

## Case report

# Clinical Course and Management of Placenta Accreta Spectrum: A Case Report from Al-Zawia Central Hospital

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Placenta accreta spectrum (PAS) is a range of abnormal placental-myometrial attachments where the placenta invades or adheres to the uterine wall, typically including placenta accreta, increta, and percreta, and posing risk of severe hemorrhage and obstetric complications. “M.A.”, a 34-year-old with painless vaginal bleeding and prior cesareans, was evaluated for PAS with placenta previa and scar. Imaging confirmed PAS on the percreta end of the spectrum (central previa, anterior wall/scar invasion). A multidisciplinary team performed a cesarean birth with regional anesthesia, placental delivery, arterial ligation, and layered closure to minimize blood loss. Uneventful recovery; discharged after 3 days with postnatal follow-up and family planning counseling. This study examines the clinical features, diagnostic methods, and management strategies of placenta accreta, a serious obstetric condition characterized by abnormal placental attachment to the uterine wall. Through the follow-up, treatment, and management of this condition, the research highlights the importance of early diagnosis using imaging techniques to reduce maternal morbidity and mortality. The findings aim to support clinical decision-making and improve maternal safety in high-risk pregnancies.

**Keywords.** Placenta Accreta Spectrum, Placenta Increta, Placenta Percreta, Prenatal Ultrasound Diagnosis, Caesarean Section Delivery.

**Introduction**

Placenta accreta spectrum (PAS) disorders are a collection of clinically relevant obstetric illnesses marked by improper attachment of the placenta to the uterine wall [1]. The placenta typically adheres to the decidua basalis and detaches autonomously following delivery [2].

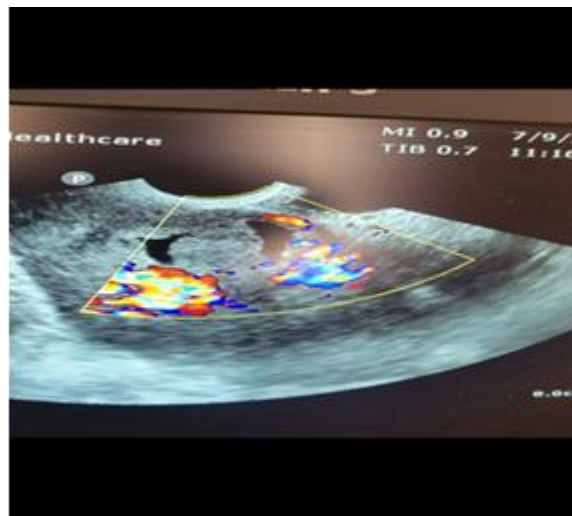
However, in PAS disorders, this physiological process is disrupted due to defective decidualization, leading to partial or complete invasion of the placenta into the myometrium, and in extreme cases, extending beyond the uterine serosa to surrounding pelvic structures [3,4]. This abnormal invasion poses substantial risks to maternal health, including life-threatening hemorrhage, hysterectomy, and long-term morbidity [5]. The global incidence of PAS disorders has risen in parallel with increasing rates of cesarean deliveries and uterine surgeries [6], which are recognized as major risk factors [7]. Historically deemed uncommon, recent studies reveal that PAS currently impacts around 1 in 500 to 1 in 2,500 pregnancies [8], underscoring its increasing clinical and public health significance. The spectrum of PAS ranges from placenta accreta, in which the placenta superficially attaches to the myometrium, to placenta increta, involving deeper myometrial invasion, and placenta percreta, characterized by full-thickness penetration potentially reaching adjacent organs such as the bladder [9].

Understanding the pathophysiology of PAS is crucial for early diagnosis [4], risk stratification, and the development of effective management strategies [10]. Pathophysiological mechanisms underlying PAS are multifactorial, involving defects in trophoblastic invasion regulation, aberrant angiogenesis, and impaired decidual formation [2,3,11]. The intricate interplay of molecular, cellular, and vascular factors disrupts the delicate balance between placental adherence and uterine tissue remodeling, leading to excessive placental invasion [12,13,14]. Insights into these mechanisms are not only essential for improving maternal outcomes but also provide opportunities for the development of predictive biomarkers and targeted therapeutic interventions. Moreover, PAS disorders present significant challenges in clinical practice. Prenatal detection often relies on advanced imaging techniques, including ultrasonography and magnetic resonance imaging (MRI) [15], yet diagnostic accuracy varies depending on gestational age, operator experience, and the degree of placental invasion. Consequently, many cases are diagnosed intraoperatively, which can result in unanticipated complications and emergency interventions [16]. A comprehensive understanding of the pathophysiological basis of PAS can therefore inform both preventive strategies, such as optimized cesarean section techniques and careful monitoring of high-risk pregnancies, and intraoperative decision-making to minimize morbidity and mortality. From a broader perspective, PAS disorders exemplify the complex relationship between obstetric interventions and maternal-fetal physiology [3,13]. The increasing prevalence of PAS reflects the cumulative effects of modern obstetric practices on uterine structure and function [17]. Studying the pathophysiology of PAS thus offers valuable insights not only into abnormal placental adherence but also into fundamental mechanisms of uterine repair, trophoblast invasion, and maternal adaptation to pregnancy [3, 18]. This knowledge can inform clinical guidelines, influence public health policy, and promote advancements in maternal care.

### Case report

"M. A.", a 34-year-old woman G5 P4 with a history of painless vaginal bleeding for 1 day, was admitted to the emergency room in Zawia Central Hospital as a case of placenta previa spectrum disorder. According to her last menstrual period (28/09/24) and first-trimester ultrasound, the pregnancy was 37 weeks plus a few days. Her past obstetric history was Gravida 5 para 4 plus 4 living children, previous 4 cesarean sections with indications of "maternal request and macrosomia, previous one cesarean with breech, Previous two cesarean, previous three cesarean, and previous four cesarean", average baby weight was 3.400 Kg. Her blood group was O- and the patient received anti-D in her previous deliveries.

She had a history of mild anemia and no significant surgical history other than cesarean sections. She got pregnant without periconceptional counselling, gestational age at the first antenatal visit was 12 weeks and a few days. The ultrasound revealed normal fetal anatomy, placental attachment covers the cervix, and is attached to the prior cesarean section scar. Her doctor, concerned about the ultrasound finding and the possibility of placenta accreta spectrum in conjunction with clinical features, referred her to an obstetrician and gynecologist specialist for further management and follow-up. The patient had a recurrent attack of vaginal bleeding during the first and second trimesters. Ultrasonography (grayscale and colour Doppler) was done at 20 weeks. It depicted placenta previa centralis attached to the anterior uterine wall and the cesarean section scar, multiple vascular lacunae within the placenta, extensive abnormal vessels, loss of the normal hypoechoic zone between the placenta and myometrium, extension of the placenta into myometrium and serosa, and abnormalities of the uterine-bladder interface. These findings confirmed the diagnosis of PAS, on the percreta end of the spectrum. Follow-up ultrasound scheduled for 28 and 34 weeks and MRI on 34 weeks (Figure 1). Both were done on time, confirming the diagnosis of PAS (Figure 2). "M.A." was admitted to the Alhadba Alkhadra Hospital at 35 weeks' gestation because of vaginal bleeding that spontaneously ended. The patient was transferred to Zawia Hospital because of a lack of facilities. "M.A." was admitted to Zawia Hospital and stayed inpatient for close observation. Corticosteroids were administered to accelerate fetal lung maturity. According to the patient's request, the patient was discharged after 2 days, "discharge against medical advice", and returned at 37 weeks for a cesarean section.



**Figure 1. Colour Doppler ultrasound at 28 weeks of gestation. Ultrasound demonstrates complete placenta previa and intense, turbulent, or bridging vascular patterns between the placenta and the uterine wall that indicate abnormally invasive placentation consistent with placenta accrete.**

A harmonized care team was gathered for the cesarean birth, which involved an obstetric specialist, anesthesia specialist, urologist, vascular surgery specialist, a neonatology team, nursing staff, and a blood bank member. During the birth, regional anesthesia was adopted at first to allow "M.A." to be awake until the baby was taken by the neonatal team in good condition. The placenta was found invading the uterus but not attached to the urinary bladder. Ligation of the uterine arteries and ovarian arteries is done. Placenta extracted and secured; stitch done at the site of the placenta in the uterine wall. The obstetrician and her birth team closed the uterine hysterotomy and abdomen in layers. An abdominal drain was left and removed after 24 hours. Mild blood loss during the operation, and the patient did not receive a blood transfusion. After 3 days, the patient was discharged in good condition and scheduled for postnatal follow-up and counselled about family planning.



**Figure2. Grayscale ultrasound view of the uterus, transvaginal at 28 Weeks of gestation, close to the lower uterine segment, ultrasound displays a placenta previa. A red arrow marks an area where the placental tissue appears close to—or over—the internal cervical os. The grayscale appearance shows loss of the normal, clear boundary between the placenta and the underlying uterine wall, which can be seen in cases of abnormally adherent placenta.**

## Discussion

Accurate preoperative assessment is fundamental to the successful management of placenta accreta spectrum (PAS) disorders. While ultrasound remains the first-line modality for initial screening due to its accessibility and cost-effectiveness, magnetic resonance imaging (MRI) has proven to be an essential adjunct in complex cases [19]. MRI offers superior soft tissue contrast and detailed visualization of placental invasion, particularly regarding the depth of myometrial involvement and potential extension into adjacent structures. Such detailed imaging facilitates precise anatomical mapping, enabling risk stratification and anticipation of intraoperative challenges. Recent evidence highlights the predictive value of MRI, with a myometrial invasion depth exceeding 2.5 cm demonstrating a sensitivity of approximately 96% in identifying cases at high risk for complications such as massive hemorrhage, transfusion, or the need for hysterectomy [19,20].

In our case, MRI played a pivotal role in preoperative planning by providing crucial anatomical details that guided clinical and surgical decision-making. Given the dynamic nature of PAS, intraoperative decisions remained responsive to real-time findings, particularly the extent of placental invasion and severity of bleeding. This case highlights the importance of individualized, flexible surgical strategies informed by detailed imaging in achieving optimal outcomes in PAS management.

## Conclusion

This case emphasizes the importance of early diagnosis and comprehensive preoperative assessment in the management of placenta accreta spectrum (PAS) disorders. The combined application of ultrasonography and magnetic resonance imaging (MRI) enabled accurate evaluation of placental invasion and informed appropriate surgical planning. Despite the patient's high-risk obstetric history and advanced disease stage, successful maternal and fetal outcomes were achieved through multidisciplinary collaboration and individualized surgical management. This report highlights the vital role of advanced imaging and coordinated care in minimizing complications and improving clinical outcomes in PAS.

## Informed Consent

Verbal informed consent was obtained from the patient for the publication of this case report and the associated images.

## Author Contributions

Dr. Karima Hwisa contributed to the study conception and design, data collection, and clinical interpretation. Dr. Nawal Hasan was responsible for manuscript writing, figure preparation, data analysis and interpretation, and critical revision of the manuscript. Both authors reviewed and approved the final version of the manuscript.

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