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Uterine Necrosis Following a Combination of Uterine Compressions and Vascular Ligation in Postpartum Hemorrhage: A Case Report

M. Halhali[1*], G. Zouhir[1], D. Bentaleb[1], D. Laoudiyi[1], K. Chbani[1], S. Salam[1]

[1]Radiology Department, Hopital Abderrahim Harouchi, CHU IBN ROCHD, Casablanca

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***Corresponding author:** M. Halhali
Radiology Department, Hopital Abderrahim Harouchi, CHU IBN ROCHD, Casablanca

Abstract **Case Report**

Postpartum hemorrhage with uterine atony is a major cause of maternal mortality and morbidity [1]. In cases of severe post-partum hemorrhage (PPH) resistant to medical treatment, advances in interventional radiology and, above all, surgical techniques have provided safe and effective alternatives to hysterectomy [2]. We report here the case of a 36-year-old woman who underwent B-Lynch compression suture and triple ligation with ligation of the left hypogastric artery following postpartum hemorrhage complicated by uterine atony. The patient presented with a febrile plateau, diarrhea and fecal vomiting with a positive infectious work-up. Imaging showed a globular uterus with no enhancement of the left corporofundal region, suggesting uterine necrosis. She underwent a hysterectomy, which confirmed necrosis of the left uterus, with a good clinical and biological evolution.

Keywords: Delivery Hemorrhage, B Lynch, Triple Ligation, Uterine Necrosis.

INTRODUCTION

Delivery hemorrhage remains the leading cause of maternal mortality in Morocco, and is an obstetric emergency requiring rapid, effective and multidisciplinary management. In cases of severe postpartum hemorrhage resistant to medical treatment, advances in interventional radiology and especially surgical techniques have provided safe and effective alternatives to hemostatic hysterectomy [2].

We report a case of uterine necrosis following triple ligation, ligation of the left hypogastric artery and uterine compression, with a review of the literature on the radiological appearance of uterine necrosis.

CASE PRESENTATION

We report the case of a 36-year-old woman, type 2 diabetic, in ketoacidosis following intrauterine fetal death at 28 weeks gestation. The immediate post-partum period after the evacuation procedure was complicated by uterine atony, bleeding and disseminated intravascular coagulation. After medical methods failed, the patient underwent laparotomy, with suture of the ruptured uterus, uterine compression suture (B-Lynch suture), triple ligation and ligation of the left internal iliac (hypogastric) artery after failure of uterine ligation.

The hemorrhage was controlled but the patient developed septic syndrome with fever, diarrhea and vomiting four days after surgery. A thoracoabdominal CT scan showed a heterogeneous uterus with no enhancement of the left corporofundal part, which was enlarged and contained air bubbles (Figures 1 and 2), associated with a pelvic hematoma and reactive thickening of the bowel and colon (Figure 3). The patient underwent hysterectomy, confirmed necrosis of the left uterus (Figure 4), with a good clinical and biological evolution.

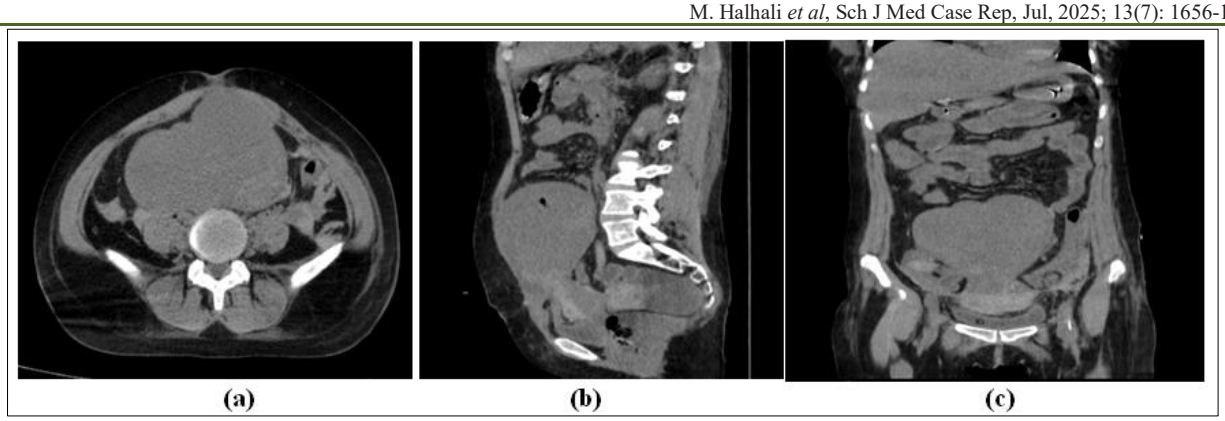

Figure 1: CT scan without contrast injection: axial (a), sagittal (b), coronal (c): globular hypodense uterus with intrauterine air bubbles

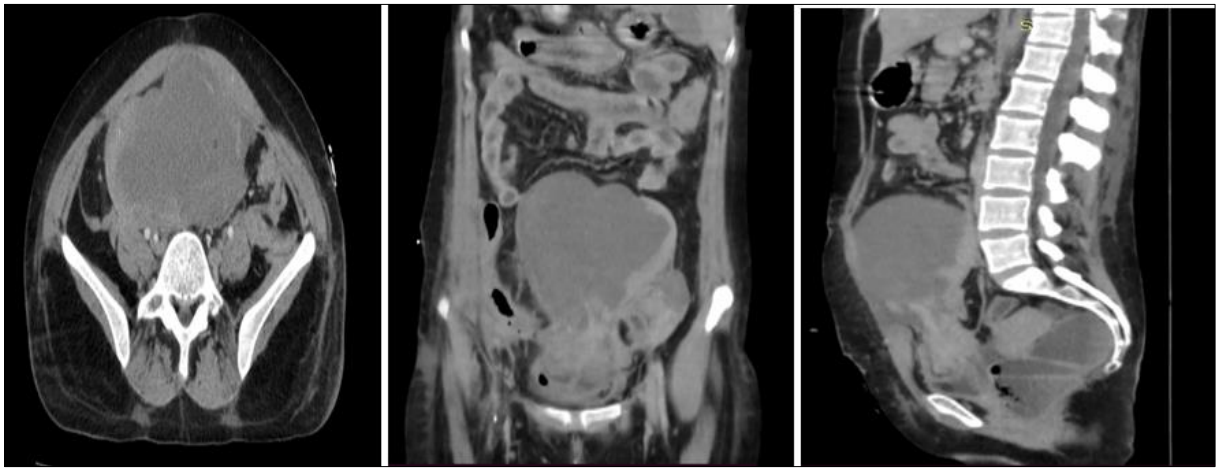

Figure 2 : CT scan after contrast injection: absence of enhancement of the uterus in the left corporo-fundal portion, contrasting with normal enhancement on the right side

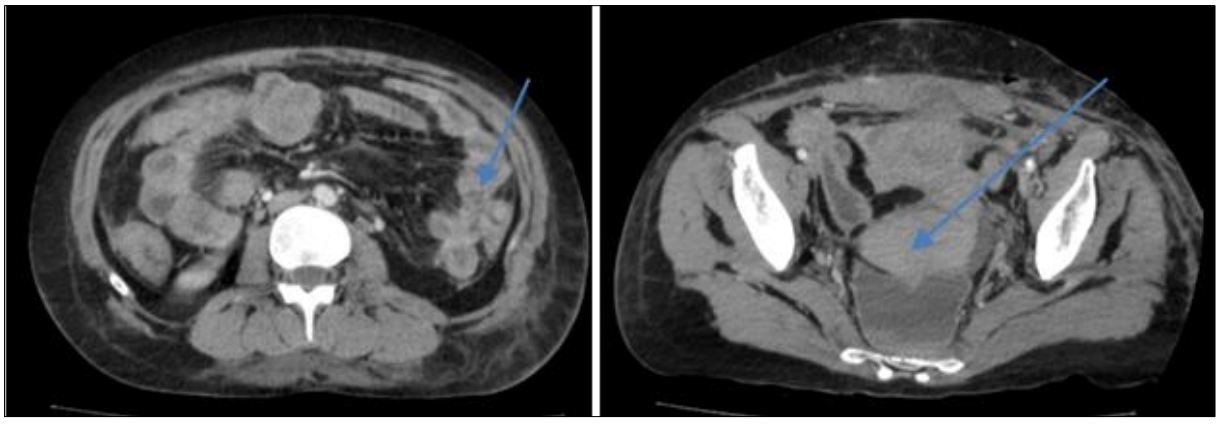

Figure 3: Axial section CT scan: reactive parietal thickening of the bowel and colon with a pelvic hematoma

Figure 4: Hysterectomy specimen showing the extent of necrosis in the left corporo-fundal portion, the trace of the B Lynch compression visible also at the coronal image in figure 2

DISCUSSION

Post-partum hemorrhage is one of the main causes of maternal morbidity and mortality. It is defined as an estimated blood loss of more than 500 ml after vaginal delivery, or more than 1000 ml after caesarean section. Uterine atony, cervical or vaginal wall lacerations, vessel damage during caesarean section, pathological placentation and disseminated intravascular coagulation are the main causes of post partum hemorrhage [3].

The various treatments for post-partum hemorrhage include systemic drugs that act as uterotonic agents, massage of the uterine fundus, bi-manual compression of the uterus, intra-uterine tamponade, compression sutures, arterial embolization, and vascular ligatures.

The B-Lynch technique and other uterine compression and vascular ligation techniques have become widely used emergency measures when post partum hemorrhage is due to uterine atony. in the case of our patient, a triple ligation with ligation of the left hypogastric artery and the B-Lynch compression technique were performed [4].

Arterial embolization represents an advance in non-invasive conservative treatment, especially after vaginal delivery. Despite its disadvantages, hemostatic hysterectomy remains one of the surgical techniques used, partculary in cases of haemodynamic instability [6].

Uterine Necrosis: A Rare but Serious Complication

Uterine necrosis is a serious complication that should be suspected when a patient presents with fever, abdominal pain, and an inflammatory syndrome after surgery for PPH, and is generally a consequence of surgical techniques aimed at controlling the hemorrhage.

The risk of uterine necrosis appears to increase when a combination of these techniques is used, as was the case in our patient.

Imaging and Diagnosis

Imaging plays an important role in diagnosis.

Ultrasound is the first-line examination; the best predictor of necrosis is hyper-echogenicity localised in the myometrium, while the peripheral zone of the uterus remains normally vascularized. Imaging findings of uterine necrosis include a large uterus with necrosis of the central uterine myometrium and strong peripheral enhancement and air bubbles in the necrotic zone [3].

Computed tomography (CT) is useful for confirming the diagnosis. It may show an absence of enhancement of the myometrium in post-contrast images, along with intrauterine air bubbles [3].

MRI is the examination of choice.It shows a loss of the normal zonal anatomy of the myometrium, distension of the uterine cavity with fluid (retained uterine secretions or tissue necrosis) and distension of the uterine cavity with fluid secondary to retained uterine

secretions or tissue necrosis. The myometrium is thinned with no enhancement after injection of Gadolinium.
Any intra-uterine or peri-uterine abscesses may be visible on DWI [5].

CONCLUSION

The surgical techniques of uterine compression sutures play a major role in the therapeutic arsenal of post-partum hemorrhage during cesarean section. In addition to or as an alternative to vascular ligation, they enables the patient's fertility to be preserved, but they also require maximum caution and monitoring for complications, the most serious of which is uterine necrosis. This should be suspected in the presence of abdominal pain, fever, and an inflammatory syndrome after surgery [2].

Conflicts of Interest: The authors declare no conflicts of interest.

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