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CASE REPORT

Successful Resuscitation of a Patient with Pernicious Placenta Previa and Placenta Accrete Presenting with Massive Life-Threatening Hemorrhage During Cesarean Section: A Case Report

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Abstract: Pernicious placenta previa (PPP) complicated by placenta accreta spectrum (PAS) is a life-threatening obstetric condition associated with significant maternal morbidity and mortality, primarily due to severe hemorrhage during cesarean section. The 2018 FIGO Guidelines defines placenta accreta spectrum (PASDs) as a group of pathologic disorders. Depending on the depth of placental villous invasion into the uterine wall, PASDs are divided into placenta accreta (grade I), placenta increta (grade II), and placenta percreta (grade III). A 28-year-old gravida 4, para 2 woman with a history of two previous cesarean sections (Pfannenstiel scar) and one scar pregnancy presented with vaginal bleeding and abdominal discomfort at 34+3 weeks gestation. Prenatal ultrasound and magnetic resonance imaging (MRI) confirmed severe PPP with placenta accreta, involving extensive placental invasion into the bladder, cervix, vagina, and parametrial tissues. A multidisciplinary team performed preoperative abdominal aortic balloon occlusion (AABO) to reduce hemorrhage risk, followed by cesarean section under general anesthesia. Despite preventive measures, massive intraoperative hemorrhage (~6000 mL) led to hemorrhagic shock, necessitating aggressive resuscitation and massive transfusion therapy. The patient was successfully resuscitated with stable vital signs. Postoperative management included intrauterine balloon tamponade for hemostasis, prophylactic antibiotics, as well as additional blood transfusions, albumin, and nutritional support. The patient was discharged after showing improvement. This case highlights the importance of early and accurate prenatal diagnosis, rigorous multidisciplinary collaboration, and individualized surgical and resuscitative strategies in managing severe PPP complicated by PAS. Future research should focus on refining diagnostic techniques, preventive interventions, and comprehensive perioperative care protocols to minimize complications and optimize maternal and neonatal outcomes.

Keywords: pernicious placenta previa, placenta accreta spectrum, massive hemorrhage, multidisciplinary management, abdominal aortic balloon occlusion, fertility preservation

Introduction

Pernicious placenta previa (PPP) complicated by placenta accreta spectrum (PAS) represents a severe obstetric condition predominantly occurring in pregnant women with prior cesarean delivery or uterine surgeries. In this disorder, abnormal implantation of placenta occurs at the uterine scar site, invading into the myometrium.[1,2] PPP remains a significant contributor to maternal morbidity and mortality worldwide, accounting for approximately 27% of maternal fatalities.[3] Placenta previa markedly elevated the risk of PAS, with an odds ratio (OR) as high as 50.75.[4] Cesarean hysterectomy is a primary method to effectively control massive hemorrhage. However, it results in irreversible infertility and significant psychological issues, particularly depression, loss of sexual interest, and prolonged emotional distress, especially among younger women.[5] The application of prophylactic aortic balloon occlusion in these patients has been shown to effectively reduce intraoperative blood loss, transfusion requirements, operative time, and hysterectomy rates.[6,7] Here, we report a successful resuscitation case

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involving severe PPP with placenta accreta, in which the patient experienced life-threatening hemorrhage during cesarean section, yet uterine preservation was achieved.

Case Report

A 28-year-old woman, gravida 4, para 2 (Pfannenstiel scar), with two prior lower uterine segment cesarean sections and one previous scar pregnancy requiring surgical intervention, but no history of placenta previa or placenta accreta spectrum, presented with placenta previa identified at 20 weeks of gestation. Ultrasound evaluations at 23+2 weeks confirmed PPP. Subsequent follow-up ultrasounds at 31^{+1} (Figure 1A) and 34^{+3} (Figure 1B) weeks demonstrated increasing placental implantation scores (10 to 13 points). Plain magnetic resonance imaging (MRI) revealed PPP with placenta accreta, irregular placental morphology, and localized hemorrhage (Figure 2), with the placenta completely invading the internal cervical os. At 34^{+3} weeks gestation, the patient experienced mild vaginal bleeding, abdominal discomfort, hemoglobin of 109 g/L, heart rate of 104 beats/min, blood pressure of 138/79 mmHg, and stable fetal parameters.

At 34+5 weeks, preoperative abdominal aortic balloon occlusion (AABO) was performed via modified Seldinger technique to reduce anticipated hemorrhage risk. The balloon catheter was positioned at the level of L1 vertebra, confirmed by aortography. Blood products (4 units Type B RBCs, 400 mL plasma, 10 units cryoprecipitate, platelets) were prepared.

Under general anesthesia, exploration revealed extensive placental invasion covering the cervical os, involving bladder, cervix, vagina, and parametrium, accompanied by poor uterine contractility post-delivery, resulting in massive bleeding (~6000 mL) (Figure 3). Conventional hemostatic methods including uterotonics, bilateral uterine artery ligation, uterine compression sutures, and cervical lifting sutures proved ineffective. Hemorrhagic shock developed, with blood pressure dropping to 90/50 mmHg and heart rate rising to 115 bpm. We immediately assembled a resuscitation team consisting of senior staff from the Department of Obstetrics and Gynecology, Anesthesiology, the Intensive Care Unit (ICU), the Blood Bank, and the Laboratory, along with a nursing team. The multidisciplinary resuscitation team rapidly administered aggressive fluid resuscitation and massive blood transfusion (20 units RBC, 2600 mL plasma, 30 units cryoprecipitate, platelets), successfully stabilizing hemodynamics (BP 135/82 mmHg, HR 84 bpm). The neonate was delivered safely with Apgar scores of 8 (1 min) and 10 (5,10 min) and transferred to NICU.

The entire procedure lasted 4 hours. Intraoperatively, the fibrinogen level decreased to 2.45 g/L, approximately one-third of the preoperative value. Four doses of tranexamic acid were administered intravenously. Thromboelastography (TEG) was not monitored during the procedure. Postoperatively, the hemoglobin level dropped from 109 g/L to 76 g/L, and increased to 87 g/L after additional blood transfusion. Postoperative prophylactic antibiotics included intravenous meropenem (0.5 g/8h) and doxycycline (0.2 g/day). Uterine balloon tamponade was intermittently drained and removed by postoperative day 3. Additional transfusions, albumin supplementation, and nutritional support were provided. The patient was discharged on postoperative day 8 in stable condition.

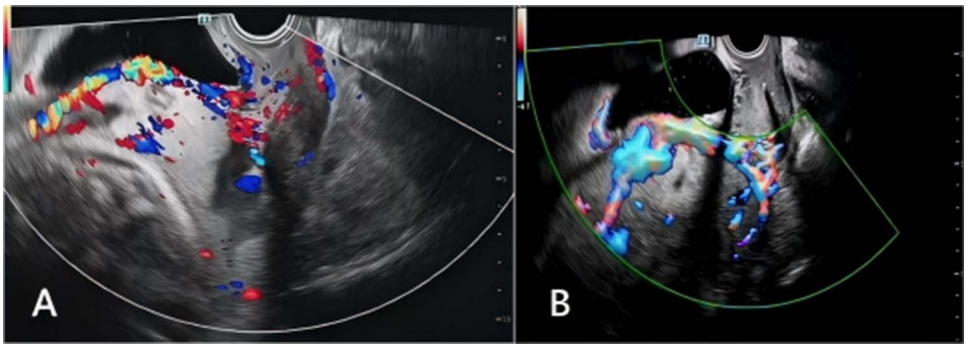

Figure 1 Ultrasound evaluation scores of this case of placenta accreta. (**A**) At 31+1 weeks of gestation, the placenta was completely attached to the left and posterior uterine wall, measuring approximately 59 mm in length, with a placental thickness greater than 5 mm. Ultrasound findings included localized interruption of the posterior hypoechoic zone, disruption of the bladder line, presence of placenta lacunae (traps), and increased blood flow within a mass at the placenta base. The cervix appeared morphologically intact (Mindray, Resona 8s). (**B**) At 34+3 weeks of gestation, the placenta was completely attached to the anterior uterine wall, spanning approximately 71.3 mm in length, with a placental thickness greater than 5 mm. The post-placental hypoechoic zone was absent. Placental lacunae had fused into a confluent area, demonstrating the "boiling water sign," and "cross-border" vessels were observed in the blood flow signals at the placental base. The cervix was noted to be structurally incomplete (Mindray, Resona 9).

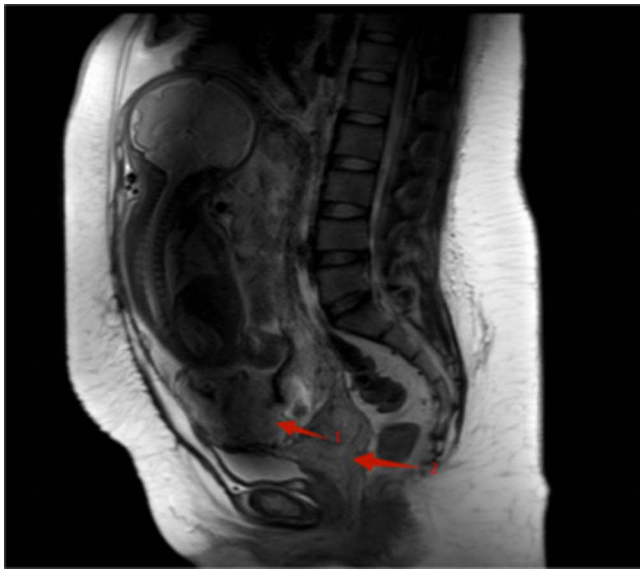

Figure 2 At 31+1 weeks, most of the placenta is located in the posterior wall of the uterus, with a low position, completely covering the cervical opening; the local morphology of the placenta is irregular, with the anterior lower part locally expanding outward toward the uterus; the signal in the placenta is inhomogeneous, with patchy short T1 and short T2 signals visible, and locally poorly demarcated from the myometrium of the uterine wall (Carestream, T2W-Cor-BH-#21). The red arrow 1 indicates the placenta. The red arrow 2 indicates the cervical os.

Figure 3 This figure shows that during a cesarean section, uterine atony leads to massive hemorrhage.

Discussion

A 28-year-old pregnant woman with two prior cesarean sections presented with PPP complicated with PAS, achieving a high-risk placenta accreta score of 13 points on prenatal ultrasound and MRI evaluation. Intraoperatively, extensive placental invasion involving the bladder posterior wall and bilateral parametrial regions was observed, accompanied by poor uterine contractions. Despite preoperative prophylactic abdominal aortic balloon occlusion (AABO) via a modified Seldinger technique, massive hemorrhage (~6000 mL) occurred, precipitating hemorrhagic shock. Prompt activation of a multidisciplinary resuscitation team and aggressive blood transfusion strategies successfully stabilized the patient's hemodynamics, resulting in a favorable postoperative outcome and preservation of fertility.

PPP complicated by PAS significantly elevates maternal morbidity and mortality, driven predominantly by established risk factors such as multiple cesarean deliveries, previous placenta previa, advanced maternal age, and uterine surgery history. Precise prenatal identification is critical; for instance, ultrasound often reveals abnormal placental vasculature, obliteration of the retroplacental clear space, and disruption of the bladder-uterine interface. MRI further enhances diagnostic accuracy by delineating the depth of placental invasion, particularly in complex cases involving bladder or parametrial extension.[8,9] Nonetheless, current scoring systems have inherent limitations, including potential false negatives and patient heterogeneity. Consequently, accurate PAS diagnosis necessitates integrating multimodal imaging findings, clinical history, and laboratory assessments into a comprehensive, individualized risk evaluation.

Managing severe PPP with PAS requires proactive, multidisciplinary collaboration. A thorough preoperative plan must address the risks of intraoperative massive hemorrhage, hysterectomy, and multi-organ injury. Critical preparatory steps include securing sufficient blood products, arranging emergency equipment, and ensuring immediate postoperative intensive care unit availability to reduce maternal-neonatal mortality and morbidity effectively.

The presented case highlights the challenge of effectively managing intraoperative hemorrhage even with advanced interventions such as preoperative AABO. Although balloon occlusion significantly reduces bleeding risk and improves operative safety, hemorrhagic complications may persist, underscoring the importance of adhering to standardized emergency protocols. Prophylactic abdominal aortic balloon occlusion is a safe and effective hemostatic measure for patients with placenta accreta spectrum disorder involving bladder invasion. Future multicenter prospective studies should focus on determining the optimal balloon positioning, developing individualized treatment protocols, and enhancing specialized management strategies for cases with bladder involvement, thereby improving the overall management of such high-risk.[6,7] Following ACOG guidelines, immediate blood transfusion and fluid resuscitation were initiated upon recognition of severe hemorrhage.[10] A multidisciplinary approach, involving Obstetrics, Gynecology, Urology, Anesthesiology, ICU specialists, Transfusion medicine, and NICU teams, was pivotal in hemorrhagic shock, stabilizing vital signs, and ensuring maternal and neonatal safety. These measures emphasize the necessity of early intervention, coordinated hemostasis techniques, and aggressive resuscitation to optimize maternal and neonatal outcomes. However, a single case cannot represent the majority of pregnant women with PPP complicated by placenta accreta spectrum (PAS). Therefore, it is difficult to extrapolate that fertility preservation can be universally achieved.

PPP complicated by placenta accreta presents long-term implications beyond immediate surgical outcomes, including severe hemorrhage, disseminated intravascular coagulation (DIC), potential multi-organ failure, and fertility loss secondary to hysterectomy.[11] Although uterus preservation was achieved in this patient, significant recurrence risks and subsequent pregnancy complications, such as uterine rupture, necessitate rigorous pre-pregnancy counseling to mitigate unintended pregnancies. Regular gynecological follow-up and rigorous pre-pregnancy counseling are necessary to mitigate associated risks, and it is recommended to monitor reproductive health and ovarian function. Additionally, psychological consequences, such as persistent anxiety, depression, post-traumatic stress disorder (PTSD), and marital difficulties, may affect even those whose uterus is preserved.[12,13] Therefore, comprehensive follow-up incorporating psychological assessment and professional nursing support is essential.

The management of PPP with PAS should emphasize early diagnosis, detailed preoperative assessment, personalized surgical strategies, and vigilant postoperative monitoring within a multidisciplinary framework. Clinically, this case underscores the critical importance of accurate prenatal diagnosis, proactive interdisciplinary collaboration, and tailored fertility-preserving management strategies to enhance maternal and neonatal outcomes. Effective team communication and preparedness for emergent complications substantially reduce adverse consequences.

Future research directions include developing precision-based diagnostic technologies with improved sensitivity for PAS prediction, optimizing timing and procedural protocols for balloon occlusion methods, and investigating novel hemostatic agents. Additionally, refinement of autologous blood salvage techniques to minimize reliance on allogeneic transfusions and exploring new antifibrinolytic therapies to reduce DIC incidence remain key research priorities. Studies should pursue minimally invasive, individualized, and preventive strategies, bridging translational research from basic mechanisms to clinical practice, ultimately transforming PPP into a manageable, preventable, and effectively treatable obstetric complication.

Conclusion

This case successfully utilized abdominal aortic balloon occlusion and multidisciplinary teamwork to preserve the uterus in a gravida 4 para 2 patient with morbidly adherent placenta (PAS complicated by PPP) following hemorrhagic shock. This report underscores the critical importance of early prenatal diagnosis, thorough preoperative assessment, and multidisciplinary collaboration in managing severe PAS. Despite proactive interventions such as balloon occlusion and meticulous preparation, the occurrence of intraoperative massive hemorrhage highlights the persistent limitations of current strategies, confirming that profound bleeding remains a formidable challenge during surgical intervention. Prompt and coordinated multidisciplinary resuscitation strategies significantly enhance maternal and neonatal outcomes, preserving fertility and reducing morbidity. Future clinical practice should continue advancing diagnostic precision, refining surgical and resuscitative protocols, and emphasizing individualized patient care to transform PPP with PAS into a manageable and preventable obstetric condition.

Patient Consent

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

Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, acquisition of figures, analysis and interpretation, or in all these areas; took part in drafting, revising or criticallyreviewing the article; gave final approval of the version to be published; have agreed on the journal to which the articlehas been submitted; and agree to be accountable for all aspects of the work.

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Disclosure

The authors report no conflicts of interest in this work.

References

1. Du X, Xie X, Wang Y. Uterine artery suture: a preventive approach for pernicious placenta previa. *Cell Biochem Biophys*. 2014;68(2):407–410. doi:10.1007/s12013-013-9721-6
2. Chen Z, Li J, Shen J, Jin J, Zhang W, Zhong W. Direct puncture embolization of the internal iliac artery during cesarean delivery for pernicious placenta previa coexisting with placenta accreta. *Int J Gynaecol Obstet*. 2016;135(3):264–267. doi:10.1016/j.ijgo.2016.05.018
3. Flood KM, Said S, Geary M, Robson M, Fitzpatrick C, Malone FD. Changing trends in peripartum hysterectomy over the last 4 decades. *Am J Obstet Gynecol*. 2009;200(6):632e631–636. doi:10.1016/j.ajog.2009.02.001
4. Eshkoli T, Weintraub AY, Sergienko R, Sheiner E. Placenta accreta: risk factors, perinatal outcomes, and consequences for subsequent births. *Am J Obstet Gynecol*. 2013;208(3):219e211–217. doi:10.1016/j.ajog.2012.12.037
5. Danesh M, Hamzehgardeshi Z, Moosazadeh M, Shabani-Asrami F. The effect of hysterectomy on women's sexual function: a narrative review. *Med Arch*. 2015;69(6):387–392. doi:10.5455/medarh.2015.69.387-392
6. Cui S, Zhi Y, Cheng G, Zhang K, Zhang L, Shen L. Retrospective analysis of placenta previa with abnormal placentation with and without prophylactic use of abdominal aorta balloon occlusion. *Int J Gynaecol Obstet*. 2017;137(3):265–270. doi:10.1002/ijgo.12132
7. Tokue H, Tokue A, Tsushima Y, Kameda T. Comparison of the safety and efficacy of PABO above or below the ovarian artery during cesarean delivery in patients with coexisting placenta accreta and placenta previa. *Eur J Radiol Open*. 2021;8:100344. doi:10.1016/j.ejro.2021.100344
8. Zou L, Wang P, Song Z, et al. Effectiveness of a fetal magnetic resonance imaging scoring system for predicting the prognosis of pernicious placenta previa: a retrospective study. *Front Physiol*. 2022;13:921273. doi:10.3389/fphys.2022.921273
9. Finberg HJ, Williams JW. Placenta accreta: prospective sonographic diagnosis in patients with placenta previa and prior cesarean section. *J Ultrasound Med*. 1992;11(7):333–343. doi:10.7863/jum.1992.11.7.333
10. Kilcoyne A, Shenoy-Bhangle AS, Roberts DJ, Sisodia RC, Gervais DA, Lee SI. MRI of placenta accreta, placenta increta, and placenta percreta: pearls and pitfalls. *AJR Am J Roentgenol*. 2017;208(1):214–221. doi:10.2214/AJR.16.16281
11. Matsuzaki S, Yoshino K, Endo M, et al. Successful anticoagulant therapy for disseminated intravascular coagulation during conservative management of placenta percreta: a case report and literature review. *BMC Pregnancy Childbirth*. 2017;17(1):443. doi:10.1186/s12884-017-1634-8
12. Sentilhes L, Goffinet F, Kayem G. Management of placenta accreta. *Acta Obstet Gynecol Scand*. 2013;92(10):1125–1134. doi:10.1111/aogs.12222
13. Howard LM, Molyneaux E, Dennis CL, Rochat T, Stein A, Milgrom J. Non-psychotic mental disorders in the perinatal period. *Lancet*. 2014;384 (9956):1775–1788. doi:10.1016/S0140-6736(14)61276-9