

## Cervical ectopic pregnancy: ultrasound diagnosis and conservative management

## Gravidez ectópica cervical: diagnóstico ecográfico e tratamento conservador

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### Abstract

Cervical ectopic pregnancy is a rare condition. We report a case of cervical ectopic pregnancy describing the ultrasound diagnosis and successful conservative management with methotrexate. Ultrasound findings and management options are discussed.

**Keywords:** Cervical ectopic pregnancy; Ultrasound diagnosis; Conservative management.

### INTRODUCTION

Cervical ectopic pregnancy is a rare form of ectopic pregnancy and can be defined as the implantation of the blastocyst in the endocervix, below the internal os<sup>1-4</sup>. Nowadays it represents less than 1% of all ectopic pregnancies, with a reported incidence varying from 1:1000 to 1:95000 pregnancies<sup>1,2,5</sup>. Until recently, cervical ectopic pregnancies were frequently diagnosed after uncontrollable hemorrhage and therefore treated surgically. Procedures to control bleeding (curettage, Foley catheter balloon tampon, local prostaglandin injection, Shirodkar cerclage or other cervical sutures, uterine artery or hypogastric artery ligation, uterine artery embolization) or more radical surgeries (hysterectomy) were the available options<sup>1,2,6-8</sup>.

Ultrasonographic diagnosis of this abnormal pregnancy was first described by Raskin (1978)<sup>9</sup>. Since then technical improvements in ultrasound have been crucial to an early diagnosis in either weakly or non-symptomatic women in the first trimester, thus allowing conservative management<sup>1-3</sup>.

We report a case of cervical ectopic pregnancy, describing the ultrasound diagnosis and conservative management.

### CASE REPORT

A 24-year-old black woman, primiparous, was admitted to the emergency room of our institution with a history of a minor painless vaginal bleeding lasting for seven days. The condom was used as the contraceptive method and her last menstrual period had been six weeks before. With regard to gynecological background, she had been submitted to a first trimester medical termination of pregnancy and a caesarian section, respectively 4 and 2 years before. The patient had no history of sexual transmitted infections or inflammatory pelvic disease.

Urinary qualitative pregnancy test was positive and transabdominal ultrasound (5 MHz probe) was performed and an incomplete miscarriage was considered as the most probable diagnosis. Therefore the patient was discharged considering clinical and hemodynamic stability and hemoglobin level of 10.6 g/dL. Another ultrasound was scheduled.

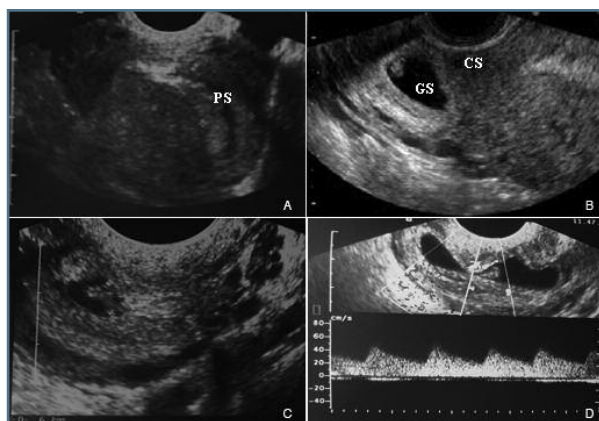
Three days later, minor painless vaginal bleeding persisted and transvaginal ultrasound (7 MHz probe) revealed a uterine cavity with thickened endometrium and an anechogenic long structure which was inter-

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**FIGURE 1.** Transvaginal ultrasound at the diagnosis (7 MHz probe). **A)** Thickened endometrium with a pseudo-gestational sac (PS); **B)** hypoechoic gestational sac (GS) below caesarian scar (CS) with a viable embryo; **C)** crown-rump length of 6,2mm; **D)** low resistance blood flow around the gestational sac

preted as a pseudo-gestational sac. A gestational sac was visualized below the uterine caesarian scar and 7 mm from external os, distending the cervix, with a 6.2 mm embryo with slow cardiac activity. “Sliding sign” was not observed and color Doppler showed a low resistance blood flow (Figure 1). Both adnexa were normal and there was no free fluid in abdominal cavity.

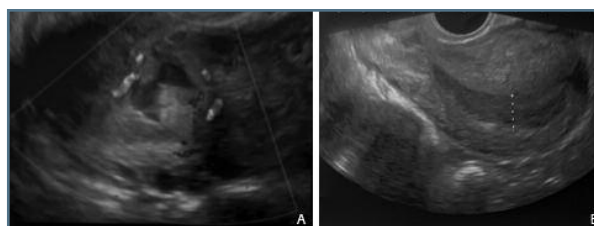
Quantitative  $\beta$  subunit of human chorionic gonadotrophin ( $\beta$ -hCG) was 22 000 mIU/mL.

In order to preserve fertility, and because our patient had a normal kidney and liver function, conservative management with systemic (intramuscular) methotrexate (MTX) was decided, in a single dose of 50 mg/m<sup>2</sup> of body surface area (considering our patient was 1.57 m high and weighted 49.5 kg a MTX dose of 75 mg was given) (day 1). Since she was hemodynamically stable and asymptomatic the treatment was conducted in an outpatient setting.

On day 2 the patient returned to our emergency room due to moderate vaginal bleeding. Gynecological examination revealed a dilated external os and the products of conception in the vagina. A control transvaginal ultrasound was repeated, showing an endocervix without a gestational sac, but with anechoic images suggestive of blood and remnant active trophoblast was identified with color Doppler (Figure 2).

Considering there was no profuse bleeding and that the minimum hemoglobin level was 8.0 g/dL, no further treatments were required, besides iron supply. Day 3 quantitative  $\beta$ -hCG level was 9704 mIU/mL.

Weekly clinical observation and quantitative  $\beta$ -



**FIGURE 2.** Transvaginal ultrasound images on day 2 after systemic methotrexate administration (7 MHz probe). **A)** Color doppler flow showing remnant trophoblastic perfusion; **B)** endometrial cavity filled with a central anechoic area suggestive of blood and a thinner surrounding endometrium

hCG levels determination were performed until a value < 5mIU/mL was obtained on day 30 (Figure 3).

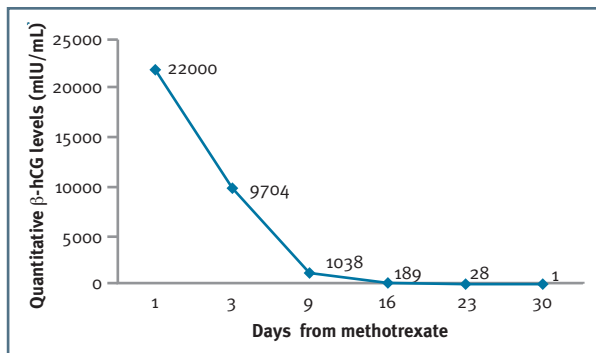
In the last ultrasound (day 45) cervix was normal, with an echogenic canal and without residual trophoblast (Figure 4).

## DISCUSSION

Although cervical pregnancy is a rare form of ectopic pregnancy it is a life-threatening disease due to its late diagnosis in symptomatic women. Its etiology is still unknown but many risk factors have been suggested: previous surgical termination of pregnancy, endometrial ablation, Asherman syndrome, previous caesarian section or other cervical or uterine surgery and assisted reproductive techniques<sup>1,2,5,10,11</sup>. In our case, a previous caesarian scar was the only known risk factor. With regard to clinical presentation, the most frequent symptom of cervical ectopic pregnancy is a painless vaginal bleeding, which was also the presenting symptom of our patient<sup>1</sup>.

The ultrasound diagnosis of a cervical pregnancy requires visualization of an intracervical ectopic gestational sac or trophoblastic mass below a closed internal os. If internal os cannot be visualized, the sac should be below the uterine artery insertion or vesico-uterine fold. Recognizing its sonographic appearance is the first step for a correct management, because it may be mistaken for an intrauterine pregnancy, an incomplete abortion or even an endocervical cyst<sup>1,12</sup>.

Transvaginal ultrasound seems to be the most appropriate imaging method. In fact, our case illustrates the limitations of transabdominal approach in the diagnosis of this pathology. The identification of a gestational sac at the cervix, associated with the existence of low embryonic heart activity (apparently not per-



**FIGURE 3.** Patients's quantitative  $\beta$ -hCG levels evolution

ceived in the first evaluation), led to the initial misdiagnosis of incomplete miscarriage. In this particular case, colour Doppler and colour Doppler flow evaluation as a complement to transvaginal ultrasound were also very useful in both diagnosis and follow-up: low resistance flow detected the cervical implantation and excluded a non-viable sac passing through the cervix.

Once the correct diagnosis is achieved, the treatment option must be decided. An early diagnosis allows the adoption of conservative methods which reduce potential morbidity and mortality associated with surgical interventions and allows fertility preservation<sup>1,2,3,10,13</sup>.

Medical approach with systemic MTX is, for many authors, the first-line management for cervical ectopic pregnancies, with an overall success rate higher than 80%<sup>1,2</sup>. Different administration routes have been described: intramuscular, intravenous, intracervical and intra-amniotic. In more advanced pregnancies (crown-rump length > 10 mm, hCG levels > 10000 IU/L) or in the presence of a viable embryo/fetus, intra-amniotic MTX, systemic MTX with intra-amniotic or intrafetal potassium chloride injection or multiple-dose regimen of systemic MTX are thought to be effective therapeutic alternatives because cardiac activity has been shown to be related to a higher rate of primary MTX failure<sup>1,14</sup>.

In the present clinical case we notice a successful uncomplicated conservative treatment with single dose methotrexate, although the embryo had cardiac activity. The therapeutic approach of ectopic pregnancy in our institution follow specific guidelines based on the protocol presented by Fernandez *et al.*<sup>15</sup> Medical therapy with methotrexate was decided considering a score of 12 (46 days of gestation, no abdominal pain, gestational sac with 3 cm, no hemoperitoneum,



**FIGURE 4.** Transvaginal ultrasound images on day 45 (7 MHz probe). Normal cervix.

$\beta$ -hCG levels > 5000 mIU/m and progesterone levels >10 ng/mL).

The pregnancy detachment and abortion presented as a self-limited hemorrhage. Therefore, we were able to preserve fertility without the need for further interventions.

Few studies evaluated the effect of cervical ectopic pregnancies in the reproductive future. However, predisposing factors to cervical ectopic pregnancy are themselves associated with other obstetric complications. Kung *et al.*<sup>16</sup> concluded that MTX, either alone or with adjuvant methods (with preservation of the uterus), has not shown detrimental effects on subsequent reproductive and obstetric outcomes.

Considering the rarity of this pathology, we consider of great relevance to report all cases, even the isolated ones.

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