

Effective Management of Early Cervical Pregnancy with Bilateral Uterine Artery Embolization Followed by Immediate Evacuation and Curettage: A Case Report

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Introduction

Incidence of ectopic pregnancy is on the rise, and outcome of cervical pregnancies is still poor. Cervical ectopic pregnancy accounts for less than 1 percent of all ectopic pregnancies; however, it is associated with significant life-threatening hemorrhage. Earlier, treatment included hysterectomy on elective basis or as a lifesaving procedure for torrential bleeding, with disastrous reproductive future. An ideal management strategy for cervical ectopic is still debatable due to limited cases. Ideal therapy would be one with least immediate life risk and fertility preservation. Bilateral uterine artery embolization (UAE) has emerged as a viable option to reduce the risk of massive hemorrhage with subsequent evacuation. However, UAE in developing countries is remotely practiced, probably due to limited availability, expertise and gynecologist bias. We report a

rare case, from Indian subcontinent, of 6-week primigravida with cervical ectopic pregnancy treated by UAE followed by immediate vacuum evacuation and curettage with excellent result.

Case Report

A 27-year-old woman, primigravida, was admitted to our hospital at 6 weeks of gestation with heavy bleeding per vaginum. Her medical history was otherwise unremarkable.

At admission, she was conscious and oriented. Physical examination showed normal temperature, blood pressure 100/60 mm of Hg and heart rate of 110 beats/min. Local examination revealed profuse bleeding per vaginum. On vaginal examination, os admitted tip of finger with products of conception attached to cervix.

Laboratory tests revealed hemoglobin 8.3 g/dl, TLC $8.5 \times 10^9/l$, DLC-N 67 L22 E2 M8, Total RBC 4.25 and INR of 0.98. Serum β -human chorionic gonadotropin (HCG) at admission was 5700 mIU/ml. The levels done 48 h prior were 2954 mIU/ml. Transvaginal sonography (TVS) was performed immediately after admission which confirmed cervical pregnancy. A normal-sized uterus was found with an empty cavity (Fig. 1a). The endometrium was thick and hyperechogenic. A gestational sac was evident below the closed internal cervical os containing a live fetus with sac measurement corresponding to 5 weeks and 5 days, lying in cervix just below the isthmus with normal cardiac activity of 100/min (Fig. 1b); a yolk sac was also seen.

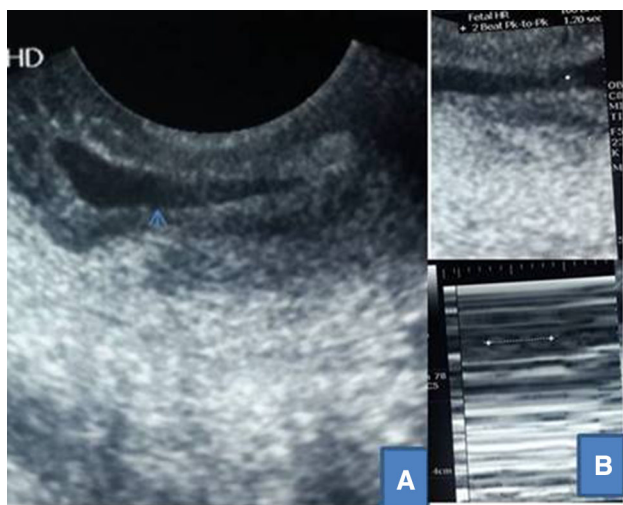


Fig. 1 Ultrasonographic scan of the cervical pregnancy. **a** Empty uterine cavity (arrow) **b** mode scan depicting cardiac activity (lower inset) positioned in gestational sac (cursor in upper inset) which was lying below the closed internal cervical os. Presence of cardiac activity helps differentiating it from missed abortion

Patient was shifted for bilateral UAE to block the blood supply of cervix via cervical branches of the uterine artery. Angiographic embolization was performed under local anesthesia through percutaneous transfemoral catheterization of the right femoral artery. A specialized 5-French Robertson uterine catheter (RUC) was used for selective catheterization of uterine arteries via anterior division of internal iliac arteries. Firstly, left uterine artery was catheterized with tip in proximal segment (Fig. 2a, b) followed by temporary embolization with Gelfoam slurry. Gelfoam slurry was obtained by scratching Gelfoam sponge sheet of bovine origin (Gelfoam® absorbable gelatin compressed sponge, USP; Pfizer Michigan 49001 USA), carefully with blade and forcefully mixing the particles with a non-ionic contrast medium [Omnipaque 300 (Iohexol 300 mgI/mL GE Healthcare Inc. Princeton, NJ 08540)] to obtain a homogenous injectable solution. Embolization was stopped after blood flow to uterine artery was interrupted (Fig. 2b, c). The procedure was repeated for right uterine artery. Total duration of the procedure was 25 min with total fluoroscopy time of 14 min.

Bleeding stopped immediately, and vacuum evacuation with curettage of the cervical canal was performed 2 h after embolization, under general anesthesia with ultrasonographic guidance. Vaginal packing of the cervical canal was done as an adjunctive safety measure. On the first postoperative day, hemoglobin was 8.5 g/dl. On the first and third postoperative days, β -HCG values were 2257 and 792 mIU/l, respectively. On third postoperative day, patient was discharged following per-speculum examination, which revealed vascularized cervix with no bleeding, and an ultrasound scan which showed a normal uterine cervix with no retained products. During the follow-up, the patient resumed her menstrual cycles after 2 months.

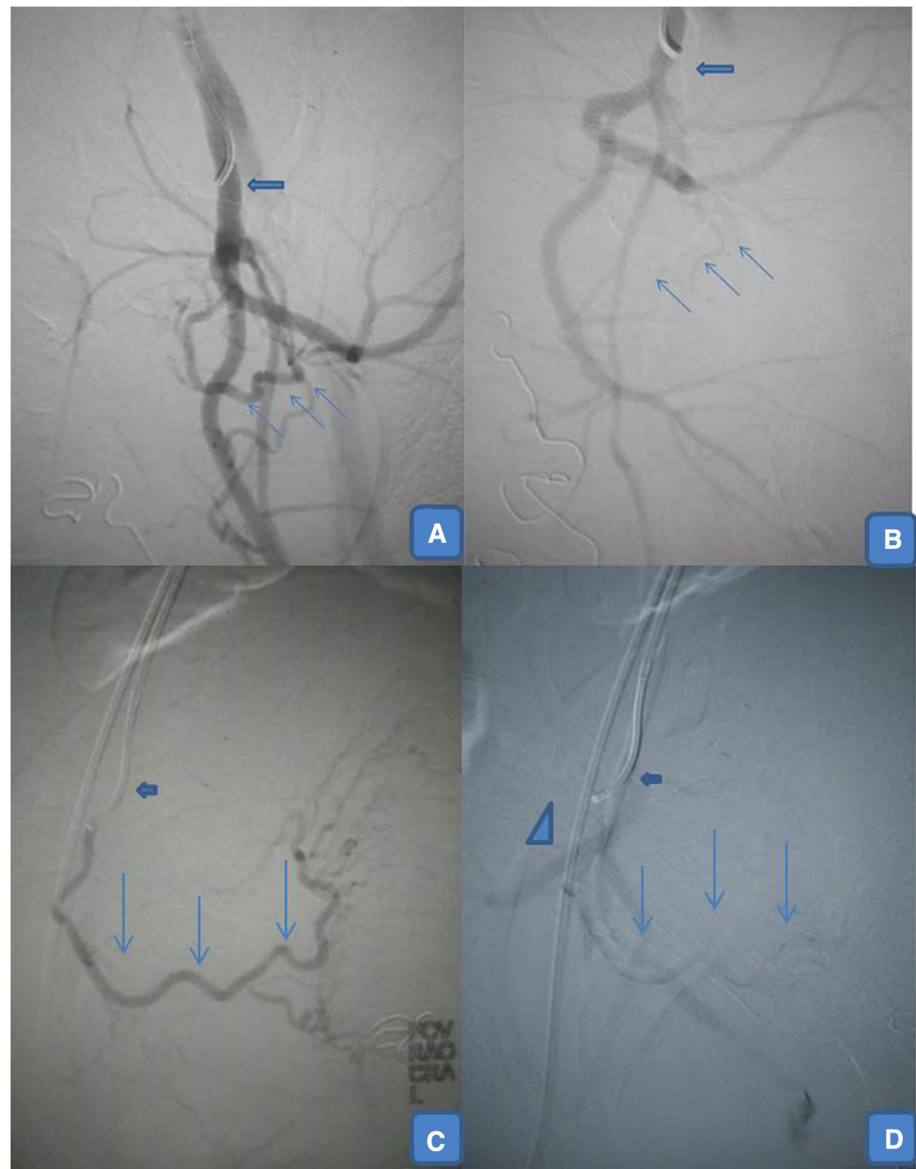
Discussion

Wider availability of transvaginal ultrasound has led to detection of cervical pregnancies at an early gestational age. In our case, TVS detected and unequivocally confirmed cervical pregnancy by various sonographic criteria and ruled out possibility of missed abortion.

Various medical and surgical options including curettage and packing, local excision, cervical amputation, cervical cerclage after curettage, systemic and local treatment with methotrexate have been tried.

Medical management with systemic single-dose or multi-dose methotrexate (MTX) is considered most appropriate treatment in hemodynamically stable patient. However, cardiac activity is a relative contraindication to MTX treatment, and advanced gestational age, a gestational sac >4 cm, β hCG level >5000 mIU/ml, and fetal

Fig. 2 Angiographic runs of embolization of bilateral uterine arteries. Internal iliac artery run (a, b). Preembolisation run (a) with catheter tip in anterior division of internal iliac artery (*bold arrow*) shows tortuous uterine artery (*arrows*) with cervical branch and post embolization run (b) show completely embolized. Left uterine artery (*arrows*) with no flow. c, d Uterine artery runs. Preembolisation run (c) with catheter tip in right uterine artery (*bold arrow*) shows tortuous uterine artery (*arrows*) with cervical branch and post gelfoam embolization run (d) show no flow in right uterine artery with reflux in internal iliac artery (*arrowhead*)



cardiac activity are associated with a higher failure rate of MTX [1]. In our case, the presence of cardiac activity, higher β hCG levels and continued bleeding were deterrents to this medical approach. In cases with fetal cardiac activity, surgical options such as dilation and curettage per se are available; however, they carry a significant risk of severe hemorrhage.

Uterine artery embolization has been practiced for controlling hemorrhage, in postpartum cases or cervical carcinoma and more recently for symptomatic leiomyoma. In cervical pregnancy, bilateral UAE has been reported as a stand-alone procedure or with methotrexate or with adjunct curettage. As stand-alone, a strict follow-up of patient with laboratory and imaging data is required and occasional failures are also reported. Few authors [2, 3] have used

uterine artery embolization in conjunction with systemic/intra-arterial methotrexate recently, but still there failure may occur and the need for strict follow-up remains. Combination of UAE with immediate adjunct curettage [4] circumvents the possibility of delayed bleeding. We used combined curettage option as it confirms immediate abortion, reduces duration of hospital stay, eliminates need for follow-up and provides psychological relief to the patient.

The mainstay of UAE in cervical pregnancy is proximal positioning of catheter tip in uterine artery so as to include the cervicovaginal branch. This branch arises from either the proximal portion of the ascending segment or the mid-to-distal portion of the transverse segment of uterine artery. These branches show extensive collateralization with contralateral branches and ascending branches of the

vaginal artery. Gelfoam considerably reduces circulation for 24 h, with recanalization of the vessels in 2–6 weeks. Resumption of menstruation rules out uterine or endometrial ischemia.

Conclusion

Bilateral uterine artery embolization in the management of cervical pregnancy is technically easy and a practical option immediately prior to evacuation and curettage. With increasing availability of angiographic suites, UAE should be considered a preferential option by gynecologists, wherever the expertise is available.

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Compliance with Ethical Standards

Conflict of interest None.

Informed Consent Informed consent was obtained.

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