

UTERINE DIDELPHYS: A TROUBLED CASE OF LABOR INDUCTION
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Introduction: Uterine didelphys is an uncommon mullerian duct abnormality (1 in 3000) with limited evidence-based recommendations. This uterine anomaly does not typically affect a woman's fertility. We present a case of a pregnancy with uterine didelphys that underwent an unsuccessful induction of labor (IOL) at 40 weeks gestation.

Case: A 29 year old G1P0 presented for IOL at 40 weeks gestation. Her prenatal care revealed uterine didelphys with fetus in the right uterus. Cervical ripening was accomplished with prostaglandin E2 followed by low dose oxytocin and mechanical balloon dilation. Once the right cervix was dilated to 4cm, artificial rupture of membranes was performed and an intrauterine pressure catheter was placed. Contractions were minimal to non-existent (measured by Montevideo units) despite maximum dose oxytocin. No cervical change was made after 7 hours. A decision was made to proceed with cesarean section, which resulted in the delivery of a healthy neonate.

Discussion: Although uterine didelphys is associated with an increased risk of cesarean section, it is not a contraindication to vaginal delivery. Both the American College of Obstetrics and Gynecology and the American Society of Reproductive Medicine do not have guidelines on labor induction or management for uterine didelphys. Some cases in the literature have shown successful labor induction, however, the majority of cases have resulted in cesarean section. The cause is mostly attributed to malpresentation. However, our case shows despite a normal fetal vertex position, there was no response to oxytocin administration.

Scholarly Question: Are there un-identified predictors of successful vaginal deliveries for patients with uterine didelphys?

Conclusion: There are no evidence-based guidelines for labor induction and management for congenital uterine anomalies. This case had no response to oxytocin, indicating a potential correlation with the uterine abnormality. Physicians should consider uterine didelphys as a strong risk factor for cesarean section when managing labor.

UTERINE DIDELPHYS: A TROUBLED CASE OF LABOR INDUCTION

Introduction

Uterine didelphys is a mullerian duct abnormality that results from failure of the mullerian ducts to fuse during embryonic development. It is classically defined as the presence of two uteri, two cervixes, and in some cases, a longitudinal vaginal septum. It is the second least common mullerian duct abnormality and has a reported prevalence of 1 in 3000.¹ Most women diagnosed with uterine didelphys are asymptomatic, but some present with dyspareunia or dysmenorrhea, which is usually a result of the longitudinal vaginal septum.² There is a reported increased prevalence among infertile women when compared to the general population, and it is thought that uterine anomalies in general may have a part in the delayed natural conception of women with secondary infertility. However, there are reported cases of uterine didelphys that do not experience reproductive challenges.² Uterine didelphys pregnancies have increased rates of miscarriage, preterm delivery, intrauterine growth restriction, malpresentation, and cesarean delivery when compared to pregnancies with a normal uterus. The pregnancy outcomes in uterine didelphys appear to be better than those of patients with septate or unicornuate uterus.¹ Induction of labor in patients with this condition has not been extensively studied in the literature. We present a case of a pregnancy with uterine didelphys that underwent an unsuccessful induction of labor (IOL) at 40 weeks gestation.

Case Presentation

This patient is a 29 year old G1P0 who was initially diagnosed with bicornuate uterus on her 6 week ultrasound. She had been told in the past she had a heart shaped uterus, but did not report dyspareunia, dysmenorrhea, chronic abdominal pain, or infertility previously. On physical examination, no longitudinal vaginal septum was present. Her 20-week anatomy ultrasound performed by a maternal-fetal medicine specialist confirmed the diagnosis of uterine didelphys. The images demonstrated two uteri and two cervixes with the fetus in the right uterus. The cervical length was also within normal limits and the presentation was vertex on ultrasound. The patient had an uncomplicated prenatal course and did not have any signs of bleeding or threatened preterm labor. Her laboratory evaluation and vital signs remained within normal limits. The fetus showed appropriate growth during serial growth scans performed every 4 weeks.

She presented for induction of labor at 40 weeks gestation. On physical exam, her blood pressure was found to be elevated with an elevated urine protein/creatinine ratio. She was diagnosed with pre-eclampsia without severe features and decision was made to continue plan for induction of labor. On sterile vaginal exam, both cervixes were found to be 0 centimeters dilated, 0 percent effacement, and -3 station. The fetal heart tracing (FHT) was category one, with baseline heart rate of 135, moderate variability, accelerations present, and no decelerations. Bedside sonogram showed the fetus to be in vertex position. Cervical ripening was performed with prostaglandin E2. Analgesia was achieved with intravenous butorphanol and then with epidural placement. After 12 hours with prostaglandin E2, the right cervix was 1 centimeter dilated 10 percent effaced and -3 station while the left cervix remained closed. We

proceeded with mechanical balloon dilation and started low dose oxytocin infusion. After mechanical balloon dilation, the right cervix was 4 centimeters dilated, 60 percent effaced and -2 station. The left cervix was also 4 cm dilated. Artificial rupture of membranes was performed and an intrauterine pressure catheter was placed. The patient had minimal to no contractions measured via Montevideo units (MVUs). The oxytocin infusion was titrated up to maximum dose and continued for 7 hours. The patient continued to have minimal to no MVUs during this time and had not made any cervical change. She also had a category 2 FHT during this time period that responded quickly to maternal repositioning. Considering the lack of cervical change, inadequate MVUs, FHT changes, and diagnosis of pre-eclampsia, the decision was made to proceed with a primary cesarean section for failed induction of labor. The patient proceeded to have a cesarean delivery of a healthy baby boy with a weight of 3895g and an uncomplicated stay in the newborn nursery.

Discussion

Most of the data on the clinical significance and outcomes of uterine didelphys are based on small retrospective, observational, or case studies.² In addition, very few studies have investigated the clinical significance specifically of uterine didelphys and induction of labor because of its low prevalence in the population.² It is reported in the literature that the incidence of cesarean section in uterine didelphys pregnancies is as high as 82 percent.³ Other reported adverse pregnancy outcomes in didelphys uterus includes early and late miscarriages, malpresentation, intrauterine growth restriction, preterm delivery, and preterm rupture of membranes.¹

However, uterine didelphys is not considered a contraindication to vaginal delivery. One retrospective cohort study following 162 patients with uterine anomalies over 18 years and a combined 265 pregnancies demonstrated there was a 40-50 percent frequency of breech presentation and a 53 percent frequency of cesarean section. Of the uterine anomalies, uterine didelphys had the highest frequency of cesarean sections at 82 percent.⁴ The largest study examining uterine didelphys specifically was a retrospective cohort study following 49 patients over an average of 9.1 years. Out of 55 deliveries, 84% of them were cesarean deliveries and 51% of them were breech presentations.⁵ Since 33% of the deliveries proceeded to cesarean section for reasons other than malpresentation, the researchers surmised that in addition to malpresentation, obstruction of the pelvic inlet by one hemiuterus and the longitudinal vaginal septum may have contributed to labor dystocia in these patients.⁵

What is unique about our case is that despite maximum dose oxytocin, the patient had minimal to no contractions measured on internal monitoring after initially showing cervical change with mechanical augmentation. To our knowledge, there are no other reports where a patient with a single intrauterine pregnancy required cesarean section specifically for failed induction of labor secondary to lack of uterine response to max dose oxytocin. Of note, there is one reported case in the literature of twin gestation that underwent cesarean section secondary to arrest of cervical dilation and chorioamnionitis.⁶ The most common indications for cesarean delivery in uterine didelphys, malpresentation or a longitudinal vaginal septum⁴, were not present in our case. This leads us to conclude that there may have been factors in patients with

uterine didelphys not previously identified in the literature that may contribute to the failure of induction of labor in this patient population.

Additional factors in uterine didelphys pregnancies that could hinder vaginal labor include a fibrosed or thickened cervical septum⁷, obstruction of the pelvic inlet by the non-pregnant uterine horn,⁸ and cervical dystocia with ineffective uterine contractions.^{9,10} In our case, both cervixes dilated to 4 centimeters after mechanical balloon dilation. In multiple case reports seen in the literature, only one cervix (corresponding to the uterus that has the fetus) dilates completely during labor while the other one either remains closed or dilates a small amount.^{2,7} It is possible in our case that the dilation of the left cervix to the same degree as the right cervix prevented the right cervix from completely dilating and thus completing the first stage of labor. The left non-pregnant uterus may have served as a pseudo-obstruction both mechanically and also the global physiologic uterine response to oxytocin. There is clearly a connection as evidenced in another case report of twin gestation which demonstrated dyssynchronous uterine contractions, preventing optimal cervical dilation as each uterine horn independent contracted.¹¹

Scholarly Question

Are there any un-identified predictors of a successful vaginal delivery for induction of labor in patients with uterine didelphys?

Conclusion

We present a case of a 29 year old G1P0 with uterine didelphys who underwent failed induction of labor at 40 weeks resulting in cesarean section. Regarding induction of labor in these patients, we recommend referring to the American College of Obstetricians and Gynecologists guidelines for labor induction provided no contraindication to labor is present. The majority of these patients go on to have cesarean deliveries secondary to malpresentation. Patients should be educated early on in the pregnancy course about the increased likelihood of complications to include higher incidence of cesarean section. Physicians taking care of these patients should plan to provide vaginal delivery in hospitals that have obstetrical providers who can perform cesarean section.

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