Outcome of arterial embolization of uterine leiomyoma: case report

C.E. Bonduki[1], C. Yokohama[2], J.M. Soares Jr.[1], E.L. Alves da Motta[1], M.J.B.C. Girão[1], E.C. Baracat[3]

[1]Department of Gynecology, Federal University of São Paulo, [2]Department of Imagery, Federal University of São Paulo, [3]Department of Obstetrics and Gynecology, Federal University of São Paulo, São Paulo (Brazil)

Summary

Objective: To describe the outcomes after uterine artery embolization treatment of leiomyoma. Design: Case report. Setting: Department of Gynecology - Federal University of São Paulo. *Patient*: a 34-year-old woman with a diagnosis of leiomyoma for two years. Intervention: embolization of uterine arteries with 500 to 700-μ diameter polyvinyl alcohol particles. Main outcome measure: pregnancy and delivery. *Results:* After embolization, the follow-up revealed a good clinical response with significant reduction in uterus and leiomyoma volume. Also, the patient became spontaneously pregnant, but the delivery was cesarean section due to placenta accreta.. *Conclusion:* Regardless of arterial embolization results for controlling uterine bleeding, this procedure might have some consequences on pregnancy outcome.

Key words: Embolization; Uterine leiomioma; Pregnancy; Complication.

Introduction

Ravina and collegues started to use embolization of the uterine arteries in cases of uterine leiomyoma to reduce size and vascularization of the tumors in the preoperative period of myomectomies or hysteroectomies, thus making the surgical procedure easier and avoiding more bleeding. However, they observed control of uterine bleeding, pelvic pain and other compressive symptoms. Also, the group reported a significant reduction in uterus and myoma size after the procedure and, therefore, no supplementary surgical treatment was necessary [1].

There was some consensus and guidelines regarding embolization of uterine arteries with indications, contraindications, used techniques and materials, establishing this procedure as another option for conservative leiomyoma treatment. Also, some authors studied more than 80,000 patients in over 250 centers where embolization of uterine arteries is carried out, and reported that clinical control occurred in 85% to 95% of the cases. Reduction in uterus volume on average reaches 60% to 70% of the initial volume and volume of leiomyoma nodules decreases by 40% to 60% [2-4].

Complications with arterial embolization in the uterus are infrequent, not exceeding a 1% incidence and may be directly related to catheterization. Initially there was apprehension regarding arterial embolization in patients who wished to maintain fertility because of fear of eventual complications, such as massive infection after necrosis or ovarian insufficiency [5, 6]. Maintenance of fertility is the main concern of a great number of patients with this disease [4]. Therefore pregnancy outcomes related to this technique are important.

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Case Report

The first visit occurred on 11/10/2000: a 34-year-old patient, yellow race, with uterine leiomyoma of two years duration was diagnosed on routine examination. During follow-up there was an increase in the number and size of the leiomyomas.

Her menstrual cycles had been normal since menarche, without modifications of their characteristics. The patient denied menstrual colic or compressive symptoms. She was nullipara and at that time had no desire to become pregnant but wanted to treat the disease in order to maintain a future reproductive capacity.

The patient was advised to use leuprorelin from February to June 2000, and in August 2000 a surgical videolaparoscopy was performed to carry out a myomectomy, but without success due to difficulties and risk. The patient was then referred for arterial embolization.

On nuclear magnetic resonance the uterus volume was 385 cm^3 with multiple intramural myomata. Hysteroscopy showed an increased endometrial cavity without other alterations.

On December 1, 2000 embolization of the uterine arteries was performed with 300-500-μ polyvinyl alcohol (PVA) particles, without intercurrent events. The patient progressed well and was discharged from the hospital after 24 h. Routine follow-up was every three months. Nine months after embolization the uterine volume was 132 cm^3 (reduction of 65%) and the myomata was reduced on average to 50% of the original volume. These radiological aspects remained stable until the second year of follow-up.

In July 2004 (three and a half years after embolization) uterine volume and size of myomata remained stable and the patient became spontaneously pregnant. Pregnancy developed normally without increase in myoma size and without impairment of the fetoplacental compartment. In April 2005, the patient was at 39 weeks' gestation and a cesarean section was performed. During delivery, placenta accreta was diagnosed and a subtotal hysterectomy

was performed without intercurrent events. Weight of the newborn was 3,370 g. After one year of delivery, the patient returned to the outpatient office for an appointment. She had normal uterine bleeding, and the pelvic sonograph exam showed a uterus with normal volume and no signals of leiomyoma.

Discussion

Treatment of uterine leiomyoma with arterial embolization has been performed for more than 15 years, and is recognized as an additional therapeutic option for this malady [7].

In the beginning, this treatment was indicated for patients with a defined offspring, since the real impact of arterial embolization on fertility was not known. The eventual risk or massive uterine necrosis or infection with a risk for the need of hysterectomy was feared. The occurrence of endometritis or pyometritis is rare, not exceeding 1% of the cases and is associated with the use of very small (150 to 250 μ) PVA particles [8, 9]. The need for hysterectomy after embolization may occur in one of every 700 treated cases. The PVA particles in embolization exhibited an adequate tissue reaction in other organs [10].

This technique has been improved and complications have also decreased since the first description of arterial embolization for uterine leiomyoma. In fact, a greater particle size is advocated, usually above 500 μ to avoid other health problems with this procedure [6]. Another change was the ideal endpoint of introduction of the particles. Up to some years ago the uterine artery trunk was blocked, however, presently the circulation of myomata is blocked without impairing the uterine trunk [5]. In view of these data it has been possible to begin this treatment in patients who wished to maintain reproductive life, especially when associated with infertility and not susceptible to another conservative surgical treatment (in cases where on radiologic evaluation myomectomy presents a risk or may impair the uterus) or when there is failure of a previous conservative treatment [11, 12].

At present, several descriptions of pregnancy series and deliveries in women submitted to arterial embolization are to be emphasized, showing that no increase of complications occurs during pregnancy, delivery and in the puerperium [5-8]. However, it is important to emphasize that complications are possible after embolization, including during the pregnancy. The case of accreta might be related to the embolization procedure.

Pathologically adherent placenta occurs when there is a defect of the decidua basalis, resulting in abnormally invasive implantation of the placenta into the substance of the uterus. As a result, there is no clear plane between the placenta and the underlying uterus to which it is implanted. The extent of adherence and invasion of the placenta varies from the superficial (accreta), into the myometrium (increta) and right through the myometrium to breach the serosa or beyond (percreta), involving adjacent structures such as the bladder. The principal risk for this condition is massive obstetric hemorrhage at delivery, particularly when attempts are made to separate the placenta in unrecognized cases. Previous myomectomies and uterine curettage (usually in the context of pregnancy terminations) could also predispose to this, but by far, cesarean section is the leading cause. In addition, the pregnancy outcome evaluation of patients who required uterine devascularization, i.e. bilateral uterine artery ligation, and either bilateral utero-ovarian ligament or suspensory ligament of ovary ligation in cases of persistent hemorrhage during the delivery, showed that 31% of the cases presented new hemorrhage in the next pregnancy due to placenta accreta [13].

One explanation of this case may be related to the damage of the decidua basalis (vascular insufficiency), which allows placental invasion into the myometrium. The barrier function of decidua is absent and the invasive trophoblasts may invade the myometrium [13].

In conclusion, the most important issue of this case is to call the attention of physicians to pregnancy outcome (placenta accreta) after embolization of the uterine arteries.

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Address reprint requests to:
C.E. BONDUKI, M.D.
Rua Domingos Leme, 609 apto 71
CEP 04510-040
e-mail: cbonduki@uol.com.br