Cirujano General
April-June 2018
Vol. 40, no. 2 / p. 132-138

Extrauterine abdominal pregnancy. An unusual clinical session

Embarazo extrauterino abdominal. Una sesión clínica insólita

César Gutiérrez Samperio,* Norberto Plascencia Moncayo**

Key words:
Pregnancy, abdominal, diagnosis, treatment.

Palabras clave:
Embarazo, abdominal, diagnóstico, tratamiento.

ABSTRACT

A review of historic background of abdominal pregnancy was done. It is related the events in a clinic session about diagnosis and treatment of extrauterin pregnancy, with enphasis in abdominal pregnancy. It is discussed the frequency of this in our country and wich has been the management of abdominal pregnancy, also wich must be the most suitable management from a scientific and bioethical point of view.

RESUMEN

Se revisan los antecedentes históricos del embarazo abdominal. Se relata lo acontecido en una sesión clínica en la que se trató el diagnóstico y tratamiento del embarazo extrauterino, con énfasis en el embarazo abdominal. Se discute la frecuencia y cuál ha sido el manejo del embarazo abdominal en nuestro país, así como el manejo más adecuado desde el punto de vista científico y bioético.

INTRODUCTION

The perspective on ectopic pregnancy, in which the fertilized egg is implanted outside the uterus, has changed since the last decades of the past century and throughout this century. At the end of the twentieth century, its frequency increased dramatically, perhaps as a result of the widespread use of intrauterine devices (IUD) –particularly those activated by hormones–, assisted reproduction technology and surgery on the Fallopian tubes. A decline in its frequency is reported in the past two decades, perhaps due to more precise indications and improved techniques applied to the aforementioned procedures. In spite of technical medical advances facilitating the diagnosis during the first weeks of pregnancy, there are still medical and ethical dilemmas as to the most appropriate management for the benefit of both mother and child.[1,2]

During the first half of the twentieth century, its most common causes were pelvic inflammatory disease and salpingitis, usually due to infections caused by *Neisseria gonorrhoeae* and *Chlamydia trachomatis*, leading to tubal stenosis that could be complicated by the development of pelvic peritonitis and multiple adhesions among the pelvic organs. With preventive measures and the appearance of antibiotics, this condition became less frequent, although it has not subsided in vulnerable populations living in extreme poverty. Its frequency resulting from congenital abnormalities and endometriosis is virtually unchanged, whereas the number of Fallopian tube obstructions due to postoperative adhesions has increased, since the number of surgical interventions nowadays is higher.[2-4]

In the mid-twentieth century, the diagnosis of pregnancy and its follow-up were mostly clinical, relying on an appropriate history, a careful gynecological examination, and determination of the beta fraction of chorionic gonadotrophin. Based on the use of imaging procedures, such as abdominal or transvaginal ultrasound –non-invasive methods that gynecologists and obstetricians are trained to perform with great dexterity–, computerized axial tomography (CAT) and magnetic resonance imaging (MRI), more detailed images can now be obtained. At the

* National Academy of Medicine. Mexican Academy of Surgery. Hospital Ángeles de Querétaro.
** Mexican Academy of Surgery. Hospital San José, Querétaro, Qro.

Received: 12/02/2018
Accepted: 15/03/2018

same time, diagnostic certainty has increased in terms of the diagnosis of pregnancy itself, fetal age and location, thus allowing the woman and her physician to establish the most convenient alternatives.[4-6]

In the first half of the twentieth century, most ectopic tubal pregnancies were diagnosed after tubal rupture, associated to profuse hemorrhage into the peritoneal cavity; tubal rupture was included in the differential diagnosis of acute abdomen and hypovolemic shock. Ovarian cysts and tumors and salpingitis with purulent collections were considered in the differential diagnosis of unruptured ectopic pregnancy, whose treatment was also surgical. Currently, timely detection prior to rupture is possible. The condition is amenable to laparoscopic treatment aimed at preserving the Fallopian tube, with lower morbidity and mortality, although the bioethical dilemma on the interruption of pregnancy persists.[7-10]

Abdominal pregnancy is less common, so its diagnosis may be missed. On the other hand, there are no uniform criteria on its management during the various stages of pregnancy, whether complications arise or the pregnancy reaches full-term. The aim of this report is to review the historical background and treatment of abdominal pregnancy, particularly in our medical setting, to narrate the events that occurred during a clinical session dealing on the management of extrauterine pregnancy (particularly that of abdominal pregnancy) whose technical and ethical details are very illustrating, and finally, to discuss the most appropriate management from a scientific and bioethical viewpoint.

Abdominal pregnancy

There are isolated references to abdominal pregnancies in Galen's medicine, when the diagnosis was made after death, and only anecdotal references during the Middle Ages, the Renaissance and the seventeenth and eighteenth centuries. In the few cases described throughout the nineteenth century in France, Austria and Germany, most abdominal pregnancies were diagnosed as an incidental finding in women with a retained dead fetus; in full-term pregnancies with a live born infant, the diagnosis was made while performing a cesarean section, to the surprise of the surgeon. Currently, on the basis of a complete clinical history, a thorough physical examination and the use of ancillary imaging techniques such as ultrasound, CAT scan and MRI, the diagnosis can be timely and allow for an adequate control and follow-up of the pregnancy, as well as judicious planning and performance of surgery at the optimal moment for the mother and child, with the least associated morbidity and mortality.[7,8,10,11]

Implantation of the fertilized egg in the peritoneal cavity may be secondary to a tubal miscarriage; expulsion of the embryo implanted in the tubal mucosa may be associated with mild hemoperitoneum, usually not exceeding 300 milliliters. There may be vaginal bleeding due to expulsion of the decidual cast and mild abdominal pain, but hypovolemic shock is unusual. If the diagnosis of extrauterine pregnancy has not been previously established, a diagnosis of incomplete miscarriage is not infrequent, leading to an unnecessary dilation and curettage. The approach in these cases should be conservative, with close surveillance and monitoring of vital signs. Only in case of persistent or increasing signs of peritoneal irritation should surgical exploration be considered, preferably by a laparoscopic approach.[3,12,13]

The diagnosis of abdominal pregnancy is based on clinical findings: an abdominal girth that is consistent with the duration of amenorrhea, breast signs of pregnancy, softening of the cervix, non-painful Braxton-Hicks contractions and positive pregnancy immunological testing. In a thorough abdominal examination, the most superficial fetal parts are palpable, although it may be difficult in obese women; the uterus is smaller than expected according to the duration of amenorrhea (no larger than 15 by 8 cm), and independent of the fetal parts. This finding may be difficult to identify, due to adhesion of the fundus to the walls of the sac. The oxytocin test

and uterine contractions resulting from its intravenous administration may help clarify the diagnosis, by allowing to differentiate the uterus from the fetal parts. The presence of the fetus among the abdominal organs may cause symptoms in other systems: digestive, urinary or vascular.[4,12,14]

Imaging studies are undoubtedly useful. A plain abdomen film with soft tissue technique reveals a thinning abdominal wall and the fetal parts irregularly distributed, in a different position to that usually found in intrauterine pregnancy. Hysterosalpingography, seldom performed, reveals an empty and slightly grown uterus, instead of the supracervical half-moon image in intrauterine pregnancy. If contrast medium is administered, the uterus and abdominal wall may be seen between the membranes; this study has fewer indications than before. Ultrasound, being non-invasive, may be repeated as many times as needed, and makes it possible to determine the size and position of the fetus, its relation to the uterus, mobility and proximity to the abdominal wall and other organs. CT scan and MRI are indicated in only a few well selected cases.[6,12,15]

Once an abdominal pregnancy is diagnosed, it is imperative to inform the patient, clearly explaining the circumstances of her pregnancy and the possible complications that might occur and lead to fetal death. Should this happen, the patient must be kept under observation using imaging techniques, since the pregnancy could progress to reabsorption and calcification of the soft tissues. This is known as "lithopedion" (stone baby), and its surgical removal will depend on its size, location and associated symptoms. It is not unusual for an imaging study obtained for other reasons to detect bone parts or a calcified fetus resulting from a prior abdominal pregnancy that was not diagnosed at the time. The patient should also be informed that, in case the pregnancy reaches full term, the extraction procedure will not be a routine cesarean section and the morbidity and mortality for both mother and child may be higher.[4,12,16]

In the first full-term abdominal pregnancies reported during the first half of the twentieth century, morbidity and mortality were high. Maternal complications included intraoperative and postoperative hemorrhage, since the nutrient vessels remained open because the so-called "Pinard's living ligatures" from uterine contractions did no exist, attempts at hemostasis in the placental implantation bed on other organs or on the mesentery failed, and organ injury or ischemia occurred when trying to control bleeding. Hypovolemic shock and infectious complications were also common. Neonatal morbidity and mortality were caused by delayed extraction and resuscitation, neonatal hypoxia, and injury to the fetus during surgical maneuvers. The current consensus is to refrain from extracting the placenta but instead ligating the umbilical cord and doing hemostasis with temporary packing that can be removed later on. The placenta should be extracted only when it is feasible to remove it with its implantation site, such as the omentum, together with the avascular membranes.[12,14,17,18]

An unusual clinical session

On the third Saturday of October 1956, the regular clinical session was being held at the old Red Cross Hospital *(Hospital de la Cruz Roja Mexicana*), located on the corner of Monterrey and Durango, in the *Colonia Roma* in Mexico City. The classroom over the ambulance garage was teeming with external physicians, residents, interns and medical students. Among the attendants were gynecologists Boris Rubio, Mario Madrazo, Jack Ovadieff, and Rafael Cervantes; surgeons Pablo Cruz Esparza, Alberto Villazón Sagahún, Eduardo Bravo, and Edmundo Ángeles; and residents Hidelbrando Carballido, Antonio León Pérez, Carlos Moreno Fernández, and Gabino Casales Ortiz. Dr. Rubio was in charge of coordinating the session, whose topic was the diagnosis and treatment of extrauterine pregnancy.

After a brief introduction by Dr. Rubio, in which he presented his experience at the *Hospital de la Cruz Roja* and the American British Cowdray Hospital (located at the

time on Mariano Escobedo Street, on a lot in *Colonia Polanco* currently occupied by the Camino Real Hotel), he addressed the physiopathology, diagnosis, and treatment of ectopic pregnancy during the first trimester. He mentioned that the treatment of ruptured extrauterine pregnancy was primarily surgical, and that replacing the effective circulating volume and transferring the patient to the operating room was urgent, in order to carry out a rapid mid infraumbilical laparotomy to perform hemostasis as quickly as possible. Every effort to preserve the Fallopian tube should be made, after incision, curettage of the mucosa and closure with interrupted sutures of thin absorbable material (2-0 or 3-0 chromic catgut). If injury to the tube was considerable and bleeding control was difficult, removal of the tube should be seriously considered.[19]

In another part of his lecture, he spoke further about the management of extrauterine pregnancy in the first trimester; if diagnosed before rupture, treatment should be surgical by salpingotomy, curettage of the mucosa and closure, attempting to preserve the tube in spite of the risk of recurrent ectopic pregnancy. In patients with inflammatory pelvic disease and multiple adhesions, he stated that salpingectomy was advisable, freeing the contralateral tube from adhesions to make it patent and thus offer the woman the possibility for a future pregnancy if parity was not satisfied. We must remember that at the time, there were no ultrasound, CT scans or MRI available, and no laparoscopic surgery. He briefly mentioned abdominal pregnancy, its clinical features for diagnosis, and recommended the administration of methotrexate to interrupt the pregnancy and the removal of the calcified abdominal fetus, leaving the incipient placental tissue adhered to the implantation site with transitory hemostatic packing. All this had the purpose of preventing serious complications resulting from fetal growth in the following months, adhesion to organs or to the abdominal wall, their possible injury or hemorrhage during and after the abdominal extraction of the fetus, and an increase in maternal and fetal morbidity and mortality.[19]

After his presentation, a round table discussion began on the clinical aspects of the differential diagnosis of acute abdomen due to ruptured extrauterine pregnancy, with the surgeons' participation. They expressed their views on various technical aspects of the surgical procedure, to which the gynecologists agreed; they also restated the criterion establishing that once the tubal ectopic pregnancy was diagnosed, it should be removed prior to rupture, in order to safeguard the mother's life. As for abdominal pregnancy, consensus established that interruption was the best course, given that few fetuses were viable, because of the possible complications of the advancing pregnancy and the maternal and fetal complications arising during and after the surgical procedure to extract the fetus and membranes.[19]

Only questions were accepted from interns and students; their opinions were ignored. Javier Méndez González, at the time a sixth year medical student completing his internship at the hospital and head of the "number two" night shift, insistently asked to voice his opinion. He stated that abdominal pregnancy should be allowed to continue, especially in women who had not been able to become pregnant previously and in whom an abdominal ectopic pregnancy was finally in progress and could potentially reach full term and be viable. With mocking words, the attending physicians disparaged his way of thinking and his precocious criteria. The opinion of highly experienced obstetricians was opposite to that of the medical student, who finished the discussion by referring to the case of a Spanish couple that had been unable to conceive for a very long time; he was 45 years old and she was 41 when she finally became pregnant, but in an abdominal ectopic location. After 38 weeks of a torpid pregnancy, the fetus was extracted, although the placenta was implanted on the mesentery and greater omentum. The child was alive and ***"that abdominal pregnancy is speaking to you"***.[19,20]

The group's bewilderment was complete; the assertion had greatly impacted not only the students at the session (the author among

them) but everyone in attendance. Dr. Rubio asked if anyone else wanted to express their opinion, but faced with silence, the session was considered finished.

DISCUSSION

It is worth commenting and reflecting on the statement by medical student Javier Méndez González, who in time became a well renowned gynecologist and obstetrician in institutional and private practice, as well as a Professor of the specialty at the School of Medicine of the National University (UNAM), both at the undergraduate and postgraduate levels. He also was Head of the Gynecology Department, Head of Medical Education and Director of the *Hospital de Gineco-Obstetricia número 3, IMSS* in Mexico City, and President of the Mexican Association of Gynecology and Obstetrics. In his doctoral dissertation and in several papers, Dr. Méndez mentioned abdominal pregnancy and the course to follow in terms of diagnosis, follow-up and treatment, but never did he mention the case that so personally affected him and that was brought up in that unusual clinical session.[20-22]

Formerly, in most cases of full-term abdominal pregnancy with a live fetus, the diagnosis used to be intraoperative during an elective surgical procedure scheduled as a cesarean section. There is a case of an abdominal pregnancy with a live birth managed by Dr. Raúl Berber at the *Hospital Civil de Pachuca*, in the state of Hidalgo, during which the anesthesiologist, Dr. Gastón Barranco, an amateur photographer, fortuitously captured the surgery on 8 mm black-and-white film that was later shown in several medical meetings. In cases diagnosed in earlier stages, precautions must be extreme and the pregnancy closely followed. The atypical cesarean section should not injure the newborn during the extraction maneuvers, and the surgeon should not insist on removing all the placental tissue, but limit himself to ligating the umbilical cord and curb bleeding with temporary packing, since the placental tissue will eventually involute and atrophy. Placental extraction is only warranted when it is inserted on a structure whose removal does not increase morbidity or threaten life, such as the greater omentum.[23,24]

An extrauterine pregnancy implanted in the Fallopian tube will inevitably lead to tubal rupture, in which case life of the embryo or fetus is lost and treatment is undoubtedly surgical. Ectopic pregnancy in the tube cannot reach full term and endangers the mother's life due to impending rupture. Weighing the pregnant woman's life and the embryo's possibilities of survival, pregnancy interruption has been recommended with few bioethical objections, since it involves interrupting a life with no possibility of survival at all, while preserving a useful life with the possibility of bearing children in the future.[2,3,14,25]

As for abdominal pregnancy, the situation is different, since the embryo may develop and be viable. It is important to confirm the clinical diagnosis by ancillary studies. Ultrasound can establish the diagnosis and inform follow-up in order to pick, in agreement with the mother-to-be, the most appropriate moment to perform the atypical cesarean section. Unlike tubal ectopic pregnancy, an abdominal pregnancy does have possibilities of survival, and therefore, interruption of uncomplicated abdominal pregnancy is not indicated, although follow-up should be expectant and extremely thorough. The risk to the mother's life is a determining factor when counseling her or allowing her to continue with the pregnancy. A preoperative diagnosis makes it possible to take the necessary precautions during surgery, in order to avoid neonatal complications during extraction, maternal complications resulting from injury to the abdominal structures or severe hemorrhage from the residual placental tissue.[4,13]

Abdominal pregnancy is uncommon, so it is rarely thought of. In a study of 35,080 pregnancies managed over five years at the *Instituto Nacional de Perinatología*, 149 were ectopic and six were abdominal, with only one full-term live birth, hence a fetal mortality of 83.5%. The first international reports and those in our country usually

present calcified abdominal pregnancies or the fortuitous finding of an abdominal pregnancy during a cesarean section. The cases of patients with a full-term abdominal pregnancy and a live birth have led to articles reviewing clinical findings useful for diagnosis, ancillary diagnostic tests, and the need for close follow-up due to the possibility of complications or the need for emergency surgery.[14-17,26-28]

Mentioning the conditions of his pregnancy and birth is not an affront to the privacy of the late Dr. Javier Méndez González's, who recently passed away, since he acknowledged them on several occasions while still alive. It is rather a recognition and an homage to a man with an exemplary life, a gynecologist and obstetrician who, throughout his life, cared for a large number of patients in public and private institutions, including the wives and relatives of many colleagues (the author among them) who trusted his professional competency and ethics. The special circumstances of that unusual clinical session in which he disclosed his case have an outstanding historical significance, since he was about to finish his medical grade; he subsequently specialized in gynecology and obstetrics and furthered his scientific education by pursuing a Master's degree and Doctorate. He is an example of the scientific physician who taught and always cared for his patients with dedication and humanity.

REFERENCES

1. Melmik DM, Wahl WL, Dalton KV. Management of general surgical problems in the pregnant patient. Am J Surg. 2004; 187: 170-179.
2. Roger ER, Sutton PG. Ginecología. En: Shwartz IS, Shires GT, Spencer CF, Husser CW. Principios de cirugía 6ª ed. Interamericana. Vol. II: Mc Graw Hill, México, 1995, pp. 1852-1853.
3. Plascencia MN. Padecimientos obstétricos, ginecológicos y patología digestiva. En: Gutiérrez-Samperio C, Arrubarrena AVM, Campos C FS. Fisiopatología quirúrgica del aparato digestivo. 3ª ed. El Manual Moderno, México, 2006, pp. 561-569.
4. Hajenius PJ, Mol BNS, Bossyl PMM, Aukum WM, Vender Veen T. Intervention for tubal ectopic pregnancy (Cochrane review). Issue 2. Cocchrane Library. 2004.
5. Boardman LA, Peipert JF, Brody JM, Cooper AS, Sung J. Endovaginal sonography for diagnosis of upper genital tract infection. Obstet Gynecol. 1997; 90: 54-57.
6. Nishino M, Hayakawa K, Iwasaku K. Magnetic resonance imaging findings in gynecologic emergencies. J Comput Asssist Tomogr. 2003; 27: 564-577.
7. Cappell SM, Friedel D. Abdominal pain during pregnancy. Gastroenterol Clin North Am. 2003; 32: 1-58.
8. Zermeño GG, Campos CFS. Abdomen agudo. En: Gutiérrez-Samperio C, Arrubarrena AVM, Campos CFS. Fisiopatología quirúrgica del aparato digestivo. 3ª ed. México, 2006, pp. 515-534.
9. Zuckerman C. Algunas consideraciones sobre embarazos ectópicos. Ginecol Obstet Mex. 1950; 5: 17-22.
10. Madrazo BM. Valoración clínica del embarazo ectópico. Ginecol Obstet Mex. 1952; 7: 21-25.
11. Usandizaga SM. Obstetricia y ginecología. En: Lain-Entralgo. Historia universal de la medicina. Ed Salvat, Barcelona, 1975. Vol. VI: 353-361, Vol. VII: 352-357.
12. Castelazo-Ayala L. Obstetricia, 5ª ed, Méndez Oteo. México, 1957; tomo II: 652-692.
13. Colmenares B, López GJR, Rivas M, Silva D. Embarazo ectópico abdominal. Caso clínico. Rev Obstet Ginecol Venez. 2002; 62: 279-281.
14. Aviño J, Rodrigo F, Gallegos M Julia J, Rivelles V. Embarazo abdominal a término con feto vivo y viable. Rev Esp Obstetricia Ginecol. 1978; 37: 233-236.
15. Benavides L. Embarazo extrauterino abdominal de 7 meses. Presentación de un caso clínico. Ginecol Obstet Mex. 1948; 3: 129-132.
16. Goslin G, Rivas C, Suarez J. Embarazo abdominal con feto momificado (litopedion). Reporte de un caso. Rev Obstet Ginecol Venez. 1994; 54: 169-172.
17. Rabago J. Embarazo abdominal a término. Ginecol Obstet Mex. 1946; 1: 229-231.
18. Rumbao F. Da Silva M, Benitez G, De Conno A, Cohen A, Pinzón A y cols. Embarazo ectópico abdominal a término. Presentación de un caso y revisión de la literatura. Rev Obstet Ginecol Venez. 2001, 61: 183-186.
19. Boletín del Hospital Central de la Cruz Roja Mexicana. 1958; 4: 13-15.
20. Méndez-González J. Historia de la operación cesárea. Tesis para obtener el grado de Doctorado (Ginecología) División de Estudios Superiores. Escuela de Medicina, UNAM. México. 1961; 4, 37, 52.
21. López-Ortiz E, Rosas-Arceo S, Oseguera-Palomar JF, Uribe-Acosta R, Méndez-González J. Embarazo ectópico avanzado. Ginecol Obstet Mex. 1974; 35: 689-700.
22. Vázquez-Ramírez CO, Méndez-González J. García Medrano P. Embarazo ectópico. Análisis de 70 casos. Ginecol Obstet Mex. 1966; 21: 871-881.
23. Berber R, Barranco G. Embarazo abdominal con producto vivo. Comunicación personal. 1960.
24. Suddiford W. Primary peritoneal pregnancy. Am J Ginec Obstet. 1942; 44: 487-491.
25. Gutiérrez-Samperio C. Bioética y cirugía. En Kuty-Porter J, Villalobos PJJ, Martínez GO, Tarasco MM. Introducción a la bioética. 4ª ed. Méndez Editores. México, 2015, pp. 193-220.

26. Bonafante RE, Bolaños AR, Simón PL Juárez GL, García BCQ. Embarazo abdominal. Experiencia institucional. Ginecol Obstet Mex. 1998; 66: 287-289.
27. Rosano LR. Embarazo abdominal avanzado. Ginecol Obstet Mex. 1989; 57: 175-184.
28. Márquez BM, Toro CR, Puello CJ. Embarazo abdominal. Emergencia quirúrgica. Ginecol Obstet Mex. 1991; 59: 59-62.

Correspondence:
César Gutiérrez Samperio, MD
H. Frías Soto Núm. 15,
Col. Ensueño, 76170,
Querétaro, Qro., México.
Tel: 442 215 8511
E-mail: cesargtzsamp@prodigy.net.mx