



Successful Treatment of a Cervical Heterotopic Gestation after *In Vitro* Fertilization with Ultrasound-Guided Aspiration, Cervical Curettage and Pessary Use

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Abstract

The lack of standard treatment guidelines for the management of a cervical heterotopic gestation poses a challenging clinical situation, particularly after IVF. Here we describe a case of cervical heterotopic gestation treated by ultrasound-guided aspiration, curettage of embryonic tissue remains and cervical pessary placement for prevention of preterm labor. The cervical pregnancy was successfully interrupted and the intrauterine gestation progressed to term with the birth of a healthy baby girl.

Keywords: Cervical heterotopic gestation; Aspiration; Curettage; Pessary

Abbreviations

ART: Assisted Reproduction Technologies; β -HCG: Beta-Human Chorionic Gonadotropin; CHG: Cervical Heterotopic Gestation; CRL: Crown-Rump Length; IVF: *In Vitro* Fertilization; US: Ultrasound

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Introduction

Heterotopic pregnancy relates to the simultaneous presence of intrauterine and extra uterine gestational sacs. Cervical Heterotopic Gestation (CHG) is the concomitant presence of cervical and intrauterine pregnancy. Heterotopic gestation is estimated to occur between 0.04 and 0.008% of natural conceptions [1]. However, its occurrence seems to be significantly increased to 1%, after Assisted Reproduction Technologies (ART) [2,3]. The etiology of heterotopic pregnancy in ART is still unknown. Among the risk factors, multiple embryo transfer, high incidence of pelvic inflammatory disease and uterine curettage are prevalent.

The CHG is considered the rarest type of heterotopic gestations and it is particularly challenging due to the lack of a standard treatment and the possible risks associated with them, such as bleeding, chance of hysterectomy and loss of the intrauterine gestation. Different approaches of medical or surgical treatments are proposed in literature, ranging from the conservative management [4-6], local vasopressin injection followed by curettage or curettage and local methotrexate injection [7], transvaginal Ultrasound (US)-guided selective reduction [8], uterine artery embolization and hysteroscopic removal of both gestational products [9], microwave ablation of the cervical pregnancy ring forceps [10], as well as an ultrasound-guided intracervical Foley balloon placement and cerclage [11,12], complete cervical evacuation and expectant management [13]. In nearly a quarter of the reports on CHGs there is no live birth of the intrauterine gestation, due to the medical intervention used to terminate the ectopic pregnancy [12]. This represents a distressing rate of pregnancy loss, particularly after ART treatment. Thus, it is foremost to detail situations and treatment procedures that reached a fortunate ending in terms of fertility preservation, gestation and delivery, more specifically after IVF.

Case Presentation

A 41-year-old nulliparous, Caucasian woman presented at our Assisted Reproduction Center with a history of infertility due to diminished ovarian reserve for 4 years. Her medical history

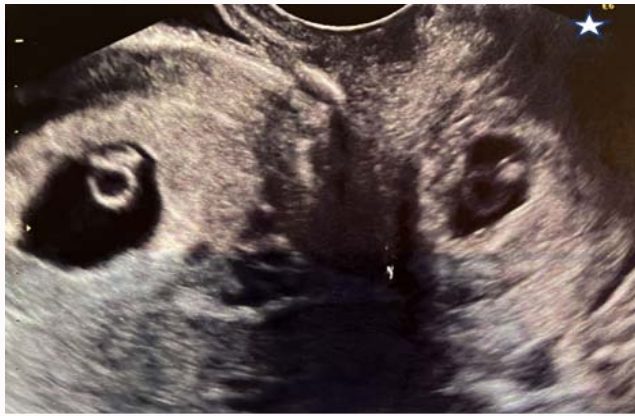


Figure 1: Transvaginal ultrasound image performed at 6 weeks demonstrating a viable cervical (star) along with an intrauterine gestation.

included two previous IVF attempts with autologous oocytes at another clinic. At that time her AMH was 0.7 ng/ml and both treatment cycles were unsuccessful. In her first IVF attempt using donor oocytes, three high quality blastocysts were created. They were transferred in two consecutive cycles and did not result in gestation. Another donor-oocyte cycle followed, in which she received two grade 1 fresh blastocysts. Ten days after transfer, β -HCG test of 355 mIU revealed an early gestation. The first ultrasound 26 days post-transfer showed one intrauterine gestational sac and another in the cervix, with both embryos measuring Crown Rump Length (CRL) of 0.5 cm and with active heartbeat (Figure 1). The patient received extensive information and counseling on her condition. After different treatment possibilities were discussed, we decided for a US-guided aspiration of the cervical gestational sac to best preserve the intrauterine gestation. The procedure was performed in a local hospital, under general anesthesia, on day 28 after embryo transfer. The cervical gestational sac was punctured using a 17 G single lumen oocyte aspiration needle under US-guidance. The treatment approach was successful in aspirating the contents of gestational sac. The patient was discharged home after 24 h observation. The histopathological examination confirmed embryonic remains and products of conception from the aspirate. There was minimal bleeding during and after the procedure. On the second post-operative day, the patient presented with painless vaginal bleeding and was readmitted to the hospital. Trophoblastic tissues of the cervical ectopic conceptus were gently removed using a curette, under ultrasound guidance. Histopathology analysis confirmed the presence of chorionic villi in the gestational tissues. An ultrasound performed four days after the curettage revealed a viable intrauterine gestation. Some residual trophoblast tissue could still be detected into the cervical canal. Serial obstetric US six days later revealed the persistence of a heterogeneous, hypervascular mass measuring 2.7 mm \times 2.0 mm in the cervical canal near the internal os, corresponding to remains of the cervical gestation chorionic villi. Two weeks after the curettage, the cervical heterogeneous mass persisted and the intrauterine gestation followed normal development. Fortnightly US surveillance revealed a shortened uterine cervix, at 20weeks gestation. A cervical pessary was inserted at 22 weeks gestation to avoid preterm delivery. The patient was prescribed absolute bed rest until 37 weeks gestation, when labor contractions started. The pessary was removed and the cesarean section was scheduled for the next day. The patient delivered a healthy baby girl weighting 2960 g and 46 cm.

Discussion

The present case report describes the successful treatment of a CHG after IVF, using US-guided aspiration of the ectopic gestational sac, followed by curettage, pessary placement due to cervical shortening and absolute rest. The frequency of different forms of heterotopic gestations is much higher after IVF, than after natural conception [2,3]. The clinical management of a CHG after IVF imposes specific challenges, considering that IVF pregnancies are highly desired and treatment for the termination of an ectopic gestation may also put in danger the viable intrauterine one.

To our best knowledge, this is the first description of a CHG detected at an early gestational age and treated with US-guided aspiration of gestational sac, cervical curettage and pessary placement. Although the curettage of the cervical canal was carefully performed, cervical shortening occurred and the placement of a pessary was necessary to avoid preterm delivery.

The patient was 41 years of age and that was her first pregnancy, after four unsuccessful embryo transfers. The early detection of the extra uterine gestational sac at 6 weeks was paramount for the success in the CHG management, without pregnancy loss of the viable intrauterine gestation and fertility preservation. Majority of the CHGs are detected after vaginal bleeding, at more advanced gestational age. Thus, particularly after IVF cycles in which more than one embryo is transferred, the first US scan should include a careful evaluation of the cervical canal to exclude a heterotopic gestation at the cervix.

Different treatment options are described for the resolution of cervical heterotopic gestations. However, some of the treatments may result in undesired outcomes, such as infertility [14] and intrauterine gestation loss [6]. Sonographically guided injection of various agents, into the ectopic gestational sac is effective, but it is also associated with persistent trophoblastic tissue [15]. US-guided aspiration of cervical conceptus results in immediate termination of the ectopic gestation and there is a minor risk to cause harm to the intrauterine pregnancy.

In conclusion, considering that there is no consensus on the best treatment for CHG, it is important to report the factors that contributed to the successful resolution of the present case. Early detection and US-guided aspiration performed by an experienced operator, careful follow up of the remaining embryonic tissues, monitoring of cervical canal along the gestation to avoid preterm delivery due to a possible shortening of the cervix after curettage and placement of cervical pessary to ensure a full-term gestation represent a safe and effective management of CHG, with fertility preservation and favorable live birth outcomes for IVF patients.

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