

Treatment of early heterotopic interstitial (cornual) gestation with subsequent delivery of an intrauterine pregnancy - case report

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Summary

We present the case of a 38-year-old woman who was treated for a heterotopic interstitial (cornual) pregnancy diagnosed at the 7th week of gestation. The intervention was performed via transvaginal ultrasound-guided aspiration and instillation of a hypertonic solution of sodium chloride into the cornual sac. The heterotopic cornual pregnancy was successfully aborted, and the intrauterine pregnancy was successfully maintained with delivery of a healthy newborn.

Key words: Interstitial pregnancy; Ultrasound; Hypertonic sodium chloride.

Introduction

The simultaneous existence of intrauterine and ectopic implantation is defined as a heterotopic pregnancy. Ectopic pregnancies located in the cornual (intramural) part of the fallopian tubes outside the cavity of the uterus and a narrow channel connected to the endometrial cavity are usually called interstitial ectopic pregnancies. Both in practice and in the literature, the terms cornual and interstitial pregnancy are often used synonymously [1]. According to the literature data, the frequency of heterotopic pregnancies ranges from one in 30,000 spontaneous pregnancies; however, the incidence of heterotopic pregnancies is significantly greater among patients receiving ovarian stimulation and in those undergoing IVF programs (up to 1-3%). Cornual pregnancies account for 2-4% of the total number of ectopic implantations [2-4]. Early diagnosis allows various therapeutic interventions, including conservative, medical, or surgical treatment [5-7]. The present report describes a case of successful pregnancy and delivery after the treatment of a heterotopic interstitial (cornual) pregnancy and suggests possible approaches for the treatment of this potentially dangerous clinical entity.

Case Report

A 38-year-old patient was admitted to our clinic due to spotting and light pain in the lower abdominal region after five weeks of amenorrhea. The bleeding and pain began two to three days prior to admission to the clinic. During an ultrasound (US) examination, the patient's gynecologist diagnosed her with a threatening abortion due to a twin pregnancy, and she was referred to the clinic. The patient had had previous salpingectomies six and four years prior to admission on the left and right side of the uterus, respectively, due to ectopic pregnancies. Moreover, she had participated in three failed IVF programs. In the current pregnancy, three embryos were transferred. At

admission, her vital signs were stable, and her blood pressure was 118/65 mm Hg. A transvaginal ultrasound (TVS) examination was immediately performed, and two gestation sacs were detected; one normal appearing intrauterine gestation sac that measured 9.74 mm by 7.47 mm, a crown-rump length (CRL) of 3.1 mm and an embryonic heart rate of 148/min was observed. The other gestational sac was located to the right of the cornual region and measured 7.4 mm by 8.2 mm, with a CRL of 3.3 mm, and a heart rate of 132/min. These US parameters were consistent with a twin pregnancy gestational age of five weeks and six days. The cross scanning revealed that the cornual gestation sac was 7.4 mm away from the endometrial cavity (Figure 1). The patient was informed of the diagnosis and the possible types of intervention. She requested that the proposed intervention not threaten the intrauterine pregnancy and its further development. The intervention was performed under general endotracheal anesthesia. The objective of the intervention was to terminate the cornual pregnancy and to preserve the intrauterine pregnancy. The US parameters were consistent with a gestational age of seven weeks and four days. The required bacteriological cervical smear was sterile, and an Accuvix V10 Ultrasound machine (Medison) equipped with a 4-9 MHz transvaginal color Doppler transducer (EC4-91S) and a puncture guide was employed. After disinfection of the external genitalia and vagina with a povidone-iodine solution, and antibiotic prophylaxis with 2 g IV sodium ceftriaxone (Longaceph), the uterus was scanned along its longitudinal and cross-sectional axes, and the position of each gestational sac was recorded. A 30-cm long, 1.4-mm outer diameter needle (Labotect GmbH, Gottingen) was inserted through the puncture guide and was advanced through the vaginal fornix toward the right horn of the uterus. The needle was connected to the vacuum pump, which is typically used to aspirate ovarian cysts or follicles. To avoid the major blood vessels of the uterus, the vessels were displayed in color, and the needle was directed toward the cornual gestational sac. Puncture guidelines of the needle toward the interstitial (cornual) gestational sac are presented in Figure 2. The center of the interstitial (cornual) gestational sac was positioned on the software-generated guideline. With a brisk movement through the thick uterine wall, the needle was inserted into the gestational sac, and approximately 1.5-2 cm³ of amniotic fluid was aspirated by vacuum (-0.8 mmHg). The aspirate was sent for histopathological analysis. According to the color scan, aspi-

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Fig. 1



Figure 1. — Heterotopic interstitial (cornual) pregnancy at 5 weeks/6 days of gestation.

Figure 2. — Puncture guidelines of the needle toward the interstitial (cornual) gestational sac.

ration caused the immediate cessation of fetal cardiac activity. Subsequently, under direct US visualization, 2 cm³ of a 20% sterile solution of sodium chloride was instilled into the gestational sac, and the needle was removed. The intrauterine pregnancy was monitored for 10 min to determine the fetal viability of the pregnancy. Bed rest and observation in our clinic was advised for several days. One month later a check up was done. The US parameters were consistent with an intrauterine pregnancy age of 11 weeks. Moreover, the required histopathological analysis confirmed the presence of chorionic villi. The development of the intrauterine pregnancy was monitored monthly, and a normal course was observed. At 38.5 weeks of pregnancy, due to exhibiting symptoms of premature membrane rupture and a prolapsed umbilical cord, an emergency caesarean section was performed. A 5 x 8-mm lump was palpated on the surface of the uterine horn at the puncture site, and a healthy male weighing 3,050 g was born. The postoperative course was uneventful.

Discussion

One heterotopic cornual implantation occurs in every 3,600 pregnancies obtained via IVF programs [8]. Increased probability of cornual gestation in women with a history of repeat tubal ectopic pregnancies, especially after IVF, in our opinion, the consequences are probably not sufficient excision of the interstitial part of the oviduct during the previous salpingectomy and as results of multiple embryo transfer in IVF.

The mortality rate of patients with cornual pregnancies ranges from 2.0-2.5% [9, 10]. High maternal mortality rates are attributed to the rupture of the overly stretched cornual myometrial wall [11]. The thick myometrial wall, which surrounds the interstitial gestation, causes late complications and permits a timely diagnosis. Late diagnosis and delayed treatment of ruptures may be associated with massive hemorrhage and even patient death. Thus, most cornual pregnancies end in hysterectomies. Currently, diagnosis and therapy for heterotopic cornual pregnancies remain a significant challenge. In the presence of risk factors, such as previous salpingectomy,

Fig. 2



tubal pregnancy, induction of ovulation, and the transfer of multiple embryos, gynecologists should consider this rare but dangerous condition. In recent years, due to the timely diagnosis of cornual pregnancies, a variety of therapeutic approaches have been developed [12, 13]. The most common conservative method for the treatment of cornual pregnancies is the TVS-guided administration of prostaglandin (15-methyl-PGF2 α), potassium chloride solution (KCL), or methotrexate [14]. These approaches have a limited role in heterotopic (cornual) pregnancy and can have negative effects on survival and development of intrauterine pregnancy [15]. In the present study, the heterotopic pregnancy was successfully terminated by the TVS-guided instillation of 20% NaCl solution. When a vital intrauterine pregnancy is present in patients with a concurrent heterotopic gestation, determination of the β hCG concentration is not required to assess the success of the procedure; only the size and disappearance of the heterotopic gestational sac should be monitored [16]. After the TVS-guided administration of any drug, the size of the gestational sac is typically monitored until it decreases by 75% [17]. According to the literature, the remains of cornual pregnancy can be monitored by TVS in the range of 47 to 64 weeks [18]. In our patient, the rapid disappearance of the US-detected remnants of the interstitial (cornual) pregnancy four weeks after the intervention was attributed to the aspiration of the amniotic fluid prior to the instillation of the hypertonic sodium chloride solution into the gestational sac. To avoid injury to the uterine blood vessels, the needle should be advanced using the color display produced by the vaginal probe. The gestational age and size of the cornual gestation sac at which this procedure can be applied have not yet been established [19]. We consider the lower limit of the feasibility of intervention is the size of the sac in which it can be safely punctured. To determine the upper limit of the pregnancy age for intervention the individual patient should be carefully considered because of the possible risks of spontaneous cornual rupture and consequences of surgical cornual resection.

Conclusion

This case report demonstrated that our approach is a successful method especially for the treatment of heterotopic cornual pregnancies and allows patients to avoid surgery and preserve intrauterine pregnancies. Prior to selecting a treatment strategy for heterotopic pregnancies, the survival and normal development of the intrauterine pregnancy must be considered. Adequate excision of the interstitial part of the fallopian tube during salpingectomy and avoidance of multiple embryo transfers, could be a good prevention for interstitial (cornual) pregnancy.

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