

Cervical Ectopic Pregnancy

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Abstract

We performed dilation and curettage and cervical balloon placement in a cervical ectopic pregnancy after treatment with Methotrexate, KCI and bilateral uterine artery embolization.

A minimally invasive approach was used in the case as the patient desired future fertility. We present the potential challenges in management of cervical ectopic pregnancy as well as approaches to treatment.

Key Words: Cervical pregnancy, fertility, uterine artery embolization, abnormal pregnancy

Introduction:

Cervical pregnancy is a type of ectopic pregnancy that results from implantation of a fertilized ovum in the endocervical canal below the level of the internal os (10). The incidence of cervical ectopic pregnancy is less than 0.1% of all ectopic pregnancies (10), and is a very serious condition due to risk of life-threatening hemorrhage. Risk factors include previous endometrial curettage, previous cesarean section, endometrial inflammation from the use of an intrauterine device or pelvic inflammatory disease, and assisted reproductive technologies (5). Other risk factors include: induced abortion, Asherman's syndrome, leiomyomata, and prior in utero exposure to diethylstilbestrol (4). The diagnosis is made by ultrasound imaging. The most common symptom is painless vaginal bleeding and delayed diagnosis may result in massive bleeding and hypovolemic shock. The management of a cervical ectopic pregnancy is tailored to the patient's individual fertility desires and the complexity of the case, given the rarity of non-tubal ectopic pregnancies (11).

We present a case of a patient diagnosed with cervical ectopic pregnancy in the late first trimester. The patient desired future fertility.

Case Description:

A 27 year old patient was referred to our group from a gynecologist's office with cervical ectopic pregnancy. Her obstetrical history was significant for two pregnancies and one term vaginal delivery with no associated complications. She had no risk factors associated with cervical pregnancy and presented with no symptoms.

On examination, her cervix was dilated to one centimeter and completely effaced. Transvaginal ultrasonography revealed a cervical length at external os of 3 mm and a gestational sac in the cervical canal beneath the internal cervical os and an empty uterus. Measurement of the fetus had crown rump length consistent with 11 weeks and 6 days, as expected by the patient's last menstrual period. Serum human chorionic gonadotrophic hormone level was 75,097 mIU/ml on first assessment. Angiography of the bilateral internal iliac arteries demonstrated arterial enhancement of cervical ectopic pregnancy arising from multiple tortuous branches from bilateral uterine arteries.



As the patient desired future fertility, treatment options were presented in accordance to this goal. The risk of intra-operative bleeding with dilation and curettage was specifically reviewed. The patient agreed to undergo Methotrexate injection, bilateral uterine artery embolization followed by suction dilatation and curettage.

On hospital day #1, the patient underwent treatment with one dose of Methotrexate and bilateral uterine artery embolization. On hospital day #2, the patient was taken to the operating room where a potassium chloride injection was administered to the products of conception until cessation of fetal heart tones were noted on ultrasound. Placement of cervical sutures at 3 and 9 o'clock was then performed to ligate the descending branches of the uterine arteries followed by a careful suction dilatation and curettage under ultrasound guidance.

An ultrasound performed after the procedure ensured evacuation of products of conception. A cervical Cook balloon was placed under ultrasound guidance with 80 cc of normal saline infused into the balloon catheter to provide hemostasis.

On postoperative day one, the Cook balloon was removed with little to no bleeding noted. She was discharged home with bleeding precautions and a close follow up with her primary provider was scheduled. After her surgery, she has been followed by her primary provider and beta HCG levels have trended down adequately with no complications after this hospitalization. The patient did not have problems with pain postoperatively. She continued to follow-up with her gynecologist.

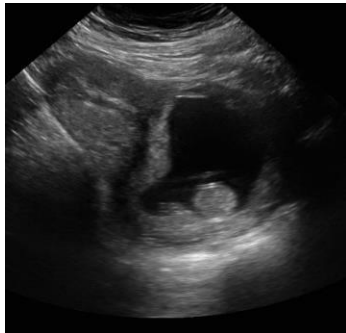


Figure 1 demonstrates long view of cervix with cervical ectopic pregnancy.



Figure 2 is a transverse view of the uterus with cervical ectopic pregnancy.

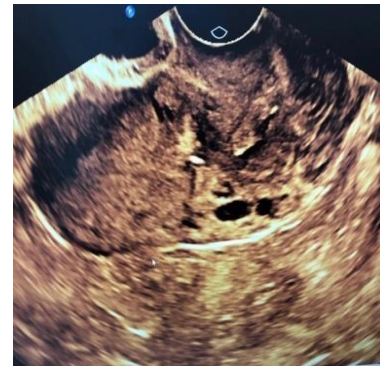


Figure 3 is an image of the uterus with resolution of cervical ectopic pregnancy after treatment.

Discussion

Cervical pregnancies are rare, accounting for less than 0.1% of all ectopic pregnancies. These pregnancies are at high risk for life-threatening hemorrhage. Our case study is unique given its late gestational age. This patient was referred at 11 weeks with diagnosis confirmed by ultrasound. Given her interest in preserving fertility, the treatment was guided away from hysterectomy.

Because of the advanced stage at which this ectopic pregnancy presents, a combination of uterine artery embolization, methotrexate injection and potassium chloride injection of the products of conception were completed with the goal of reducing blood loss at the time of suction dilatation and curettage. According to Zakaria et al., uterine artery embolization in conjunction with multi dose Methotrexate therapy has been shown to be a safe and effective option for the conservative treatment of cervical ectopic pregnancy, and in cases of fetal cardiac activity, intra-amniotic KCl may be administered in addition to Methotrexate (15).

First, a dose of Methotrexate was given as a DNA synthesis inhibitor to decrease cell reproduction and growth of trophoblastic and fetal cells in the interest of decreasing overall blood loss and to aid in reduction of serum HCG levels.

Methotrexate can be injected intramuscularly, intra-cervically or intra-amniotically at a dose of 50 mg/m². Approximately 49% of patients will require a surgical procedure despite treatment with Methotrexate (5). Pretreatment HCG levels greater than 5,000 mIU/ml and fetal cardiac activity are relative contraindications to Methotrexate use. Although, a review article by Cheung suggests that ultrasound guided local methotrexate injection could be considered as a first-line treatment modality for cesarean scar pregnancy in women with serum human chorionic gonadotropin levels no higher than 100,000 mIU/mL (3). The benefit of methotrexate use before uterine artery embolization is that it reduces vascular flow to the uterine tissue thereby improving effectiveness of the embolization procedure (15). A major complication of conservative management of cervical ectopic pregnancy is increase in bleeding which is why Methotrexate therapy was combined with uterine artery embolization. We believe this approach has led to the successful treatment of this cervical ectopic pregnancy, resulting in minimal



blood loss.

Uterine artery embolization was performed by our radiology department through percutaneous transcatheter embolization of polyvinyl alcohol microspheres under fluoroscopic guidance.

These particles are carried by the arterial blood flow to occlude the uterine arteries distally. The vessels feeding the pregnancy are preferentially occluded due to their larger caliber and higher flow. There has been a debate regarding potential risk of uterine artery embolization, potentially causing reduction of ovarian blood supply, reducing circulating AMH levels.

Given that the patient desired future fertility, impact on ovarian function was carefully considered. A meta-analysis studying the impact of uterine artery embolization on circulating AMH levels among women under and over 40 years of age showed no difference in circulating AMH levels at 3, 6 and 12 months (2). The patient did not have vasomotor complaints after uterine artery embolization. Thus, there is evidence that uterine artery embolization is an acceptable form of management in patients desiring future fertility. In the case of our patient, we counseled her about the temporary occlusion of the uterine vessels for 2 to 6 weeks (5) from UAE and its advantage is prevention of hemorrhage. Available data suggest a modest to minimal negative impact on fertility.

Immediately prior to performing suction dilatation and curettage, we injected the products of conception with potassium chloride at a dose of 14.9 g/100ml. A total of 2 mL was needed for cessation of pulsations. The reason for using potassium chloride is that therapeutic intra-amniotic demise may lead to fewer maternal morbidity events, including less bleeding and shorter hospital stays (15). In an article by Trambert et al, due to the low number of cervical ectopic cases treated with KCI, it was difficult to determine if intra-amniotic KCI injection is necessary to successfully resolve a cervical ectopic pregnancy (14). We believe that this step did not have an effect on our overall blood loss.

Dilation and curettage was then performed. Of note, cervical sutures were placed to ligate the descending branches of the uterine arteries and a careful suction dilatation and curettage was then performed without difficulty and encountering minimal bleeding.

An ultrasound performed after the procedure ensured complete evacuation of products of conception. We finished the procedure by placing a prophylactic Cook balloon to tamponade the cervical blood vessels. All tissue was submitted to pathology, confirming chorionic villi and fetal parts. We feel that this stepwise approach to conservative management of cervical ectopic pregnancy produced a successful outcome.

Regarding pathology, the criteria for the diagnosis of cervical pregnancy was established by Isidor Rubin (8) and consisted of the following: cervical glands must be opposite the placental attachment, placental attachment to the cervix must be situated below the entrance of the uterine vessels or below the peritoneal reflection of the anterior and posterior surfaces of the uterus and fetal elements must be absent from the corpus uteri.

Dilation and curettage carries a 40% risk for hysterectomy, and

improved outcome is noted with concurrent uterine artery embolization (5). Total abdominal hysterectomy is the treatment of choice for patients in whom future fertility is not desired, or in the setting of unstable vital signs secondary to excessive vaginal bleeding (5).

The impact of cervical ectopic pregnancy on future fertility as well as recurrence risk is unknown and patients should be counseled appropriately.

Conclusion

This is a case of late first trimester cervical ectopic pregnancy that was managed successfully with Methotrexate, uterine artery embolization, followed by dilation and curettage & cervical balloon placement. This stepwise approach to management of a late first trimester cervical ectopic resulted in successful outcome with uterine and cervical presentation, minimal blood loss and preservation of the patient's fertility. Cervical ectopic pregnancy carries a high risk of hemorrhage driving efforts to reduce bleeding, as with the use of methotrexate combined with uterine artery embolization.

Uterine artery embolization was performed prior to dilation and curettage due to its ability to reduce risk of hemorrhage, and did so effectively in this case. This case demonstrates a successful conservative approach in management of cervical ectopic pregnancy, in a patient desiring preservation of fertility.

Disclosure statement: The authors declare that they have no conflicts of interest and nothing to disclose

IRB approval was not required.

References:

1. Amato, P. (2014, January 1). Diagnosis and Management of Cervical Ectopic pregnancy. Available at <https://excellence.org/pearls-of-excellence/list-of-pearls/diagnosis-and-management-of-cervical-ectopic-pregnancy/> Accessed 30 November 2019.
2. El Shamy, T, Amer Saad, Mohamed A, et al. The impact of uterine artery embolization on ovarian reserve: A systematic review and meta-analysis. *Acta Obstet Gynecol Scand* 2020; 99: 16-23.
3. Cheung V. Local Methotrexate Injection as the first line treatment for cesarean Scar pregnancy: Review of the literature. *Journal of Minimally Invasive Gynecology* 2015; 22 (5): 753-758, July-August 2015.
4. Fylstra D. Ectopic pregnancy not within the (distal) fallopian tube: etiology, diagnosis, and treatment. *Am J Obstet Gynecol* 2012; 206 (4): 289-299.
5. Hosni, M. Diagnostic and Therapeutic dilemmas of Cervical ectopic pregnancy.
6. CME Review Article. *Obstetrical and Gynecological Survey* 2014; Volume 69 (5): 261-76.
7. Hwang JH, Lee JK, Oh MJ, et al. Classification and management of cervical ectopic pregnancies: experience of a single institution. *J Reprod Med* 2010; 55 (11-12): 469-76.
8. Kung FT, Chang SY, Tsai YC, et al. Subsequent reproduction



- and obstetric outcome after methotrexate treatment of cervical pregnancy: a review of original literature and
9. Rubin IC. Cervical pregnancy. *Surg Gynecol Obstet.* 1911;13: 625.
 10. Schneider, P. Dreizin DH. Cervical pregnancy. *Am J Surg.* 1957; 93: 27-40.
 11. Singh, Sweta. Diagnosis and management of cervical ectopic pregnancy. *Journal of Human Reproductive Science* 2013. 6 (4): 273-276.
 12. 11. Shah J, Nasab S, Papanna R, et al. Management and reproductive counseling in cervical, caesarean scar and interstitial ectopic pregnancies over 11 years: identifying the need for a modern management algorithm. *Human Reproduction Open* 2019. 2019 (4) hoz028.
 13. Tang PP, Liu XY, Chen N, et al. Diagnosis and treatment of international collaborative follow-up. *Hum Reprod* 1997; 12(3):591–595.
 14. Thomas RL, Gingold BR, Gallagher MW. Cervical pregnancy: a report of two cases. *J Reprod Med* 1991; 36:459-62.
 15. Trambert JJ, Einstein MH, Banks E, et al. Uterine artery embolization in the management of vaginal bleeding from cervical pregnancy: a case series. *J Reprod Med* 2005;50: 844–50.
 16. Zakaria M, Abdallah M, Shavell V, et al. Conservative management of cervical ectopic pregnancy: utility of uterine artery embolization. *Fertility and Sterility* 2011; 95 (3), 872-76.