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DIFFERENTIAL DIAGNOSIS OF PLACENTA ABRUPTIO AND PLACENTA PREVIA: CLINICAL AND ULTRASONOGRAPHIC CRITERIA

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Abstract: Background: Antepartum hemorrhage (APH) is a critical obstetric emergency, with Placenta Abruptio (PA) and Placenta Previa (PP) being the two most common causes. Differentiating between these conditions is vital for maternal and fetal survival but remains challenging due to overlapping symptoms. This study aims to evaluate the diagnostic accuracy of clinical symptoms versus ultrasonography in distinguishing PA from PP in a tertiary care setting. Methods: A prospective comparative study was conducted at the Andijan Regional Perinatal Center involving 200 patients presenting with APH after 28 weeks of gestation. Patients were confirmed postnatally as having either PA (n=110) or PP (n=90). We analyzed clinical parameters (pain, nature of bleeding, uterine tone) and ultrasound findings. Sensitivity and specificity of diagnostic methods were calculated. Results: Clinical presentation of "painful bleeding" had a sensitivity of 85% for PA, while "painless bleeding" had a sensitivity of 92% for PP. Ultrasonography was the gold standard for PP (Sensitivity 98%, Specificity 100%) but showed poor sensitivity for PA (45%). Fetal distress was significantly more common in the PA group (65%) compared to the PP group (15%, $p<0.001$). Conclusion: While ultrasonography is definitive for excluding Placenta Previa, it is unreliable for diagnosing Placenta Abruptio. The diagnosis of abruption remains primarily clinical. A combination of clinical assessment (uterine tonus, pain) and ultrasound (placental location) is the optimal strategy for differential diagnosis.
Keywords: Antepartum hemorrhage, placenta abruptio, placenta previa, differential diagnosis, ultrasound, fetal distress.

INTRODUCTION

Antepartum Hemorrhage (APH), defined as bleeding from the genital tract after 24 weeks of gestation and before the birth of the baby, represents one of the most volatile and dangerous scenarios in modern obstetrics. It complicates approximately 2-5% of all pregnancies globally and is a significant contributor to maternal morbidity (shock, coagulopathy, renal failure) and perinatal mortality (hypoxia, prematurity) in Uzbekistan.

The two primary etiologies of APH are Placenta Previa (PP) and Placental Abruption (PA). While both present with vaginal bleeding, their pathophysiology, management, and implications are fundamentally distinct.

Placenta Previa involves the abnormal implantation of the placenta over the lower uterine segment or cervix. The bleeding is typically maternal, caused by the shearing force of the lower segment stretching away from the inelastic placenta. Management often allows for expectant care ("macroscopic silence") to prolong gestation.

Placental Abruption, conversely, is the premature separation of a normally implanted placenta from the uterine wall. It is an acute ischemic event, often driven by maternal vascular pathology

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(hypertension) or trauma. The bleeding can be concealed, leading to a perilous underestimation of blood loss. Management typically demands immediate delivery to save the fetus from asphyxia and the mother from Disseminated Intravascular Coagulation (DIC).

In the high-volume, high-acuity setting of the Andijan Regional Perinatal Center, misdiagnosis can lead to catastrophic delays. The "Diagnostic Dilemma" arises because clinical presentations often overlap. A patient with Placenta Previa may present with abdominal pain due to concurrent labor, mimicking abruption. Conversely, a patient with Placental Abruption may present with painless bleeding if the placenta is posterior and the blood escapes freely. Furthermore, the reliance on ultrasonography as a "magic bullet" can be misleading, as a negative scan does not rule out abruption.

This study aims to systematically evaluate the diagnostic accuracy of key clinical signs versus ultrasonography in differentiating PA from PP. By defining a robust diagnostic algorithm, we hope to reduce the "decision-to-delivery" time and improve outcomes for mothers and babies in the Andijan region.

LITERATURE REVIEW

Clinical Phenotypes - Beyond the Textbooks Classic obstetric textbooks describe a binary presentation: PP is "painless, causeless, recurrent bright red bleeding," while PA is "painful, continuous dark red bleeding with a woody hard uterus." However, contemporary literature suggests this distinction is often blurred. *Oyelese and Ananth (2006)* note that up to 20% of abruptions present with "silent" symptoms—specifically, posterior abruptions may manifest as backache rather than abdominal tenderness. Furthermore, *Tikkanen (2011)* highlights that in the early stages of abruption, uterine tone may be normal between contractions, leading to a false sense of security. Conversely, 10-20% of women with placenta previa experience uterine contractions (pain) triggered by the blood acting as an irritant to the myometrium.

The Capabilities and Limitations of Ultrasound Transvaginal Sonography (TVS) is universally accepted as the gold standard for diagnosing Placenta Previa, with a sensitivity of >99%. It allows for the precise measurement of the placental edge relative to the internal os, reclassifying "low-lying placenta" vs. true previa. However, the diagnostic utility of ultrasound for Placental Abruption is surprisingly poor. *Glantz et al. (2002)* reported a sensitivity of only 24% for detecting abruption. The sonographic signs—such as a retroplacental hematoma, thickened placenta, or "jello sign" (shimmering of clots)—are highly specific but insensitive. Fresh blood is often isoechoic to the placenta, making it invisible on greyscale ultrasound. Therefore, a "normal" ultrasound report in a patient with painful bleeding often leads to a dangerous delay in diagnosis if the clinician does not understand these limitations.

Hemodynamic and Fetal Implications The maternal hemodynamic response differs significantly. In PA, the amount of *visible* vaginal bleeding is often disproportionate to the degree of maternal shock because much of the blood may be concealed behind the placenta (retroplacental clot). In PP, the visible blood loss generally correlates well with the patient's hemodynamic status. Fetal status is another critical differentiator. Abruption compromises gas exchange surface area, leading to rapid fetal hypoxia (late decelerations, bradycardia). Previa, unless accompanied by massive hemorrhage or abruption of the previa itself, typically does not compromise fetal oxygenation until maternal shock sets in.

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Risk Factor Profiling Differential diagnosis is aided by the patient's history. *Silver et al. (2015)* demonstrated a strong dose-response relationship between prior Cesarean sections and Placenta Previa/Accreta. In contrast, Placental Abruption is strongly linked to hypertensive disorders (preeclampsia), chronic hypertension, PPROM, and trauma.

MATERIALS AND METHODS

Study Design A prospective comparative diagnostic study was conducted at the Andijan Regional Perinatal Center (2022-2024).

Participants 200 consecutive patients presenting with APH (>28 weeks) were included. Final diagnosis was confirmed by direct inspection of the placenta and uterus during Cesarean section or after vaginal delivery (presence of retroplacental clot/impression for PA). Group A (Abruption): n=110. Group B (Previa): n=90.

Diagnostic Protocol Upon admission, all patients underwent: Clinical Assessment - Evaluation of pain (Visual Analog Scale), uterine tone (relaxed vs. rigid), and fetal heart rate (CTG). Ultrasonography - Abdominal and/or Transvaginal scan to localize placenta and check for hematomas. Laboratory: CBC, Coagulation profile.

Statistical Analysis - We calculated Sensitivity, Specificity, Positive Predictive Value (PPV), and Negative Predictive Value (NPV) for key signs.

RESULTS

Risk Factor Profile The demographic profiles differed significantly. Hypertension/Preeclampsia: Present in 42% of Group A (PA) vs. only 5% of Group B (PP). Prior Cesarean Section: Present in 55% of Group B (PP) vs. 15% of Group A (PA).

Diagnostic Accuracy of Clinical Symptoms

Table 1: Clinical Signs in Differential Diagnosis

Sign	Sensitivity for Abruption	Sensitivity for Previa	Specificity
Abdominal Pain / Tenderness	85%	15% (Labor pain)	88%
"Woody" Uterine Tone	72%	0%	100%
Fetal Distress (Bradycardia)	65%	15%	85%
Coagulopathy (DIC)	12%	0%	100%

Pain and uterine hypertonus were the most reliable indicators of Abruption.

Diagnostic Accuracy of Ultrasound - For Placenta Previa: Ultrasound correctly identified 89/90 cases. Sensitivity: 98.8%, Specificity: 100%.

For Placenta Abruption: Ultrasound identified a retroplacental clot in only 50/110 cases. Sensitivity: 45.4%.

Conclusion: A "Normal" ultrasound report excludes Previa but supports the diagnosis of Abruption in the context of vaginal bleeding.

Fetal Outcomes Perinatal mortality was significantly higher in the Abruption group (18% vs 4% in Previa), primarily due to acute asphyxia before arrival.

DISCUSSION

The results of this study provide a clear framework for the emergency management of APH in our region. The fundamental finding is that Ultrasound is a tool of exclusion for Abruption, but a

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tool of confirmation for Previa.

The "Normal Scan" Trap: In 55% of our confirmed abruption cases, the ultrasound report was "normal placental location, no retroplacental hematoma." In a clinical setting, this can be disastrous if interpreted as "no pathology." Our data reinforces that Placental Abruption is a clinical diagnosis. The presence of vaginal bleeding with a normal scan must be treated as abruption until proven otherwise, especially if accompanied by uterine tenderness or non-reassuring fetal status.

Clinical Nuances: The presence of "Woody Hard" uterus (hypertonus) was 100% specific for abruption but only 72% sensitive. This means that a soft uterus does not rule out a posterior abruption or a marginal sinus rupture. Conversely, pain in Placenta Previa (15% of cases) was almost always associated with the onset of active labor contractions, distinguishing it from the constant, tearing pain of abruption.

Fetal Distress as a Diagnostic Marker: The significantly higher rate of fetal distress in Group A (65% vs 15%) serves as a crucial diagnostic clue. In a patient with heavy bleeding, if the fetal heart rate is stable, Previa is more likely. If the fetal heart rate shows late decelerations or bradycardia even with moderate bleeding, Abruption is the primary suspect because the gas exchange surface is compromised.

CONCLUSION

Differential diagnosis of Antepartum Hemorrhage requires a rapid synthesis of maternal history, physical examination, and targeted imaging.

Ultrasound is definitive for diagnosing Placenta Previa (>98% sensitivity) but unreliable for Placental Abruption (~45% sensitivity). A negative scan in a bleeding patient does not rule out abruption.

The diagnosis of Placental Abruption remains primarily clinical, based on the triad of abdominal pain, uterine hypertonus, and fetal distress.

Maternal history provides vital clues: a history of C-section points towards Previa/Accreta, while hypertension points towards Abruption.

RECOMMENDATIONS

To improve outcomes for APH patients in the Andijan region, we recommend the following:

1. Clinical Algorithm:

"No Digital Exam" Policy - Strictly prohibit digital vaginal examinations in any woman with APH until placental location is confirmed by ultrasound.

The "Triage Scan" - Equip admission units with Point-of-Care Ultrasound (POCUS) to rapidly answer one question: "Where is the placenta?" If the placenta is high, and the patient is bleeding and in pain, treat as Abruption immediately.

2. Training & Education:

Educate Junior Staff - Emphasize that a "normal ultrasound" report does not equal "normal patient." Junior doctors must be trained to recognize the clinical signs of concealed abruption (tachycardia, pallor, increasing fundal height).

Simulation Drills - Conduct "Code Red" drills for massive hemorrhage to ensure the team can rapidly mobilize blood products and perform emergency cesarean sections.

3. Patient Management:

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Stabilization First - In cases of severe bleeding, maternal resuscitation (IV fluids, blood) must occur simultaneously with diagnosis. Do not transport an unstable patient to the radiology department; bring the ultrasound to the patient.
High-Risk Vigilance - Women with preeclampsia or prior C-sections should be counseled about the warning signs of APH (pain vs. painless bleeding) to ensure rapid presentation to the hospital.

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