



A Case of Placental Abruption Complicated by Vaginal Trial of Labor in a Unicornuate Uterus

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Abstract: Unicornuate uterus has a low incidence, it is a congenital uterine developmental anomaly, it has many complications during pregnancy, and it is less common in pregnancy to term. This article retrospectively analyzes a case of unicornuate uterus with a full-term vaginal trial of labor and delivery with placental abruption resulting in neonatal asphyxia. We also present the typology of unicornuate uterus, diagnosis, and discuss the mode of delivery in the light of the literature, in order to raise awareness of this type of disease among medical professionals and reduce the occurrence of adverse pregnancy outcomes.

Keywords: unicornuate uterus, placenta abruption, neonatal asphyxia, case report

1. Case summary

The patient was 30 years old, admitted with irregular lower abdominal pain for half a day mainly due to a full-term pregnancy 2020-11-23 22:00. Present history: conceived spontaneously, 39 days of menopause B suggests right uterine horn not explored, 49 days of menopause ultrasound suggests fetal germ 0.6 cm long, unicornuate uterus? Stumpy uterus? (Figure 1 and Figure 2). She was diagnosed with gestational diabetes mellitus after regular pregnancy checkups and abnormal glucose tolerance at 25⁺⁵ weeks of gestation, and was controlled by diet and self-monitored glucose in normal range. On admission: T36.5°C, P78 times/min, R19 times/min, BP114/64mmHg, weight 65Kg, uterine height 33cm, abdominal circumference 104cm, no pressure and tension in uterine body, palpable irregular contractions, fetal position cephalic, fetal heart rate 142 times/min, regular. Vaginal examination: no pelvic abnormality, cervical canal nearly flattened, soft, centered, preeclampsia, S-2, estimated fetal size 2700g. ultrasound (city hospital: 2020-11-23): BPD 9.5cm, FL 6.6cm, AFV 4.6cm, S/D 2.00. admission diagnosis: 1. 38⁺² weeks gestation first fetus in cephalic position, preterm labor 2. gestational diabetes 3. Unicornuate uterus? 4. residual angular uterus? After admission, the patient and family were fully briefed about the associated risks and asked for a vaginal trial of labor. On 2020-11-24 13:05 spontaneous rupture of membranes, clear amniotic fluid, additional diagnosis: premature rupture of membranes, continuous fetal heart monitoring for 20 minutes reactive type. On 2020-11-24 15:05, labor was induced with intrauterine insemination, on 2020-11-24 21:40, the opening of the uterus was 4 cm, the amniotic fluid was clear, transfer to the delivery room, continuous fetal heart monitoring for 20 minutes was reactive, on 2020-11-24 22:26, the opening of the uterus was 5.0 cm, the head was exposed, S⁺, no pulsatile strips were palpated, the fetal heart was slow, prolonged decelerations were seen, as low as 70 The fetal distress was considered? An emergency cesarean section was performed under local anesthesia. Intraoperatively, a full-term male baby was delivered in the left occipital anterior position with no deformity, weighing 2880 g. The placenta was 20 cm × 18 cm × 2 cm in size, with a placental abruption of about 2/3 of the area (Figure 3). During the operation, there is a residual horn uterus on the right side of the unicornuate uterus. The residual horn uterus does not communicate with the unicornuate uterus, and it is a solid muscle tissue (Figure 4). Arrhenius score of 2 at 1 minute, 4 at 5 minutes, and 5 at 10 minutes was diagnosed as neonatal asphyxia and referred to pediatric resuscitation, and the neonate recovered and was discharged after 18 days of treatment. Postoperative placental pathology: metaplastic plate thrombosis, partial chorionic vascular stasis, poor formation of individual chorionic vascular syncytium, dry chorionic vascular occlusion, and visible avascular villi (large lesions).

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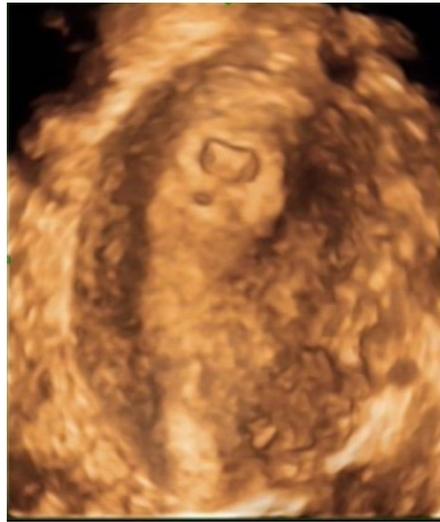


Figure 1. Three-dimensional sonogram of unicornuate uterus (coronal view): gestational sac is visible in the cavity; the endometrium is "columnar", slightly curved to the left, and the right horn of the uterus is absent



Figure 2. Two-dimensional sonogram of solid stump uterus (shown by arrow): an isoechoic mass with myometrium is visible on the right side of the uterus, with its outer edge continuing with the uterine plasma membrane and no endometrium in the center

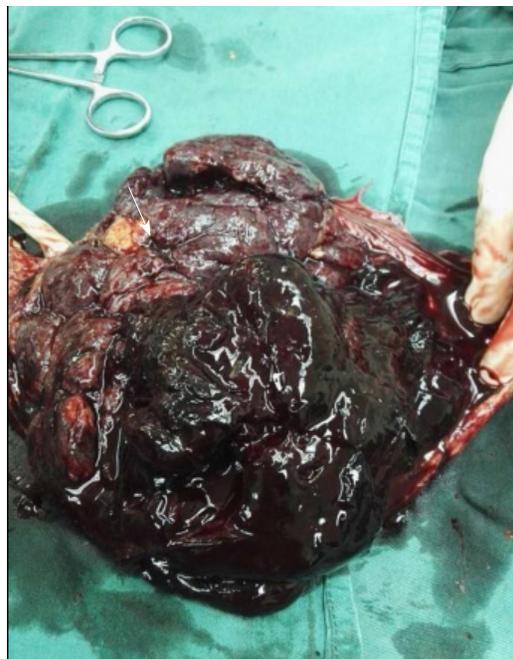


Figure 3. The placenta shows a large number of clot indentations, covering about 2/3 of the placental area



Figure 4. A: Left unicornuate uterus and left ovarian oviduct; B: Right residual angular uterus and right ovarian fallopian tube

2. Discussion

Congenital anomalies of uterine development are caused by differentiation of the embryonic primordial gonads, abnormal development, incomplete or unfused fusion of both paramedian ducts, or abnormal development of one of the paramedian ducts. unicornuate uterus accounts for 10% of congenital anomalies of uterine development^[1,2]. In 2013 the European Society for Human Reproduction and Embryology (ESHRE) and the European Society for Gynecological Endoscopy (ESGE) jointly performed a new classification of female genital anomalies. A new classification and consensus was reached on the code U4 for unicornuate uterus, which is classified as type a: contralateral with a cavernous stump uterus (communicating or not communicating with a unicornuate uterus) and type b: contralateral with an uncavernous stump uterus or absence^[3].

The diagnosis of unicornuate uterus is based on preconception ultrasonography, hysterosalpingography, MRI, hysteroscopy, laparoscopy or intraoperative exploration with open surgery, and trans-laparoscopy combined with hysteroscopy in U4b type unicornuate uterus is the gold standard for diagnosis^[4,5]. It is noted that urological imaging should be routinely performed at the same time, and in a few patients with combined lower urinary tract (urethra, bladder) anomalies, cystoscopy is helpful to assist in the diagnosis. In this case, no pre-pregnancy examination or diagnosis was performed, and ultrasound examination during early pregnancy suggested unicornuate uterus? stump-angle uterus? was confirmed to be unicornuate uterus type U4b with an associated stump uterus on the opposite side and no uterine cavity after intraoperative cesarean section. This type of unicornuate uterus is relatively difficult to diagnose because of the absence of clinical manifestations such as menstrual reflux, accumulation of blood in the uterine cavity and dysmenorrhea, and its insidious onset, which is mostly due to infertility or gynecological examination, or inadvertently discovered during abdominal surgery. Because of the various types of unicornuate uterus and hidden symptoms, a variety of imaging methods can be used to improve the diagnostic accuracy to meet the needs of clinical diagnosis and treatment.

Unicornuate uterus is associated with cervical insufficiency, miscarriage, preterm delivery, fetal growth restriction, abnormal fetal position, weak uterine contractions, abnormal progress of labor, uterine rupture, postpartum hemorrhage, and cord and placenta abnormalities^[6-9]. Ji Mingliang et al [10] from Peking Union Medical College Hospital reported 23 cases of unicornuate uterine pregnancies, and the main complications during pregnancy included cord winding (45.84%), breech position (29.17%), fetal growth restriction (16.67%), fetal malformation (4.17%), single umbilical artery (4.17%), and placenta praevia (4.17%). The unicornuate uterus has an incomplete degree of myometrial development, abnormal uterine cavity morphology and altered uterine volume, abnormal uterine vascular distribution, cervical insufficiency, poor muscle wall tone and little dilatation, and the presence of other pelvic pathologies, resulting in compromised polarity and symmetry of contractions, which may lead to uncoordinated uterine contractions, uterine rupture, postpartum hemorrhage, and placental abruption, affecting labor outcomes^[7,11].

Zou Yuqing et al^[11] from the Obstetrics and Gynecology Hospital, Zhejiang University School of Medicine, reported 80 cases of unicornuate uterine pregnancy with 70 cesarean deliveries with the main surgical indications of abnormal fetal position and fetal distress. There were 10 successful transvaginal deliveries, including 4 forceps-assisted deliveries, with no significant prolongation or stagnation of labor compared with the control group, and no significant differences in neonatal Apgar scores, compared with the control group. There was no adverse outcome of vaginal delivery and no uterine rupture. In this case, after a thorough assessment of the pelvis, soft birth canal and fetal size, and after adequate communication with the

patient and her family about her condition, a vaginal trial of labor was chosen. During the trial of labor, premature rupture of membranes occurred, and labor was induced by intrauterine indocin 2 hours after rupture of membranes, the opening of the uterus was 4 cm, the fetal heart monitoring continued for 20 minutes, the contractions were 2-3 minutes apart, the duration was 30-40 seconds, the uterine pressure was 55-60 mmHg, the uterine body was not tense, and the contractions were regular and intermittent. 26 minutes later, the opening of the uterus was 5 cm, the prolonged deceleration of the fetal heart was found, and the lowest fetal heart rate dropped to 70 beats per minute. After 26 minutes, the opening of the uterus was 5 cm, and the prolonged deceleration of fetal heartbeat was found. The large area of placental abruption in a short time may be related to the abnormal symmetry and polarity of the contraction of the unicornuate uterus and the uneven pressure in the uterine cavity. The defective development of the myometrium of the unicornuate uterus prevents it from achieving the myofibrillar contraction of the normal form of the uterus. Uncoordinated uterine contractions may occur at the constrictor resting point, leading to uneven force on the placenta and subsequent placental abruption.

In conclusion, it is rare for a U4a unicornuate uterus to reach full term and even rarer for placental abruption to occur during delivery. If there are no other indications for cesarean delivery, singleton, cephalic position, moderate fetal size, no pelvic abnormality and mature cervical score, vaginal delivery can be tried with caution in spontaneous labor. However, close monitoring of labor and contractions is required, and if abnormal labor and fetal distress occur, the indication for cesarean section should be relaxed to avoid placental abruption and reduce the occurrence of adverse outcomes.

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