.[2] A unicornuate uterus may occur as an isolated finding; however, it is frequently associated with a noncommunicating rudimentary horn.[3]

Pregnancy in a noncommunicating horn is thought to occur through the transperitoneal migration of sperm from the contralateral tube, fertilizing an ovum in the fallopian tube of the rudimentary horn.[4] The early diagnosis of a rudimentary horn pregnancy is of utmost importance since it may be associated with life-threatening bleeding in the event of uterine rupture.

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We present a case of rudimentary horn pregnancy which was diagnosed with magnetic resonance imaging (MRI) and treated surgically before the rupture of the rudimentary horn.

Case Report

The patient was a 21-year-old primigravid presenting at 12 weeks of gestation. She had a history of menarche at 15 years of age and subsequent normal menstrual periods with no complaints of dysmenorrhea. She had not been using any form of contraception and her past medical and surgical histories were insignificant. She had received prenatal care in a private clinic until 12 weeks of pregnancy and undergone ultrasound scans at 6^{+4} and 9^{+3} gestational weeks reporting the presence of a normal pregnancy and a subserosal leiomyoma. At 12 weeks, she was diagnosed with intrauterine fetal demise and was induced with misoprostol. After 48 h of unsuccessful induction, a dilatation and curettage were performed under general anesthesia, which

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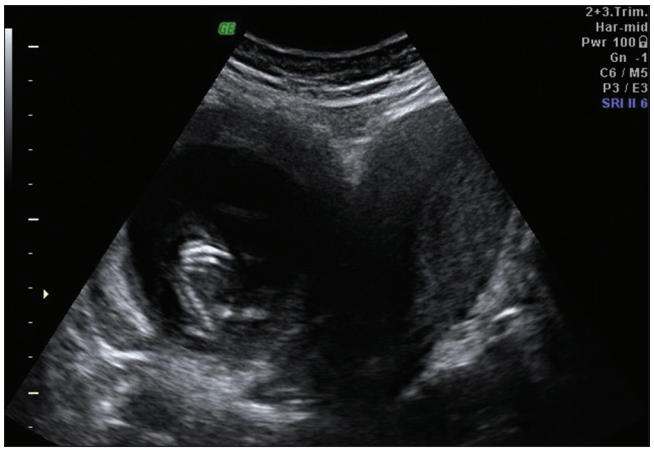

Figure 1: An ultrasound image demonstrating two uterine cavities indicating to either a left-sided nonpregnant unicornuate uterus with a pregnant right-sided rudimentary horn or a right sided pregnancy in a bicornuate uterus. No fetal cardiac activity was seen

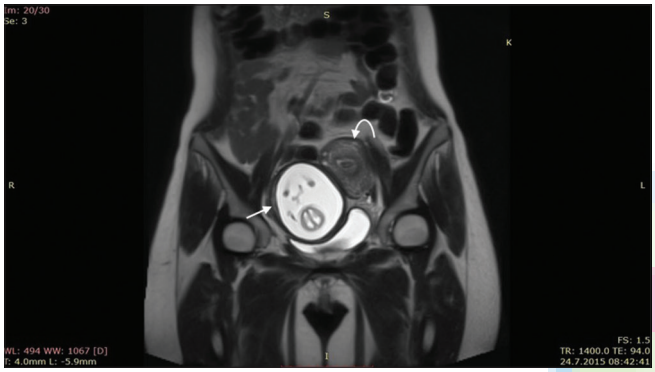

Figure 2: Axial T2-weighted magnetic resonance imaging shows a gestational sac surrounded by thin myometrial tissue on the right (straight arrow) and an empty uterus on the left side (bent arrow). No communication was seen between the uterus and the cavity that contained the fetus, confirming the diagnosis of a rudimentary horn pregnancy

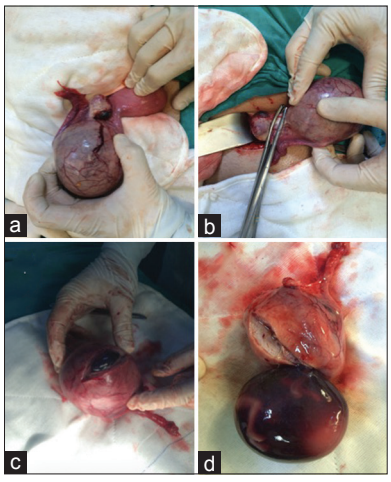

Figure 3: (a) Right-sided rudimentary horn pregnancy at 12 weeks of gestation at laparotomy. (b) The uteroovarian ligament was clamped and cut. (c) A vertical incision was made on the pregnant horn. (d) The gestational sac was surrounded by the wall of the rudimentary horn

was also unsuccessful. She was consequently referred to our hospital with the diagnosis of "failure to medically and surgically terminate the pregnancy." On admission, the patient's general condition was good and her vital signs were normal. No complications were detected following attempts to terminate the pregnancy. A speculum examination showed a single cervix. Abdominal and transvaginal ultrasound examinations revealed an empty uterus and a nonviable fetus at 11 weeks of gestation surrounded by thin myometrial tissue [Figure 1]. A rudimentary horn pregnancy was suspected. An MRI scan was carried out which confirmed the diagnosis [Figure 2]. An ultrasonographic examination of the urinary tract failed to find any associated anomalies. After detailed counseling, the patient chose to undergo laparotomy. Intraoperatively, a rudimentary horn pregnancy was observed on the right side [Figure 3]. A vertical incision was made on the anterior surface of the rudimentary horn, and the cavity was evacuated. Exploration of the cavity revealed no outflow pathway. Finally, the right rudimentary horn and the fallopian tube were removed. Since we could not identify any subserosal leiomyomas, we assumed that the unicornuate uterus was misdiagnosed as a subserosal leiomyoma. The postoperative period was uneventful, and the patient was discharged from hospital 2 days following her operation.

Discussion

A rudimentary horn with a unicornuate uterus is caused by the partial development of one of the Müllerian ducts and its incomplete fusion with the contralateral side. According to the American Fertility Society, a "unicornuate" uterus is classified as Class II and is subdivided into four subgroups. In "Class IIa" the cavity of the rudimentary horn communicates with the uterus; in "class IIb" the cavity of the rudimentary horn does not communicate with the uterus; in "class IIc" the rudimentary horn does not have a cavity, and in "class IId" there is no horn.[5] The current case was classified as IIb.

A unicornuate uterus accounts for 2.4–13% of all Müllerian anomalies.[6] Rudimentary horns are found in 74% of unicornuate uteri.[7] In the majority of cases (83%), the rudimentary horn is noncommunicating.[8] It has been reported in the literature that rudimentary horns have a tendency to be located on the right side with a frequency of 57–80%, as was observed in the present case.[8-10]

It is known that women with a noncommunicating rudimentary horn may present with progressive dysmenorrhea due to hematometra, hematosalpinx or endometriosis following menarche. However, almost half of such patients are reported to remain asymptomatic.[10,11] According to Fedele *et al.*, the absence of such symptoms may be explained by the fact that the endometrium in the rudimentary horn is rarely functional and is not always synchronous with the

endometrial cycle in the hemiuterus.[12] Thus, identification of this anomaly is usually possible later in life; during or after the third decade.[10]

Pregnancy in a noncommunicating rudimentary horn is extremely rare and is estimated to occur in 1 out of 76,000–150,000 pregnancies.[13] It is associated with significant obstetric complications and maternal mortality.[10] The most significant concern regarding the patient is the possibility of uterine rupture, which is reported to occur in 80% of rudimentary horn pregnancies.[13] Sixty-seven percent of uterine rupture cases are reported to take place in the second trimester, leading to life-threatening hemorrhage.[13] Ruptures occur due to an underdeveloped myometrium and dysfunctional endometrium.[14]

The precise clinical diagnosis of a rudimentary horn pregnancy is difficult. The sensitivity of ultrasonography for diagnosis is only 29% and decreases with advancing pregnancy.[10] As in the present case, the pregnant rudimentary horn can be misdiagnosed on the early antenatal ultrasonogram for a normal intrauterine pregnancy, and the unicornuate uterus for a leiomyoma. Other common sonographic misdiagnoses are tubal ectopic, cornual, abdominal and bicornuate uterine pregnancies.[15,16]

A misdiagnosis of normal intrauterine pregnancy can often lead to the implementation of inappropriate treatment modalities. Unsuccessful attempts at terminating a pregnancy in a rudimentary horn by dilatation and curettage or administering misoprostol have been reported in the literature, as was attempted in the present case.[10] Fortunately, the correct diagnosis was made with a thorough ultrasonographic examination and MRI scan before uterine rupture ensued. Tsafrir *et al.*, described ultrasonographic criteria for the differentiation of rudimentary horn pregnancies from tubal or cornual ectopic and bicornuate uterine pregnancies including: (i) A pseudo pattern of an asymmetrical bicornuate uterus (with variations between the myometrial thicknesses of the two uterine horns and a marked distance between them), (ii) absence of visual continuity between the cervical canal and the lumen of the pregnant rudimentary horn and (iii) the presence of myometrial tissue surrounding the gestational sac. The anatomic configuration of the uterine malformation and the noncontinuous nature of the cervical canal with the gestational sac could be assessed in more detail with the MRI scan, a useful radiologic tool in the diagnosis and planning of surgical treatment in uncertain cases.[17]

On diagnosis of an unruptured rudimentary horn pregnancy, immediate surgery is recommended by many authors.[10] Removal of the pregnant horn and its tube by laparotomy is the main mode of management. In recent years, laparoscopic treatment of several cases has been reported even at advanced gestational ages.[18] We opted for laparotomy due to our lack of experience in laparoscopic management of rudimentary horn pregnancies. Medical management with methotrexate or potassium chloride have also been suggested by some authors.[19] There have been reports on a few cases of rudimentary horn pregnancies progressing to the third trimester and resulting in live births following cesarean delivery.[20,21] Therefore, a conservative approach may be attempted until viability, provided the patient is well-informed and immediate emergency surgery facilities are available.[13]

Conclusion

Pregnancy in a rudimentary uterine horn may have severe consequences for the health of both the mother and the fetus. A careful ultrasonography during the first trimester may help the diagnosis of this rare event. MRI seems to be a useful tool in the confirmation of the diagnosis of a rudimentary horn pregnancy and helps the clinician during the consultation of the patient before surgery. The possibility of a rudimentary horn pregnancy should be kept in mind in cases with unsuccessful attempts at the termination of pregnancy.

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Conflicts of interest
There are no conflicts of interest.

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