

Intact Cornual Ectopic Pregnancy and Dermoid Cyst With Intraoperative Rupture

Daniel Martingano, DO
Francis X. Martingano, MD

From the Department of
Obstetrics and Gynecology
at NYU Lutheran Medical
Center in Brooklyn,
New York.

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Address correspondence to
Daniel Martingano, DO,
NYU Lutheran
Medical Center,
150 55th St,
Brooklyn, NY 11220-2508.

E-mail: dmartingano@carolinas.vcom.edu

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Of ectopic pregnancies encountered in clinical practice, more than 95% are located within the fallopian tube, and 2% to 4% are cornual. A cornual ectopic pregnancy is a serious clinical condition and poses diagnostic and therapeutic challenges. Thus, understanding the clinical course and treatment options is essential. The authors describe the case of a 29-year-old woman who presented to the Department of Obstetrics and Gynecology. The patient was suspected of having a cornual pregnancy, and a dermoid cyst had been detected during routine ultrasonography. In the absence of maternal symptoms, the clinical scenario is potentially dangerous and must be treated promptly and efficiently to decrease morbidity and mortality.

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An ectopic pregnancy occurs when a fertilized ovum implants outside the endometrial cavity, and approximately 1.5% to 2% of all pregnancies are ectopic.¹ More than 95% of ectopic pregnancies are located within the fallopian tube,² and 2% to 4% of these cases are cornual ectopic pregnancies.³ A cornual gestation is one of the most dangerous types of ectopic gestations, conferring a mortality rate up to 7 times that of other ectopic pregnancies.⁴ This high rate is largely due to the probability of cornual rupture and resultant maternal hemorrhage if left untreated. Because of the elasticity of the myometrium, cornual ectopic pregnancies tend to remain asymptomatic longer than most other ectopic pregnancies; rupture usually occurs at about 7 to 12 weeks' gestation.⁵ We describe the case of a 29-year-old woman who was suspected of having a cornual pregnancy and a concurrent dermoid cyst detected during routine ultrasonography. The present case report highlights the distinctiveness of a cornual ectopic pregnancy from interstitial or angular pregnancies and demonstrates how a cornual ectopic pregnancy can be present in the absence of commonly found clinical symptoms associated with such pregnancies.

Report of Case

A 29-year-old pregnant woman (gravida 2, para 1) with a gestational age of 12 weeks by last menstrual period presented to the Department of Obstetrics and Gynecology for evaluation of possible bicornuate uterus, potential ectopic pregnancy, and dermoid cyst detected during routine ultrasonography. Her medical history was notable for 2 cesarean deliveries. The patient had no complaints of pain or discomfort but did report vaginal discharge with slight fetal movement. The patient's β -human chorionic gonadotropin level was measured, and results were pending. An osteopathic structural examination was performed on the

thoracic and lumbar spine in addition to the sacrum, which revealed that T1-9 was neutral, rotated right, sidebent left; T10-12, flexed, rotated right, sidebent right; L1-5, neutral, sidebent right, rotated left; and sacrum with a positive seated flexion test on the left and rotated to the right on a right oblique axis.

Results of a pelvic transvaginal sonogram revealed the presence of a gestational sac and positive fetal heart tones with an uncertain location, either within the left fallopian tube proximal to the uterus or to the left of the uterine fundus. A magnetic resonance image of the pelvis without contrast showed a 4.6-cm eccentrically located gestational sac to the left of the uterine fundus surrounded by an asymmetric, thin myometrial mantle consistent with an ectopic pregnancy of the cornua (*Figure*).

Because of the size of the gestational sac, the potential location in the cornua, and the thinness of the uterine wall as evidenced by the magnetic resonance image, a diagnostic laparoscopy was ordered. At this time, this approach was preferred over open laparotomy because the patient was in stable condition without complaints of pain.

On the same day the patient presented to the Department of Obstetrics and Gynecology, she underwent laparoscopy. In the operating room, incisions were made in the abdomen, the abdomen was insufflated, and a camera was inserted to view the pelvic contents. The contents visualized were consistent with the MR image of a large ectopic pregnancy located in the left cornua of the uterus with a thin wall and a dermoid cyst. Because of the risk of rupture of the ectopic pregnancy and subsequent compromise to maternal health, the decision was made to convert to open laparotomy.

The slight manipulation of the uterus during the open procedure caused rupture of the uterine wall where the fetus was implanted with resultant spontaneous expulsion of the fetus. The remaining fetal tissue was evacuated and sent to the pathology department for testing. The dermoid cyst was removed from the overlying ovarian tissues using sharp and blunt dissection.

The patient tolerated the remainder of the procedure well, and the rest of the hospital course was uneventful.

Discussion

According to *Williams Obstetrics*,⁶ a cornual implantation occurs in the upper and lateral uterine cavity, whereas interstitial implantation occurs within the proximal intramural portion of the tube. *Cornual pregnancy* is sometimes used interchangeably with an *interstitial pregnancy* by some sources, and these 2 terms are often confused with the term *angular pregnancy*. A review of these terms was done by Arleo and DeFilippis⁷ to elucidate the terms' distinctiveness for the purpose of determining the important clinical implications of each entity. Arleo and DeFilippis⁷ concluded that cornual and interstitial ectopic pregnancies present the same clinical consequences, namely that they are exceedingly rare and will likely result in a nonviable fetus. Six case reports have been published reporting interstitial or cornual pregnancies that have achieved fetal viability.⁸⁻¹³

Angular pregnancies, on the other hand, occasionally progress to term pregnancies and are often managed expectantly.¹³ They are distinguished from interstitial pregnancies by their position in relation to the round ligament as seen during surgery: the lateral uterine enlargement of an angular pregnancy displaces the round ligament reflection upward and outward. Accordingly, the current case of cornual pregnancy is clearly distinct in anatomic location, clinical expectation, and evident outcome.

In the current case, the patient did not present with rupture or any discernable symptoms, which is in sharp contrast to the literature on clinical presentation of cornual pregnancies. Shan et al¹⁴ conducted a retrospective analysis of 1000 cases of abnormal pregnancies. Of the 30 cornual pregnancies identified (3%), 36.8% of patients presented in shock due to rupture, 68.4% presented with vaginal bleeding in the absence of rupture, and 94.7% presented with abdominal pain.¹⁴ Given the absence of the symptoms in the current case presentation,

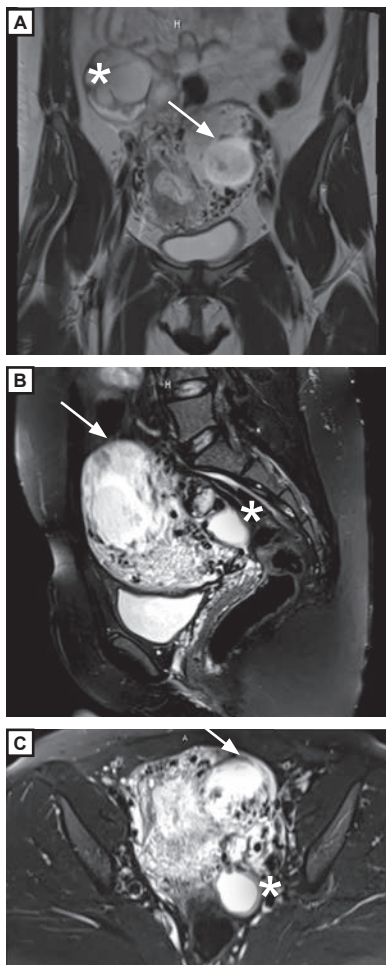


Figure. T2-weighted magnetic resonance images of cornual ectopic pregnancy and dermoid cyst. Coronal view (A), sagittal view (B), and axial view (C). The arrow points to the gestational sac at its thinnest point in the left cornual wall, and the asterisk indicates the location of the dermoid cyst.

clinical suspicion and suggestive radiographic evidence of a cornual or interstitial ectopic pregnancy should prompt intervention.

Any potential intervention is largely dependent on the stage at which the ectopic pregnancy is identified. Cucinella et al¹⁵ analyzed 354 cases of cornual pregnancy and found that conservative laparoscopic treat-

ment is the preferred surgical approach in cases of ectopic pregnancy when medical treatment is not recommended. Cornuostomy and resection of the affected horn are the standard laparoscopic techniques used to manage cornual pregnancies and was initially attempted in the present case.

Laparotomy with cornual wedge resection, the traditional treatment for cornual pregnancy, was ultimately used in the present case because of the suspicion of imminent rupture during diagnostic laparoscopy. Walid and Heaton¹⁶ reviewed several reports on the use of minimally invasive surgical techniques to successfully manage cornual ectopic pregnancies in which the patient is hemodynamically stable and suspicion for immediate rupture is low. Previous cesarean deliveries do not appear to correlate with an increased risk for complications from either of these approaches. These techniques are consistent with the goals of minimally invasive surgery and have introduced a surgical alternative with reduced blood loss, less postoperative pain, shorter hospital stay, and a more expeditious recovery, thus making it a preferred surgical option to open laparotomy when indicated.

With increased accuracy of diagnostic modalities such as ultrasonography, methotrexate is often used to manage cornual ectopic pregnancies. Correct discrimination between a cornual ectopic pregnancy vs a normal intrauterine pregnancy can be made. Thus, chances are reduced of administering systemic methotrexate for normal intrauterine pregnancies mistakenly believed to be implanted in the cornua of the uterus.¹⁷ Using methotrexate to treat patients can be considered in cases of early, asymptomatic cornual pregnancies when β -human chorionic gonadotropin is less than 4000 IU/L, a gestational sac is less than 3.5 cm to 4 cm, and a hemodynamically stable patient in whom the risk for rupture is low.¹⁸ Otherwise, surgical treatment is recommended. These criteria are congruent with the present case, in which a gestational sac greater than 4 cm was identified with a pending β -human chorionic gonadotropin and an

increased risk of rupture. However, no clinical symptoms were indicated.

No clearly defined guidelines regarding the use of osteopathic manipulative treatment in the setting of ectopic pregnancy exist, nor is there any literature regarding osteopathic structural examination findings in patients with ectopic pregnancy compared with early intrauterine pregnancy, to our knowledge. Although osteopathic manipulative treatment is a safe and effective tool in alleviating the symptoms caused by normal pregnancy, such practices may present a potential risk in the case of cornual ectopic pregnancy given its increased risk of rupture.

Conclusion

A cornual ectopic pregnancy is a serious clinical condition that poses challenges diagnostically and therapeutically; thus, understanding the clinical course and treatment options is essential. The present case illustrates an advanced cornual ectopic pregnancy that was identified and treated in a very narrow timeframe before inevitable rupture. Unlike angular pregnancies, cornual ectopic pregnancies require prompt identification and treatment because the fetal viability rates are negligible, and the potential harm to the mother is probable and severe. Whether or not maternal symptoms are present, cornual ectopic pregnancy is potentially dangerous and must be treated promptly and efficiently to decrease morbidity and mortality.

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