Abruptio Placentae with Disseminated Intravascular Coagulation in a Robert's Uterus: A Rare Multidisciplinary Obstetric Success Story

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ABSTRACT

Background: Placental Abruption is a major obstetric emergency associated with significant maternal and fetal morbidity and mortality. The coexistence of placental abruption with rare Müllerian anomalies such as Robert's uterus is exceptionally uncommon and poses unique diagnostic and surgical challenges. Severe cases may rapidly progress to Disseminated Intravascular Coagulation and catastrophic obstetric hemorrhage.

Case Presentation: A 24-year-old gravida 3 abortion 2 woman at 32 weeks gestation presented with antepartum hemorrhage and hemodynamic instability. She was diagnosed clinically with abruptio placentae and underwent emergency lower segment cesarean section. Intraoperatively, a Robert's uterus with Couvelaire changes and severe uterine atony was identified. Despite aggressive uterotonic therapy, Bakri balloon tamponade, uterine artery ligation, massive transfusion, and intensive resuscitative measures, persistent hemorrhage with consumptive coagulopathy necessitated emergency supracervical hysterectomy. The patient required multidisciplinary intensive care support involving obstetricians, anesthesiologists, hematologists, nephrologists, cardiologists, and transfusion medicine specialists. Postoperatively, disseminated intravascular coagulation and stage 1 acute kidney injury resolved with supportive management. The patient was discharged in stable condition.

Conclusion: This case highlights the extreme rarity and life-threatening nature of abruptio placentae occurring in a Robert's uterus complicated by disseminated intravascular coagulation. Early recognition, rapid multidisciplinary intervention, massive transfusion protocols, and timely obstetric hysterectomy were crucial in achieving maternal survival.

Keywords: Robert's uterus; abruptio placentae; disseminated intravascular coagulation; Couvelaire uterus; obstetric hemorrhage; supracervical hysterectomy

Introduction

Placental Abruption, defined as the premature separation of a normally implanted placenta before delivery of the fetus, remains a significant cause of maternal and perinatal morbidity and mortality worldwide.[1] In India, abruptio placentae continues to contribute substantially to obstetric hemorrhage, preterm birth, fetal distress, and maternal intensive care admissions.[2] The incidence ranges between 0.4% and 1% of pregnancies globally, with higher maternal and neonatal complications observed in low- and middle-income countries due to delayed referral, anemia, and limited access to emergency obstetric care.[1,2]

The clinical spectrum of placental abruption varies from mild concealed hemorrhage to catastrophic bleeding with hypovolemic shock and coagulopathy. Severe cases may progress to Disseminated Intravascular Coagulation, a life-threatening hematological emergency resulting from widespread activation of the coagulation cascade and consumption of clotting factors.[3] Disseminated intravascular coagulation associated with abruptio placentae is frequently accompanied by massive obstetric hemorrhage, multiorgan dysfunction, acute kidney injury, and increased maternal mortality.[4]

Couvelaire uterus, also known as uteroplacental apoplexy, represents a rare manifestation of severe placental abruption in which blood infiltrates the myometrium and may extend beneath the serosa.[5] Although the diagnosis is usually made intraoperatively, its presence indicates severe placental separation and significant uterine vascular compromise. Persistent uterine atony in such cases may necessitate aggressive surgical intervention including obstetric hysterectomy.[5]

Congenital uterine anomalies arise due to abnormal formation, fusion, or resorption of the Müllerian ducts during embryogenesis and are observed in approximately 5–7% of the general female population.[6] These anomalies are associated with infertility, recurrent pregnancy loss, preterm labor, malpresentation, placental abnormalities, fetal growth restriction, and obstetric hemorrhage.[6,7] Among the rarest Müllerian anomalies is Robert's uterus, an asymmetric septate uterus characterized by a blind non-communicating hemicavity and a contralateral communicating cavity connected to the cervix.[8]

First described by Robert in 1970, Robert's uterus is considered an unusual variant of a septate uterus and remains extremely rare in obstetric practice.[8] Most reported cases present during adolescence with severe dysmenorrhea, hematometra, infertility, recurrent abortions, or endometriosis due to obstructed menstrual flow.[9] Pregnancy occurring in a Robert's uterus is uncommon and poses significant diagnostic and therapeutic challenges because distorted uterine anatomy may predispose to abnormal placentation, impaired uteroplacental perfusion, preterm labor, and severe obstetric hemorrhage.[10]

The coexistence of abruptio placentae, Couvelaire uterus, and disseminated intravascular coagulation in a previously undiagnosed Robert's uterus is exceedingly rare, with very limited cases reported in literature.

Furthermore, the occurrence of refractory uterine atony requiring emergency obstetric hysterectomy in such anatomical anomalies represents a major surgical and resuscitative challenge requiring multidisciplinary management.

We report a rare and life-threatening case of a 24-year-old gravida 3 abortion 2 woman at 32 weeks gestation with previously undiagnosed Robert's uterus presenting with abruptio placentae complicated by Couvelaire uterus, disseminated intravascular coagulation, hemorrhagic shock, refractory uterine atony, and stage 1 acute kidney injury, successfully managed with emergency supracervical hysterectomy, massive transfusion protocol, and multidisciplinary critical care support.

CASE PRESENTATION

A 24-year-old gravida 3 abortion 2 woman at 32 weeks gestation presented to the emergency department of Saveetha Medical College and Hospitals with complaints of antepartum hemorrhage and severe abdominal pain. On admission, the patient was hemodynamically unstable with features suggestive of hypovolemic shock. Clinical examination and obstetric assessment were consistent with Placental Abruption. Emergency laboratory investigations were performed, and the patient was planned for immediate surgical intervention in view of maternal instability.

After initial resuscitation and stabilization, the patient was shifted for emergency lower segment cesarean section (LSCS) on 18 July 2025. Spinal anesthesia was initially administered; however, due to worsening intraoperative condition, the patient was subsequently managed under general anesthesia. The patient was placed in supine position, and abdomen was opened in layers under aseptic precautions.

Intraoperatively, the rectus sheath and bladder appeared normal. After identifying and dissecting the uterovesical fold of peritoneum, a lower uterine segment incision was made. A live preterm male neonate was delivered in cephalic presentation at 2:22 PM with immediate cord clamping. The neonate weighed 1.47 kg and was appropriate for gestational age. Apgar scores were 4/10 at 1 minute and 7/10 at 5 minutes. The baby did not cry immediately after birth and was handed over to the pediatric team for further management.

Following delivery, the placenta and membranes were delivered completely. Approximately 120 g of retroplacental clots were noted intraoperatively, confirming placental abruption. The uterus appeared severely atonic and flabby and showed extensive Couvelaire changes. An incidental congenital uterine anomaly with asymmetric hemiuterine configuration consistent with Robert's uterus was identified intraoperatively.

Aggressive uterotonic therapy was initiated immediately. The patient received intravenous oxytocin infusion (40 units), intravenous tranexamic acid 1.5 g, intramuscular carboprost 250 µg in three doses, one intramyometrial carboprost injection, intravenous methylergometrine 0.25 mg in two doses, and rectal misoprostol 250 µg. Despite maximal medical management, severe uterine atony and ongoing hemorrhage persisted.

Senior obstetric consultants were urgently called for intraoperative assistance. Bilateral uterine artery ligation was performed in an attempt to control hemorrhage. Subsequently, the patient was placed in dorsal lithotomy position, and Bakri balloon tamponade was inserted and inflated with 750 mL normal saline. However, continuous bleeding persisted with approximately 100 mL ongoing collection in the drainage bag, indicating failure of conservative surgical measures.

Progressive diffuse bleeding from operative sites raised suspicion of Disseminated Intravascular Coagulation. Massive transfusion protocol was initiated immediately. The patient received 3 units packed red blood cells (PRBC), 4 units fresh frozen plasma (FFP), and 4 units cryoprecipitate intraoperatively. Inotropic support was started due to persistent hemodynamic instability.

In view of refractory uterine atony, Couvelaire uterus, consumptive coagulopathy, and uncontrolled obstetric hemorrhage despite exhaustive conservative management, a decision for emergency obstetric hysterectomy was made after obtaining informed consent from the patient's attenders. Emergency supracervical hysterectomy was performed successfully, and an abdominal drain was placed.

Histopathological examination of the supracervical hysterectomy specimen revealed features of a gravid uterus with asymmetric septate uterine morphology and absence of communication between the endometrial cavities, consistent with Robert's uterus. Both endometrial cavities showed decidualized endometrium, and focal adenomyosis was also identified. Microscopy demonstrated hypertrophied smooth muscle fibres with congested blood vessels and extensive decidualization.

The patient was intubated and shifted to the intensive care unit for further management.

Postoperatively, the patient required multidisciplinary management involving obstetricians, intensivists, nephrologists, hematologists, cardiologists, vascular surgeons, anesthesiologists, and transfusion medicine specialists. Additional transfusions included 2 units of PRBC, 6 units of FFP, 16 units of cryoprecipitate, and 4 units of random donor platelets.

The patient subsequently developed stage 1 acute kidney injury secondary to hemorrhagic shock. Nephrology evaluation advised maintenance of mean arterial pressure, strict urine output monitoring, intravenous fluids at 75 mL/hour, serial arterial blood gas monitoring, and evaluation for thrombotic microangiopathy and autoimmune causes including lactate dehydrogenase, peripheral smear, liver function tests, complement levels, antinuclear antibody immunoblot, and antineutrophil cytoplasmic antibody profile. Renal parameters improved gradually with conservative management.

Cardiology consultation recommended correction of anaemia and thrombocytopenia, while vascular surgery opinion advised against anticoagulation for deep vein thrombosis prophylaxis due to ongoing coagulopathy and bleeding risk.

The patient showed gradual clinical improvement during intensive care stay. Disseminated intravascular coagulation resolved with aggressive blood component replacement therapy and supportive management. On

postoperative day 3, the patient became hemodynamically stable and was shifted from ICU to the labor ward. On postoperative day 5, fibrinogen levels decreased to 81 mg/dL, following which transfusion medicine consultation was obtained and additional correction was administered. Suture removal was performed on postoperative day 8, and the patient was shifted to the postnatal ward.

The patient remained symptomatically improved and hemodynamically stable thereafter and was discharged with appropriate follow-up advice. During follow-up review on postoperative day 31, renal function reassessment and rheumatology evaluation were advised.

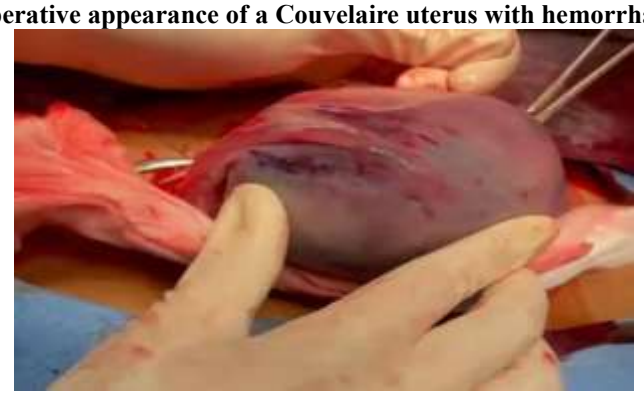
TABLE 1. Timeline of Clinical Events

Date / POD	Clinical Event
18/07/2025	Patient presented with antepartum hemorrhage and hemodynamic instability
18/07/2025	Diagnosed clinically with abruptio placentae
18/07/2025	Emergency LSCS performed
18/07/2025	Intraoperative diagnosis of Robert's uterus with Couvelaire changes
18/07/2025	Severe uterine atony managed with uterotonics, uterine artery ligation, and Bakri balloon
18/07/2025	Massive obstetric hemorrhage complicated by DIC
18/07/2025	Emergency supracervical hysterectomy performed
18/07/2025	ICU admission with massive transfusion and inotropic support
POD 3	Hemodynamically stable; shifted from ICU to labor ward
POD 5	Low fibrinogen corrected with additional blood products
POD 8	Suture removal and transfer to ward
POD 31	Follow-up nephrology review advised

TABLE 2. Blood Products Administered

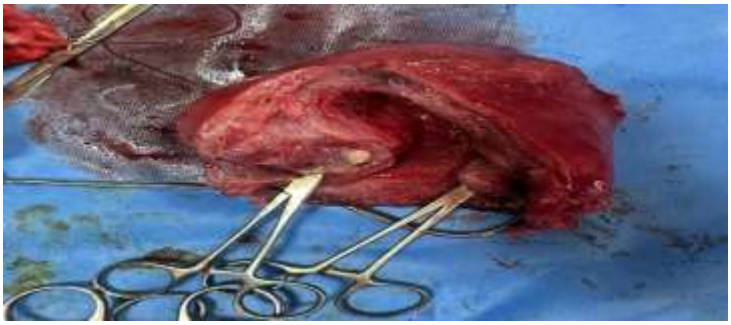
Blood Product	Intraoperative	Postoperative	Total
Packed Red Blood Cells	3 units	2 units	5 units
Fresh Frozen Plasma	4 units	6 units	10 units
Cryoprecipitate	4 units	16 units	20 units
Random Donor Platelets	—	4 units	4 units

Figure 1. Intraoperative appearance of a Couvelaire uterus with hemorrhagic discoloration



Diffuse bluish-purple ecchymotic discolouration of the uterine serosa suggestive of Couvelaire uterus secondary to severe placental abruption and intramyometrial hemorrhage.

Figure 2. Gross specimen demonstrating asymmetric septate uterine morphology consistent with Robert's uterus



Gross specimen demonstrating asymmetric hemiuterine morphology consistent with a rare Müllerian anomaly consistent with Robert's uterus

Discussion

Placental Abruption remains one of the most catastrophic obstetric emergencies and is associated with significant maternal and perinatal morbidity and mortality worldwide.[1,2] Severe placental abruption may rapidly progress to hypovolemic shock, postpartum haemorrhage, acute kidney injury, multiorgan dysfunction, and disseminated intravascular coagulation. [3,4] The present case was further complicated by the coexistence of a rare congenital Müllerian anomaly, Robert's uterus, making it an exceptionally uncommon and surgically challenging presentation.

Robert's uterus is an extremely rare asymmetric septate uterus characterized by a blind non-communicating hemicavity with a contralateral communicating cavity connected to the cervix.[8] Due to its rarity, the true incidence remains unknown, and most available literature consists of isolated case reports and small case series.[8,9] Patients commonly present during adolescence with severe dysmenorrhea, hematometra, infertility, recurrent abortions, or endometriosis resulting from obstructed menstrual flow.[9] In many patients, diagnosis is delayed or established intraoperatively because routine ultrasonography may fail to accurately delineate the complex uterine anatomy.[7]

Robert's uterus is classified as a rare variant of a septate uterus resulting from an asymmetric resorption defect of the Müllerian ducts, leading to the formation of a non-communicating blind hemicavity alongside a contralateral normally communicating cavity.[8,9] Unlike a bicornuate uterus, the external uterine contour in Robert's uterus is usually preserved, making preoperative diagnosis particularly difficult on routine ultrasonography.[7,9] Advanced imaging modalities such as three-dimensional ultrasonography and magnetic resonance imaging are considered more reliable for accurate anatomical delineation and differentiation from other Müllerian anomalies.[7] The altered uterine architecture and abnormal endometrial cavity configuration may contribute to impaired implantation, defective placentation, reduced uteroplacental perfusion, and adverse obstetric outcomes including recurrent pregnancy loss, preterm delivery, fetal malpresentation, placental insufficiency, and severe obstetric hemorrhage.[6,10] In many reported cases, the diagnosis is established only intraoperatively or following histopathological examination after surgical intervention, as observed in the present patient.[9]

In the present case, histopathological examination of the hysterectomy specimen demonstrated asymmetric septate uterine morphology with absence of communication between the endometrial cavities, further supporting the diagnosis of Robert's uterus. Histopathology also revealed decidualised endometrium and focal adenomyosis.

Congenital uterine anomalies are well known to adversely affect reproductive and obstetric outcomes.[6,10] Abnormal uterine contour and altered vascular architecture may impair implantation and uteroplacental perfusion, thereby increasing the risk of recurrent pregnancy loss, placental insufficiency, fetal growth restriction, malpresentation, preterm labor, and placental abruption.[6,10] In the present case, the patient had a history of two previous abortions, which may have represented earlier manifestations of the underlying uterine anomaly.

The coexistence of abruptio placentae in a Robert's uterus is exceedingly rare. Altered placentation secondary to distorted uterine anatomy may have contributed to severe retroplacental hemorrhage in this patient. Intraoperatively, extensive Couvelaire changes were identified, indicating severe placental separation with extravasation of blood into the myometrium. Couvelaire uterus is an uncommon manifestation of severe placental abruption and usually reflects advanced disease with significant maternal compromise.[5]

Massive obstetric hemorrhage remains one of the leading indications for emergency obstetric hysterectomy worldwide.[11] Current management strategies for severe postpartum hemorrhage include aggressive uterotonic therapy, uterine massage, uterine artery ligation, compression sutures, balloon tamponade, and stepwise devascularization procedures before proceeding to hysterectomy.[11,12] In our patient, despite administration of oxytocin, tranexamic acid, carboprost, methylergometrine, misoprostol, bilateral uterine artery ligation, and Bakri balloon tamponade, severe uterine atony and ongoing hemorrhage persisted.

The patient subsequently developed disseminated intravascular coagulation, evidenced intraoperatively by diffuse bleeding from surgical sites and worsening hemodynamic instability. Disseminated intravascular coagulation associated with placental abruption results from release of thromboplastin into maternal circulation leading to widespread activation of the coagulation cascade and rapid consumption of clotting factors.[3,4] Prompt correction with blood products including packed red blood cells, fresh frozen plasma, cryoprecipitate, and platelet concentrates is essential to reduce maternal mortality.[3]

Massive transfusion protocols have significantly improved outcomes in obstetric hemorrhage by enabling rapid and balanced blood component replacement. [12] Our patient required extensive transfusion support both intraoperatively and postoperatively, including packed red blood cells, fresh frozen plasma, cryoprecipitate, and random donor platelets. Early involvement of transfusion medicine specialists and intensivists contributed significantly to successful maternal recovery.

Another major complication encountered in this case was stage 1 acute kidney injury secondary to hemorrhagic shock and disseminated intravascular coagulation. Acute kidney injury in severe obstetric hemorrhage occurs due to renal hypoperfusion, ischemic injury, microvascular thrombosis, and systemic inflammatory response.[13] Early nephrology involvement, strict fluid monitoring, maintenance of adequate perfusion pressure, and serial biochemical monitoring facilitated renal recovery in this patient without the need for renal replacement therapy.

Emergency obstetric hysterectomy remains a definitive life-saving procedure in cases of uncontrollable obstetric hemorrhage refractory to conservative management.[11] Although fertility preservation is an important consideration in young women, timely hysterectomy is crucial to prevent maternal mortality when conservative measures fail. In the present case, supracervical hysterectomy was performed due to refractory uterine atony, Couvelaire uterus, severe coagulopathy, and persistent hemorrhage despite exhaustive medical and surgical interventions.

The successful outcome in this patient highlights the importance of rapid multidisciplinary management involving obstetricians, anesthesiologists, intensivists, hematologists, nephrologists, cardiologists, vascular surgeons, pediatricians, and transfusion medicine specialists. Early recognition of deterioration, aggressive resuscitation, activation of massive transfusion protocols, and decisive surgical intervention were critical in achieving maternal survival in this rare and catastrophic obstetric emergency.

Conclusion

This case highlights the extreme rarity and life-threatening nature of Placental Abruption occurring in a previously undiagnosed Robert's uterus complicated by Couvelaire uterus, refractory uterine atony, massive obstetric hemorrhage, and Disseminated Intravascular Coagulation. Distorted uterine anatomy associated with congenital Müllerian anomalies may predispose to abnormal placentation and catastrophic hemorrhagic complications during pregnancy.

The present case emphasizes the importance of early recognition of maternal deterioration, rapid activation of massive transfusion protocols, aggressive correction of coagulopathy, and timely surgical intervention in achieving maternal survival. Although conservative uterine-sparing measures remain the preferred initial approach, emergency obstetric hysterectomy continues to be a definitive life-saving procedure in cases of uncontrolled hemorrhage refractory to medical and surgical management.

Successful maternal recovery in this patient was possible because of prompt multidisciplinary coordination involving obstetricians, anesthesiologists, intensivists, hematologists, nephrologists, cardiologists, vascular surgeons, pediatricians, and transfusion medicine specialists. This case further adds to the limited literature available on pregnancy-related complications in Robert’s uterus and underscores the need for heightened awareness and individualized management strategies in such rare congenital uterine anomalies.

Patient Consent

Written informed consent was obtained from the patient and her attenders for publication of this case report and accompanying clinical details. Efforts have been made to maintain patient confidentiality and anonymity.

Author Contributions

Dr. Manaswini Janagam contributed to data collection, literature review, manuscript drafting, and preparation of the final manuscript.

Dr. Archana Kumari contributed to case supervision, critical revision of the manuscript, and final approval of the version to be published.

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