

P R A C E K A Z U I S T Y C Z N E
położnictwo

Uterine artery embolization using gelatin sponge particles performed due to massive vaginal bleeding caused by ectopic pregnancy within a cesarean scar: a case study

Opis zabiegu embolizacji tętnic macicznych przy użyciu spongostanu przeprowadzonej u pacjentki z objawami masywnego krwotoku z powodu ciąży zlokalizowanej w bliźnie po cięciu cesarskim – analiza przypadku klinicznego

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Abstract

A pregnancy located within a cesarean scar is the rarest form of ectopic pregnancy.

We present a case of a 34-year-old woman with a history of one cesarean section (gravida 2, para 1) admitted to the hospital at 9 weeks of gestation due to vaginal bleeding, initially diagnosed as a missed abortion. During the hospitalization spontaneous abortion took place, and the patient was qualified for dilatation and curettage. After the procedure massive vaginal bleeding occurred, a cesarean scar pregnancy was diagnosed, and uterine artery embolization (UAE) using gelatin sponge particles was performed. The treatment was successful.

Our case shows that UAE might be a life-saving procedure in cesarean scar pregnancy hemorrhages. Absorbable properties of gelatin sponge particles reduce the risk of adverse effect on fertility.

Keywords: **ectopic pregnancy / uterine artery embolization / haemorrhage bleeding / cesarean scar /**

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Streszczenie

Ciąża zlokalizowana w bliźnie po cięciu cesarskim jest najrzadszą postacią ciąży pozamacicznej.

W prezentowanej pracy analizujemy przypadek 34 letniej kobiety ciężarnej, stan po cięciu cesarskim, hospitalizowanej z powodu objawów poronienia. W czasie hospitalizacji z powodu nasilenia objawów pacjentka została zakwalifikowana do łżeczki jamy macicy. Po zabiegu wystąpił masywny krwotok. Wstępna diagnoza została zweryfikowana i rozpoznano ciążę zlokalizowaną w bliźnie po poprzednim cięciu cesarskim.

W celu zachowania macicy oraz zdolności prokreacji, pacjentce zaproponowano embolizację tętnic macicznych (UAE) przy użyciu spongostanu. Zabieg wykonano, uzyskując zahamowanie krwotoku.

Analizowany przypadek przedstawia możliwość użycia UEA jako procedury ratującej życie w przypadku wystąpienia masywnego krwotoku z powodu ciąży zlokalizowanej w bliźnie po cięciu cesarskim.

Słowa kluczowe: **ciąża pozamaciczna / embolizacja / tętnica maciczna / krwotok /
/ blizna po cieceu cesarskim /**

Introduction

Cesarean scar pregnancy is the rarest form of ectopic pregnancy. The product of conception implants in the myometrium in the region of the previous cesarean section scar. The incidence of cesarean scar pregnancies is estimated between 1/1800 and 1/2250 of all pregnancies [1, 2] and has been steadily increasing due to substantial growth in the rates of cesarean sections. Cesarean scar pregnancy is a life-threatening condition that may lead to uterine rupture and massive bleeding. Uterine artery embolization (UAE) may be used as treatment complementary to curettage, especially in young women who want to maintain fertility [1-5].

We report a case of severe hemorrhage following dilatation and curettage performed due to cesarean scar pregnancy, that was successfully treated with UAE.

Case report

A 34-year-old woman (gravida 2; para 1) was admitted to the hospital at 9 weeks 6 days of gestation due to sudden vaginal bleeding and abdominal pain. The patient had a history of one cesarean section. Upon admission the physical examination showed a slightly enlarged and mild tender uterus. The cervix was closed. Transvaginal ultrasound examination showed a gestational sac (40.5 mm) located in the isthmic region of the uterine cavity with a single embryo (crown-rump length: 18.4 mm - 7 weeks 6 days) with no cardiac activity. There was no fluid in the cul-de-sac. A missed abortion was diagnosed. The laboratory tests showed: hemoglobin (HGB) level of 12.7 g%, a hematocrit (Ht) of 35.4%, a total human chorionic gonadotropin (hCG) level of 4530 mIU/ml. During hospitalization a spontaneous abortion took place and the patient was qualified for dilatation and curettage (D&C). During the procedure excessive blood loss (300 ml) occurred, the bleeding significantly decreased after the administration of uterotonic drugs. Three hours later massive vaginal bleeding was observed. Second transvaginal ultrasound examination revealed an empty uterine cavity and a hemorrhagic mass (36 x 24mm) within the cesarean scar (Fig. 1).

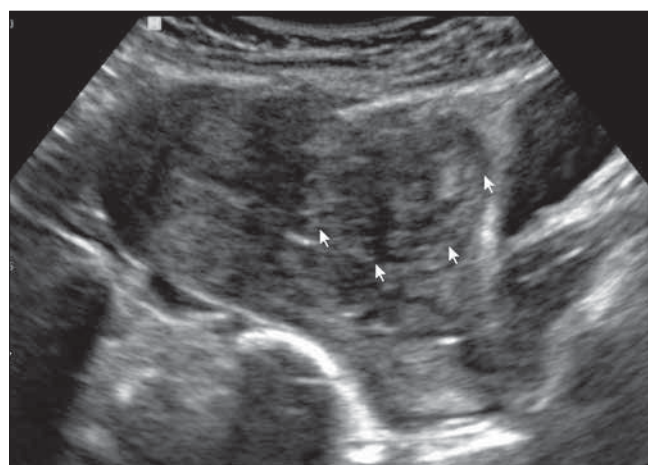


Figure 1. Transvaginal ultrasound scan performed after D&C demonstrated an empty uterine cavity and a hemorrhagic mass within the cesarean scar.

Color Doppler function demonstrated strong circular perfusion in this region. Due to massive hemorrhage and laboratory tests results (HGB 8,5g%, Ht 24,5%), 3 units of red blood cells concentrates were substituted and hysterectomy was proposed. Since the patient expressed a wish to preserve fertility, she was qualified for UAE with Gelatin sponge particles.

Uterine arteries were successfully catheterized with a 5F Cobra catheter. On angiograms, extravasation of contrast media was visible (Fig.2). Both arteries were embolized with Gelatin sponge material (torn into strips and rolled up into 'torpedoes') which is a temporary agent. Gelatin sponge dissolves in 1-6 weeks. That is why this kind of embolic material is especially useful in women who wish to retain fertility after UAE.

The final uterine artery angiography confirmed the effectiveness of the procedure (Fig. 2) – both uterine arteries were occluded.

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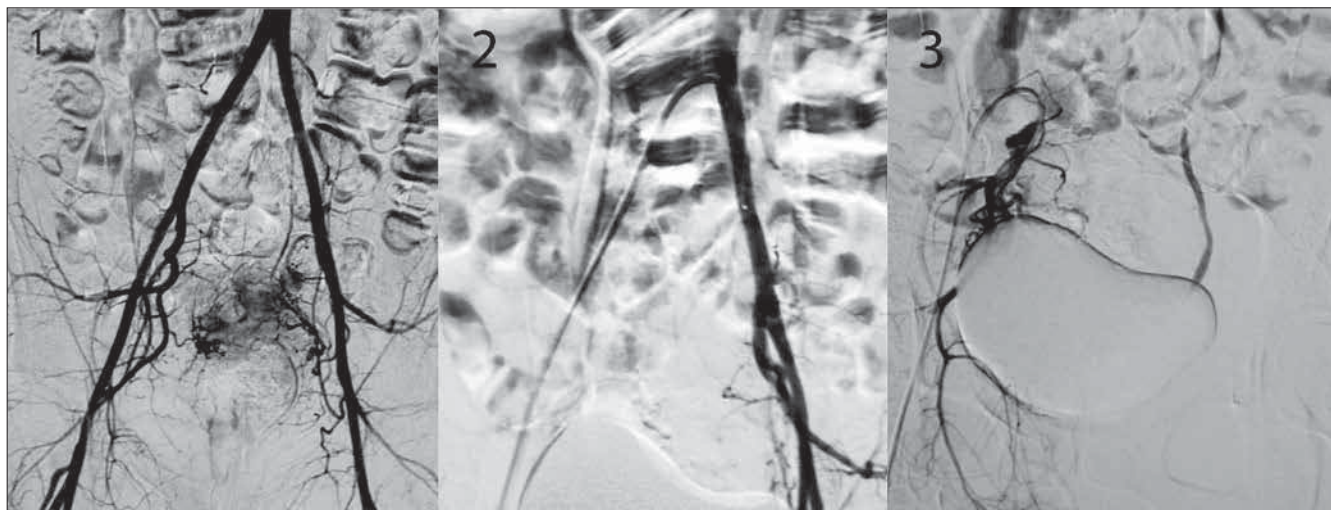


Figure 2. Angiograms of the uterine arteries. Extravasation of contrast media was visible before UAE (1). After UAE both uterine arteries were occluded (2, 3).

Two weeks after the procedure the patient had no abdominal pain, only minimal bleeding and the serum level of hCG was 15mIU/ml. Three weeks after UAE serum hCG level had normalized and the bleeding stopped completely. The final transvaginal ultrasound examination demonstrated an empty uterine cavity and no sonographic abnormalities in the region of the cesarean scar (Fig. 3). At present the patient is pregnant and the pregnancy is developing normally.

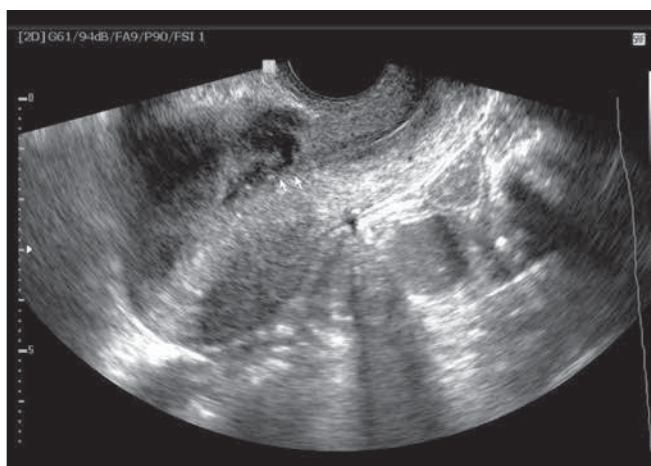


Figure 3. Three weeks after UAE a transvaginal ultrasound examination demonstrated an empty uterine cavity and no sonographic abnormalities in the region of the cesarean scar.

Discussion

Cesarean section is a risk factor of ectopic pregnancy, placental pathology and massive bleeding in future pregnancies [6]. Its etiology remains only partially understood. In case of a cesarean scar pregnancy, the product of conception may penetrate the myometrium through a microscopic dehiscence of cesarean section scar [7].

Risk factors of intramural pregnancy include: previous uterine surgery, cesarean delivery, curettage, myomectomy, metroplasty, hysteroscopy and manual removal of the placenta [3, 7, 8, 9]. Ectopic pregnancy within a cesarean scar might lead to uterine rupture and severe uncontrollable vaginal or abdominal bleeding. In many cases hysterectomy is required as a life-saving procedure. Therefore, correct diagnosis should be made as early as possible, before massive hemorrhage and hypovolemic shock develop. The proposed ultrasound diagnostic criteria for a scar pregnancy are: an empty uterine cavity, an empty cervical canal, development of the gestational sac in the anterior part of the isthmic portion of the uterus, circular blood flow around the gestational sac. The criterion differentiating a scar pregnancy from cervico-isthmic pregnancy is the absence of physiological myometrium between the bladder and gestational sac in scar pregnancies [2-4]. Diagnosis of cesarean scar pregnancy is easier in the first trimester. In the second and third trimester it may be misdiagnosed as a lowly implanted intrauterine pregnancy, cervical pregnancy or miscarriage in progress [11, 12]. Magnetic resonance imaging can be used in case of diagnostic uncertainty after the ultrasound examination [9, 12, 13].

The time interval from the last cesarean section is not defined as a risk factor of a cesarean scar pregnancy. In the literature the interval period ranges from six months to twelve years. No significant interactions between the number of cesarean deliveries and the risk of cesarean scar pregnancy were found [11, 12, 18]. In our case the patient had a history of one cesarean section, six years previously.

Many invasive and conservative treatment options of cesarean scar pregnancies are described in the literature. Some authors suggest minimally invasive procedures such as hysteroscopy, laparoscopy or D&C as fertility preserving methods of treatment [11, 14, 15, 16, 17]. A widely described conservative treatment option is local and/or systemic administration of methotrexate (MTX), followed by D&C. This method may help to avoid unnecessary surgical procedures and preserve fertility. However, cases where laparotomy was performed after treatment with MTX due to excessive bleeding were reported as well.

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Expectance treatment is not recommended because of the risk of uterine rupture. Despite an increasing number of cesarean scar pregnancies, no universal guidelines for the management and treatment of a scar pregnancy have been proposed. Termination of pregnancy in the first trimester is strongly recommended in order to prevent life-threatening complications [7, 18, 19, 20, 21, 22, 23, 24].

In our case the cesarean scar pregnancy was initially misdiagnosed as a missed abortion. D&C resulted in massive vaginal bleeding. Ultrasound reevaluation led to the diagnosis of a cesarean scar pregnancy and qualification for UAE. The management we introduced was effective.

Uterine artery embolization is widely recommended as a prophylactic treatment preceding systemic methotrexate therapy [16, 17]. Our case illustrates a successful use of UEA using gelatin sponge particles in the management of a severe cesarean scar pregnancy hemorrhage after D&C.

Conclusion

In conclusion, UAE using gelatin sponge particles is an effective, fertility preserving treatment option for severe ectopic cesarean scar pregnancy hemorrhages. Absorbable properties of gelatin sponge particles reduce the risk of adverse effect on fertility.

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