

Preoperative Uterine Artery Embolization and Evacuation in the Management of Cervical Pregnancy : Report of Two Cases

Preoperative uterine artery embolization and cervical evacuation as conservative management of cervical pregnancy has been tried in recent years. However, cervical suturing, vasoconstrictor injection, or cervical ballooning was frequently used as an ancillary measures in those procedures in most of the previous studies. We report two cases of cervical pregnancy that were successfully treated with preoperative uterine artery embolization and removal of gestational material without ancillary procedures. Our therapeutic modality seems to be safe and effective for conservative management of cervical pregnancy.

Key Words : Arteries; Embolization, Therapeutic; Pregnancy, Ectopic; Hemorrhage

Ki Young Ryu, Seung Ryong Kim*,
Sam Hyun Cho*, Soon-Young Song†

Department of Obstetrics and Gynecology,
Department of Radiology¹, College of Medicine,
Kwandong University, Myongji Hospital, Koyang;
Department of Obstetrics and Gynecology*,
College of Medicine, Hanyang University, Seoul,
Korea

Received : 29 September 2000
Accepted : 12 January 2001

Address for correspondence

Ki Young Ryu, M.D.
Department of Obstetrics and Gynecology,
Myongji Hospital, 697-24 Hwajung-dong,
Dukyang-gu, Koyang 412-270, Korea
Tel : +82.31-962-6900, Fax : +82.31-969-0500
E-mail : ryuky@mail.kwandong.ac.kr

*Case 1 has been reported in Korean J Obstet
Gynecol 2000; 43(5): 936-940 [Article in Korean]
and republished in English with permission from
The Korean Association of Obstetricians and Gynecologists.

INTRODUCTION

Cervical pregnancy is a rare form of ectopic gestation. The incidence varies from 1:2,400 to 1:50,000 in the United States (1). To preserve fertility, many conservative procedures have been tried. Angiographic embolization of uterine artery has been used for the control of intractable obstetric hemorrhage of uterine atony in recent years. This procedure has been also tried for cervical pregnancy before and after cervical evacuation for conservative management. However additional procedures such as hemostatic suture, local injection of vasopressin, Foley catheter ballooning, or rollerball ablation were added to manage cervical bleeding (2-6). A MEDLINE search from 1966 to December 1999 using the search terms "cervical pregnancy" and "uterine artery embolization" found only 11 cases.

In this report, we present our successful experiences with preoperative embolization of uterine artery and evacuation without ancillary procedure.

CASES REPORTS

Case 1

A 35-yr-old woman, gravida 5, para 2-0-2-2, presented with amenorrhea for 7 weeks and painless vaginal spotting for 4 weeks. According to her obstetric history, she had undergone induced abortion for early pregnancy 10 yr before and two term deliveries by Cesarean section 9 and 2 yr before, respectively. After the last delivery, she had another induced abortion for early pregnancy. Her husband had had vasectomy 2 yr before. Her vital signs were stable and findings from general physical examination were unremarkable except anemic conjunctiva. Gynecological examination revealed a slightly enlarged uterus and no adnexal masses. The uterine cervix was voluminous, soft, and engorged. There was a little bleeding from the cervical os. The hematocrit was 34.1% and the urine β -hCG was positive. Pelvic ultrasound showed a 24.9 mm-sized gestational sac located within endocervical canal. There was no fetal pole or yolk sac. In the uterine cavi-

ty, there were no endometrial signs of an intrauterine pregnancy.

According to her gynecologic examination and sonographic results, she was too late to get any medical treatment. We considered the conventional method; D&C followed by Foley catheter tamponade but often caused re-bleeding. Therefore, we decided to perform preoperative embolization of uterine arteries before evacuation. We had informed consent from the patient and her family through the enough discussion and information.

On admission, the patient was started on 1 g of cefmetazole intravenously. Under local anesthesia, selective uterine artery angiograms were obtained. Uterine arteries showed hypertrophic changes. Embolization with absorbable gelatin sponge particles of 1-2 mm diameter (Gelfoam; Upjohn, Kalamazoo, Mich) soaked in 1 g of cefmetazole and nonionic contrast medium (iopromide [Ultravist 370]; Schering, Berlin, Germany) was performed until blood flow ceased.

After the procedure, she complained of low back and abdominal pain. Although her vital signs were stable, we decided to postpone the evacuation. As the pain was persistent, 10 mg of nalbuphine hydrochloride (Nubain) was injected intramuscularly and 10 mg of morphine hydrochloride diluted in 1 L of 5 DW were infused intravenously. For prevention of infection, 2 g of cefmetazole and 160 mg of Tobramycin per day were started.

Sixteen hours after the embolization, curettage of the cervical pregnancy was performed under general anesthesia. During the evacuation, cervical canal was measured as 5 cm in length and felt like hollow cavity. The estimated blood

loss was about 50 mL. After surgery, scant cervical bleeding continued, which, however, did not require any further intervention.

On the first postoperative day, hematocrit was 31.8% and the pain was decreased. On the third day, the parenteral administration of opioid and antibiotics were switched to oral agents for further 7 days. Ultrasonography showed multiple hyperechoic spots in endometrial lining and a normal cervical contour. The patient was discharged on the fourth postoperative day with minimal vaginal spotting which disappeared 7 days later. Pathologic examination of the evacuation specimen confirmed the products of conception with a cervical implantation site. She started a menstruation 50 days after the procedure.

Case 2

A 40-yr-old woman with gravida 4, para 2-0-1-2 was admitted to our department with amenorrhea for 6 weeks. She was diagnosed as cervical ectopic pregnancy at private clinic. Obstetric history revealed two Cesarean deliveries and one induced abortion due to early pregnancy. Her medical and surgical histories were unremarkable. The patient complained of painless dark vaginal spotting for a week. On physical examination, vital signs were stable. Her abdomen was soft and nontender. In pelvic examination, cervix was normal in contour with closed external os. Uterus was slightly enlarged and no adnexal masses were palpated. Hematocrit was 38.9% and serum β -hCG was 37,827 mIU/mL. On transvaginal sonography, the endometrium was 10.7 mm thick



Fig. 1. Transvaginal ultrasonography scan of the uterus shows 18.2 mm-sized gestational sac in endocervix. Yolk sac is also noted. The arrow indicates urinary bladder.

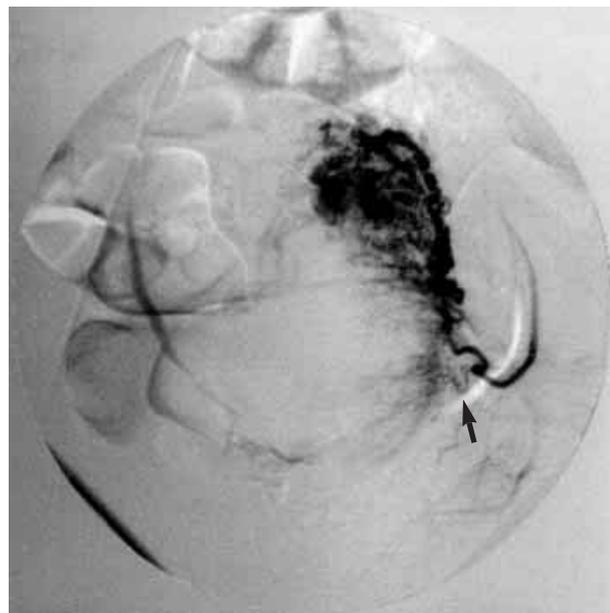


Fig. 2. A supraselective angiography shows hypertrophied and tortuous left uterine artery. Increased vascularity at lower uterine segment and cervical area is noted (arrow).



Fig. 3. A scan of transvaginal ultrasonography obtained three days after the evacuation demonstrates normal uterine cervix without residue of gestational material (arrow).

and gestational sac of 18.2 mm in diameter was visualized within the cervical canal (Fig. 1).

On admission, the patient was started on 1 g of cefmetazole intravenously and underwent a bilateral uterine artery embolization with Gelfoam pledgets (Fig. 2). After the procedure, she complained of low abdominal pain. The pain control and prevention of infection were done as in Case 1. Cervical curettage was performed 10 hr after the embolization under general anesthesia. The estimated blood loss was about 30 mL. After the evacuation, minimal vaginal bleeding continued but ancillary procedures were not needed. On the first postoperative day, hematocrit was 36.2% and serum β -hCG level decreased to 8,630.5 mIU/mL. The patient was discharged in the evening of the first postoperative day. Three days after the curettage, ultrasonography showed a normal contour of uterine cervix (Fig. 3). Pathologic examination of the evacuation specimen confirmed the products of conception. She started a menstruation 30 days after the procedure.

DISCUSSION

Cervical pregnancy may cause life-threatening persistent bleeding. Recently, the use of transvaginal ultrasound has dramatically improved diagnostic accuracy to detect early stage of cervical pregnancies and thus allows conservative treatments that include both medical and surgical methods. In medical treatment, various chemotherapeutic agents have been used, either alone or in combination. For example, suc-

cessful outcomes have been reported with intra-amniotic instillation of potassium chloride (6) and systemic or local injection of methotrexate (7). For the conservative surgical treatments, uterine arterial embolization was used to control hemorrhage before and after the evacuation (2-6). Lobel et al. (2) performed preoperative uterine artery embolization, cervical chromic suturing, local injection of dilute vasopressin and then cervical evacuation. Simon et al. (3) and Pattinson et al. (4) performed preoperative uterine artery embolization and evacuation followed by cervical ballooning for internal compression. Eblen et al. (5) managed patients with methotrexate injection, preoperative embolization of anterior division of hypogastric artery, curettage, and then rollerball ablation. In those reports, the effects of preoperative uterine artery embolization for controlling postoperative hemorrhage were equivocal.

Gelfoam provides temporary occlusion of the vessel for 2 to 6 weeks. Gelfoam embolization considerably reduces the circulation in the catheterized region for about 24 hr (3). Because there have been only a few reports on this procedure for cervical pregnancy, the complications from this procedure have not been clearly revealed. However, from the experience of selective embolization of uterine artery for non-surgical management of uterine myoma (8), complications from pelvic embolization procedures fall into three categories: complications from angiography, pelvic infection, and ischemic phenomena. These include groin hematoma, acute endometritis, tubo-ovarian abscess, transient or permanent amenorrhea. In addition, all patients experienced some degree of crampy pelvic pain after the embolization procedure. The peak of the pain episode typically occurred on the first day, diminished rapidly thereafter, and usually resolved within a week (8). In our cases, the prevention of infection was started before the embolization procedure and pain control was started immediately after the embolization procedure. So, there was no such complications except for pain that was resolved easily by analgesic medications.

On the third postoperative day, uterine ultrasound scan showed multiple echogenic spots in the endometrial lining. It was not clear whether it was usual findings after the curettage or ischemic variation of endometrium after the uterine embolization.

This procedure may have advantages over commonly used treatment that is medication or Foley catheter insertion after the curettage for management of cervical pregnancy. These include shorter hospital stay, less laboratory follow up, outpatient check ups and prevention of hemorrhage.

Contrary to conventional practices, our intervention avoids medication side effects and prevents from additional procedure due to its failure. Additionally, patients undergoing this method have a significant decreased time to return to normal activities and reconstruct to normal contour of the uterine cervix.

As compared to internal compression of cervix after the

evacuation, our intervention may avoid massive bleeding during or after the curettage. And it may relieve discomfort from internal device with possible reoperation.

Our procedure has some problems that need experienced interventional radiologist, setting of the instruments, complexity of the treatment, and complications of the intervention itself.

In conclusion, preoperative embolization of uterine arteries was proven to be effective for controlling hemorrhage even without ancillary measures for cervical hemostasis. Despite the obvious advantages of uterine artery embolization in our cases, it may not always be the appropriate treatment choice. It is therefore important to approach each patient individually, based on gestational age at presentation, desire for future fertility, response to medical treatments and in-depth counseling as to the risks and benefits of the procedure.

REFERENCES

1. Parente JT, Ou CS, Levy J, Legatt E. *Cervical pregnancy analysis: a review and report of five cases. Obstet Gynecol 1983; 62: 79-82.*
2. Lobel SM, Meyerovitz MF, Benson CC, Goff B, Bengtson JMB. *Preoperative angiographic uterine artery embolization in the management of cervical pregnancy. Obstet Gynecol 1990; 76: 938-41.*
3. Simon P, Donner C, Delcour C, Kirkpatrick C, Rodesch F. *Selective uterine artery embolization in the treatment of cervical pregnancy: two case reports. Eur J Obstet Gynecol 1991; 40: 159-61.*
4. Pattinson HA, Dunphy BC, Wood S, Saliken J. *Cervical pregnancy following in vitro fertilization: evacuation after uterine artery embolization with subsequent successful intrauterine pregnancy. Aust N Z J Obstet Gynaecol 1994; 34: 492-3.*
5. Eblen AC, Pridham DD, Tatum CM Jr. *Conservative management of an 11-week cervical pregnancy. A case report. J Reprod Med 1999; 44: 61-4.*
6. Frates MC, Benson CB, Doubilet PM, DiSalvo DN, Brown DC, Laing FC, Rein MS, Osathanondh R. *Cervical ectopic pregnancy: results of conservative treatment. Radiology 1994; 191: 773-5.*
7. Farabow WS, Fulton JW, Fletcher V Jr, Velat CA, White JT. *Cervical pregnancy treated with methotrexate. N C Med J 1983; 44: 91-3.*
8. Goodwin SC, McLucas B, Lee M, Chen G, Perrella R, Vedantham S, Muir S, Lai A, Sayre JW, DeLeon M. *Uterine artery embolization for the treatment of uterine leiomyomata midterm results. J Vasc Interv Radiol 1999; 10: 1159-65.*