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CASE REPORT PEER REVIEWED | OPEN ACCESS

Cervical ectopic pregnancy: A case report

Keturah Murray

ABSTRACT

Cervical ectopic pregnancy is a rare but potentially life-threatening condition due to the high risk of hemorrhage. Early diagnosis can allow for conservative management, thus reducing maternal morbidity and mortality. Here we present a case of 33-year-old female who presented with vaginal bleeding and ultrasound findings confirmed a cervical ectopic pregnancy. She was managed conservatively with methotrexate therapy. The purpose of this article is to provide the reader with an example of a clinical presentation of cervical ectopic pregnancy, and a discourse on management of these patients.

Keywords: Cervical ectopic, Extra-uterine gestation, Pregnancy

How to cite this article

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INTRODUCTION

Ectopic pregnancy is one of the main causes of maternal mortality and morbidity in the first trimester [1]. Among extra-uterine gestations, cervical ectopic pregnancies (CEPs) account for less than 1% of ectopic gestations with an incidence of 1 in 10,000 births [2]. Cervical ectopic pregnancies may also be more prevalent in pregnancies resulting from assisted reproductive technology, occurring in an estimated 0.1% of in vitro fertilization pregnancies; however, other risk factors include previous cesarean section, cervical dilatation, and uterine curettage [2]. With the advent of transvaginal ultrasonography and serum beta human chorionic gonadotrophin (βHCG) testing, earlier diagnosis of these patients has created a shift in management from radical procedures such as hysterectomy to conservative management strategies with an emphasis on fertility preservation [1].

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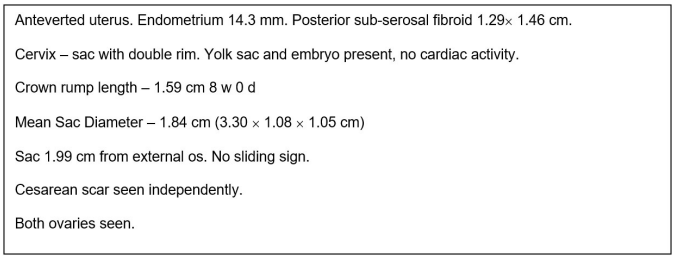
CASE REPORT

A 33-year-old, G5P3^{+1} female, with no known chronic illnesses, presented to her private obstetrician gynecologist (OBGYN) with a one week history of heavy bleeding per vaginum, and passage of large clots. Her obstetric history, outlined in Table 1, included two prior lower segment cesarean sections, a vaginal delivery, and a previous medical termination of pregnancy requiring dilation and curettage.

Speculum examination showed a parous cervix with clots seen at the os. A transvaginal ultrasound scan (TVUSS) was performed which showed a gestation in the lower pole of the uterus measuring seven weeks and three days. She was discharged with a diagnosis of threatened miscarriage and advised to return if there was further bleeding. She returned for a follow-up visit with her OBGYN, where she was noted to have painless spotting per vaginum. A repeat TVUSS showed an hourglass shaped uterus, with a gestation measuring eight weeks in the cervix, no cardiac activity was present.

She was subsequently referred to the Queen Elizabeth Hospital, a tertiary level center, for further management of her condition. Upon arrival, she was hemodynamically stable with a hemoglobin of 12 g/dL. Vaginal examination revealed a bulky cervix with a parous os. The TVUSS in hospital, outlined in Figure 1, confirmed the findings of a cervical ectopic pregnancy. Her initial beta-human chorionic gonadotropin (βHCG) was 60,500 mIU/mL (Table 2). She was managed conservatively with systemic and intra-amniotic injection of methotrexate. She had an uneventful hospital stay and was discharged five days after admission. Her histopathology report is as seen in Figure 2.


Anteverted uterus. Endometrium 14.3 mm. Posterior sub-serosal fibroid 1.29× 1.46 cm.

Cervix – sac with double rim. Yolk sac and embryo present, no cardiac activity.

Crown rump length – 1.59 cm 8 w 0 d

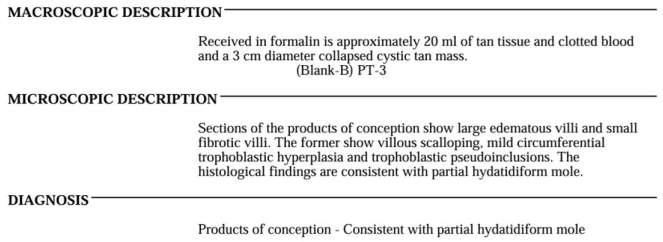
Mean Sac Diameter – 1.84 cm (3.30 × 1.08 × 1.05 cm)

Sac 1.99 cm from external os. No sliding sign.

Cesarean scar seen independently.

Both ovaries seen.

Figure 1: Transvaginal ultrasound scan report


MACROSCOPIC DESCRIPTION

Received in formalin is approximately 20 ml of tan tissue and clotted blood and a 3 cm diameter collapsed cystic tan mass.
(Blank-B) PT-3

MICROSCOPIC DESCRIPTION

Sections of the products of conception show large edematous villi and small fibrotic villi. The former show villous scalloping, mild circumferential trophoblastic hyperplasia and trophoblastic pseudoinclusions. The histological findings are consistent with partial hydatidiform mole.

DIAGNOSIS

Products of conception - Consistent with partial hydatidiform mole

Figure 2: Histopathology report

DISCUSSION

Ectopic pregnancies represent 2–3% of all pregnancies, among which cervical ectopic pregnancies (CEPs) are one of the rarest forms, accounting for less than 1% of all ectopic pregnancies [3]. They occur as a result of implantation of a fertilized ovum into the endocervical canal [4].

This condition was first described in 1817 [5]. While the etiology remains unknown, CEPs are more likely to arise in the setting of local cervical pathology mainly of iatrogenic origin [6]. The patient had two of these major risk factors, previous cesarean section and previous dilatation and curettage. In a review of literature, Gun and Mavrogiorgis found that 25 of 31 patients diagnosed with CEPs had previous curettage [6]. Similar findings were reported by Shinagawa et al., who identified previous curettage in 18 of the 19 patients in their study [7]. Other risk factors include presence of an intra-uterine device, in vitro fertilization, structural anomalies, and diethylstilbestrol exposure [8].

As seen in our case, the most common presentation of CEP is painless vaginal bleeding which may also be associated with cramping abdominal pain. However pain is only reported in one-third of patients [5]. Clinical signs that suggest cervical pregnancy include a soft cervix that is enlarged and barrel shaped, a partially open or closed external os, and profuse hemorrhage on manipulation of the cervix. A visible cervical lesion, often described as blue or purple and edematous in appearance, may be noted [1]. Early stage asymptomatic pregnancies may also be detected on routine ultrasonography [1].

Historically, the diagnosis was made intra-operatively in the presence of extensive hemorrhage at the time of uterine curettage [2]. In 1911, Rubin proposed the pathological criteria for the diagnosis of cervical ectopic pregnancy: (1) The cervical glands must be opposite the attachment of trophoblast or placenta. (2) Attachment of trophoblast must be below the level of entrance of uterine vessels into the uterus or anterior peritoneal reflection. (3) Fetal elements must be absent from the corpus uteri. However these criteria could only be ascertained by specimen examination [9].

Table 1: Obstetric history

Year	Type of labor and delivery	Gestation	Sex	Birth weight	Complications
2009	Vaginal forceps delivery	Term	Female	3400 g	Neonatal death
2011	Emergency lower segment cesarean section	Term	Male	3410 g	None
2014	Medical termination of pregnancy	First trimester	–	–	Dilation and curettage
2015	Elective lower segment cesarean section	Term	Male	3405 g	None

Table 2: βHCG results

Day	βHCG (mIU/mL)
1	60,500
4	1,552
7	548
27	9.8
33	4.7
40	2.3

Abbreviations: βHCG: Beta-human chorionic gonadotropin.

In modern day medicine, βHCG measurements and TVUSS are integral components in the early diagnosis of CEPs. The aim of the TVUSS is to distinguish between an early intra-uterine pregnancy, an ongoing miscarriage with a gestational sac passing through the cervix and a cervical ectopic pregnancy [10]. Our patient had the typical ultrasonographic features of a CEP; an empty uterus and a gestational sac within the cervical canal, invading the anterior or the posterior wall of the cervix (hourglass uterus or dilated cervix) [8].

The first report of a cervical ectopic pregnancy diagnosed using ultrasound was in 1978 by Raskin in a 31-year-old female who presented with profuse vaginal bleeding and abdominal pain [11]. Since then, a stringent criterion for diagnosing CEPs has evolved. This includes: (1) empty uterine cavity or thickened endometrium. (2) Closed internal os. (3) Gestational sac or placental tissue below the level of the internal os. (4) Intact cervical canal between endometrium and sac. (5) Negative "sliding sign." (6) High peri-trophoblastic vascularity on Doppler examination [1].

An early CEP may be mistaken for a cervical abortion. Features in keeping with the former include a gestational sac with regular contour versus irregular contours seen in an incomplete abortion (which may change shape during the scan), and an echogenic rim around the gestational sac which rim may be absent or minimal in incomplete abortion. If the diagnosis is uncertain and the patient is stable, the ultrasound may be repeated the next day to see if the sac has moved (suggestive of an incomplete abortion) [12]. Infrequently, magnetic resonance imaging (MRI) is used if the location of the pregnancy is unclear, and MRI is needed to guide management. The typical MRI image of cervical pregnancy is a lobulated, solid mass with heterogeneous signal intensity of varying stages of hemorrhage and an enhancing, papillary, internal projection of products of conception in the cervix [12]. Early diagnosis of CEPs is essential because this will decrease the occurrence of acute complications and allow the preparation and implementation of a conservative approach [1].

Management of the cervical ectopic pregnancy is dependent on several factors such as patient's gestational age, fetal cardiac activity, stability of the patient, patient's interest in retaining future fertility, and the availability of resources and expertise of the practicing gynecologist [13]. Following diagnosis, conservative medical, and/or surgical management is generally undertaken in an attempt to avoid hysterectomy and preserve fertility. Treatment options may be broadly categorized as: tamponade, reduction of blood supply, excision of trophoblastic tissue, intra-amniotic feticide and systemic chemotherapy [6].

Our patient was hemodynamically stable without severe bleeding and was offered conservative management with methotrexate (MTX). This is the preferred option in this scenario [14]. In a retrospective case series of 62 cervical ectopic gestations, Kung and Chang reported preservation of reproductive capacity in over 90% of first trimester cervical pregnancies managed with MTX [15]. The choice between single-dose and multidose protocols should depend on patient factors [2].

The initial βHCG in this case was 60,500 mIU/mL. According to Prameela and Dev failure of single MTX chemotherapy is likely if serum βHCG titer is ≥10,000 mIU/mL, the gestational age is ≥9 weeks, fetal viability is documented, or fetal CRL is greater than 10 mm. Prameela and Dev also reported that in these scenarios, concomitant feticide would enhance the therapeutic effect of MTX [1]. Feticide by local therapy consists of sonographically guided injection of medications, either intra-amniotic or intra-fetal.

If the previous medical treatment fails or is contraindicated, a fertility-sparing surgery method could be adopted with the excision of the trophoblast via curettage/aspiration or surgical hysteroscopy. However, due to the lack of smooth muscle tissue in the cervical region, there is a predisposition to massive bleeding during conservative surgery, which often requires an emergent hysterectomy to control hemorrhage [14].

Therefore, adjuvant measures to reduce blood loss post- or pre-procedure are recommended and include tamponade with a Foley balloon catheter or reduction of blood supply by vasopressor or prostaglandin cervical injections, cervical cerclage, surgical ligation of cervical, uterine or internal iliac arteries, and arterial embolization. Although relatively safe, complications of uterine artery embolization such as uterine infarction and bladder necrosis have been documented [14].

Hysterectomy may still prove to be appropriate in settings of intractable hemorrhage, second- or third-trimester diagnosis of cervical pregnancy and possibly to avoid emergency surgery in a woman who does not desire fertility. This is a radical approach and should be performed as lifesaving measure [1].

Regardless of the conservative management strategy, cervical ectopic pregnancies need to be followed until complete resolution (serum βHCG < 10 mIU/mL and resumption of menstrual cycling). In a study by Murji et al., the median time for βHCG levels to resolve was 35 days. Persistence of abnormal cervical enlargement on TVUSS long after resolution of βHCG levels has also been reported [2]. Serial HCG measurement is especially important in this case as her histopathology report confirmed partial hydatidiform mole and persistent gestational trophoblast has the potential to become gestational trophoblastic neoplasia [16].

Gestational trophoblastic disease (GTD) is a tumor originating from the trophoblast, which surrounds the blastocyst and develops into the chorion and amnion. The main types of gestational trophoblastic diseases are: hydatidiform mole (complete or partial), invasive mole, choriocarcinoma and placental site trophoblastic tumor.

The most common form of GTD is hydatidiform mole of which there are two types; complete and partial [12]. Complete molar pregnancy is most often presented

by vaginal bleeding, partial molar pregnancy is also associated with a similar clinical manifestation.

Less than 10% of cases have βHCG levels greater than 100,000 mIU/mL. More than 90% of cases occur as an incomplete or delayed abortion and the diagnosis is usually made only after histological examination of the evacuated material [17]. These features are in in keeping with this patient, who presented with vaginal bleeding and her initial βHCG was 60,500 mIU/mL.

According to studies by Kung et al. and Jeng et al., a prior cervical pregnancy with MTX treatment does not impair subsequent reproductive function and that the risk of infertility after MTX therapy does not generally increase. These patients may be advised contraception for six months to minimize potential teratogenic risks. Early ultrasonography is indicated in the subsequent pregnancy to rule out recurrence of ectopic pregnancy. Pregnancy should be observed closely for possible complications like cervical incompetence or preterm labor [1].

CONCLUSION

In conclusion, CEP is a rare clinical entity. Early diagnosis of CEP with the use of ultrasound and utilization of conservative treatment regimes has decreased associated morbidity and improved the possibility of ongoing fertility in affected patients.

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Author Contributions

Keturah Murray – Conception of the work, Design of the work, Acquisition of data, Analysis of data, Interpretation of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Guarantor of Submission

The corresponding author is the guarantor of submission.

Source of Support

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Consent Statement

Written informed consent was obtained from the patient for publication of this article.

Conflict of Interest

Author declares no conflict of interest.

Data Availability

All relevant data are within the paper and its Supporting Information files.

ABOUT THE AUTHORS

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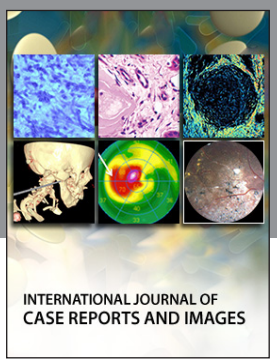

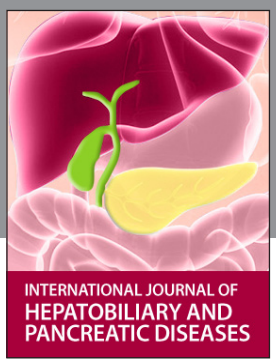

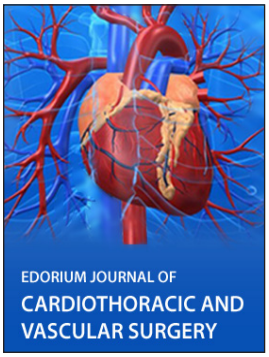

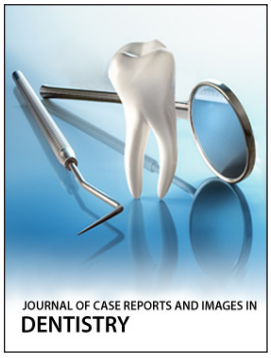

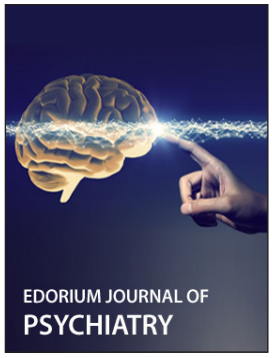

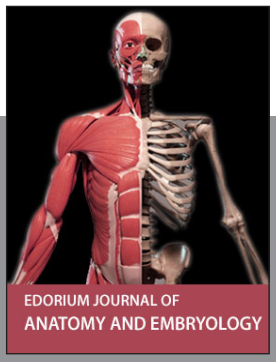

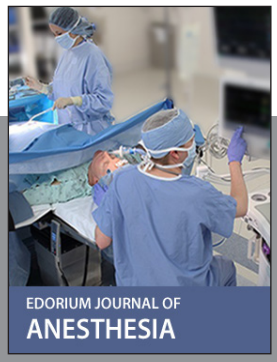

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