Pregnancy in Non-communicating Rudimentary Horn

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Abstract
Background: Pregnancy in the rudimentary horn of the unicornuate uterus is highly rare. Its incidence is 1 in 75 000-150 000 pregnancies. It is difficult to diagnose the rudimentary horn of the unicornuate uterus before the rupture of an ectopic pregnancy.

Case Presentation: The current study reports the case of a 35-year-old Iranian mother with a natural contraceptive method. The mother was a primigravida woman at the gestational age of 7 weeks, based on her last period. She complained of abdominal pain in the right and lower abdomen and had a positive pregnancy test with a beta-human choriionic gonadotropin beta-human choriionic gonadotropin (beta-hCG) titration of 38982 on May 17, 2021. The ultrasound report on May 17, 2021, showed a right adnexal mass with a size of 32*32*31 and a fetal pole, and yolk sac. A fetal heart of six weeks and one day in favor of ectopic pregnancy was detected and its endometrial thickness was 12 mm. There were no abdominal or pelvic-free fluids. Thus, after being diagnosed with an ectopic pregnancy that included a heart, the patient was transferred to the operating room for laparoscopy. During laparoscopy, we found that the pregnancy was in the rudimentary horn of the unicornuate uterus. The rudimentary horn was resected, and the salpingectomy of the right side was performed for the patient. The samples were then transferred to the laboratory for pathological analysis.

Conclusion: We should increase awareness about pregnancies that occur in this uterine abnormality so that there is a high suspicion index for faster diagnosis before the rupture of ectopic pregnancy and worse events can be prevented accordingly.

Keywords: Pregnancy, Non-communicating rudimentary horn, Unicornuate uterus

Introduction
The primary horn of the unicornuate uterus is caused by the incomplete development of one of the Müllerian ducts and their incomplete connection to the opposite side. It is a congenital anomaly of the female reproductive system as a deviation from the normal anatomy. It is caused by the incorrect fetal development of the Müllerian or paramesonephric ducts and is a relatively common benign disease (1). Pregnancy in the rudimentary horn of the unicornuate uterus is extremely rare (1 in 75 000 to 150 000 pregnancies), and ultrasound can help in the early diagnosis of uterine abnormalities, which can then be confirmed by such methods as magnetic resonance imaging (MRI) or laparoscopy. The diagnosis of this disease is usually difficult. In fact, if it is not diagnosed early, it can lead to the rupture of the rudimentary horn and hemoperitoneum (2). Approximately 85% of rudimentary horns are non-communicating. Pregnancy in the rudimentary horn of the unicornuate uterus has a poor prognosis and usually results in a rupture during the first trimester of pregnancy (3).

It is difficult to diagnose an ectopic pregnancy in the rudimentary horn, especially in women who have had a previous vaginal delivery. Therefore, a high index of suspicion is necessary (4). Ectopic pregnancy in the rudimentary horn of the unicornuate uterus is associated with life-threatening complications, including uterine rupture with a 50% risk (5). In this paper, we report the case of ectopic pregnancy in the rudimentary horn of the unicornuate uterus at a gestational age of 6 to 7 weeks.

Case Presentation
This study presents the case of a 35-year-old Iranian mother with a 6-year marriage history and a natural contraceptive method. The mother was a primigravida woman with a positive pregnancy test and a beta-human choriionic gonadotropin (beta-hCG) titration of 38982 on the hospitalization day. The ultrasound report indicated an ectopic pregnancy at six weeks and one day in the right adnexa. The fetus had a heart, the uterus did not...
contain a fetus, and the endometrium thickness was 12 mm. Complaining of abdominal pain in the right lower quadrant, the patient was referred to the emergency ward of Arash hospital. She was prepared for laparoscopy after being diagnosed with an ectopic pregnancy. During laparoscopy, we noticed a unicornuate uterus with a rudimentary horn. The rudimentary horn was attached to the unicornuate uterus with fibrous tissue, and an ectopic pregnancy was diagnosed in it. The rudimentary horn was resected, and the salpingectomy of the right side was performed for the patient. The samples were transferred to the laboratory for pathological analysis. It should be noted that the tube and ovary on the opposite side were completely normal (Figures 1-2).

After the surgery, the patient recovered in good general condition. Then, she was transferred to the hospitalization ward. One day after the surgery, the requested beta-hCG titration for the patient was 1630. Due to a reduction in beta-hCG titration, the good general well-being of the patient, and the stability of the vital signs, the patient was discharged with the recommendation to take iron pills, follow the pathological report, and use contraception methods. Informed consent was obtained from the patient to publish the clinical data and findings.

**Discussion**

The mechanism of pregnancy in the non-communicating rudimentary horn is probably the trans-peritoneal migration of the fertilized egg and sperm from the opposite tube (5). It is noteworthy that if this pregnancy is diagnosed at a late stage, it will result in the rupture of the rudimentary horn and intra-abdominal bleeding. Thus, raising awareness about these clinical manifestations is crucial to increasing the rate of early diagnosis before rupture and preventing adverse complications. Fortunately, with a timely diagnosis, many complications were prevented in our patient. Myometrial weakness and inefficient endometrium are the causes of uterine rupture in the rudimentary horn during the last two trimesters of pregnancy. Only a very small number (10%) of these pregnancies reach the full stage, of which only 2% of the fetuses survive (1).

Although the diagnosis of rudimentary horn before pregnancy is still difficult, careful examination in the first trimester of pregnancy can lead to an early diagnosis. It should be noted that only a few cases of rudimentary horn

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**Figure 1.** (A) The Tip of the Noncommunicating Rudimentary Horn not Lined by the Endometrium and (B) The Placental Site Bed With Two Trophoblasts in the Rudimentary Horn and a Few Chorionic Villi

**Figure 2.** (A) The Unicornuate Uterus With Right-side Rudimentary Horn Attached to the Uterine Body by a Dense Fibro-muscular Tissue and (B) The Stump (Arrow) of the Resected Rudimentary Horn After Performing the Resection
pregnancies are diagnosed in the first trimester before rupture. An MRI may be helpful whenever the ultrasound report is inconclusive (1). The removal of the rudimentary horn and tube on the same side with laparotomy or laparoscopy is the main method for managing an ectopic pregnancy in the rudimentary horn. In our patient, the rudimentary horn was resected, and the salpingectomy of the right side was performed for her. It is recommended that the surgery not be delayed because the rupture depends on the myometrium thickness of the rudimentary horn. Otherwise, it may lead to the occurrence of ruptures and catastrophic conditions (3,4). Patients with the rudimentary horn of the unicorneate uterus should be evaluated in terms of urinary abnormalities. In our patient, the ultrasound report of the kidney and urinary tract was normal. It is noteworthy that the uterus and adnexa had not been examined in our patient before, and she was unaware of the anomaly in her uterus. At discharge, the patient should be reminded of the risk of future ectopic pregnancy and preterm delivery associated with this abnormality.

Conclusion
In developing countries where early diagnosis before rupture is difficult, it is necessary to increase the awareness of people about this rare uterine abnormality, and there should be a high suspicion index. Rudimentary horn pregnancy is a rare disease that may not be diagnosed before surgery and may cause maternal risks. Early diagnosis can facilitate laparoscopic surgery.

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Not applicable.

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