International Journal of Reproduction, Contraception, Obstetrics and Gynecology
Dharmarha N et al. Int J Reprod Contracept Obstet Gynecol. 2020 Nov;9(11):4713-4715
www.ijrcog.org
pISSN 2320-1770 | eISSN 2320-1789

DOI: http://dx.doi.org/10.18203/2320-1770.ijrcog20204840

Case Report

A case of natural conception after uterine artery embolization

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Received: 28 July 2020
Revised: 19 September 2020
Accepted: 29 September 2020

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ABSTRACT

Our objective of this case report is to highlight the value of uterine artery embolization as a means of conservative management of uterine arteriovenous malformation in patients wanting preservation of fertility. A 24 years old woman, $P_1L_1A_2$ presented with complaints of heavy menstrual bleeding for two months. She had a previous term caesarean section in 2014, followed by curettage twice, in 2016 and 2017. The first episode of heavy bleeding occurred two months after the last curettage. Previous menstrual cycles were regular with moderate flow. The patient was started on combined oral contraceptive pills but she did not respond to medical treatment. Transvaginal scan and Doppler showed uterine AVM and endometrial thickness of 7.7mm. Beta hCG was less than 1.2. Digital subtraction angiography and bilateral uterine artery embolization was done. Patient conceived spontaneously a year after the procedure and delivered a healthy baby at term by elective caesarean section. Angiography and uterine artery embolization has revolutionized the management of AVM and contrary to popular belief, the pregnancy outcome after UAE was good.

Keywords: Arteriovenous malformation, Menorrhagia, Uterine artery embolization

INTRODUCTION

Uterine AVMs are formed by abnormal proliferation of vascular channels. Blood flow is slow and under low pressure. AVMs may be congenital or acquired. Congenital AVM is a rare condition and is formed by anomalous differentiation or development of capillary plexus. There are multiple abnormal connections between arteries and veins and multiple feeding arteries, draining veins, and intervening nidus. Acquired AVMs are more common and occur due to trauma, malignancy or infection. These are multiple small AV fistulas between intramural arterial branches and myometrial venous plexus and they appear as a vascular tangle. They comprise of single or bilateral feeding arteries, not supplied by extrauterine arteries and nidus is absent.

The majority of reported cases are acquired, most commonly after vigorous uterine curettage or after uterine surgery. The usual presentation is abnormal uterine bleeding. Definitive diagnosis is by pelvic angiography but ultrasound Doppler studies and magnetic resonance imaging have been shown to be of value.[1]

The purpose of our case report is to emphasize the role of uterine artery embolization as a conservative approach for treatment of uterine arterio-venous malformations in patients desirous of future fertility.[2] Our report also highlights the fact that the chances of a healthy,

successful term pregnancy following this approach are good.[3]

Herein, we report a case of natural conception after uterine artery embolization (UAE) done for uterine AVM. The patient delivered a healthy baby at term.

CASE REPORT

A woman aged 24 years, $P_1L_1A_2$ presented with complaints of two consecutive episodes of prolonged heavy menstrual bleeding, each lasting for 10-15 days needing hospitalization and blood transfusion.

Obstetric history

First pregnancy was in 2014, girl child delivered by full term caesarean section in view of non-progress of labour.Second pregnancy was in 2016. Medical termination of pregnancy followed by curettage was done at second month of gestation. Third pregnancy (2017) was a missed abortion at six weeks for which curettage was done. The first episode of heavy bleeding occurred two months after the last curettage. Previous menstrual cycles were regular with moderate flow. She had no chronic medical illnesses or family history of chronic medical illness or any bleeding disorder.

Diagnosis and management

Presence of retained products and gestational trophoblastic disease was ruled out by presence of non-pregnant serum β-hCG value. She was put on continuous combined contraceptive pills but they were ineffective in controlling the bleeding. Transvaginal sonography with Doppler showed serpiginous tubular anechoic structures in myometrium with tangle of vessels with multidirectional high velocity flow suggestive of arteriovenous malformation. Digital subtraction angiography with superselective uterine artery embolization of both uterine arteries till distal bifurcating branches with 300-400 µm polyvinylalcohol particles was done. Post-embolization Doppler showed decreased vascularity in anterior myometrium.

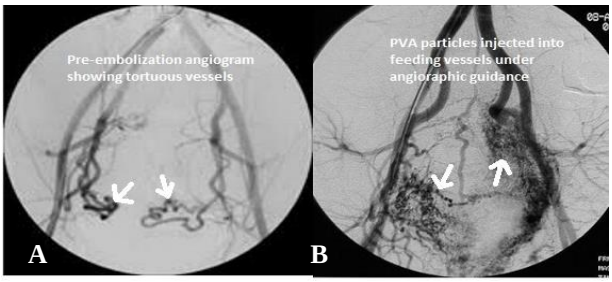

Figure 1: Pre and post embolization angiograms showing A) tortuous vessels and B) PVA particles injected into the feeding vessel under angiographic guidance.

Outcome

Patient conceived spontaneously after a year. A healthy female baby was delivered at 39 weeks by planned caesarean section. Intraoperative and post-operative period was uneventful. Both mother and baby are well.

DISCUSSION

Uterine arteriovenous malformation (AVM) is a rare condition. True incidence is unknown. It can be congenital or acquired. The majority of reported cases are acquired, most commonly after vigorous uterine curettage or after uterine surgery. This finding emphasizes the importance of avoiding vigorous curettage as a method of preventing the formation of arteriovenous malformation.

The usual presentation is abnormal uterine bleeding, most commonly an arterial bleed. However, a dilatation and curettage done for a mistaken diagnosis can cause catastrophic haemorrhage.

Ultrasound is used for diagnosis as well as to demonstrate the efficacy of treatment and resolution of AVMs within 24 hours of embolization. However, angiography is the gold standard for diagnosis.[1] Other important imaging modalities include pelvic magnetic resonance imaging and computed tomography angiography. A possibility of enhanced myometrial vascularity/ arteriovenous malformation should be considered in patients with early pregnancy failure and persistent bleeding, and they should be evaluated by ultrasound.[4] Transcatheter embolization has become the initial treatment option for patients who wish to retain fertility or to avoid invasive procedures. Numerous cases of transcatheter embolization providing adequate symptomatic relief have been documented with minimal side effects or complications.[5] There is a theoretical chance of subfertility and increased chance of caesarean delivery, fetal growth restriction, miscarriage, placenta accreta, preterm delivery and abruption. However, Uterine transarterial embolization does not have a significant effect on the ovary in most women younger than age of 45 years.[2]

The first case of successful pregnancy following UAE was reported by Chapman and Lutz in 1985.[6] Recently, PUBMED data from 21 successful pregnancies indicates that outcomes are not compromised after UAE.[3] Definitive management by using embolization therapy is being increasingly utilised in symptomatic AVM. Hyper-selective technical procedures further aim at reducing treatment related morbidity and preserving the reproductive capacity with a favourable pregnancy outcome.

Ours is a case of a 24 year old lady, $P_1L_1A_2$, with a history of curettage done four months back for a missed abortion. She presented to us with complaints of heavy menstrual bleeding for the past two cycles, each lasting

for 10-15 days and requiring hospitalization each time. The first such episode occurred two months after the curettage. Her past menstrual cycles were regular with moderate flow. Combined oral contraceptives were given to the patient for symptomatic relief but the patient did not respond to medical management.

Our differential diagnoses were; retained products of conception and gestational trophoblastic disease. On investigating, we could rule out the above two conditions as the serum beta hCG was at non pregnant levels. Diagnosis of uterine AV malformation was confirmed on a transvaginal scan done along with a Doppler ultrasound Digital subtraction angiography is however the gold standard for diagnosis of AV malformation.

Medical management with estrogens and progestins, danazol, prostaglandin F2 alpha, and methylergonovine maleate may be tried in milder cases. In severe cases, surgical management is preferred, for example embolotherapy, coagulation of AVM under hysteroscopic guidance, surgical removal of AVM, laparoscopic bipolar coagulation of uterine vessels, ligation of the uterine artery, and as a last resort, hysterectomy. Transareterial embolization is now considered the primary treatment in hemodynamically unstable patients.

The patient was planned for digital subtraction angiography with superselective uterine artery embolization till the distal bifurcating branches as she desired preservation of fertility.

The patient conceived spontaneously two months after the procedure and carried the pregnancy uneventfully till term. A healthy female baby was delivered at 39 weeks by a planned caesarean section. Both mother and baby are well.

Thus our case report, along with various other studies supports that successful pregnancy outcome is achievable after uterine artery embolization for arteriovenous malformation.[2,7]

CONCLUSION

Uterine arterio-venous malformation is a rare condition. The true incidence is difficult to determine as many cases go undiagnosed. A high index of suspicion is required on USG. Cases usually present with abnormal uterine bleeding and can lead to torrential haemorrhage. Dilatation & curettage done for a mistaken diagnosis can cause catastrophic haemorrhage. Angiography with UAE has revolutionized the management, with superselective embolization having lesser side effects. Overall pregnancy outcome is good after uterine artery embolization for arteriovenous malformation.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

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Cite this article as: Dharmarha N, Hajari A, Konda A, Reddy VM. A case of natural conception after uterine artery embolization. Int J Reprod Contracept Obstet Gynecol 2020;9:4713-5.