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Unicornuate uterus and pregnancy

Útero unicorne y embarazo

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Abstract

Malformations of the uterus are due to defective fusion of the Müller's ducts. These include the unicornuate uterus, with or without a rudimentary horn. Emergency cesarean section was performed due to alteration of the fetal heart rate diagnosed by fetal monitoring, obtaining a male newborn with a cephalic presentation of flexion with the presence of caput weighing 3360 g, height 51 cm, APGAR 7-8-9, CAPURRO 41 weeks of gestation, posterior fundic placenta, extraction was performed. Due to the percentage of infertility presented by patients with unicornuate uterus with the possibility of the use of assisted reproductive technology, women with congenital uterine anomalies should be informed about the impact on the probabilities of success, as well as on pregnancy-related complications. Women with a unicornuate uterus should undergo a prenatal check-up that includes monitoring of cervical length, growth and fetal presentation. If present, the rudimentary non-communicating horn should be removed to avoid ectopic pregnancy. Despite the pregnancy complications associated with a unicornuate uterus, there is the possibility of a successful pregnancy, as referred to in the present clinical case, however, it is important to recognize that patients who present with Mullerian malformation of the unicornuate uterus tend to infertility and to be habitual abortionists with difficulty in reaching a term and successful pregnancy. Here lies the importance and attention of the present case, the patient despite presenting the condition of unicornuate uterus reaches 41 weeks of gestation and has a successful cesarean delivery.

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Resumen

Las malformaciones del útero se deben a la fusión defectuosa de los conductos de Müller. Estos incluyen el útero de unicorne, con o sin cuerno rudimentario. Se realiza cesárea de emergencia por alteración de la frecuencia cardiaca fetal diagnosticado por monitoreo fetal, obteniéndose recién nacido sexo masculino presentación cefálico de flexionado con presencia de caput con peso de 3360 g, talla 51 cm, APGAR 7-8-9, CAPURRO 41 semanas de gestación, placenta fúndica posterior, se realiza la extracción. Debido al porcentaje de infertilidad que presentan las pacientes con útero unicorne teniendo como posibilidad el uso de tecnología de reproducción asistida, se debe informar a las mujeres con anomalías uterinas congénitas sobre el impacto en las probabilidades de éxito, así como también en las complicaciones relacionadas con el embarazo. Las mujeres con útero unicorne deberán realizarse un control prenatal que incluya monitorización de la longitud cervical, crecimiento y presentación fetal. En caso de existir, debe extirparse el cuerno rudimentario no comunicante para evitar embarazo ectópico. A pesar de las complicaciones del embarazo asociadas con útero unicorne, existe la posibilidad de un embarazo exitoso, como refiere el presente caso clínico, sin embargo, es importante reconocer que las pacientes que presentan malformación mulleriana de útero unicorne tienden a la infertilidad y a ser abortadoras habituales con dificultad para llegar con una gestación a término y exitosa. Aquí radica la importancia y llama la atención el presente caso, la paciente pese a presentar la condición de útero unicorne llega a las 41 semanas de gestación y tiene un parto por cesárea exitoso.

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Introduction

The uterus, a complex organ, performs crucial functions, such as fertilization, embryo implantation and fetal development[1]. The European Society of Human Reproduction and Embryology/European Society of Gynaecological Endoscopy (ESHRE/ESGE) classifies uterine malformation into; U0 normal uterus, U1 dysmorphic uterus (infantile and T-shaped mainly), U2 septate uterus, U3 bicorporeal uterus, U4, hemiuterus (unicorn), U5, aplastic uterus, and U6, for cases not yet classified[2].

It is estimated that maternal mortality of patients with unicornuate uterus (UU) is between 6 and 23 %, because more than 50 % of pregnancies associated with this anomaly resulted in uterine rupture, which usually occurs during the third trimester of pregnancy due to reduced uterine muscle mass[3].

Malformations of the uterus are due to defective fusion of the Müller's ducts. These include the UU, with or without a rudimentary horn. Pregnancy in a UU is a rare event that carries maternal-fetal risks including recurrent miscarriage, preterm birth, fetal malposition, intrauterine growth retardation, and uterine rupture[4].

Approximately 1 in 76 000 pregnancies is accompanied by a rudimentary horn, while 83 % of these cases were reported as pregnancies[5,6].

Pregnancies within noncommunicating uterine horns represent a high risk for a fatal outcome; therefore, the realization must be considered three-dimensional ultrasound or magnetic resonance imaging.

A study is used to determine the nature of uterine abnormalities, because a pregnancy located in a rudimentary uterine horn is associated with a risk of spontaneous rupture and bleeding due to increased uterine blood flow[6].

Laparoscopic surgery can be performed in cases of ectopic pregnancies, in rudimentary horns without rupture in the early stages of pregnancy[7].

40 % of women with UU may experience infertility, in addition to patients with this malformation, require renal evaluation, because UU can arise from the incomplete development of the paramesonephric canal or abnormalities in the urogenital crest, which can result in variations in renal and ovarian structures, since it is recommended to evaluate the renal system using imaging techniques every time a UU[4] is detected.

Accurate diagnosis requires pelvic examination, urinary tract evaluation, hysterosalpingography (HSG), magnetic resonance imaging and 3D transvaginal ultrasound.

It has been reported that women with a history of miscarriage and infertility have a higher prevalence of congenital uterine anomalies[8], with a reported incidence of subfertility of 23.7 % in 3181 women with UU[9].

Rudimentary uterine horn removal is considered a preferred surgical approach to treat dysmenorrhea, ectopic pregnancy, and retrograde menstruation in patients affected with UU. Studies report that the use of cervical cerclage can prevent preterm birth in patients with a UU[4].

The reproductive prognosis of women with UU has been shown to be particularly poor in the case of twin pregnancy, women with congenital uterine anomalies should be informed about the impact of their congenital anomaly on the chances of success in assisted reproduction therapy, as well as about pregnancy-related complications[7].

The objective of this research was to present a clinical case of UU, diagnosed during a cesarean section in a full-term pregnancy.

Case Presentation

A 21-year-old female patient, first-time mother, 41 weeks pregnant, presented to the obstetric gynecological emergency room due to a clinical picture of approximately 7 days of evolution, characterized by colicky pain in the hypogastrium, which radiated to the lumbosacral region, plus loss of the mucus plug; she reported exacerbation of her clinical picture approximately 30 minutes ago, accompanied by loss of clear transvaginal fluid in abundant quantity, good perception of fetal movements.

Personal history. *Obstetric Gynecology;* first time, menarche at 12 years, sexually transmitted infections does not refer, urinary tract infections and vaginal infections 1 time in the third trimester treated, she was admitted to hospital at 37 weeks for urinary tract infections, she performed 5 prenatal controls at the Health Center.

Surgical history; Lipoma excision in the right ankle.

Vital signs; blood pressure 123/87 mmHg, pulse 100 beats per minute (bpm), respiratory rate 20 per min, saturation 98 %, Glasgow 15/15.

Physical examination; abdomen: with pregnant uterus, fetus in cephalic presentation, left lateral dorsum, uterine height 34 cm, fetal heartbeat 135 bpm, fetal movements present, irregular uterine activity.

Genital region; speculoscopy showed clear amniotic fluid leakage, central cervix of soft consistency, dilation 2 cm, effacement 50 %, ruptured membranes plane I.

Obstetric risk 3 points.

Diagnosis of admission; premature rupture of membranes and onset of labor within 24 hours.

Entrance to the antepartum area; patient went to the antepartum area to continue care, received 25 μg of misoprostol for induction of labor, in addition to antibiotic coverage with ampicillin 1 g intravenous every 6 h, plus hydration with sodium chloride 0.9 % 1000 cm^3 intravenous 30 drops per minute, psychoprophylaxis was indicated, but 2 hours later during fetal monitoring alteration was evidenced with category 2 fetal monitoring, There is evidence of a baseline fetal heart rate of 175/180, absent decelerations, present accelerations, with a diagnosis of labor and delivery complicated by alteration of the fetal heart rate. The patient went to pre-surgery for surgery with stable vital signs and under spinal anesthesia an emergency cesarean section was performed.

Pre-surgical laboratories; leukocytes 11.75, hematocrit 35.7 %, hemoglobin 12 g dL^{-1}, platelets 291, neutrophils 84.7 %, syphilis negative, antibody (HIV 1-2) non-reactive, antigen (p24) non-reactive. Blood group O Rh positive, TP 13.2, TPT 39.9, INR 1.03. hemoglucotest 93 mg dL^{-1}.

Surgical technique; previous asepsis and antisepsis, placement of surgical drapes, Pfannenstiel incision, plane dissection, findings: subcutaneous cellular tissue of +/- 6 cm, evidence in the abdominal cavity of an enlarged pregnant uterus, Kerr-type hysterotomy, leakage of stained amniotic fluid (meconium +++, pea puree) was evidenced, a male newborn was obtained with a cephalic presentation of flexion with the presence of caput weighing 3360 g, height 51 cm,

APGAR 7-8-9, Capurro 41 weeks of gestation, posterior fundic placenta, it is completely removed, abnormal findings are evidenced in the morphology of the adnexa as the uterus is externalized for complete evaluation of its anatomy, observing UU with rudimentary left annex (Figure 1) Hysterorraphy is performed in 3 planes with strict hemostasis control, drying of the cavity, unscathed bladder, synthesis by planes until reaching the skin, placement of sterile dressings, permeable Foley probe with clear diuresis approximately 200 cm^3, clots are extracted in moderate quantity at the transvaginal level, transient uterine hypotonia is evidenced, 800 µg of misoprostol is placed rectally.

Postoperative evolution; during the postoperative period, the patient remained conscious, oriented in time and space, reported pain at the surgical site level, with vital signs, blood pressure 111/65 mmHg, heart rate 151, respiratory rate 25 breaths per minute, temperature 37.5, saturation 99 %, proteinuria 0. Alert state of consciousness, MAMA score 5 points.

Abdomen; soft depressible slightly painful on palpation uterus with normal involution 2 cm lower than the umbilical scar.

Genital region;scarce non-fetid lochia, there is evidence of a permeable bladder catheter clear diuresis due to 300 cm^3.

Extremities; symmetrical non-edema, preserved osteotendinous reflexes.

The patient continued with maternal tachycardia, so an electrocardiogram was performed, and sinus tachycardia was evident.

Patient with a favorable evolution at 48 hours there is stabilization of her vital signs, she is discharged in stable clinical conditions in joint housing with the newborn.

Results



Figure 1 Unicornuate uterus, seen from the front. A cylindrical uterus with a flattened left wall is observed, with a rudimentary fallopian tube and left ovary. No additional abnormalities were observed within the abdominopelvic cavity

Discussion

When the presence of asymptomatic rudimentary horns containing endometrium is detected in a patient, resection is recommended by application of laparoscopic techniques[10].



Figure 2 Unicornuate uterus, seen from the side, with horn and left rudimentary appendage

In an investigation, the case of a 23-year-old primiparous woman was admitted to the maternity ward at 38.3 weeks of gestation with suspected premature rupture of membranes and the onset of labor, in her evaluation they determined the presence of a fetus with restricted growth. The woman smoked 10 cigarettes a day. She underwent a cesarean section due to fetal presentation dystocia; the 2530 g baby was born in a breech position. During surgery, a UU was obtained with a rudimentary left horn without a left fallopian tube, the patient was unaware of. Both ovaries and the right fallopian tube were normal. Their kidneys and ovaries were evaluated by ultrasound, and showed an enlarged left kidney of 13.2 cm in length, compared to the right kidney of 10.4 cm, and they observed signs of bifurcation of the left kidney, which suspected the presence of a double kidney[11].

In a study involving 20 patients whose mean age was 28 years, 13 patients (65 %) had primary infertility, while the remaining 7 had secondary infertility, and 2 of them had a previous ectopic pregnancy. Routine communicating uterine horn was observed in 7 patients (35 %), which were removed during laparoscopy. The diagnosis of UU was made by HS, 3D transvaginal ultrasound, and the urinary system was evaluated by 2D ultrasonography[5].

In the literature reviewed, the case of a 29-year-old Japanese patient, gravid 2, nulliparous, with a diagnosis of left UU with a rudimentary non-communicating right horn diagnosed by HSG and magnetic resonance imaging was evidenced. They observed a heartbeat gestational sac in the right rudimentary uterine horn at 6 weeks gestation, diagnosing ectopic pregnancy. Color Doppler detected multiple signals of blood flow around the gestational sac, which were clearly magnified compared to the left UU. Their serum human chorionic gonadotropin level was 104 619 mIU mL^{-1}. As a therapeutic measure, they administered a 100 mg methotrexate injection into the gestational sac, and laparoscopic surgery was performed on day 48 after methotrexate treatment. The right rudimentary horn and fallopian tube were successfully removed with minimal bleeding. A normal spontaneous pregnancy was established 6 months after surgery. The pregnancy was uneventful, and one girl was born by elective cesarean section at 38 weeks[7]. Ectopic pregnancy in a rudimentary UU horn is rare and presents a high risk of rupture, with increased maternal morbidity and mortality. The standard treatment is complete surgical excision[12].

A study revealed the case of a 24-year-old first-time mother patient with 12 weeks of gestation and a twin pregnancy in the US with a rudimentary non-communicating horn. One fetus was in the U.S. and the other in the rudimentary horn that broke. They performed an urgent laparotomy, removed the rudimentary horn and the fallopian tube. Pregnancy in the U.S. continued and at 38 weeks of gestation, cesarean section was performed due to premature rupture of membranes, resulting in a normal newborn[13].

Due to the percentage of infertility presented by patients with UU with the possibility of the use of assisted reproductive technology, women with congenital uterine anomalies should be informed about the impact on the probabilities of success, as well as on pregnancy-related complications[14].

In a study carried out on a total of 3181 patients in whom the morphology of the uterus was determined, the uterus was measured in the HSG and laparoscopy/laparotomy during the years 1980-1995, whose population analyzed were fertile, infertile and sterile patients, found the following results: The frequency of uterine malformations was 4.0 %. Infertile patients

had a higher incidence ($p < 0.05$) of Müllerian anomalies, compared to fertile and infertile women. Septate and arcuate uteruses were the most frequently observed malformations. Each malformation was analyzed individually in fertile and infertile patients, to determine their reproductive status. As for UU and didelph, the probability of having a living child was 37-40 %. The bicornuate uterus with a live birth rate of 62.5 % and the septate uterus of 62 %. In all of these abnormalities, early miscarriages and preterm births were common. The arcuate uterus presented a live birth rate of 82.7 % and concluded that uterine anomalies are more frequent in infertile patients. However, there are fertile patients with normal reproductive performance, and Müllerian defects can allow an absolutely normal obstetric outcome[9].

Conclusion

Women with UU and pregnancy should have prenatal care that includes monitoring of cervical length, growth, and fetal presentation. If present, the rudimentary non-communicating horn should be removed to avoid ectopic pregnancy. Despite the pregnancy complications associated with UU, there is the possibility of a successful pregnancy, as in the present clinical case, however, it is important to recognize that patients who present Mullerian malformation of UU tend to be infertility and to be habitual abortionists with difficulty in reaching a term and successful pregnancy.

Here lies the importance and attention of the present case, the patient despite presenting the condition of UU reaches 41 weeks of gestation and has a successful cesarean delivery.

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Conflicts of interest

The authors declare that they have no conflict of interest.

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Ethical considerations

For this publication, authorization was requested from the patient by signing an informed consent.

Limitations in research

None.

Publishing permissions

A document signed by the patient authorizing the publication of the clinical case is attached.

Identification of the responsibility and contribution of the authors in the article

The authors declare to have contributed to the original idea (*Jorge Cárdenas*), research design (*Viviana Torres*), data collection (*Pedro Tomalá, Vanessa Cedeño, Liz Mendoza, Ketty Mosquera*), data analysis (*María Calderón*), draft

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Use of artificial intelligence

We assume that the entire document was written based on ethical and professional criteria, and AI was not used to make the images or text.

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