

Emergency Bilateral Internal Iliac Artery Ligation in Antepartum Haemorrhage with Complete Placenta Previa and Placenta Accreta at Previous Caesarean Scar Site: A Case Report

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ABSTRACT

Implantation and placentation at the normal site are critical for a successful pregnancy. Many complications associated with pregnancy, which manifest late in pregnancy, such as preeclampsia and preterm labour, have been reported to have origins early during pregnancy with abnormalities in implantation and placental development. Placental abnormalities result from impaired embedding of the placenta in the endometrium, encompassing a wide range of placental pathologies associated with high maternal morbidity and mortality. Pregnancy-related complications such as Postpartum Haemorrhage (PPH) and hysterectomy have been closely linked to the Placenta Accreta Spectrum (PAS). PAS refers to the aberrant and invasive implantation of the placenta into the myometrium. Invasiveness in placenta accreta is marginal, followed by placenta increta (partial), placenta percreta (total), and placenta previa (covering the cervix). Here, the authors present a unique case report of an antenatal woman with antepartum haemorrhage, placenta previa, and placenta accreta at the previous Lower Segment Caesarean Section (LSCS) scar site, with massive PPH at 35 weeks, who benefited from an emergency LSCS with bilateral uterine and internal iliac artery ligation procedure, resulting in a life-saving outcome. The most common risk factors for PAS include prior caesarean section and curettage. The adhered placenta can lead to pelvic bleeding and necessitate an emergency hysterectomy. Therefore, it poses unique diagnostic and treatment issues, with the majority of cases requiring preterm termination of pregnancy.

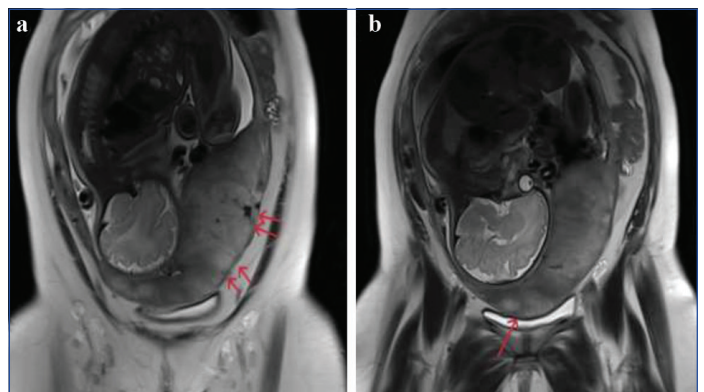
Keywords: Caesarean section, Perinatal period, Pregnancy outcome, Risk factors

CASE REPORT

A 28-year-old female, gravida 3 para 1, alive 1, with one abortion, presented to the labour room at 35 weeks and five days gestational age, complaining of vaginal bleeding and abdominal pain for the past hour. She reported no history of vaginal leakage, decreased foetal movements, or abnormal discharge. Her menstrual cycles typically lasted 28-30 days with bleeding lasting 3-4 days. The patient has been married for six years. Her first pregnancy ended in a spontaneous abortion four years ago at three months of gestation, for which she underwent dilatation and evacuation. The second pregnancy resulted in the birth of a 3.5 kg female child 2.5 years ago via a caesarean section due to cephalopelvic disproportion. The previous delivery was uneventful. The current pregnancy was a spontaneous conception with no other significant medical history. On examination, her pulse rate was 120 beats per minute, and blood pressure was 128/84 mmHg. A previous caesarean section scar was noted but without tenderness. The fundal height was greater than expected for the gestational age, and the abdomen was irritable.

Ultrasound revealed a single live foetus in the vertex position at 34+3 weeks with an anterior low-lying placenta, positioned 9 mm from the internal ostium (os), indicating Grade-I placenta previa. Myometrial thinning with loss of the retroplacental hypoechoic line and increased retroplacental vascularity in the lower segment of the previous caesarean section site suggested placenta accreta, with a cervical length of 3.7 cm. The estimated foetal weight was 2420 grams. An Magnetic Resonance Imaging (MRI) showed the placenta to be located in the left lateral wall of the uterus and the posterior

wall in the lower segment [Table/Fig-1a], with a placental thickness of 73 mm. The inferior edge was rounded and completely covering the internal os, indicative of complete placenta previa grade 4 [Table/Fig-1b]. Poor differentiation of the placenta-myometrium interface, focal myometrial thinning with loss of the hypointense decidua basalis in the lower segment, and a heterogeneous placenta with increased retroplacental vascular flow all suggested an adherent placenta. A pelvic examination was not performed.

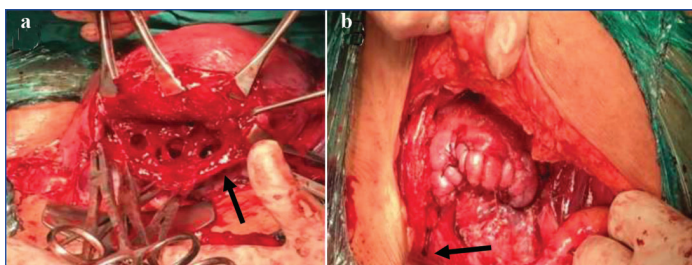


[Table/Fig-1]: MRI confirming the diagnosis: (a) Arrows indicating placenta to be in the left lateral wall of the uterus and posterior wall in the lower segment, with a placental thickness of 73 mm; (b) Arrow indicating the inferior edge rounded and completely covering the internal os S/O complete placenta previa grade 4.

The patient was admitted, and all routine investigations were completed. Blood and blood products were ordered, and the patient was immediately transferred to the operating theatre for emergency LSCS due to antepartum haemorrhage with

complete placenta previa and placenta accreta, along with a history of previous LSCS in labour. The patient received intravenous antibiotics (ceftriaxone 1 gm and metronidazole 500 mg) and began receiving Packed Cell Volume (PCV) transfusion.

The patient was informed of all the risks and benefits of the emergency LSCS and Si Opus Sit (SOS) obstetric hysterectomy. Written high-risk consents were obtained for the procedure. The emergency LSCS was performed under spinal anaesthesia by a senior obstetrician. The patient was positioned supine, and a Foley catheter (size 14) was inserted for urinary catheterisation. After painting and draping, the abdomen was opened with a Pfannenstiel incision in layers. Bladder adhesions were released, and the uterovesical fold was dissected, followed by the introduction of Doyen's. The lower uterine segment was accessed via Kerr's incision. The placenta was incised, and the baby, a 2.6 kg female, was immediately delivered in a vertex position. The baby cried promptly after birth and was promptly handed over to the paediatrician without delaying cord clamping. The incision margins of the uterus were held with green Armytage forceps and allis forceps. The adherent placenta accreta was identified [Table/Fig-2a] and removed. Bilateral uterine arteries were ligated with Vicryl 1-0 RB [Table/Fig-2b], following which the lower uterine segment was sutured with a continuous interlocking suture in a single loop.



[Table/Fig-2]: Intraoperative images showing: (a) Adherent placenta accrete; (b) Uterine artery ligation.

Intraoperatively, one litre of blood loss was observed. Bilateral internal iliac arteries were ligated at their edges from medial to lateral. A drainage tube was inserted, and the abdomen was closed in layers. Four units of fresh frozen plasma were transfused intraoperatively. The patient was then moved to the Surgical Intensive Care Unit (SICU) for observation. In the postoperative period, the patient received another Packed Cell Volume (PCV) transfusion along with intravenous antibiotics. The patient maintained adequate input/output and vitals and was transferred to the ward within two days. The abdominal drain was removed, and 1,000 mg of Ferric Carboxymaltose (FCM) was transfused, along with multivitamin tablets. Breastfeeding was initiated.

The patient was discharged after one week following complete suture removal. The patient attended routine postnatal follow-ups and received counselling regarding contraception and future pregnancies.

DISCUSSION

The placental site in complete placenta previa is innervated by the descending cervical and vaginal arteries, supplying the majority of the blood. These arteries continue to perfuse even after uterine ligation, resulting in continuous haemorrhage. Therefore, in such cases, internal iliac artery ligation is considered favourable as it prevents the flow of blood in the vaginal, cervical, and uterine vessels [1].

For the prevention of severe PPH in patients with placenta previa, in addition to cervical lift-off sutures, uterine tamponades, uterine

sutures, balloon blocks, vascular ligation, and even hysterectomy have been used to manage refractory PPH [2,3].

A study conducted by İçen MS et al., which includes ten years of experience in a tertiary care centre, shows that internal iliac artery ligation helped in successfully preserving fertility in 65.9% of patients [4]. Several methods have been suggested to increase the effectiveness of artery ligation. A randomised clinical trial by Abbas AM et al., reports that the use of Tranexamic acid in patients with placenta previa undergoing bilateral uterine artery ligation significantly reduces blood loss; however, they did not rule out the risk of thromboembolism and its associated complications [5]. Another innovative technique includes using LigaSure, an instrument that occludes blood arteries using high-frequency and low-voltage electric current, significantly reducing blood loss [6].

In a study by Bai L et al., it was concluded that in cases of placenta previa with the absence of penetrating implantation, uterine artery ligation could be favoured as it requires a minimal surgical procedure and has a short operative time. In the existence of penetrating implantation or even bladder implantation, internal iliac artery ligation could be favoured. Prophylactic internal iliac artery ligation was related to lower intraoperative bleeding, transfusion and postoperative transfusion volumes, and lower Intensive Care Unit (ICU) admission rates when compared with therapeutic ligation, and there was less intraoperative bleeding in patients who underwent hysterectomy [7].

In concurrence with the previous literature, the authors proposed that uterine artery ligation can significantly reduce blood loss and also preserve fertility in women with adherent placenta. It is of utmost importance to identify the necessity to proceed with an internal iliac artery ligation without waiting for significant blood loss, which means a vascular surgeon or skilled obstetrician should be present during such high-risk cases. The authors have thereby combined both bilateral internal iliac artery ligation and bilateral uterine artery ligation as a therapeutic measure to control haemorrhage and prevent the need for hysterectomy.

CONCLUSION(S)

Placental disorders can present at any gestational age with varying severity and various symptoms. Early clinical diagnosis is essential for better and vigilant follow-up, especially in women with previous uterine surgical interventions, and also to reduce morbidity and mortality. The course of treatment begins with emergency LSCS and most commonly leads to obstetric hysterectomy. In women who would like to maintain their fertility, as in the present case, bilateral internal iliac artery ligation was the better option and lifesaving in controlling severe PPH.

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