

## Spontaneous Heterotopic Pregnancy: A Case Report

Caryn Russman<sup>1\*</sup>, Morgan Gruner<sup>1</sup>, Xuezi Jiang<sup>1,3</sup> and Peter F. Schnatz<sup>1,4</sup>

<sup>1</sup>Department of Obstetrics and Gynecology, The Reading Hospital, Reading, PA

<sup>2</sup>Department of Obstetrics and Gynecology and Internal Medicine, The Reading Hospital, Reading, PA

<sup>3</sup>Departments of Obstetrics and Gynecology, Sidney Kimmel Medical College of Thomas Jefferson University, Philadelphia, PA

<sup>4</sup>Departments of Obstetrics and Gynecology and Internal Medicine, Sidney Kimmel Medical College of Thomas Jefferson University, Philadelphia, PA

### Abstract

**Introduction:** Heterotopic pregnancy is the coexistence of intrauterine pregnancy (IUP) and extrauterine gestation. It is a rare and dangerous life-threatening situation that is difficult to diagnose and easily missed. The incidence in the general population is estimated to be 1 in 30,000. Risk factors for ectopic pregnancy are pelvic inflammatory disease (PID), tubo-ovarian abscess (TOA), previous ectopic pregnancies, or previous surgery.

**Case:** A 22 year old gravida 2 para 1-0-0-1 presented to the emergency department (ED) and was diagnosed with heterotopic pregnancy despite lack of any notable risk factors. Transvaginal ultrasound showed live IUP and right ovarian/adnexal ectopic pregnancy with heartbeat, along with moderate hemoperitoneum. She underwent operative laparoscopy and right salpingectomy, being discharged home on post-operative day 1 with a stable hemoglobin concentration. She delivered the IUP at 38 weeks 5 days gestation via spontaneous vaginal delivery.

**Discussion:** This case represents a spontaneous heterotopic pregnancy in a 22-year-old patient with no previous risk factors identified and demonstrates laparoscopy as a successful treatment modality for heterotopic pregnancy.

**Keywords:** Heterotopic pregnancy; Ectopic pregnancy

### Objectives

1. Understand the definition of and importance of identifying spontaneous heterotopic pregnancy.
2. To be able to identify cases in which heterotopic pregnancy must be considered.
3. Understand the utility of laparoscopy in treatment of heterotopic pregnancy.

### Introduction

Heterotopic pregnancy is the coexistence of intrauterine pregnancy (IUP) and extrauterine gestation [1,2]. It is a rare and dangerous life-threatening situation that is difficult to diagnose and easily missed [2]. The incidence in the general population is estimated to be 1 in 30,000, while a rate as high as 1 in 8,000 has been reported [3,4]. The fallopian tube is the site of the vast majority of the ectopic implantation in heterotopic pregnancies, but the cervix or abdomen can also be involved [3,5,6].

Risk factors for ectopic pregnancy include pelvic inflammatory disease (PID), tubo-ovarian abscess (TOA), previous ectopic pregnancies, or previous surgery [7]. PID is an ascending infection of the female genital tract. It is most commonly due to *N. gonorrhoeae* or *C. trachomatis* infection, but can also be due to microorganisms of the vaginal flora [8]. Any event that can lead to scarring of the fallopian tube can increase the risk of an ectopic pregnancy.

Heterotopic pregnancy is thought to occur because of multiple ovulation events [9]. Therefore, individuals who have undergone assisted reproduction therapies are at an increased risk of heterotopic pregnancy [3,6]. Pregnancies with assisted reproduction have an estimated 1% chance of culminating in a heterotopic pregnancy [5,10], so it should be suspected in any patient who presents with lower abdominal pain in a pregnancy resulting from fertility treatment [11].

Individuals often present with four common symptoms: abdominal mass, abdominal pain, peritoneal irritation, and enlarged

uterus [3], although in some cases there may be either hypovolemic shock or a complete lack of symptoms [12]. Early symptoms can also be similar to those seen in acute appendicitis, ovarian cyst rupture, or ovarian torsion, further adding to difficulty in diagnosis [13]. Diagnosis is challenging, as it is often difficult to identify both the IUP and extrauterine pregnancy. A significant discrepancy between beta human chorionic gonadotropin levels and the corresponding IUP can reinforce the possibility of another pregnancy [13]. Ultrasound often leads to the suspected presence of the associated ectopic pregnancy, but is not confirmatory [14]. A common pitfall noted in previous reports is ceasing the workup after identification of an IUP in women with abdominal pain [13]. Ultrasound can lead to the elevated concern, which may prevent the performance of a dilation and curettage and lead to the application of conservative surgical therapy [14]. Approximately 70% of heterotopic pregnancies are diagnosed between 5-8 weeks, 20% are diagnosed between weeks 9 and 10, and the remaining 10% are diagnosed at or beyond the 11<sup>th</sup> week [6]. In an individual who has undergone ovulation induction therapy, caution should be exercised when a patient complains of acute abdominal pain without vaginal bleeding [10] (Figure 1).

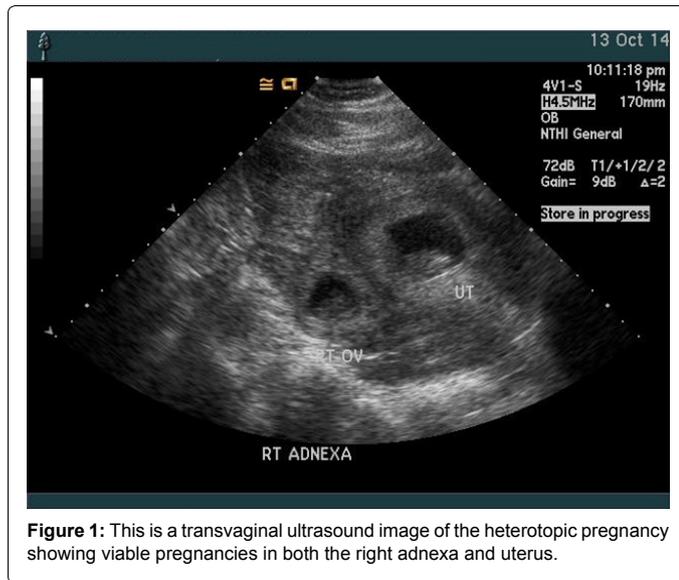
Due to the rarity of heterotopic pregnancy, there is little agreement regarding the optimal surgical management [15]. Treatment of heterotopic pregnancy should be as minimally invasive as possible to preserve the developing IUP [16]. Laparoscopy can be performed, with slight modifications such as avoiding excessive manipulation of

**\*Corresponding author:** Caryn Russman, Department of Obstetrics and Gynecology, The Reading Hospital, Reading, PA, Tel: 484-628-8614; E-mail: [caryn.russman@readinghealth.org](mailto:caryn.russman@readinghealth.org)

**Received** August 20, 2015; **Accepted** September 11, 2015; **Published** September 18, 2015

**Citation:** Russman C, MGruner C, Jiang X, Schnatz PF (2015) Spontaneous Heterotopic Pregnancy: A Case Report. Gynecol Obstet (Sunnyvale) 5: 318. doi:10.4172/2161-0932.1000318

**Copyright:** © 2015 Russman C, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.



**Figure 1:** This is a transvaginal ultrasound image of the heterotopic pregnancy showing viable pregnancies in both the right adnexa and uterus.

the uterus or cannulation [16]. Non-surgical forms of treatment are available as well. An ectopic abdominal pregnancy which reached full gestation with a viable fetus has been reported [17]. Also, injection of potassium chloride to selectively reduce the extrauterine gestation has been used [5].

### Case Presentation

A 22 year old gravida 2 para 1-0-0-1 presented to the emergency department (ED) with lower abdominal cramping and vomiting with a 9 week 0 day pregnancy dated by her last menstrual period. She became faint in the ED but retained consciousness. Upon arrival she noted difficulty urinating and her last bowel movement was 2 days prior and loose. On initial examination by the ED provider her vital signs were stable (blood pressure 100/64, pulse 81, temperature 36.1 degrees Celsius, respirations 14, oxygen saturation 97% on room air) and generalized abdominal tenderness and guarding were noted. Beta-human chorionic gonadotropin drawn in the ED was 70,490 mIU / mL, white blood cell count was  $21.0 \times 10^3/uL$ , and her hemoglobin was 10.9 g/dL. A transvaginal ultrasound was obtained and showed a simultaneous live IUP and right ovarian/adnexal ectopic pregnancy with a heartbeat, along with moderate hemoperitoneum. The left ovary and the appendix were not well visualized.

This was an unplanned pregnancy and her second spontaneous pregnancy, the first of which was a spontaneous vaginal delivery at term. She denied a history of twins on either side of the family. She denied any medical or surgical history and only reported mild allergies to Penicillin and Amoxicillin. She complained of right lower quadrant pain that radiated “everywhere” as well as nausea with two episodes of emesis earlier in the day. She also noted right shoulder and neck pain, inability to void or move her bowels, and obstipation that day. A physical examination revealed stable vital signs, bowel sounds present, abdominal guarding, rebound and diffuse abdominal tenderness, and peritoneal signs. The decision was made to urgently transfer the patient to the operating room for a diagnostic laparoscopy, removal of ectopic pregnancy, possible right or left salpingectomy and/or a possible oophorectomy. She was typed and crossed for 2 units of packed red blood cells in the event she should need them and consented for the above procedure as well as the possibility of blood transfusion.

During the diagnostic laparoscopy procedure, uterine manipulator

was not placed, instead a sponge stick was inserted in the vagina to serve the purpose. Approximately 900 mL of hemoperitoneum was immediately noted upon insufflation of the peritoneal cavity. Pelvic survey revealed a right tubal mass near the ampulla with fimbriae present and an obvious defect oozing a small amount of blood near the mesosalpinx. After confirming that the right ovary was not involved and identifying pertinent anatomy, right salpingectomy was performed without difficulty using a combined laparoscopic electrocautery and scalpel device. The tube was transected approximately 1 cm proximal to the mass and 3 cm distal to the right cornu and was then removed using an endo-catch bag through a 10 mm trocar site. Fingerstick hemoglobin in the operating room was 8.3 g/dL. The patient was transferred to the recovery room in stable condition, where her intrauterine pregnancy was noted to be intact with fetal heart rate 178. Her vital signs remained stable throughout the night and her post-operative hemoglobin was 7.5 g/dL. She was discharged home on post-operative day 1 with a stable hemoglobin and eventually went on deliver at 38 weeks 5 days gestation via a spontaneous vaginal delivery.

### Discussion

This case represents a spontaneous heterotopic pregnancy in a 22-year-old patient with no previous risk factors identified. It illustrates the importance of not immediately ruling out an IUP after identifying an ectopic pregnancy, and consistently placing a heterotopic pregnancy on the differential diagnosis. In the case of confirmed IUP and hemoperitoneum, it is important to consider the possibility of ruptured heterotopic pregnancy, as was seen in the case presented here. In the case of ectopic pregnancy undergoing surgical management, intrauterine device such as uterine manipulator should be generally avoided due to the likelihood of coexistence of early intrauterine pregnancy that is not visualized by ultrasound. In the case of confirmed IUP with abdominal pain, further workup and close monitoring should be considered to rule out heterotopic pregnancy especially after ART techniques. Fortunately in this case, the IUP and extrauterine pregnancy were discovered simultaneously via ultrasound. Conservative surgical management allowed the viable IUP to develop to term, ultimately leading to a spontaneous vaginal delivery. This case demonstrates that laparoscopy can be a successful treatment modality for a heterotopic pregnancy, a finding supported by other authors [12].

### References

1. Mj G, RR (2008) Heterotopic pregnancy in natural conception. *J Hum Reprod Sci* 1: 37-38.
2. Hassani KI, Bouazzaoui AE, Khatouf M, Mazaz K (2010) Heterotopic pregnancy: A diagnosis we should suspect more often. *J Emerg Trauma Shock* 3: 304.
3. Reece EA, Petrie RH, Sirmans MF, Finster M, Todd WD (1983) Combined intrauterine and extrauterine gestations: a review. *Am J Obstet Gynecol* 146: 323-330.
4. Devoe RW, Pratt JH (1948) Simultaneous intrauterine and extrauterine pregnancy. *Am J Obstet Gynecol* 56: 1119-1126.
5. Scheiber MD, Cedars MI (1999) Successful non-surgical management of a heterotopic abdominal pregnancy following embryo transfer with cryopreserved-thawed embryos. *Hum Reprod* 14: 1375-1377.
6. Tal J, Haddad S, Gordon N, Timor-Tritsch I (1996) Heterotopic pregnancy after ovulation induction and assisted reproductive technologies: a literature review from 1971 to 1993. *Fertil Steril* 66: 1-12.
7. McDonald J, Sebrina DP (2002) Abdominal Pain In The Adolescent Female. *Clinical Pediatric Emergency Medicine* 3: 33-44.
8. <http://www.cdc.gov/std/treatment/2010/pid.htm>
9. Wang PH, Chao HT, Tseng JY, Yang TS, Chang SP, et al. (1998) Laparoscopic surgery for heterotopic pregnancies: a case report and a brief review. *Obstetrics & Gynecology and Reproductive Biology* 80: 267-271.

10. Berger MJ, Taymor ML (1972) Simultaneous intrauterine and tubal pregnancies following ovulation induction. *American Journal of Obstetrics & Gynecology* 113: 812-813.
11. Kumar R, Dey M (2015) Spontaneous heterotopic pregnancy with tubal rupture and pregnancy progressing to term. *Med J Armed Forces India* 71: S73-75.
12. Yu Y, Xu W, Xie Z, Huang Q, Li S (2014) Management and outcome of 25 heterotopic pregnancies in Zhejiang, China. *Eur J Obstet Gynecol Reprod Biol* 180: 157-161.
13. Chen KH, Chen LR (2014) Rupturing heterotopic pregnancy mimicking acute appendicitis. *Taiwan J Obstet Gynecol* 53: 401-403.
14. van Dam PA, Vanderheyden JS, Uyttenbroeck F (1988) Application of ultrasound in the diagnosis of heterotopic pregnancy—a review of the literature. *J Clin Ultrasound* 16: 159-165.
15. Kwon YS, Lee SH, Im KS, Ro JH (2015) Laparoscopic Management of Heterotopic Interstitial Pregnancy with Subsequent Term Delivery. *Int J Fertil Steril* 9: 265-267.
16. Louis-Sylvestre C, Morice P, Chapron C, Dubuisson JB (1997) The role of laparoscopy in the diagnosis and management of heterotopic pregnancies. *Hum Reprod* 12: 1100-1102.
17. Bassil S, Pouly JL, Canis M, Janny L, Vye P, et al. (1991) Advanced heterotopic pregnancy after in-vitro fertilization and embryo transfer, with survival of both the babies and the mother. *Hum Reprod* 6: 1008-1010.