

Complex Obstetric Management of Placenta Previa with Accreta and Severe Anemia: A Clinical analysis.

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Abstract

Placenta previa associated with placenta accreta spectrum (PAS) represents a critical obstetric condition with a high risk of maternal morbidity and mortality, particularly among women with a history of cesarean delivery. The coexistence of intrauterine growth restriction (IUGR) and maternal anemia further complicates clinical management and adversely affects outcomes. This case study presents a comprehensive analysis of the clinical features, multidisciplinary approach, surgical management, and nursing care of a 26-year-old multigravida at 37 weeks of gestation diagnosed with Grade IV placenta previa complicated by PAS, IUGR, and moderate anemia.

A planned lower segment cesarean section followed by subtotal hysterectomy with bilateral internal iliac artery ligation was performed due to extensive placental invasion into the lower uterine segment with involvement of adjacent structures. Preoperative optimization and timely availability of blood components facilitated effective control of intraoperative hemorrhage. A live male neonate weighing 2.52 kg was delivered with satisfactory Apgar scores.

Postoperative management included intensive care monitoring, blood transfusion, antibiotic therapy, thromboprophylaxis, and meticulous fluid balance. The patient remained hemodynamically stable with an uneventful recovery. This case underscores the importance of early diagnosis, coordinated multidisciplinary care, and evidence-based nursing interventions in improving maternal and neonatal outcomes.

Keywords

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Introduction

Placenta previa and placenta accreta spectrum (PAS) are significant contributors to maternal morbidity and mortality across the globe¹². Placenta previa is defined by implantation of the placenta in the lower uterine segment partially or completely covering the cervical os, whereas PAS involves abnormal adherence or invasion of placental tissue into the myometrium²⁴.

The global increase in cesarean section rates has contributed substantially to the rising incidence of PAS³¹¹. Women with a history of cesarean delivery, particularly when associated with placenta previa, are at markedly increased risk¹. The underlying mechanism involves

defective decidualization and excessive trophoblastic invasion into the uterine wall²⁴.

Early identification through ultrasonography and magnetic resonance imaging (MRI) plays a crucial role in guiding clinical management and reducing complications⁹¹⁰. If not managed appropriately, PAS can lead to catastrophic hemorrhage, disseminated intravascular coagulation, multi-organ failure, and maternal death⁵⁸.

This case study highlights the role of early diagnosis, planned surgical intervention, and comprehensive nursing care in managing a high-risk obstetric patient.

Case Report

Patient Demographic and Obstetric Profile

A 26-year-old multigravida woman (G4P2L2E1) at 37 weeks of gestation was admitted for elective delivery at a tertiary care hospital. She had been regularly followed antenatally and had no history of consanguinity. Her obstetric history included two previous lower segment cesarean sections and one early pregnancy loss. Her blood group was A positive. Based on her clinical profile and prior uterine surgeries, she was categorized as a high-risk obstetric patient requiring planned institutional delivery.

Clinical Findings

On admission, the patient was hemodynamically stable but exhibited signs suggestive of underlying obstetric risk. Her primary finding was a diagnosis of placenta completely covering the internal cervical os as identified on antenatal imaging. She reported intermittent episodes of fever without any associated chills or rigors. On examination, her pulse rate was elevated at 128 beats per minute, while blood pressure was within normal limits at 110/70 mmHg. Fetal heart rate monitoring revealed a reassuring pattern ranging between 142 and 146 beats per minute. Abdominal examination showed a uterus corresponding to 34–37 weeks of gestation, which was soft and relaxed with no signs of tenderness or uterine irritability. Speculum examination did not reveal any active vaginal bleeding at the time of assessment. However, clinical pallor was noted, correlating with laboratory findings of moderate anemia. These findings collectively indicated a high-risk obstetric condition requiring close monitoring and planned intervention.

Investigations

Laboratory investigations revealed findings consistent with moderate anemia and otherwise stable hematological and biochemical status. The patient's hemoglobin level was 8.2 g/dL, indicating moderate anemia, which was further supported by a reduced packed cell volume of 25.9% and a slightly decreased red blood cell count of 3.90 million/ μ L. The total white blood cell count was within normal limits at $7.15 \times 10^3/\mu$ L, suggesting the absence of active infection despite the history of intermittent fever. Platelet count was normal at $257 \times 10^3/\mu$ L, indicating adequate coagulation potential. Random blood sugar was within normal range at 84 mg/dL. Renal function tests

showed urea at 12 mg/dL and creatinine at 0.4 mg/dL, both within or slightly below normal limits but clinically acceptable. Serum electrolytes revealed sodium levels ranging between 135–137 mEq/L, slightly lower than normal, while potassium levels were within normal limits (3.9–4.0 mEq/L).

Imaging studies played a crucial role in diagnosis and management planning. Ultrasonography demonstrated a single live intrauterine fetus with Grade IV placenta previa, completely covering the internal cervical os. Magnetic resonance imaging (MRI) further confirmed the diagnosis and revealed focal myometrial disruption, raising strong suspicion of placenta accreta spectrum. The estimated fetal weight was approximately 2.3 kg, suggestive of intrauterine growth restriction, while the amniotic fluid index was within normal limits at 12 cm. Biophysical profile scoring was 8/8, indicating reassuring fetal well-being at the time of assessment. These findings collectively guided the decision for planned surgical intervention.

Preoperative Preparation

The patient was managed as a high-risk obstetric case and underwent meticulous preoperative preparation. A multidisciplinary team comprising obstetricians, anesthesiologists, neonatologists, intensivists, and trained nursing personnel was assembled to ensure comprehensive care. Detailed counseling was provided to the patient and her family regarding the diagnosis of Grade IV placenta previa with suspected placenta accreta spectrum, the risk of massive obstetric hemorrhage, the possibility of peripartum hysterectomy, and potential maternal and neonatal complications. Written informed consent was obtained.

Preoperative optimization included correction of anemia and arrangement of adequate blood and blood components, including packed red blood cells, fresh frozen plasma, and platelets. Baseline investigations were reviewed, and cross-matching was performed in anticipation of significant intraoperative blood loss. Intravenous access with large-bore cannulas was secured, and preoperative fluid management was initiated. Prophylactic antibiotics were administered prior to surgery to reduce the risk of postoperative infection. The patient was kept nil per oral for an appropriate duration, and pre-anesthetic evaluation was conducted to assess fitness for

surgery. Intensive care unit (ICU) facilities were kept ready for postoperative monitoring. All necessary surgical equipment and expertise were prepared in advance, considering the anticipated complexity of the procedure.

Surgical Procedure

The patient underwent an elective lower segment cesarean section under appropriate anesthesia in a well-equipped operating theater. A multidisciplinary surgical approach was adopted. After abdominal entry through a Pfannenstiel incision, careful dissection was performed due to anticipated adhesions from previous cesarean sections. Upon opening the uterus, a live male neonate weighing 2.52 kg was delivered with satisfactory Apgar scores.

Intraoperative findings revealed that the placenta was abnormally adherent and invading the lower uterine segment, extending towards the bladder surface, consistent with placenta accreta spectrum. Attempts to separate the placenta were avoided to prevent catastrophic hemorrhage. In view of the extensive placental invasion and high risk of uncontrolled bleeding, a decision was made to proceed with a subtotal hysterectomy.

To minimize intraoperative blood loss, bilateral internal iliac artery ligation was performed. Hemostasis was carefully achieved, and the surgical field was inspected for any active bleeding. The estimated blood loss was managed effectively with transfusion of blood components, including packed red blood cells, fresh frozen plasma, and platelets. The procedure was completed without intraoperative complications, and the patient was shifted to the ICU for close monitoring.

Postoperative Management

Postoperatively, the patient was admitted to the intensive care unit for continuous monitoring of vital parameters, including heart rate, blood pressure, oxygen saturation, and urine output. Hemodynamic stability was closely observed, and fluid balance was meticulously maintained through strict input-output charting. Blood transfusions were continued as required to correct anemia and maintain adequate hemoglobin levels.

Broad-spectrum intravenous antibiotics, including ceftriaxone (Monocef), metronidazole (Metrogyl), and amikacin, were administered to prevent postoperative

infections. Analgesics such as diclofenac and paracetamol were provided for effective pain management. Thromboprophylaxis with low molecular weight heparin (Clexane) was initiated to reduce the risk of thromboembolic complications, considering the patient's postoperative status and limited mobility.

Regular monitoring for signs of hemorrhage, infection, and organ dysfunction was carried out. The surgical wound was inspected periodically, and aseptic wound care was maintained. Early ambulation was encouraged once the patient's condition stabilized to prevent complications such as deep vein thrombosis and pulmonary embolism. Nutritional support was provided to facilitate recovery and improve hemoglobin levels.

The patient showed gradual improvement with stabilization of vital signs and correction of anemia. No major postoperative complications were observed. She was transferred out of the ICU after stabilization and subsequently discharged in satisfactory condition with advice on follow-up care, nutrition, and future reproductive counseling.

Nursing Management

Nursing management played a pivotal role in ensuring optimal maternal and neonatal outcomes in this high-risk obstetric case. Care was provided in a structured and systematic manner across the preoperative, intraoperative, and postoperative phases, with a strong emphasis on early identification of complications, patient safety, and holistic support.

Preoperative Nursing Care

During the preoperative period, the primary focus was on assessment, stabilization, and preparation of the patient for surgery. A comprehensive baseline assessment was conducted, including monitoring of vital signs such as pulse, blood pressure, respiratory rate, temperature, and oxygen saturation. Continuous fetal monitoring was maintained to assess fetal well-being. The presence of pallor was noted, and laboratory findings indicating moderate anemia were reviewed carefully.

Intravenous access was established using large-bore cannulas to facilitate fluid administration and potential blood transfusion. Blood samples were sent for cross-matching, and coordination with the blood bank was

ensured for timely availability of blood products. The patient was closely observed for any signs of vaginal bleeding, abdominal pain, or hemodynamic instability.

Psychological support formed an essential component of care, as the patient was counseled regarding the high-risk nature of her condition, the need for surgical intervention, and the possibility of hysterectomy. Informed consent was verified, and the patient's concerns were addressed empathetically to reduce anxiety.

Preoperative preparation included maintaining nil per oral status, ensuring personal hygiene, and preparing the surgical site according to aseptic protocols. Prophylactic antibiotics were administered as prescribed. All necessary documentation, including investigation reports and consent forms, was verified and kept ready prior to shifting the patient to the operating room.

Intraoperative Nursing Care

In the intraoperative phase, nursing responsibilities focused on maintaining asepsis, assisting the surgical team, and ensuring patient safety. The patient was positioned appropriately on the operating table, and pressure points were padded to prevent injury. Continuous monitoring of vital signs, oxygen saturation, and urine output was maintained throughout the procedure.

Strict aseptic technique was followed to minimize the risk of infection. The circulating nurse ensured availability and proper functioning of surgical instruments, sutures, and emergency equipment. Anticipation of massive hemorrhage required readiness with blood products, and coordination with the anesthesiology team was maintained for prompt transfusion when necessary.

Accurate documentation of intraoperative events, including estimated blood loss, fluids administered, medications given, and surgical procedures performed, was maintained. The nurse also played a critical role in maintaining a calm and organized environment to facilitate smooth surgical workflow.

Postoperative Nursing Care

Postoperative nursing care was intensive and aimed at early detection and management of

complications. The patient was shifted to the intensive care unit for close monitoring. Vital signs were monitored frequently, including heart rate, blood pressure, respiratory status, temperature, and oxygen saturation. Hemodynamic stability was assessed continuously.

Strict intake and output charting was maintained to monitor fluid balance and renal function. Urine output was closely observed as an indicator of adequate perfusion. The surgical site was inspected regularly for signs of bleeding, hematoma, or infection. Aseptic wound care was performed as per protocol.

Pain management was provided through prescribed analgesics, and the patient's comfort was ensured. Broad-spectrum antibiotics were administered to prevent postoperative infections. Thromboprophylaxis with low molecular weight heparin was given, and the patient was monitored for signs of thromboembolic complications.

Early ambulation was encouraged once the patient's condition stabilized to reduce the risk of deep vein thrombosis and promote recovery. Nutritional support was initiated gradually, focusing on a balanced diet rich in iron and protein to aid in correction of anemia and wound healing.

Health Education and Discharge Planning

Prior to discharge, the patient received comprehensive health education. She was counseled regarding wound care, personal hygiene, dietary modifications, and the importance of medication adherence. Instructions were given on recognizing warning signs such as fever, excessive bleeding, pain, or discharge from the surgical site.

Psychological support was continued, especially in view of the hysterectomy and its implications on future fertility. Family planning counseling and emotional reassurance were provided. The patient was advised on follow-up visits for monitoring recovery and overall health status.

Discussion

Placenta accreta spectrum is strongly associated with previous cesarean sections and placenta previa¹³. The increasing global

cesarean rate has contributed to a rise in PAS cases³¹¹.

The underlying mechanism involves abnormal placental invasion due to defective decidua²⁴. Early diagnosis using ultrasound and MRI significantly improves clinical outcomes by enabling planned delivery⁹¹⁰.

Massive hemorrhage remains the most serious complication, often requiring hysterectomy⁵⁸. Planned cesarean hysterectomy is considered the safest approach in cases with confirmed invasion⁸²¹. In this case, subtotal hysterectomy was performed due to placental invasion into the lower uterine segment and bladder surface.

Adjunctive procedures such as bilateral internal iliac artery ligation help reduce blood loss²². Multidisciplinary care is essential for optimal outcomes¹⁶.

Maternal anemia further complicates management by reducing tolerance to blood loss¹⁹. Therefore, preoperative optimization and blood product availability are critical.

Postoperative ICU care and nursing management play a key role in recovery and prevention of complications²³.

This case demonstrates that structured obstetric and nursing care significantly improves maternal and neonatal outcomes¹³.

Conclusion

Grade IV placenta previa with placenta accreta spectrum is a high-risk obstetric condition requiring timely diagnosis and intervention. Multidisciplinary planning, surgical expertise, blood product availability, and comprehensive nursing care are essential to reduce maternal morbidity and mortality.

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