Colombia Médica

English version

Spanish version

Crossmark

ACCESO ABIERTO

Citación: Herrera CE, Luna G., Sejnaui,SJ, Vacca OLM, Tobar PJM. **Laparoscopic surgical alternative for the treatment of ruptured cornual heterotopic pregnancy**. Colomb Méd (Cali),2025; 56(1):e5005576. http://doi.org/10.25100/cm.v56i1.5576

Received: 30 Mar 2023
Revised: 10 Dec 2023
Accepted : 05 Dec 2024
Publishing: 30 Mar 2025

Keywords:

Heterotopic pregnancy; ectopic pregnancy; laparoscopy.

Palabras clave:

Embarazo heterotópico; embarazo ectópico; laparoscopia.

CASE REPORT

Laparoscopic surgical alternative for the treatment of ruptured cornual heterotopic pregnancy

Alternativa quirúrgica laparoscópica en el tratamiento de embarazo heterotópico cornual roto

Enrique Herrera Castañeda,[1] Gustavo Luna,[2] Jessica Sejnaui Sayegh,[1] Luisa M. Vacca Orrego,[1] Juan Manuel Tobar Parra [1]

1 Universidad del Valle, Facultad de Salud, Departamento de Ginecología y Obstetricia, Cali, Colombia., **2** Clínica Imbanaco, Cali, Colombia.

Abstract

Case Description:

A 35-year-old woman with a history of intrauterine device use for family planning presented with a spontaneously conceived heterotopic pregnancy.

Clinical Findings:

The patient developed a ruptured cornual ectopic pregnancy, leading to hemodynamic instability and an acute abdomen, while concurrently carrying a viable intrauterine pregnancy.

Treatment and Outcome:

A laparoscopic intervention was performed to manage the ruptured ectopic pregnancy. The surgical technique employed minimized the impact on maternal blood volume, ensuring patient stabilization and favorable progression of the intrauterine pregnancy.

Clinical Relevance:

Heterotopic pregnancy is the coexistence of gestation in two different implantation sites, both intrauterine and extrauterine. This condition is associated with significant maternal morbidity and mortality. Management remains a challenge due to the lack of consensus and limited clinical experience. The primary goal is maternal stabilization while preserving the intrauterine pregnancy whenever possible. This case highlights the importance of modern surgical strategies tailored to optimize maternal and fetal outcomes.

Autor de correspondencia:

Enrique Herrera Castañeda.
Universidad del Valle, Facultad de Salud, Departamento de Ginecología y Obstetricia, Cali, Colombia. **Email:** enrique.herrera@correounivalle.edu.co

Resumen

Descripción del caso:

Mujer de 35 años con antecedente de uso de dispositivo intrauterino para planificación familiar, quien presentó un embarazo heterotópico concebido de manera espontánea.

Hallazgos clínicos:

La paciente desarrolló un embarazo ectópico cornual roto, con inestabilidad hemodinámica y abdomen agudo, asociado a un embarazo intrauterino viable.

Tratamiento y resultados:

Se realizó una intervención laparoscópica para el manejo del embarazo ectópico roto. La técnica quirúrgica utilizada minimizó el impacto en la volemia materna, permitiendo la estabilización de la paciente y la evolución favorable del embarazo intrauterino.

Relevancia clínica:

El embarazo heterotópico es la coexistencia de una gestación en dos sitios de implantación diferentes, tanto intrauterino como extrauterino. Esta condición está asociada con una morbilidad y mortalidad materna significativas. El manejo representa un desafío debido a la falta de consensos y a la experiencia clínica limitada. El objetivo principal es la estabilización materna, con la intención de preservar el embarazo intrauterino cuando sea posible. Este caso resalta la importancia de estrategias quirúrgicas actuales adaptadas para optimizar los resultados maternos y fetales.

Introduction

Heterotopic pregnancy is the coexistence of an intrauterine pregnancy and an ectopic pregnancy [1]. It is a rare, potentially fatal entity [2]. The incidence is estimated to be 1/30,000 in spontaneous pregnancies; 1/900 when conception occurs during treatment with clomiphene citrate; and greater than 1/100 when pregnancy is due to in vitro fertilization [2,3].

Due to its low prevalence, high-quality evidence regarding the diagnosis and management of heterotopic pregnancy is limited. The literature consists primarily of case reports and series [3]. Although rare, these pregnancies are responsible for significant maternal morbidity and mortality [3,4]. Pelvic adhesions, pelvic inflammatory disease, the use of intrauterine devices, previous ectopic pregnancies, curettage, and assisted reproductive therapies increase the risk of heterotopic pregnancy [2,3].

The diagnosis of heterotopic pregnancy can be confused with a threatened abortion, and β-HCG monitoring is not useful in differentiating between the two [5]. Approximately 74% are diagnosed after 8 weeks of gestation [6]. Delays in diagnosis are associated with rupture of ectopic pregnancies, heavy bleeding, and hemodynamic decompensation, which compromise the intrauterine pregnancy and the patient's life. Transvaginal pelvic ultrasound is the diagnostic test that locates both intrauterine and ectopic implantations [5]. The goal of management is to stabilize the patient and preserve the intrauterine pregnancy. Heterotopic pregnancy has several treatment options, including surgical, expectant management, and ultrasound-guided gestational sac aspiration [5,7].

The choice of treatment remains a challenge due to the potential for jeopardizing the intrauterine pregnancy [5,7]. This is the case with expectant and medical management, since the use of

methotrexate (first-line therapy for ectopic pregnancies) is not recommended due to its high risk of teratogenesis in the intrauterine embryo [7]. Surgical management is usually the treatment of choice in hemodynamically unstable patients; however, it is associated with a higher rate of miscarriage than other therapeutic options [7].

The objective of this case report is to describe and propose a minimally invasive surgical technique with emphasis on vascular management of the source of profuse bleeding in cases of ruptured cornual heterotopic pregnancy, allowing for the preservation and adequate progression of the concomitant intrauterine pregnancy.

Clinical case

A 35-year-old female patient, mixed-race, home-based, primigravida with reliable amenorrhea of 9 weeks, presented to the emergency department with a clinical picture of sudden onset of generalized abdominal pain and distension associated with dizziness, and scanty brown vaginal bleeding. Her gynecological history revealed that she had been using intrauterine devices for the past six months.

Physical examination revealed a blood pressure of 90/60 mm Hg, a heart rate of 105 beats/minute, a slightly pale, pallid, and abdominal distension, with a positive Blumberg sign. A vaginal examination revealed an enlarged uterus with tenderness upon cervical movement. Speculoscopy revealed scant vaginal bleeding. A transvaginal ultrasound revealed a gravid uterus measuring 10 cm in length with a transverse diameter of 8.5 cm, and a gestational sac located in the right uterine fundus, with a live embryo with a 26 mm craniocaudal length (CRL) at nine weeks' gestation, an irregular area toward the fundus, and abundant free fluid in the abdominal cavity. Associated with the findings described, a ruptured right cornual pregnancy with an intrauterine pregnancy was diagnosed.

The patient was hemodynamically unstable with an acute abdomen and abundant free fluid in the abdominal cavity, so an emergency exploratory laparoscopy was performed. The surgical technique performed was: Insertion of an 11 mm port at the umbilical level, followed by CO_2 pneumoperitoneum inflation. A 10 mm port was then inserted into the left iliac fossa to perform rapid aspiration of the hemoperitoneum and thus allow visualization of the pathology. A 5 mm accessory port was then inserted in the right iliac fossa and another 5 mm accessory port was inserted suprapubically.

Surgical findings included an estimated hemoperitoneum of 1,500 cc and a ruptured right cornual pregnancy with active bleeding (Figure 1-A). The tubal branch of the uterine artery was ligated with 1-0 Vicryl (Ethicon-Johnson and Johnson, Invima Reg 2007 DM 00000908R2) and deep endosutures were placed through the mesentery of the right tube, which reduced bleeding by 95% (Figure 1-B). The ectopic pregnancy was resected with a 5 mm Ligasure clamp (Covidien LF1937, Ligasure Maryland 5 mm). The tissue extracted from the cornual region (gestational sac) was sent to pathology for histological analysis in the cornual region, verifying hemostasis. 3-0 single-gout catgut sutures (Ethicon-Johnson and Johnson, Invima Reg 2016DM 0000279 R4) were placed at the umbilical and iliac fossa levels (Figure 1-C). The patient's postoperative recovery was favorable. The pathology report described the presence of chorionic villi and trophoblasts, confirming the presence of an ectopic pregnancy coexisting with an intrauterine pregnancy. The intrauterine pregnancy continued without major abnormalities. Prenatal care was within normal limits, and micronized progesterone (200 mg/day) was administered vaginally for support until the 14th week of gestation. The pregnancy continued until 39 weeks. The delivery was by cesarean section with a 3,200 g neonate, without complications.

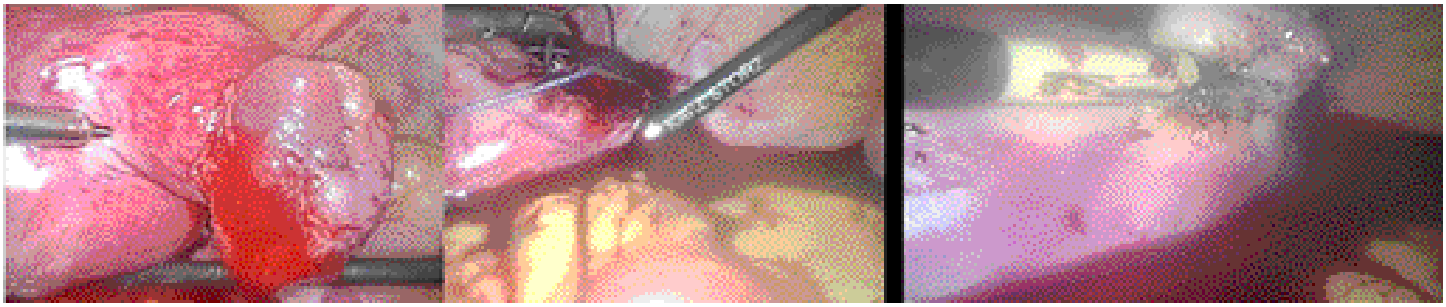

Figure 1. Minimally invasive treatment. A. Ruptured cornual ectopic pregnancy with active bleeding. B. Placement of an endosuture (Vycril 1-0) through the mesosalpinx, producing vascular blockage of the tubal branch of the uterine artery. C. Resection of the cornual pregnancy with a 5-mm Ligasure to reinforce hemostasis

Discussion

Heterotopic pregnancies are rare when they occur spontaneously, but an increased incidence has been observed with the use of assisted reproductive techniques [2,3]. This type of pregnancy has the characteristic of producing massive bleeding with hemodynamic compromise and a high risk of maternal death (8). The main objective of managing a heterotopic pregnancy is to stabilize the patient and preserve the intrauterine pregnancy [5].

Its management is controversial, and depends on the clinical presentation, the patient's hemodynamic status, and the surgical skills of the medical team [5,6]. Surgical management is the choice when the patient is hemodynamically unstable or has profuse vaginal bleeding [9]. Minimally invasive surgical techniques have been accepted since 2000 [5], and exploratory laparotomy is the surgical option in cases of acute abdomen with hemodynamic instability. The access route depends on the experience of the surgical team and the degree of instability of the patient. The minimally invasive approach generates shorter hospital stays, better pain management, a lower infection rate, and less disability compared to open surgery (laparotomy) [10]. Among the minimally invasive surgical techniques for the management of cornual ectopic pregnancies described in the medical literature are: 1. Laparoscopic cornuonostomy: Complete incision of the cornual region, recommended for masses smaller than 4 cm. 2. Laparoscopic cornuectomy: Resection of only the affected cornual region. These techniques carry a high risk of uterine rupture during ongoing pregnancy [5,9,11].

The case presented is a ruptured heterotopic cornual pregnancy, diagnosed early, at 9 weeks of gestation, in a patient using an intrauterine device. Although the patient was mildly tachycardic and showed signs of peritoneal irritation, her general condition allowed for the laparoscopic approach, combined with the surgical team's experience in minimally invasive techniques. A larger-caliber trocar (10 mm; a 5 mm trocar is normally used) was used at the level of the iliac fossa contralateral to the lesion to allow rapid aspiration of the hemoperitoneum, allowing observation of the affected area and thus proceeding to control the bleeding source. Unlike what is described in the medical literature, the tubal branch of the uterine artery is ligated, thereby achieving hemostatic control for the patient. The ectopic pregnancy is subsequently removed with a 5 mm Ligasure, reinforcing hemostasis as described in the reported surgical techniques.

This surgical approach is recommended in clinical scenarios where a diagnosis of a ruptured or unruptured heterotopic pregnancy at the cornual level is presented, diagnosed in a timely manner (before 10 weeks), as long as the patient's hemodynamic status allows it, in hospitals with physicians adequately trained in laparoscopy, as it allows for adequate hemodynamic management of the patient associated with adequate progression and viability of the concomitant intrauterine pregnancy. The need for follow-up of patients undergoing this technique is emphasized to determine whether implementing this surgical approach reduces the risk of uterine rupture in both the current intrauterine pregnancy and a future pregnancy.

References

1. Maleki A, Khalid N, Rajesh Patel C, El-Mahdi E. The rising incidence of heterotopic pregnancy: current perspectives and associations with in-vitro fertilization. Eur J Obstet Amp Gynecol Reprod Biol. 2021; 266: 138-44. Doi: 10.1016/j.ejogrb.2021.09.031

2. Bataille P, Reynard A, Ducarme G. Spontaneous heterotopic triplets - A review of literature. J Gynecol Obstet Hum Reprod. 2017; 46(8): 657-9. Doi: 10.1016/j.jogoh.2017.05.008.

3. CNRS. Grossesses hétérotopiques: à propos de trois cas. Bases bibliographiques Pascal et Francis-Home ; 2002. Cited: 6 de febrero de 2025. http://pascal-francis.inist.fr/vibad/index.php?action=getRecordDetail&idt=13985703

4. Wu Z, Zhang X, Xu P, Huang X. Clinical analysis of 50 patients with heterotopic pregnancy after ovulation induction or embryo transfer. Eur J Med Res . 2018; 23(1): 17. Doi: 10.1186/s40001-018-0316-y

5. Moawad NS, Mahajan ST, Moniz MH, Taylor SE, Hurd WW. Current diagnosis and treatment of interstitial pregnancy. Am J Obstet Gynecol. 2010; 202(1): 15-29. Doi: 10.1016/j.ajog.2009.07.054

6. Dendas W, Schobbens JC, Mestdagh G, Meylaerts L, Verswijvel G, Van Holsbeke C. Management and outcome of heterotopic interstitial pregnancy: case report and review of literature. Ultrasound. 2017; 25(3): 134-42. Doi: 10.1177/1742271x17710965

7. Li YL, Chuang FC, Lan KC. Laparoscopic management of second trimester ruptured cornual heterotopic pregnancy with subsequent live birth delivery: a case report and literature review. Taiwan J Obstet Gynecol. 2023; 62(2): 363-8. Doi: 10.1016/j.tjog.2022.07.013

8. Barrenetxea G, Barinaga-Rementeria L, Lopez deLA, Agirregoikoa JA, Mandiola M, Carbonero K. Heterotopic pregnancy: two cases and a comparative review. Fertil Steril. 2007; 87(2): 417.e9-417.e15. Doi: 10.1016/j.fertnstert.2006.05.085

9. Noor N, Parveen S, Bano I. Heterotopic pregnancy with successful pregnancy outcome. J Hum Reprod Sci. 2012; 5(2): 213. Doi: 10.4103/0974-1208.101024

10. Ricci A P, Lema C R, Solá D V, Pardo S J, Guiloff F E. Desarrollo de la cirugía laparoscopica: pasado, presente y futuro: desde hipócrates hasta la introducción de la robótica en laparoscopia ginecológica. Rev Chil Obstet Ginecol. 2008; 73(1): 63-75. Doi: 10.4067/s0717-75262008000100011

11. Kuczkowski KM. Laparoscopic procedures during pregnancy and the risks of anesthesia: what does an obstetrician need to know? Arch Gynecol Obstet. 2007; 276(3): 201-9. Doi: 10.1007/s00404-007-0338-0