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### RESEARCH ARTICLE

#### POSTPARTUM UTERINE ARTERIOVENOUS MALFORMATION: A CASE REPORT

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#### Abstract

Uterine arteriovenous malformations can be congenital or acquired. The acquired form results from arteriovenous anomalies in which one or more uterine arteries and venous plexuses from the endometrium and/or myometrium communicate without the interposition of a vascular nest. It is composed of tortuous arteriovenous shunts, fragile and with low resistance. It is a rare but serious pathology that can threaten the patient's prognosis. The therapeutic strategy is determined by the symptoms, the desire for subsequent pregnancy, the extension and the location of the malformation. The two main types of treatment are selective embolization and hysterectomy. We report a new case of postpartum arteriovenous malformation treated by hysterectomy after failure of conservative treatment by ligation of the internal iliac arteries. The anatomopathological examination of the hysterectomy specimen confirmed the diagnosis of AVM.

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#### Introduction:-

Uterine arteriovenous malformations (UAVM) are a rare and potentially serious or even fatal pathology. They can result from endo-uterine trauma such as curettage, uterine revision, caesarean section, or secondary to retention of trophoblastic tissue. They can also be congenital.[1].

These fistulas should be suspected in any woman of childbearing age presenting with unexplained vaginal bleeding.

Treatment is based on embolization of the uterine artery or, if this fails, hemostasis hysterectomy.

We report the case of a postpartum UVA.

#### Observation:-

We report the case of a 30-year-old patient, 3G, 3P, 3EV/VB, with no particular pathological history, who presented with heavy metrorrhagia at 30 days postpartum from a spontaneous vaginal delivery, giving birth to a male newborn weighing 3300g, with directed placental delivery and complete expulsion off the placenta.

Upon admission, the patient was found to be in shock with hypotension at 70/50 mmHg, cutaneous-mucous pallor, and significant endo-uterine bleeding..

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An emergency pelvic ultrasound revealed a normally sized uterus with regular contours, a visible empty cavity, and no intrauterine images..

The color Doppler examination showed a hyper-vascularized myometrial zone located at the level of the anterior isthmic wall, with a high and turbulent arterial flow and a low resistance index suggesting an arteriovenous malformation (**Figure 1**).

The beta-HCG assay was negative.

Due to the patient's hemodynamic instability despite fluid resuscitation and transfusion, and the unavailability of technical facilities for emergency uterine artery embolization, hypogastric artery ligation was performed as a conservative treatment.

However, an hour after the procedure, significant bleeding recurred, necessitating a hysterectomy for hemostasis due to the risk of the patient's life.

Macroscopic examination of the anterior wall of the hysterectomy specimen revealed a hemorrhagic lesion with vascular gap at the isthmic level (Figure 2).

The anatomopathological analysis of the surgical specimen confirmed the presence of an underlying vascular malformation.



**Figure 1:-** The hyper-vascularized character of a myometrial zone located in the anterior wall.



**Figure 2:-**Hemorrhagic focus with vascular gap at isthmic level.

### **Discussion:-**

Uterine arteriovenous malformation (UAVM) is an abnormal connection between an artery and a vein that bypasses the capillary system. There are two categories: congenital, which is due to disturbance during embryogenesis, involving the differentiation of vessels inducing numerous vascular connections, and acquired, which represents a single junction between an artery and a vein, also known as a "fistula". The latter results from mechanical trauma, such as a normal delivery, a cesarean section, inflammation, a tumor, and intrauterine surgical treatments like dilation and curettage and hysteroscopy. Other risk factors include maternal exposure to diethylstilbestrol, endometrial adenocarcinoma, and gestational trophoblastic illness [2, 3, 4].

Continuous or recurring gynecologic bleeding can be brought on by UAVM; in the past, a uterine sample's histology was used to make the diagnosis.

The two non-invasive tools that are most frequently utilized today are ultrasonography and MRI. The presence of traditional hypoechoic tortuous gaps in the myometrium, which indicate low impedance vascular flow with high velocity in spectral analysis of vessels, is how UAVM is seen by color Doppler ultrasonography. The ability to distinguish between UAVM and other hypoechoic pictures at the level of the uterus, such as retained fetal products, is thus made possible by this examination [5, 6].

The cornerstone of diagnosis is angiography. In patients undergoing embolization, computed tomography angiography minimizes the radiation dose, study time, and contrast needed to complete the surgery. It may also be helpful in pointing the surgeon in the direction of the UAVM. In unstable patients with severe bleeding or those who have MRI contraindications, CT angiography is recommended [7].

Due to enhanced soft tissue characterization, multiplanar imaging capabilities, and the use of gadolinium-based contrast fluids, magnetic resonance imaging (MRI) enables precise diagnosis of UVA [8]. A large uterus with a focal mass, disruption of junctional areas, and numerous signal voids attributable to serpiginous flow in the myometrium with better visibility after gadolinium injection are typical MRI characteristics of UVA [9]. High cost, restricted availability in some countries, and a lengthy acquisition time are the primary drawbacks of MRI. (compared to angioscanner).

Nowadays, ultrasonography has replaced angiography as the predominant diagnostic method for UAVMs, while angiography is typically utilized for therapeutic embolization or prior to surgical management. In general, several authors do not advise having an angiography done on all patients with hypervascular uterine lesions [10].

For women who want to maintain their fertility but have frequent bleeding episodes, heavy bleeding, or are hemodynamically unstable, uterine artery embolization is recommended as the first line of treatment [11,12].

Clinical state and the size of the UAVM are used to determine which patients are eligible for embolization.. This procedure is highly effective, safe, and has a low risk of complications; however, some cases may require repeat embolization [13,14]. The risk of complications is extremely rare and is minimized when the intervention is performed by an expert in interventional radiology. Following this operation, there have been no instances of infertility or intrauterine growth retardation [15]. Uterine artery embolization is the treatment of choice for curing hemorrhage due to UAVMs in hemodynamically stable patients.

In menopausal women with uterine vascular malformations (UVMs) who do not wish to preserve fertility, as an emergency procedure in potentially life-threatening conditions (as in the case of our patient), or in situations where uterine artery embolization fails, hysterectomy is still the preferred course of action.. Intrauterine tamponade with a Foley catheter may also be considered in potentially life-threatening bleeding [16].

PanagiotisPeitsidis et al. conducted a comprehensive study on 103 patients, all of whom had Doppler ultrasound and angiography for diagnosis. Embolization was performed on 62 out of 103 patients, with a failure rate of 12.6% [17].

The treatment of UAVMs is not standardized; it depends on the patient's clinical condition, fertility desire and age.

Before performing a curettage for unknown vaginal bleeding, a better evaluation of the cause is necessary to prevent profuse bleeding. Because of the side effects of radiation, diagnostic angiography should only be performed to guide embolization.

### **Conclusion:-**

Although uterine vascular malformations are exceptional, they are potentially fatal and life-threatening.

The diagnosis involves first-line Doppler ultrasound and subsequently confirmed by angiography, which allows for conservative treatment through selective embolization of the uterine arteries.

Hysterectomy remains the last resort in case of embolization failure or imminent vital risk.

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