Available online at www.sciencedirect.com

SciVerse ScienceDirect

journal homepage: www.elsevier.com/locate/poamed

Case Report

Subsequent pregnancy following B-Lynch suture, bilateral ligation of uterine arteries, utero-ovarian arteries and internal iliac arteries due to uterine atony – A case report

Piotr Martyn[a,b], *Karolina Loewenau-Samusionek*[a,b,*], *Tomasz Waśniewski*[a,b], *Janina Lipińska*[a,b]

[a]*Department of Gynecology, Gynecological Endocrinology and Obstetrics, Clinic of Gynecology, Gynecological Endocrinology, Gynecological Oncology and Obstetrics, University of Warmia and Mazury in Olsztyn, Poland*
[b]*Department of Gynecology, Obstetrics and Gynecological Oncology, Provincial Specialist Hospital in Olsztyn, Poland*

ARTICLE INFO

Article history:
Received 13 May 2013
Accepted 13 September 2013
Available online 20 September 2013

Keywords:
Pregnancy
Uterine atony
B-Lynch suture
Uterine artery ligation
Internal iliac artery ligation

ABSTRACT

Introduction: Postpartum hemorrhage is currently the leading cause of death of birthing mothers in Poland. Uterine atony remains one of its major causes. Treatment of uterine retraction failure consists of application of B-Lynch suture, O-Leary uterine artery ligation, utero-ovarian arteries ligation and internal iliac arteries ligation.

Aim: The aim of this work was to present a case of a patient, in whom conservative surgical treatment for uterine atony allowed preserving fertility and subsequent pregnancy.

Case study: The authors report a case of a patient, in whom after cesarean delivery a postpartum hemorrhage was diagnosed during the fourth stage of labor due to uterine atony. After unsuccessful pharmacological attempts and performing dilation and curettage procedure, a decision about surgical treatment was made. During relaparotomy B-Lynch suture was applied and bilateral ligation of uterine arteries, its ovarian branches and internal iliac arteries was performed. After 19 months the patient was diagnosed with early pregnancy. During subsequent weeks uncomplicated course of pregnancy with normal fetal development was observed.

Results and discussion: Implementation of conservative surgical treatment in the course of postpartum hemorrhage allowed preserving fertility and subsequent pregnancy. The authors have analyzed the available literature on the conservative surgical treatment in postpartum hemorrhage.

Conclusions: In a group of selected patients with postpartum hemorrhage a risk of conservative surgical treatment, that gives the chance to preserve fertility, can be taken. This is of particular importance in women with further procreative plans.

*Correspondence to: Department of Gynecology, Obstetrics and Gynecological Oncology, Provincial Specialist Hospital in Olsztyn, Żołnierska 18, 10-561 Olsztyn, Poland. Tel.: +48 89 538 64 83; mobile: +48 505 106 566; fax: +48 89 538 65 50.
E-mail address: karolina_loewenau@wp.pl (K. Loewenau-Samusionek).

1230-8013/$ – see front matter © 2013 Warmińsko-Mazurska Izba Lekarska w Olsztynie. Published by Elsevier Urban & Partner Sp. z o.o. All rights reserved.
http://dx.doi.org/10.1016/j.poamed.2013.09.005

1. Introduction

Postpartum hemorrhage is defined by absolute blood loss of more than 500 mL/day following vaginal delivery and more than 1000 mL/day following a cesarean section. Excessive blood loss during the fourth stage of labor is currently the leading cause of death of birthing mothers in Poland.[17] Uterine atony, together with abnormal placental implantation, intrapartum birth canal injuries and coagulation disorders, remains one of the major causes of postpartum hemorrhage.[26] It is a postpartum complication that results from failure of the uterus to retract,[4] which leads to a significant blood loss and is a direct threat to the life of the mother.

Risk factors for uterine atony include above all: factors associated with uterine overdistention (multiple pregnancy, polyhydramnios, fetal macrosomia), labor related factors (prolonged labor, oxytocin augmentation of labor, retained placenta or placental fragments, cesarean delivery), use of uterine relaxants (magnesium sulfate, beta-agonists, nifedipine), as well as previous history of postpartum hemorrhages, obesity, age above 35 years, intrauterine infections.[11,17]

The primary function of the uterus is to provide the appropriate conditions for fetal development, which is associated with rich vascularity. The main arterial trunks include paired uterine arteries which are branches of the internal iliac arteries and ovarian arteries which most frequently arise directly from the abdominal aorta. Unusual connection between two vessels include arterio-arterial anastomoses between the ovarian and tubal branches of uterine arteries within the mesovarium and mesosalpinx. Such extensive vascularity provides a rich blood supply during pregnancy and early puerperium. In full-term pregnancy, uterine blood flow increases by about 30–50 times than pre-pregnant levels,[12] reaching 1000 mL/min, which constitutes 1/5 of the total cardiac output.[11] Thus, in case of atonic uterine hemorrhage, of particular importance are prompt and efficient measures that significantly increase patients chances of survival.[15]

Treatment of uterine atony involves pharmacological and surgical measures. Pharmacological treatment begins with the administration of uterotonic agents. If pharmacological measures fail to control the hemorrhage, surgical proceeding that consists of uterine compression and reduction of blood supply is indicated. Simultaneously, dynamic anti-shock measures and prevention of coagulation disorders are adopted.

The first stage of surgical intervention implemented after vaginal delivery includes uterine arteries ligation from vagina, i.e. Erwin and Chrobak's suture (possibly modified Hebisch and Huch).[17]

In case of ineffectiveness of measures taken in the first stage or in patients after cesarean delivery, invasive treatment is performed during laparotomy. It includes: application of B-Lynch suture, O'Leary uterine arteries ligation, utero-ovarian branch ligation and internal iliac arteries ligation. Internal iliac arteries ligation reduces blood flow in distal vessels by 50% with an 85% reduction of blood pressure in the arteries, which changes blood flow from arterial to venous and increases the chance of bleeding inhibition through blood clot formation.[24]

In case of ineffectiveness of the above procedures, hysterectomy as a life-saving surgery is recommended.

2. Aim

The aim of this work is to present a case of a patient, in whom conservative surgical treatment for uterine atony allowed preserving fertility and subsequent pregnancy.

3. Case study

A 29-year-old female was admitted as an emergency to the tertiary referral unit from a district hospital (first referral unit) due to persistent uterine bleeding and hypovolemic shock developing in the course of uterine atony. There was a history of a cesarean section performed 5 hours earlier in first pregnancy at ±39 weeks of gestation due to lack of progress in labor. Pregnancy history was uncomplicated, and medical history unremarkable.

On admission, the patient was in a serious condition, HR=123 beats/min, RR=90/50 mm Hg. The patient was conscious and somnolent. In addition, pale skin, soft abdomen , painless, peritoneal symptoms negative, and cesarean section wound sutured intradermally. Gynecological examination showed the tendency for the uterus to relax and symptoms of persistent uterine bleeding.

Treatment stimulating uterine contraction was implemented. Pharmacological preparations with different mechanism of action were used (Oxytocin, Nalador, Cytotec), accompanied by intense uterine massage. In parallel, radical anti-shock and antithrombotic treatment was carried out (crystalloids, colloids, RCC, FFP).

Due to ineffectiveness of the above measures, persistent bleeding and ultrasound image (wide uterine cavity filled with mixed echogenic masses), the patient was qualified for instrumental inspection of the uterine cavity. Under general anesthesia dilation and curettage was performed, evacuating approximately 800 mL of blood clots and liquid blood from the uterine cavity. The material also contained small fragments of afterbirth. After the procedure, anti-shock management was continued (RCC, FFP, Novo-Seven).

Two hours after the procedure the general condition of the patient was defined as fair. At the time of the assessment: HR=90–115 beats/min, RR=115/65 mm Hg, hourly diuresis=35 mL/min. The patient was conscious but weak. Her skin was pale and clammy. Vaginal bleeding was observed again −500 mL of fresh, not properly clotted blood with uterine atony. The patient was qualified for reoperation of the abdomen (possible ligation of uterine arteries and hysterectomy as a last resort to save the patient's life).

During relaparotomy, after uterine sutures had been removed, uterine cavity was opened and a thorough manual inspection was performed. Placental site was visualized on the anterior uterine wall, numerous bleeding sites were observed; thus, in an attempt to reduce bleeding bilateral tying and ligation of ascending branches of the uterine arteries with O'Leary technique was performed. Then, after careful suturing of the uterine wound with single sutures a typical fast absorbable B-Lynch suture was applied, forcing muscle compression. Despite these measures, combined with administration of oxytocics, pathological bleeding was