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Case Report

Acute lower limb ischemia following surgical management of postpartum hemorrhage: about a case and review of the literature

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ABSTRACT

This is a 30-year-old patient, without history, primigravida, with a full-term pregnancy, who consulted in the obstetric emergency department for treatment of heavy metrorrhagia. After conditioning, the ultrasound showed a completely covering placenta, hence the indication for an emergency caesarean giving birth to an Apgar boy 5/10th then 9/10th. The patient presented with uterine atony resistant to medical treatment. Uterine padding and triple vascular ligation were performed. With the persistence of uterine atony, ligation of the hypogastric arteries was attempted with accidental lesion of the right external iliac artery requiring its ligation to ensure haemostasis. The patient was transferred to our training for additional care. On admission, the patient was intubated, hemodynamically stable with coldness of the right lower limb and absence of the right femoral pulse. CT angiography of the aorta and both lower limbs revealed partial occlusion of the right external iliac artery with downstream patency. Revascularization by bypass using the great saphenous vein of the contralateral limb was performed. The post-operative follow-up was simple. Postpartum hemorrhage is a serious complication in obstetrics. Hypogastric artery ligation is one of the means for the surgical management of postpartum hemorrhage. It is a standardized and effective technique, but complications are not uncommon.

Keywords: Post-partum hemorrhage, Placenta previa, Arterial ligation, Acute limb ischemia

INTRODUCTION

Postpartum hemorrhage is an extreme obstetric emergency that is life-threatening for the mother. It is the leading cause of maternal death in developing countries. Her medical management is standardized: administration of uterotonics (oxytocin±misoprostol), estimation of blood loss using a collection bag, monitoring of the patient's blood pressure and heart rate, uterine revision or artificial delivery/uterine revision, examination under valves of the genital canal, external uterine massage and placement of an indwelling urinary catheter.

When these means are unsuccessful, surgical management is necessary.

CASE REPORT

We describe the case of a 30-year-old patient, without significant pathological history, primigravida, with a pregnancy to be at term with normal evolution until the day she consulted in the obstetric emergency department of a regional hospital for the management of heavy bleeding. On admission, the patient was conscious, pale, normotensive and normocardiac and presented with great abundance of metrorrhagia. The speculum examination was not performed given the picture of cataclysmic hemorrhage. The vaginal ultrasound found a completely covering placenta previa and the control of cardiac activity by the suprapubic probe found fetal bradycardia, which is why she underwent an emergency caesarean section giving

birth to a newborn of sex male Apgar 5/10th in the 1st minute then 9/10th in the 5th minute with a huge hematoma on delivery. A check-up launched immediately revealed a preoperative hemoglobin of 10.2 g/dl, a platelet count of 125,000 e/mm^3, a TP of 90% and a B+ grouping. Immediately after delivery, the patient presented uterine inertia with significant bleeding that did not respond to medical treatment by injection a total of 40 IU of oxytocin, 1 g of tranexamic acid and 1 g of calcium by slow intravenous injection as well as 1000 µg intra-rectal misoprostol. Uterine padding using the B-lynch technique was performed, combined with a triple Tsirulnikov ligature.

Despite these measures and given the persistence of uterine atony and bleeding, ligation of the hypogastric arteries was attempted during which an accidental lesion of the right external iliac artery occurred causing active hemorrhage of great abundance requiring its ligation to ensure hemostasis. Given the state of shock that set in, the patient required a transfusion with 4 RBCs and 4 fresh frozen plasma intra-operatively. She was then transferred intubated to the nearest reference center (Mohammed VI university hospital in Oujda) for additional care. On admission to our training, the patient was intubated, hemodynamically stable and presented with acute ischemia of the right lower limb due to coldness of the right lower limb and absence of the right femoral pulse.

CT angiography of the aorta and both lower limbs revealed partial occlusion of the right external iliac artery with downstream patency (Figure 1). Revascularization, by the vascular surgery team, by restoring the continuity of the external iliac artery-external iliac artery using a bypass of the great saphenous vein of the contralateral limb was successfully performed (Figure 2 and 3). 1250 IU of unfractionated heparin (UFH) was received before declamping. The post-operative follow-up was simple with the presence of present and symmetrical peripheral pulses and a good safety globe. The patient and her child were discharged 4 days later.

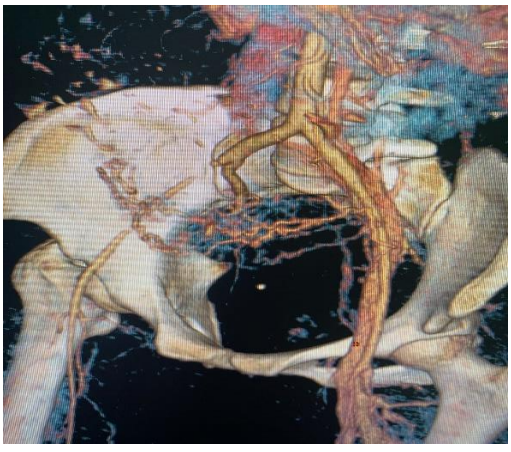

Figure 1: CT angiography of the aorta and both lower limbs revealing partial occlusion of the right external iliac artery with downstream patency.

Figure 2: External iliac ligation.

Figure 3: Revascularization of the external iliac artery using a bypass of the great saphenous vein of the contralateral limb.

DISCUSSION

According to the WHO, it is defined by blood loss greater than 500 ml regardless of the delivery route occurring within 24 hours postpartum.[1] It is said to be serious if the losses are >1000 ml. Other more practical definitions seem adapted to our context taking into consideration the maternal clinical state. According to ASGO and SCOG, postpartum hemorrhage is said to be serious when it results in hemodynamic instability requiring special care such as transfusion, intensive care hospitalization or surgical treatment.[2]

The primary prevention of PPH is based on the administration of 5 to 10 IU of Oxytocin® at the release of the anterior shoulder and its medical management must be systematized by a succession of gestures managing both the hemorrhagic shock and the cause of the hemorrhage itself: administration of uterotonics (oxytocin±misoprostol), estimation of blood loss using a collection bag, monitoring of the patient's blood pressure and heart rate, uterine revision or artificial delivery/uterine revision, examination under valves of the birth canal, external uterine massage and placement of an indwelling urinary catheter. When these means are unsuccessful, surgical management is necessary.[3] The main surgical

techniques for controlling PPH are: uterine padding techniques (B-lynch, Hayman, Cho, etc.) which may or may not be associated with arterial ligatures; vascular ligation based on: bilateral hypogastric artery ligation (LBAH); uterine artery ligation or Tsirulnikov triple ligation (uterine artery ligation combined with round and utero-ovarian ligament ligation); haemostasis hysterectomy which will preferably be subtotal because it is simpler, faster and as effective as total hysterectomy except in specific situations (placenta previa accreta, complex rupture of the lower segment, associated serious cervical tear).[4]

Hypogastric artery ligation is one of the means of choice for the surgical management of postpartum hemorrhage. It is a standardized and effective technique, but complications are not uncommon.[5]

The main drawbacks of this technique are that it is a difficult procedure, performed infrequently, generally in a context of great urgency and involving a dissection area rarely approached by obstetrician-gynecologists who do not practice carcinological surgery.[6] In addition, the morbidity of the technique can be severe: iliac venous wound, ureteral or external iliac artery ligatures, buttock claudication and peripheral venous lesion.[7] Several authors have attempted to assess the efficacy of LBAH in the management of postpartum hemorrhage. Its success rate will vary from 39 to 100% depending on the authors (with an average of 69%) (Table 1).[8-17]

Table 1: Comparison of success rate studies of bilateral hypogastric ligation for post-partum hemorrhage.

Authors	Year	Country	Success rate
Evans et al[11]	1985	États-Unis	42.9 (6/14)
Clark et al[12]	1985	États-Unis	42.1 (8/19)
Fernandez et al[13]	1988	France	100 (8/8)
Thavarasah et al[14]	1989	Malaisie	64.3 (9/14)
Chattopadhyay et al[15]	1990	Arabie Saoudite	65.5 (19/29)
Likeman et al[16]	1992	Australie	100 (9/9)
Allahbadia et al[17]	1993	Inde	76.5 (13/17)
Biswas et al[18]	1998	Inde	90.9 (10/11)
Ledee et al[19]	2001	France 8	89.6 (43/48)
Papp et al[20]	2005	Hongrie	39.3 (11/28)
Total			69.0 (136/197)

CONCLUSION

Post-partum hemorragiahe remains the leading cause of maternal mortality in the world. Its management must be multidisciplinary (anaesthetist, gynecologist-obstetrician, interventional radiologist, midwife). The keys to management lie in the speed of diagnosis and in the implementation of means to control the hemorrhage. In case of PPH occurring after cesarean section or when a patient has unstable hemodynamics after vaginal delivery, surgical treatment should be performed without delay. Vascular ligations involving the uterine artery and/or the hypogastric artery do not seem to have any subsequent impact on the fertility and obstetrical prognosis of patients. However, it appears that hypogastric artery ligation is less effective, is associated with a higher morbidity rate and is less easy to perform compared to staged ligation techniques involving the uterine artery. Finally, the multiplication of conservative treatments should not delay the performance of a haemostasis hysterectomy in the event of haemodynamic instability.

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