Internal Iliac Artery Ligation as lifesaving Procedure for Spontaneous Posterior Uterine Rupture on Scarred Uterus in Labor Following a Hysterectomy for Managing a Severe Postpartum Hemorrhage

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ABSTRACT

Nowadays, the uterine rupture is a situation world widely encountered especially in low-income countries. Postpartum hemorrhage that the uterine rupture leads to is frequently severe and life threatening. The aim of medical and surgical conservative methods is to preserve the uterus and the fertility. However, sometimes, the surgeon has to perform a hysterectomy and even completing with the unilateral or bilateral internal iliac artery ligation to manage the blood loss which may last in some cases after hysterectomy. Here we present a 34 years old pregnant woman with previous cesarean delivery scar for a twin pregnancy, admitted in advanced labor for term pregnancy with a posterior uterine rupture of 12 cm and abdominal expulsion of a dead male fetus with a lesion fusing to the right vaginal angle, with intact lower segment scar. The hemostatic subtotal hysterectomy was performed with the failure of handling the vaginal bleeding. At last, a bilateral internal iliac artery ligation was performed to ensure successful hemostasis and maternal lifesaving.

Keywords: Postpartum hemorrhage, uterine rupture, internal iliac artery ligation, scarred uterus, labor

1. INTRODUCTION

The postpartum hemorrhage is one of the life-threatening complications which may result from several etiologies. It may concern all pregnant women beyond 20 weeks gestation. Unfortunately, it remains a most important cause of maternal morbidity and mortality in the developing world.

World Health Organization statistics suggest that 25% of maternal deaths are due to postpartum hemorrhage, accounting for more than 100,000 maternal deaths per year(1). PPH is defined as blood loss of more than 500 mL following a vaginal delivery or more than 1000 mL following cesarean delivery(2,3). Severe PPH is defined as bleeding in excess of 1000 mL after a vaginal birth(4,5). PPH is often further classified as primary (in the first 24 hours postpartum) or secondary (delayed, after 24 hours postpartum). The PPH has several potential causes related to uterine tone, tissue, trauma, and thrombosis(6).

The prevention is based on active management of the third stage of labor which reduces the incidence and severity of PPH. The uterus rupture is one of the several causes of PPH. The majority of uterine rupture during pregnancy occurs
in scarred uterus. Rupture of an unscarred uterus is a rare event\(^7\). The uterine rupture occurs particularly during labor or third trimester of pregnancy. The most important consequences following the uterine rupture are Postpartum hemorrhage, need for blood transfusion and hysterectomy, as well as high risk for neonatal perpartum death\(^8,9\).

2. CASE REPORT

It is about a 34 years old patient, gravid 2 para 3, from a low socioeconomic background with previous cesarean delivery scar for twin pregnancy 2 years ago, two female twins, with normal psychomotor development. Her general medical history revealed no diseases or allergy.

Current pregnancy included two prenatal visits with 1 sonographic examination at the first trimester. The X-ray scan was requested but not realized. Admitted in spontaneous labor with hypovolemic shock. No fetal heart rate was detected. The initial blood pressure was 80/40 mmHg, pulse = 120 bpm, important vaginal bleeding.

The blood loss was estimated beyond 1500 ml. An emergent laparotomy was indicated, and the patient was rushed to the operating room. At the opening of the abdominal wall, we discovered a large hemoperitoneum, an intact lower segment scar. The dead fetus and placenta were expelled through a posterior uterine wall rupture of 12 cm and free in the posterior peritoneal cavity, with no other visceral lesions [Fig 1, A&B].

![Uterine rupture is interesting the posterior wall fusing till the right vaginal angle.](image)

The inspection showed that the posterior uterine rupture interesting the body has been extending to the right vaginal angle. Facing the hemostatic instability and the massive bleeding, conventional surgical techniques were not attempted, and a subtotal hysterectomy was performed with the failure of managing the persistent bleeding. A bilateral internal iliac artery ligation was performed to ensure the hemostasis successfully [Fig 2].

*To Cite This Article:* Mohammed Bhihi, Issam Zoubairi, Jamal Elazzaoui, Amina Lakhdar, Najia Zeraidi, Abdelaziz Baidada, Aicha Kharbach. Internal iliac artery ligation as a lifesaving procedure for spontaneous posterior uterine rupture on scarred uterus in labor. *International Annals of Medicine*. 2017;1(3). [https://doi.org/10.24087/IAM.2017.1.3.77](https://doi.org/10.24087/IAM.2017.1.3.77)
morbidty\textsuperscript{(13,14)}. The inelastic nature of the scar and its atrophy make it less adapted to labor’s forces, and so predisposing to scar rupture. Sometimes, the anterior lower segment is particularly rigid and may cause the abnormal distribution of forces. The site of uterine rupture is unpredictable and may be atypical as this case with a posterior wall rupture and intact lower segment scar. Recognized factors predisposing to uterine rupture during vaginal birth after caesarean section are induction or augmentation of labor, slow progress, labor dystocia, multiparity, fetal malposition, short interdelivery interval (less than 24 months), and placenta accreta\textsuperscript{(12)}. In this case, the patient had one cesarean section for a twin pregnancy, the inter-delivery interval of 24 months. The X-ray scan was requested but not realized. The overdistension or the laxity may predispose to atypical uterine rupture. In our patient’s case, the fetal position before the rupture was not diagnosed because at the admission the fetus was already in the peritoneal cavity with hypovolemic shock. Posterior uterine rupture is extremely rare, conventional signs may be absent, and women may compensate well for massive hemorrhage. However, good maternal and fetal outcomes are achievable, with a prompt, coordinated team response and swift recourse to caesarean section. In this case, the uterine rupture could be avoided if the patient had arrived earlier before or at the beginning of the labor. Unfortunately, she was admitted shocked after the uterine rupture. Initial treatment in a case of uterine rupture should be aimed at stabilization of the patient, with the aggressive replacement of fluid with crystalloid and blood products\textsuperscript{(15,16)}. Early diagnosis and deciding to proceed with surgical intervention can be lifesaving\textsuperscript{(13,17)}. PPH can lead to fatal quick exsanguination in spite of the availability of blood products. The internal iliac artery ligation as a life-saving technique is underused in the management of PPH, probably due to fear of injuring iliac veins. The thorough knowledge of anatomy and meticulous operative techniques may minimize these risks. Selective arterial embolization is an option in managing PPH if the woman is hemodynamically stable. Current indications include hemorrhage due to vaginal or cervical lacerations or persistent bleeding after hysterectomy. IHAL is helpful in uterine trauma with avulsed and retracted uterine artery in the broad ligament with a hematoma as the pressure and flow of circulation decrease distal to the ligation and enabling one to readily locate the bleeder and ligate it securely. Also, in cases of deep fornical tears and hematomas, uterine

3. DISCUSSION

Uterine rupture is a common complication of pregnancy in low-income countries. However, it is very rare in developed countries. In modern obstetrical practice, the combination of prenatal care and management of women with previous cesarean deliveries has helped to decrease the uterine rupture rate. According to World Health Organization (WHO), the median incidence of uterine rupture was estimated at 5.3 per 10,000 deliveries\textsuperscript{(10)}. Uterine rupture is defined as a defect involving the full thickness of the myometrium and uterine serosa or myometrium disruption extending to the bladder or broad ligament\textsuperscript{(11)}. The majority of uterine dehiscences and ruptures in scarred uteri occur via the uterine scar (specifically from caesarean section).

Rupture of a uterus without prior scarring has been described as significantly more severe than rupture of a scarred uterus, with higher rates of maternal and fetal


Fig 2: Internal iliac artery before ligation (Right side).
artery ligation or even hysterectomy does not stop the hemorrhage. In such cases, blood loss could be arrested after IIAL as the vaginal artery is a direct branch of the anterior division of internal iliac artery such in this case.

IIAL not only contributes to the prevention of hysterectomy but also in cases where hysterectomy cannot be prevented, it facilitates hysterectomy as in cases of uterine trauma. In this case, the IIAL was performed after the hysterectomy to stop the persistent bleeding.

4. CONCLUSION

The uterine rupture is a rare cause of PPH which may be life threatening. IIAL is a surgical technique which may be life/uterus-saving procedure. Currently, every practicing obstetrician must be able to perform the IIAL before hemostatic hysterectomy. However, it can also be used as prophylaxis to ensure hemostasis whether intra or post-operative surgeries. Finally, prevention remains the key to modern obstetric practice to avoid such complications.

REFERENCES
