

Combined Medical and Surgical Management of Rudimentary Uterine Horn Pregnancy

John K. Park, MD, Celia E. Dominguez, MD

ABSTRACT

Background: Pregnancy within a noncommunicating rudimentary horn is a known complication of unicornuate uterus. The risk of rupture approximates 50%, most of which occur in the second trimester.

Case: A rudimentary horn pregnancy was discovered at 8 weeks gestation. Medical termination was then performed with fetal intracardiac potassium chloride and intraplacental methotrexate. Magnetic resonance imaging (MRI) of the pelvis was obtained. Laparoscopic uterine horn resection 6 weeks after medical termination was performed.

Discussion: While surgical resection of a rudimentary horn pregnancy is necessary, early diagnosis affords the opportunity to take steps that minimize surgical risks. MRI assists surgical planning by demonstrating the form of attachment of the uterine horn to the unicornuate uterus. Preoperative medical termination may decrease vascularity of the gestation, thereby decreasing operative blood loss.

Key Words: Unicornuate uterus, Rudimentary horn, Ectopic pregnancy, Müllerian anomaly.

INTRODUCTION

A unicornuate uterus results from unilateral failure of normal Müllerian system development. In most instances, the abnormal Müllerian duct has partially developed into a rudimentary uterine horn. In one series of 42 patients with unicornuate uterus, 84% had a contralateral rudimentary horn.¹ The anatomic variations of a rudimentary horn serve as the basis for classification of unicornuate uterus by the American Fertility Society²: rudimentary horn with cavity, communicating with unicornuate uterus (class II-A), rudimentary horn with cavity, not communicating with unicornuate uterus (class II-B, the most common), rudimentary horn without cavity (class II-C), or unicornuate uterus without rudimentary horn (class II-D).

Pregnancy within a noncommunicating rudimentary uterine horn is a well-known complication, estimated to occur in 1 in 76,000 pregnancies.³ This occurs by transperitoneal migration of sperm from the patent contralateral fallopian tube.⁴ Migration of ovum with sperm can also occur, as evidenced by the 8% prevalence of a corpus luteum on the side contralateral to the rudimentary horn containing the pregnancy.⁵ The prognosis for maternal and fetal outcome is poor, with a neonatal survival rate of 6% and uterine horn rupture risk of 50%.⁶ Due to the high risk of this potentially catastrophic outcome, the classical teaching has been that all uterine horn pregnancies should be surgically removed immediately upon diagnosis. However, medical termination followed by delayed surgical resection is an option when diagnosis is obtained early and impending rupture seems unlikely, since most cases of rupture occur in the second trimester.⁶ Antecedent medical termination may facilitate surgical resection by decreasing blood flow to the gestation. We describe a case of noncommunicating rudimentary horn pregnancy that was medically terminated and subsequently resected along with the uterine horn and fallopian tube 6 weeks later.

CASE REPORT

A 36-year-old female who had a known history of a left unicornuate uterus with a noncommunicating rudimentary horn presented to her obstetrician 8 weeks into her

Emory University School of Medicine, Department of Gynecology and Obstetrics, Atlanta, Georgia, USA (all authors).

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Address reprint requests to: John K. Park, MD, Emory Reproductive Center, 550 Peachtree St, Ste 1800, Atlanta, GA 30308, USA. Telephone: 404 686 1858, Fax: 404 686 4956, E-mail: jpark6@emory.edu

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second pregnancy. Her uterine anomaly was detected in her first pregnancy during a Cesarean delivery at 34 weeks for failure to progress. However, an accurate description of the uterine anomaly was difficult given the gravid state. Several months later, a hysterosalpingogram revealed a small uterine cavity deviating towards the left side, along with a patent left fallopian tube. Dye did not fill the right uterine horn.

An ultrasound at 8 weeks revealed a singleton pregnancy within the right uterine horn and a corpus luteum on the ipsilateral ovary (**Figure 1**). The crown-rump length and quantitative B-hCG (approximately 89,000 mIU/mL) were consistent with the gestational age, and cardiac activity was observed. The patient was referred to a perinatologist who confirmed the ectopic pregnancy diagnosis and counseled her about the risk of uterine horn rupture and poor prognosis for viability. The patient was also counseled that surgery would be necessary to remove the ectopic gestation and noncommunicating rudimentary horn. The ectopic gestation was asymptomatic. The perinatologist performed intracardiac injection of KCl along with intraplacental injection of methotrexate to prevent further gestational growth. Absent fetal cardiac activity was confirmed several days later. The patient was seen weekly to follow B-hCG levels, which had decreased to 653 mIU/mL after 6 weeks. Four weeks after medical termination, we obtained an MRI to further characterize the uterine anomaly and urinary system. The MRI revealed a rudimentary horn attached to the unicornuate uterus by a small band of tissue, and no urinary system abnormalities were detected (**Figures 2 and 3**).



Figure 1. Ultrasound revealing ectopic pregnancy within the right rudimentary horn.

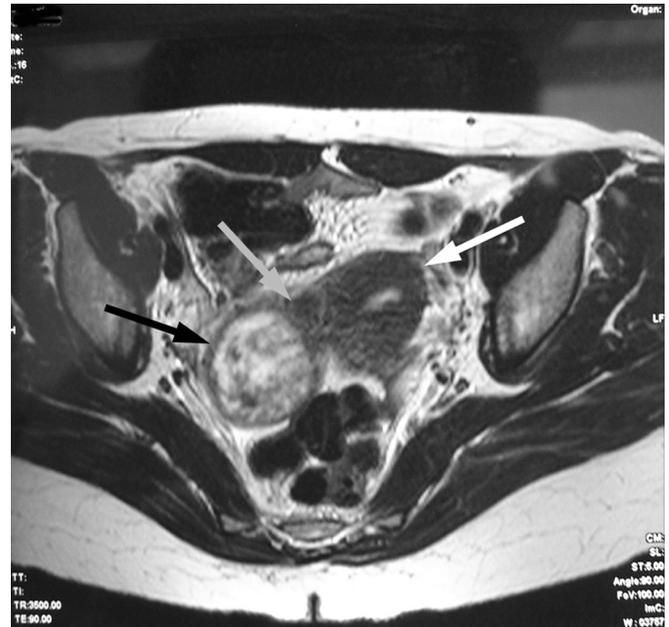


Figure 2. Magnetic resonance image, axial view. Black arrow: right rudimentary horn containing pregnancy; white arrow: left unicornuate uterus; grey arrow: band of tissue connecting the rudimentary horn to the uterus.

Six weeks after medical termination, we performed laparoscopy with a 5-mm laparoscope in the umbilicus, a 10-mm trocar in the left lower quadrant, and a 5-mm trocar in the right lower quadrant. A 4x4x6-cm rudimentary horn was attached to the unicornuate uterus by a 15-mm diameter band of tissue (**Figure 4**). The right ovary, tube, and ureter appeared normal. We transected the right round ligament and opened the broad ligament by using a 5-mm LigaSure (Valleylab, Boulder, CO). The anterior leaf of the broad ligament was dissected from the edge of the uterine horn, and a right salpingectomy was performed. The posterior leaf of the broad ligament was dissected off the edge of the uterine horn (**Figure 5**), and the utero-ovarian ligament was transected. Two PDS Endoloops (Ethicon Endo-Surgery, Inc, Cincinnati, OH) were placed over the rudimentary horn and ligated around the fibrous band before it was transected with the LigaSure. Once the uterine horn and tube were free, the specimen was removed by using an Endopouch (Ethicon Endo-Surgery, Inc, Cincinnati, OH).

Superficial lesions of endometriosis in the posterior cul-de-sac and on the left uterosacral ligament were fulgurated using bipolar cautery. Estimated blood loss was less than 50mL and there were no complications. The patient was discharged the following day. The pathology report

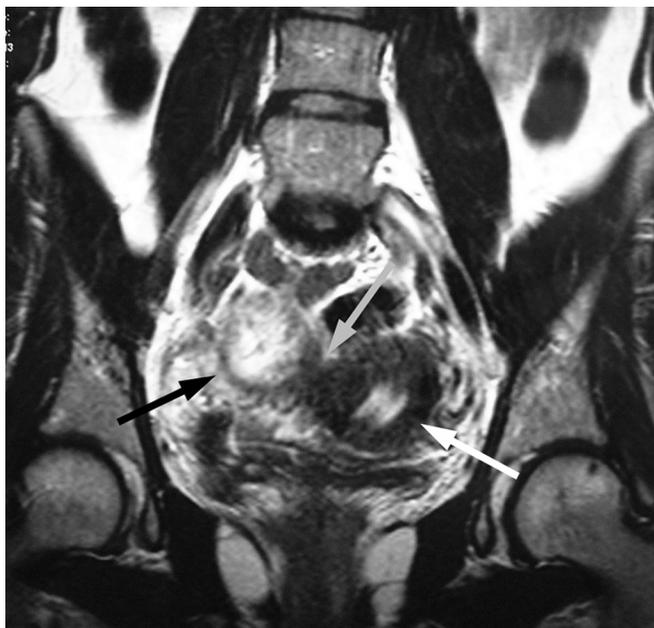


Figure 3. Magnetic resonance image, coronal view. Black arrow: right rudimentary horn containing pregnancy; white arrow: left unicornuate uterus; grey arrow: band of tissue connecting the rudimentary horn to the uterus.

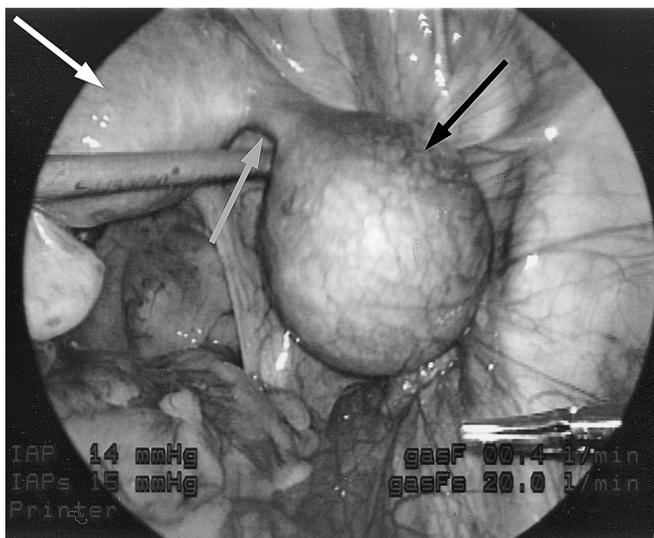


Figure 4. Uterine horn (black arrow) is attached to the unicornuate uterus (white arrow) by a small band of tissue (grey arrow).

revealed necrotic decidua and chorionic villi within the uterine horn. The patient was aware of the poor prognosis for carrying a pregnancy to term, yet she continued to express a strong desire for future childbearing.

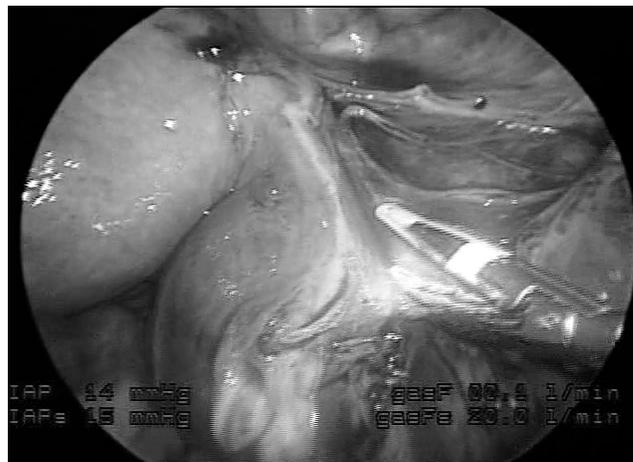


Figure 5. Dissection of posterior leaf of broad ligament off the rudimentary horn. Anterior leaf was previously detached.

DISCUSSION

When ectopic pregnancy within a rudimentary uterine horn occurs, surgical resection is requisite due to the high risk of rupture. Because most cases of uterine horn rupture occur in the second trimester, early diagnosis in the first trimester provides some time to take measures that can minimize surgical risks. In this case, medical termination was performed before surgery to decrease the vascularity to the ectopic gestation. For the nongravid patient, elective surgical removal of a rudimentary horn is advised to eliminate the possibility of a rudimentary horn ectopic pregnancy.⁷

Immediate surgical resection was not necessary in this case. The patient was asymptomatic from the ectopic pregnancy and displayed no signs of impending rupture. Termination with intracardiac KCl and intraplacental methotrexate was successful in reducing further development of the ectopic gestation, and the B-hCG levels decreased rapidly. Single-dose intramuscular methotrexate has also been reported to terminate rudimentary horn pregnancy, which requires a larger dose of medication due to systemic administration.⁸ We monitored the patient with serial B-hCG levels and an occasional ultrasound. We delayed surgical resection until B-hCG levels declined significantly, hoping this would signify a decrease in blood flow to the rudimentary horn. The use of preoperative GnRH agonists to render the surgical field less vascular has been reported in cases without pregnancy.⁹ However, this was not used in our patient because we did not feel that a GnRH agonist would have a significant effect during pregnancy.

Characterizing the anatomic relation between the uterine horn and the unicornuate uterus with MRI is helpful for planning the surgical approach. A rudimentary horn can be attached to the unicornuate uterus by either a band of tissue or a broad, firm attachment.¹⁰ A band of tissue is easily transected while a broad attachment requires much more dissection. Separation is more difficult without a pedicle, and there is a higher risk of dissecting into the cavity of the uterus. An MRI is also useful to determine whether any urinary abnormalities are present, given that approximately 38% of patients have coexisting renal abnormalities.¹ Unilateral renal agenesis is most commonly found, which is always ipsilateral with the rudimentary horn.

CONCLUSION

Rudimentary horn pregnancy is associated with high maternal morbidity and fetal mortality. MRI is helpful for making this diagnosis and understanding the anatomy to plan the surgical approach for resection. Early diagnosis can provide the luxury of delaying surgery. When diagnosis is obtained early, medical termination before surgery can be used to potentially decrease blood flow to the gestation, facilitating surgical removal with limited blood loss.

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