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Heterotopic pregnancy in late gestation

Embarazo heterotópico en edad gestacional avanzada

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Abstract

Heterotopic pregnancy is a rare condition in gynecology and obstetrics, characterized by the simultaneous implantation of at least two gestational sacs in different locations, one intrauterine and one extrauterine. We present the case of a 28-year-old female patient, with a gestation of approximately 5 weeks confirmed by previous ultrasound, who presented to the emergency department for pelvic pain of 24 hours of evolution, irradiated to the lumbosacral region, of moderate intensity (7/10), accompanied by slight transvaginal bleeding initiated two days earlier. Transvaginal ultrasound showed the presence of a gestational sac in the left fallopian tube and another in the uterine cavity, confirming the diagnosis of heterotopic pregnancy. Treatment consisted of exploratory laparotomy with salpinguectomy, allowing the continuation of the intrauterine pregnancy without subsequent complications. Associated risk factors include a history of cesarean section, tubal surgeries, pelvic inflammatory disease, adenomyosis, and, more importantly today, *in vitro* fertilization techniques, which have increased the incidence of this clinical entity. Heterotopic pregnancy represents a diagnostic challenge due to its low frequency and high maternal morbidity and mortality, mainly in cases of rupture and hemorrhage that can trigger hypovolemic shock. Transvaginal ultrasound is the initial diagnostic tool, complemented in complex situations with nuclear magnetic resonance imaging. Early and timely diagnosis, together with continuous monitoring, is essential to define therapeutic strategies that guarantee maternal and fetal well-being in high-risk conditions.

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Resumen

El embarazo heterotópico es una condición poco frecuente en ginecología y obstetricia, caracterizada por la implantación simultánea de al menos dos sacos gestacionales en diferentes localizaciones, uno intrauterino y otro extrauterino. Se presenta el caso de una paciente femenina de 28 años, con gestación de aproximadamente 5 semanas confirmada por ecografía previa, que acude al servicio de emergencia por dolor pélvico de 24 h de evolución, irradiado a región lumbosacra, de intensidad moderada (7/10), acompañado de leve sangrado transvaginal iniciado dos días antes. La ecografía transvaginal evidenció la presencia de un saco gestacional en la trompa de Falopio izquierda y otro en cavidad uterina, confirmando el diagnóstico de embarazo heterotópico. El tratamiento consistió en laparotomía exploratoria con salpinguectomía, permitiendo la continuidad del embarazo intrauterino sin complicaciones posteriores. Entre los factores de riesgo asociados se incluyen antecedentes de cesárea, cirugías tubáricas, enfermedad pélvica inflamatoria, adenomiosis y, de manera más relevante en la actualidad, las técnicas de fertilización *in vitro*, que han incrementado la incidencia de esta entidad clínica. El embarazo heterotópico representa un desafío diagnóstico por su baja frecuencia y elevada morbimortalidad materna, principalmente en casos de ruptura y hemorragia que pueden desencadenar shock hipovolémico. La ecografía transvaginal constituye la herramienta diagnóstica inicial, complementada en situaciones complejas con resonancia magnética nuclear. Un diagnóstico precoz y oportuno, junto con seguimiento continuo, resulta esencial para definir estrategias terapéuticas que garanticen el bienestar materno y fetal en condiciones de alto riesgo.

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Introduction

Heterotopic pregnancy is an infrequent obstetric condition, characterized by the coexistence of at least two pregnancies in different implantation sites, and only one is located in the uterine cavity[1]. Its prevalence ranges from 1/30 000 in natural cycles to 1/100 in assisted reproduction, with maternal mortality estimated at 5 per 1 000 000 cases[2].

Risk factors for developing heterotopic pregnancy are assisted reproduction techniques, especially *in vitro* fertilization, in fresh cycles without a donor or multiple embryo transfer, history of extrauterine pregnancy, previous surgery (including salpingectomy, salpingostomy or reconstructive tubal surgery), history of pelvic inflammatory disease, previous cesarean deliveries, procedures Not only does it indicate structural changes in the uterus and compromised endometrial integrity, but it is also associated with implantation failure[3].

Its clinical symptoms include abdominal pain and vaginal bleeding with a positive pregnancy test, as in ectopic pregnancy, but the diagnosis of heterotopic pregnancy is more complex; represents a serious diagnostic problem, which is often misdiagnosed, due to the fact that the two main symptoms; abdominal pain and vaginal bleeding; They can also occur in intrauterine pregnancies when there are threats of miscarriage or miscarriage, which often complicates the accuracy of the diagnosis, mainly in cases where bleeding can be severe if there is a rupture in the interstitial portion of the fallopian tube[4].

Although the primary function of β-hCG is to confirm pregnancy and assess early gestational development, it does not indicate the implantation site; therefore, transvaginal ultrasound serves as the important diagnostic tool, and diagnosis is often delayed by the presence of an intrauterine gestational sac[5].

It should be taken into account that heterotopic pregnancy is suspected when ultrasound examination shows an intrauterine pregnancy and a complex adnexal mass or a general extrauterine finding[6].

Surgical treatment allows direct removal of the ectopic mass, while preserving the intrauterine pregnancy[2]. Depending on the clinical presentation, treatment options include watchful waiting, medical treatment, or surgery. The prognosis of coexisting intrauterine pregnancy is usually favorable[5].

Regarding the surgical approach, laparoscopic salpingectomy is a standard for the surgical management of heterotopic pregnancy, mainly tubal ones, depending on the location of the pregnancy, while cornual wedge resection is the standard surgical approach to treat heterotopic interstitial pregnancy patients[4].

Early detection of heterotopic pregnancy can reduce maternal morbidity and mortality, so despite its rarity, the presence of a confirmed normal intrauterine pregnancy, a concurrent extrauterine pregnancy should not be excluded; it can be located in different parts of the abdominopelvic cavity, for example, heterotopic cervical heterotopic pregnancy, a rare form of ectopic pregnancy that involves implantation of the gestational sac in both the cervical canal and in the uterine cavity. This condition carries a high risk of serious complications, such as lethal vaginal bleeding and miscarriage[3,6,7].

The most common type of heterotopic pregnancy is intrauterine pregnancy combined with tubal pregnancy, while intrauterine pregnancy combined with cervical pregnancy is very rare[3].

The objective of this study was to describe a clinical

case of heterotopic pregnancy and its current management, highlighting the importance of early diagnosis and intervention to preserve maternal and fetal health.

Case Presentation

A 28-year-old female patient, who was approximately 5 weeks pregnant due to previous ultrasound, went to the emergency area by her own means, reported a clinical picture of 24 hours of evolution, characterized by pelvic pain, which radiated to the lumbosacral region of moderate intensity 7/10, on the pain scale that is accompanied by vaginal bleeding in a slight amount that began two days ago, he states that he changes two cloths daily, today he reports being without bleeding.

Personal history. Obstetric Gynecology; 3 gees, one caesarean section, one childbirth and one abortion, interreproductive period: five months, menarche at 14 years, onset of sexual life at 18 years, sexual partners one, regular menstrual cycles of four days, date of last menstruation 3 March 2025.

Patient lives and resides in Guayas - La Aurora, she is a high school graduate, Ecuadorian, mestizo.

Vital signs; blood pressure 106/69, pulse 100 bpm, heart rate 22 rpm, weight 53.4 kg, size 1.62, Glasgow 15/15. *Physical examination*; soft, depressible abdomen painful on deep palpation at the level of the left iliac fossa.

Genital area; speculoscopy showed scant chocolate bleeding, closed cervix was seen, painful cervix on vaginal examination on mobilization.

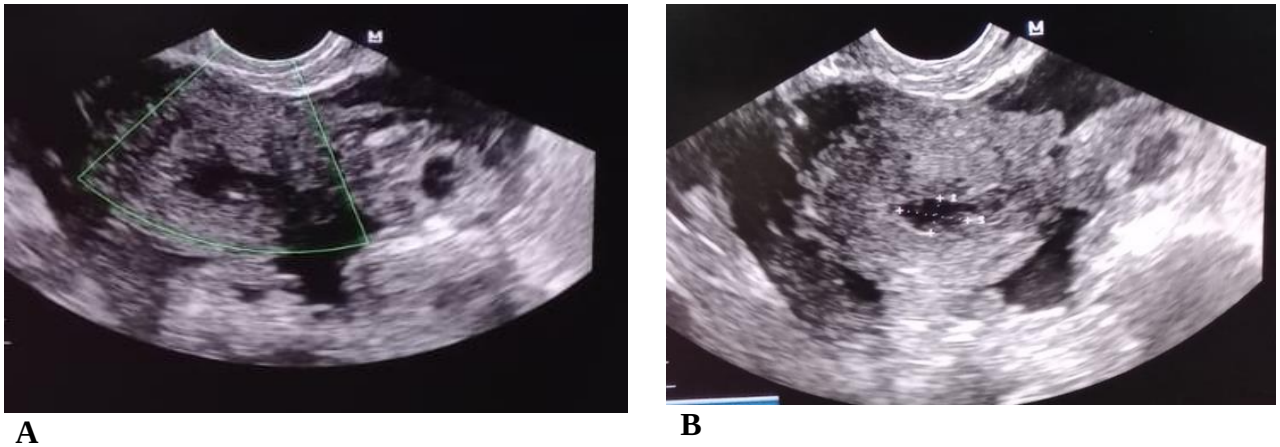
Extremities; symmetrical, in edema.

MAMA Score; 1 point, state of consciousness: alertness, positive proteinuria

Obstetric risk; 3 points, has a miscarriage and hemorrhage in the first half of pregnancy.

Pre-surgical lab tests, clotting times, HIV, VDRL, blood type, complete blood count, glucose, and qualitative hCG test are sent.

Ultrasound tracking was performed, evidenced; uterus in preserved shape and size, thickened endometrium is visualized with an anechoic image inside, rounded, suggestive, gestational sac, ovaries, right, normal appearance and size, left ovary, normal shape and size. A rounded anechoic image with thick hyperechoic edges is visualized that is attached to the left ovary, the presence of fluid in the Douglas sac fundus is visualized. Images suggestive of heterotopic pregnancy.

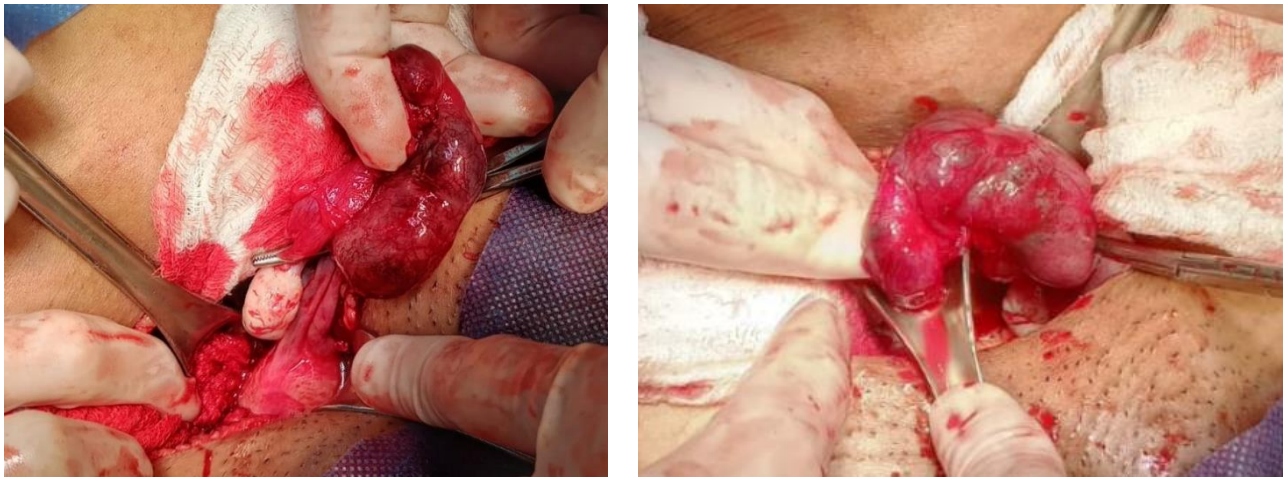


A **B**

Figure 1 In panels A and B, transvaginal ultrasonography is evidenced with the presence of a sac in the left fallopian tube corresponding to a left tubal heterotopic pregnancy and inside the uterine cavity there is the presence of another sac corresponding to normal intrauterine gestation

General indications; Swim orally, prepare for surgery (exploratory laparotomy). Control of vital signs, nursing care, reports to family members, informed consents, communicate news, prepare two units of concentrated red blood cells, collect laboratory tests, go to pre-surgery. *Medication*: Ranger lactate 0.9 % 1000 mL pass to 30 drops per min.

The patient went to the operating room, where an exploratory laparotomy was performed, through a Pfannenstiel incision, dissection was performed by planes until the abdominal cavity was identified in the left annex organized left tubal ectopic pregnancy.



C D

Figure 2 In panel C and D, the presence of left tubal heterotopic pregnancy is evident during exploratory laparotomy

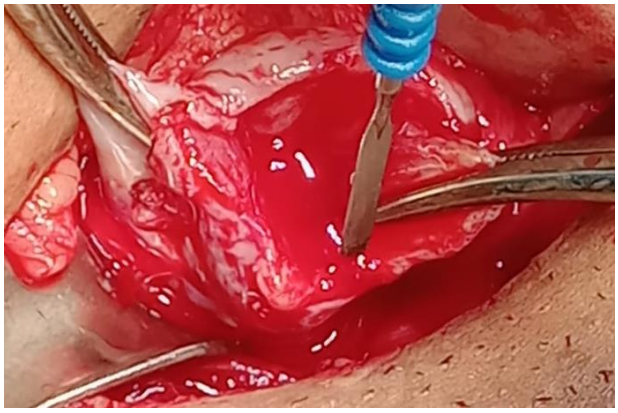


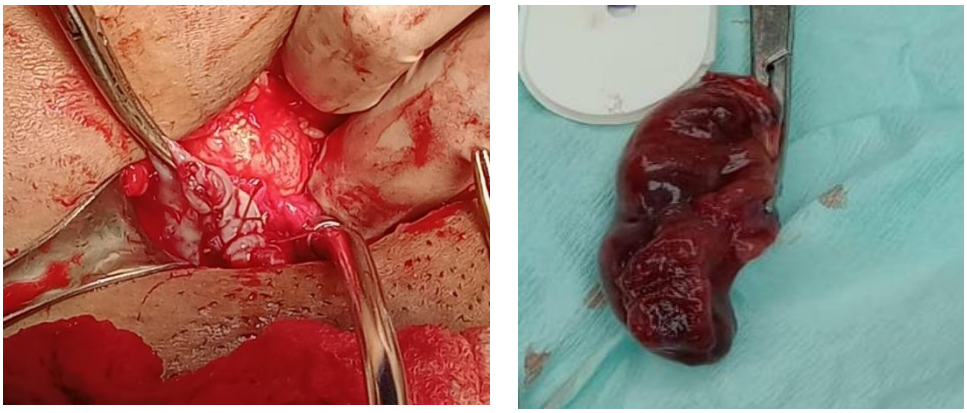
Figure 3 Hypertrophic, hypervascularized, hemorrhagic right ovary wedge resection was performed

Discussion

A 24-year-old woman presented to the emergency room of a hospital due to a threat of premature labor. Despite treatment, the pain worsened, with no progression of labor. An emergency ultrasound examination revealed free fluid in the abdominal cavity. The suspicion of active bleeding led the medical team to perform an exploratory laparotomy. The surgical team found a ruptured heterotopic pregnancy. This was an unexpected cause of non-traumatic hemoperitoneum at such an advanced gestational age[8].

A 33-year-old patient with multiple adenomyosis surgeries and bilateral salpingectomy, which she

conceived using assisted reproductive technologies. On day 31 after embryo transfer, they observed only one intrauterine pregnancy by ultrasound. However, early vaginal bleeding and high-risk factors prompted additional ultrasound, which revealed an intramural ectopic pregnancy. They performed the surgical removal of the ectopic pregnancy, preserving the intrauterine pregnancy, which evolved without complications. At the end of the second trimester, follow-up MRI confirmed an intact posterior uterine myometrium, ruling out uterine rupture and resolving lingering doubts[9].



A **B**

Figure 4 Hemostatic suture in the right ovary (A), anatomical specimen: left tubal heterotopic pregnancy (B)

A 35-year-old pregnant woman with a history of right adnexectomy and 16 weeks pregnant with dichorionic diamniotic twins after in vitro fertilization, was admitted with unexplained recurrent abdominal pain and anemia. Further investigation reported hemoperitoneum and due to hypovolemic shock, they performed an emergency laparotomy and diagnosed ruptured heterotopic interstitial pregnancy. The uterine defect was sutured with simple interrupted sutures. Intrauterine pregnancy progressed without complications later[10].

A 35-year-old pregnant woman with ruptured cornual heterotopic pregnancy presented with lower abdominal pain with hemoperitoneum and decreased hemoglobin level. They performed laparoscopic surgery to manage a heterotopic rupture, leaving the intrauterine fetus intact, progressing her normal pregnancy until she gave birth to a male baby of 2360 g by cesarean section at 34 weeks of gestation due to a premature rupture of membranes. During the cesarean section, they found a well-healed wound on the left uterine horn[11].

A healthy 27-year-old patient with 5 weeks and 5 days of gestation through natural conception presented to the emergency department with acute lower abdominal pain and vaginal bleeding. He had associated non-bilious non-bloody vomiting. The obstetric history included one spontaneous vaginal delivery and two miscarriages. On physical examination, the patient presented tachycardia with 117 bpm, rebound pain in the lower abdomen, more accentuated on the right side at McBurney's point. The pelvic exam showed blood in the vaginal vault. Laboratories: hCG at 16 108 mIU/mL and leukocytosis. Pelvic ultrasound showed a normal intrauterine pregnancy of 5 weeks and 5 days with a fetal heart rate of 128 bpm, but they also observed a hyperechogenic structure of 2.4 cm with an internal hypoechogenic structure of

1.3 cm in the right adnexa with weak peripheral vascularization and observed a weak "ring of fire" sign with internal septa, possibly indicative of a yolk sac, they also observed complex free fluid in the pelvis and vascular waves in both ovaries. The patient signed the consent for a laparoscopic evaluation and was informed about the risk of having an early pregnancy loss with the surgical intervention, performed a laparoscopic right salpingectomy with evacuation of the hemoperitoneum. Significant operative findings included an enlarged uterus, an enlarged right fallopian tube with a purple-red hue, and a noticeable rupture with hemoperitoneum. The bilateral ovaries, left fallopian tube, appendix, and liver had a normal appearance. The results of the pathology confirmed the presence of the right fallopian tube of the ruptured ectopic gestation. A postoperative ultrasound confirmed a viable normal intrauterine pregnancy and the patient was discharged home on the first postoperative day. Follow-up confirmed early pregnancy loss at 8 weeks' gestation[12].

Heterotopic pregnancies are rare and difficult to diagnose early. A patient with a combined intrauterine pregnancy and a cervical pregnancy was admitted to Qingdao Municipal Hospital in 2019 for abnormal vaginal bleeding after menopause and was misdiagnosed as a simple intrauterine pregnancy. She underwent an induced abortion and suffered intraoperative bleeding. To stop the bleeding, he immediately received uterine artery embolization treatment. Subsequently, the residual cervical tissues from the pregnancy began to necrotize, the level of β-hCG in the blood, and the appearance of the cervix gradually returned to normal. Selective uterine artery embolization was an important measure to prevent and treat massive bleeding[13].

A 33-year-old woman with a history of embryo transfer 52 days earlier, presented left low back pain after a curettage due to intrauterine fetal death without vaginal bleeding or spotting, analgesics relieved the pain initially but it did not disappear so she returned to the hospital. Where they measured the level of β-hCG, which remained elevated compared to the time of curettage, they performed ultrasound and computed tomography diagnosing an abdominal heterotopic pregnancy with the gestational sac implanted in the left psoas major muscle at the level of the left hilum. They performed a laparotomy to remove the abnormal pregnancy, separating the adipose tissue between the left renal gate space and the left psoas major muscle, removed the gestational sac measuring approximately 50 mm × 40 mm with a fetal outbreak 25 mm long, and administered a local injection of 10 mg of methotrexate into the psoas major muscle. Fifty days later, β-hCG decreased to normal levels[14].

In another case, a 34-year-old woman with a history of appendectomy went to the emergency room after acute abdominal pain, at 8 weeks of gestation, presented hypotension, tachycardia and appreciable tenderness in the lower right part of the abdomen. Transvaginal ultrasound revealed a right adnexal mass of 4 x 4 cm and an intrauterine pregnancy, as well as free fluid in the peritoneal cavity, so they performed an urgent laparoscopy, observing a ruptured heterotopic pregnancy in the right fallopian tube, with extensive hemoperitoneum and active bleeding, as well as a gestational sac and an intact embryo. performed a salpingectomy. In this case, the intrauterine pregnancy remained intact and a healthy girl was born at term[15].

Another case of cervical heterotopic pregnancy was analyzed, emphasizing early diagnosis, the patient

had a history of in vitro fertilization. They used potassium chloride and methotrexate as treatment. Initially, the patient expelled the cervical gestational sac, but later she also aborted the intrauterine gestational sac[16].

Most patients with heterotopic pregnancy have some risk factor such as a previous cesarean section, fallopian tube surgery, pelvic inflammatory diseases, adenomyosis and, in more relevant cases, and currently what has increased its incidence are in vitro fertilization therapies, which predisposes to the presentation of this clinical entity[8].

Conclusion

Heterotopic pregnancy is a rare condition in gynecology and obstetrics, but with high maternal mortality due to the risk of hypovolemic shock in case of rupture and hemorrhage. Its diagnosis represents a real clinical challenge that requires a thorough evaluation. Transvaginal ultrasound is recognized as the main diagnostic tool and, in the event of persistent doubts, it should be complemented with higher-resolution techniques such as nuclear magnetic resonance imaging. An early and timely approach, accompanied by continuous follow-up, is essential, especially in patients with high-risk factors. The integration of clinical, biochemical and imaging findings allows us to guide the most appropriate therapeutic strategies, with the aim of preserving both maternal health and fetal well-being.

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Conflicts of interest

The authors declare that they have no conflicts of interest in this research.

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Ethical considerations

For the present research, authorization was obtained from the patient by signing an informed consent.

Limitations in research

Es un caso clínico observacional, se necesita una mayor muestra para poder reproducir a gran escala los resultados.

Publishing permissions

All participants as authors of the research contributed freely to propose, execute or present the results and accept that the article be published.

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

María Calderón, conceptualization and resources. *Liliana Torres*, methodology. *Giannina Cielo Chiriboga*, software and formal analysis. *María Calderón*, data curation. *Andrea Patricia Chancay*, writing the original draft. *Juan Carlos Suárez*, revision and editing of the original draft. *Oscar Jorge Cruz*, visualization. *Ana María Vélez*, research. *María Calderón*, supervision. *Karen Tatiana Mora*, project management. *Liliana Torres*, writing the final draft. *María Calderón*, revision of the final manuscript. *Andrea*

Patricia Chancay, final reception. *María Calderón*, acquisition of funds and translation.

Use of artificial intelligence

No artificial intelligence was used in the development of the manuscript.

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