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Pregnancy in a Non-Communicating Rudimentary Horn of a Unicornuate Uterus Complicated by Uterine Rupture: A Case Report from Afghanistan

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Abstract

Background: Pregnancy in a non-communicating rudimentary horn of a unicornuate uterus is an extremely rare obstetric complication with significant risks, including uterine rupture and maternal mortality. This condition poses diagnostic and management challenges, especially in resource-limited settings.

Case Presentation: We report the case of an 18-year-old woman from Wardak Province, Afghanistan, presenting with severe abdominal pain, hypotension, and a history of amenorrhea for four months. Clinical and ultrasound findings revealed a ruptured ectopic pregnancy with hemoperitoneum. Surgical exploration confirmed pregnancy in a non-communicating rudimentary horn of a unicornuate uterus, leading to uterine rupture. The patient underwent a successful laparotomy, including evacuation of a deceased fetus, excision of the rudimentary

horn, and abdominal lavage. She received multiple blood transfusions and was discharged in stable condition after three days.

Discussion: This case highlights the diagnostic challenges and life-threatening complications associated with rudimentary horn pregnancies. Early diagnosis using imaging and timely surgical intervention are critical to optimizing maternal outcomes. The unique challenges posed by this condition in resource-limited settings underscore the importance of awareness among healthcare providers and prompt referral systems.

Conclusion: Pregnancy in a rudimentary horn of a unicornuate uterus is a rare and life-threatening condition. This case demonstrates the importance of early recognition, timely surgical management, and postoperative care to prevent severe maternal morbidity and mortality.

Keywords: Unicornuate uterus, Rudimentary horn pregnancy, Uterine rupture, Ectopic pregnancy, Resource-limited settings**.**

Introduction

Congenital anomalies of the uterus are rare but significant contributors to reproductive challenges. Among these, the unicornuate uterus, resulting from incomplete fusion of the Müllerian ducts during embryogenesis, accounts for about 0.1–0.5% of all uterine anomalies. This condition creates a single functional uterine cavity and, in many cases, an underdeveloped rudimentary horn. When non-communicating, this rudimentary horn poses significant risks, especially during pregnancy, due to its inability to sustain fetal development [1,2].

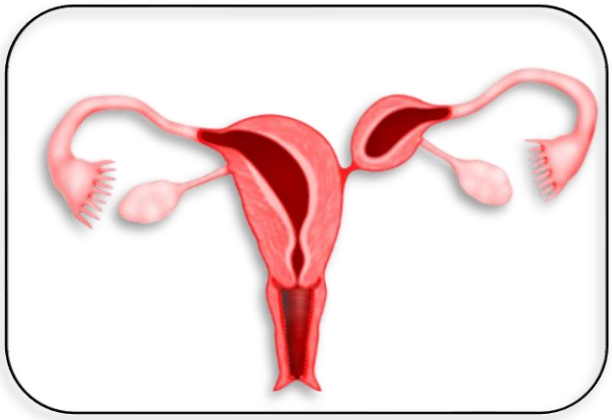

Figure 1: Non communicating redumentary horn of unicornate uterus

Pregnancy in a non-communicating rudimentary horn is exceedingly rare, with an estimated incidence of 1 in 76,000 to 150,000 pregnancies [3,4]. The structural limitations of the rudimentary horn, including inadequate musculature and vascularization, make it ill-equipped to support a growing pregnancy, often resulting in uterine rupture, typically between 12 and 16 weeks of gestation. Such ruptures are medical emergencies with severe maternal morbidity and mortality

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risks, especially in low-resource settings where diagnostic and therapeutic resources may be limited [5,6].

Diagnosing rudimentary horn pregnancy before rupture is a challenge due to nonspecific symptoms such as abdominal pain and amenorrhea, often mistaken for other conditions, including ectopic pregnancy [7, 8]. Ultrasound remains the first-line diagnostic tool, capable of identifying the presence of a gestational sac within the rudimentary horn and revealing its lack of communication with the main uterine cavity. Advanced imaging modalities such as magnetic resonance imaging (MRI) can provide additional confirmation by delineating the anomalous uterine structure [9, 10]. Despite these tools, the rarity of the condition often delays accurate diagnosis until complications arise [11].

Surgical intervention is the cornerstone of management for rudimentary horn pregnancies. For un-ruptured cases, excision of the rudimentary horn is typically performed to prevent future complications. In emergencies involving rupture, immediate laparotomy or laparoscopy is necessary to control hemorrhage, excise the affected horn, and preserve maternal health [12, 13]. The decision between laparotomy and minimally invasive surgery depends on the severity of the rupture, the hemodynamic stability of the patient, and the available surgical expertise [14, 15].

This report details the case of an 18-year-old woman from Wardak Province, Afghanistan, who presented with acute abdominal symptoms and was diagnosed with a ruptured pregnancy in a non-communicating rudimentary horn of a unicornuate uterus. Surgical management was successfully performed, underscoring the critical importance of timely recognition and intervention in improving outcomes. By highlighting this case, we aim to increase awareness among healthcare professionals, particularly in resource-limited settings, about the

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diagnostic and therapeutic challenges of rudimentary horn pregnancies. This report also contributes to the growing body of literature on congenital uterine anomalies, emphasizing the need for a multidisciplinary approach to ensure optimal care and outcomes.

Methodology

Study Design

This case report follows a descriptive observational approach, focusing on the clinical presentation, diagnosis, surgical intervention, and outcome of a single patient with a pregnancy in a non-communicating rudimentary horn of a unicornuate uterus.

Diagnostic Procedures

- **Physical Examination**: Conducted upon arrival at the clinic and emergency department, noting vital signs, abdominal distension, rigidity, and sensitivity.
- **Ultrasound Examination**: Initial ultrasound was performed to detect the presence of fluid in the abdomen and assess the viability of the fetus.
- **Cul-De-Sac Puncture**: Performed to confirm the presence of blood in the abdominal cavity, supporting the diagnosis of uterine rupture.
- **Laboratory Tests**: Blood tests were conducted to assess hemoglobin levels, white blood cell count, and other relevant parameters.

Management

- **Surgical Intervention**: The patient underwent an urgent laparotomy under general anesthesia, where a lower midline incision was made to address the internal hemorrhage and extract the deceased fetus and placenta.
- **Hemostasis and Postoperative Care**: Ensured hemostasis was achieved, the abdomen was irrigated, and a drain was placed in

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the Douglas pouch. The patient received blood transfusions during and after surgery.

Outcome Measures

- **Immediate Outcomes**: Monitored the patient's vital signs, hemoglobin levels, and overall condition post-surgery.
- **Follow-Up**: The patient was hospitalized for three days, during which her recovery was assessed, and she was provided with follow-up instructions for monitoring her reproductive health.

Ethical Considerations

- **Informed Consent**: Obtained written informed consent from the patient for participation in the case report, ensuring confidentiality and the right to withdraw at any time.

Case Presentation

An 18-year-old woman from Wardak Province, Behsud District, presented to the Behsud District clinic with a history of amenorrhea for four months, accompanied by abdominal pain. Given the clinical concerns, she was promptly referred to Faiz Muhammad Kateb Hospital for further evaluation.

Upon arrival at the emergency department, the patient was in distress, experiencing severe abdominal pain, weakness, dizziness, nausea, and vomiting. She appeared lethargic, and physical examination revealed a restless, very ill appearance. Vital signs were concerning, with a weak pulse and blood pressure of 40/60 mmHg, indicating significant hypotension. Abdominal examination showed distension, diffuse rigidity, and increased sensitivity. Notably, there were no bowel sounds detected, and heart and respiratory sounds were within normal limits. A vaginal examination revealed a closed cervix, and there was no evidence of vaginal bleeding.

An initial ultrasound examination revealed the presence of fluid in the abdomen with internal echoes and a non-viable fetus at four months

of gestation. The clinical suspicion was an ectopic pregnancy, likely involving a ruptured pregnancy in a non-communicating rudimentary horn of a unicornuate uterus. To confirm this, a Cul-De-Sac puncture was performed, yielding 10 cc of blood, further supporting the diagnosis of uterine rupture.

The patient's laboratory results revealed a hemoglobin level of 5.7 g/dl, a white blood cell count of 22,000/μL, platelet count of 228,000/μL, and a creatinine level of 0.9 mg/dL. Her blood type was O Rh-positive. Given the patient's deteriorating condition, two units of blood were transfused, and she was urgently transferred to the operating room for laparotomy.

Under general anesthesia and after appropriate preparation, a lower midline incision was made. Upon opening the abdominal cavity, approximately three liters of blood were drained, indicating significant internal hemorrhage. A deceased fetus weighing 200 grams, male, along with the placenta, was extracted from the abdomen. The initial segment of the fallopian tube was also identified and resected, as it showed no connection to the uterine cavity, confirming the diagnosis of pregnancy in a non-communicating rudimentary horn of a unicornuate uterus.

After ensuring hemostasis, the abdomen was thoroughly irrigated with saline, and a drain was placed in the Douglas pouch to prevent further complications. The patient received two additional units of blood during the procedure. She was subsequently transferred to the recovery room in stable condition.

Post-operatively, the patient was admitted to the hospital for three days, during which she received a total of five units of blood. Her hematocrit level stabilized at 28%, and her hemoglobin improved to 9.3 g/dl. Following successful recovery, she was discharged from the

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hospital in good condition, with careful follow-up instructions provided to monitor her reproductive health in the future.

This case underscores the rare but critical complication of pregnancy in a non-communicating rudimentary horn of a unicornuate uterus, which can result in uterine rupture and significant maternal morbidity. Early recognition and prompt surgical intervention are vital to improving outcomes in such cases.

Figures:

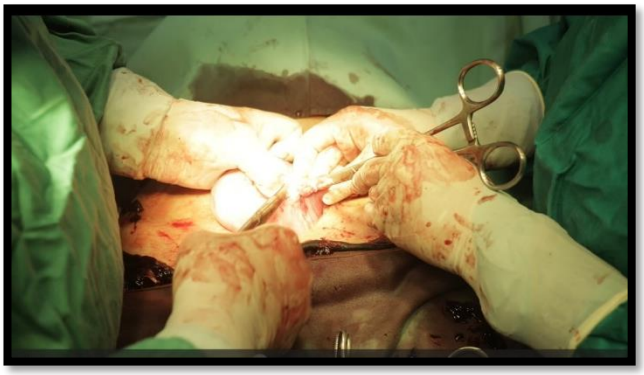

Figure 2: Laparotomy procedure

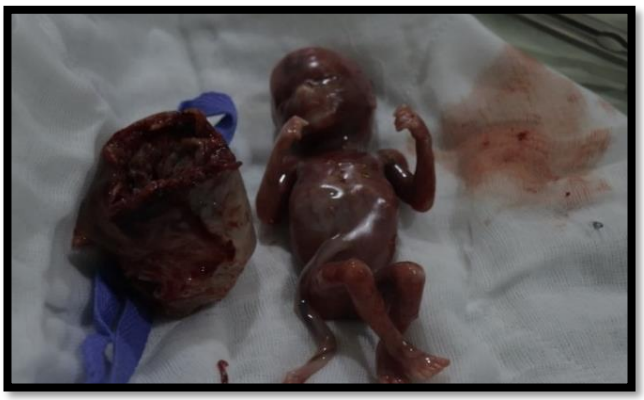

Figure 3: Deceased fetus and placenta

Figure 4: Drained blood (three liters)

Discussion

Pregnancy in a non-communicating rudimentary horn of a unicornuate uterus is a rare but life-threatening obstetric complication. The unicornuate uterus is a congenital uterine anomaly caused by the incomplete fusion of the paramesonephric ducts during embryogenesis. This condition is present in approximately 1 in 1,000 to 4,000 women, and it can be associated with various reproductive challenges, including infertility, recurrent miscarriage, and abnormal pregnancy outcomes such as ectopic pregnancies, preterm labor, and uterine rupture (16, 17). Among these, pregnancy in a non-communicating rudimentary horn is especially dangerous due to the risk of uterine rupture, which can result in catastrophic maternal morbidity or even mortality if not managed promptly (18).

In our case, the patient presented with signs of acute abdominal pain, hypotension, and abdominal distension, along with a history of

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amenorrhea. These symptoms, coupled with an ultrasound showing a non-viable fetus and fluid accumulation in the abdomen, led to a high suspicion of an ectopic pregnancy. The Cul-De-Sac puncture confirmed the presence of intra-abdominal hemorrhage, supporting the diagnosis of a ruptured ectopic pregnancy in a non-communicating rudimentary horn. Early recognition of this condition is crucial to prevent severe blood loss and other life-threatening complications (19).

The clinical presentation of pregnancy in a non-communicating rudimentary horn can be deceptive. In many cases, these pregnancies can progress asymptomatically or with vague symptoms, such as intermittent abdominal pain or spotting, which might be misinterpreted as normal pregnancy discomfort or early miscarriage (20). This is especially true in resource-limited settings, where diagnostic facilities such as ultrasound may not always be readily available or used for early screening. In our case, the patient's symptoms were more severe, with rapid deterioration requiring immediate surgical intervention.

Management of pregnancy in a non-communicating rudimentary horn involves surgical intervention to remove the ectopic pregnancy and repair any damage caused by the rupture. In this case, laparotomy was performed, and the fetus, placenta, and a portion of the fallopian tube were extracted. The procedure also included abdominal lavage and drainage to prevent peritonitis. Blood transfusion was required to address the patient's significant blood loss. The patient's recovery was uneventful after adequate resuscitation, and she was discharged with proper follow-up care. Timely intervention is essential to prevent the development of complications such as hemorrhagic shock, sepsis, or damage to other abdominal organs (21, 22).

In the majority of cases, the diagnosis of pregnancy in a non-communicating rudimentary horn is made postoperatively, as the condition is difficult to detect early, particularly in the absence of

specific risk factors. Ultrasound imaging is the primary diagnostic tool used to assess for the presence of a gestational sac outside the uterine cavity. However, distinguishing a non-communicating rudimentary horn pregnancy from other types of ectopic pregnancies, such as tubal pregnancies, can be challenging (23). In our case, the ultrasound showed fluid in the abdomen, internal echoes, and a non-viable fetus, which were consistent with the diagnosis of ruptured ectopic pregnancy.

The management approach in such cases should include not only surgical intervention but also a careful evaluation of the patient's overall condition. Blood transfusions are often required to address the significant blood loss associated with uterine rupture, and supportive care in the postoperative period is essential for optimal recovery. Additionally, patients with unicornuate uterus and non-communicating rudimentary horn pregnancies should be counseled regarding the high risk of recurrence in future pregnancies (24, 25).

The case highlights the importance of early diagnosis and intervention in preventing severe maternal outcomes in pregnancies involving uterine anomalies. It also emphasizes the need for greater awareness and vigilance among healthcare providers, particularly in settings where diagnostic resources may be limited. It is essential to consider uterine anomalies in the differential diagnosis when a patient present with symptoms of ectopic pregnancy, especially in the presence of risk factors such as unexplained abdominal pain, amenorrhea, and history of infertility.

Conclusion

Pregnancy in a non-communicating rudimentary horn of a unicornuate uterus is a rare and potentially life-threatening condition that can present with acute symptoms of uterine rupture. Timely diagnosis and prompt surgical intervention are critical to improving

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maternal outcomes. This case underscores the importance of considering congenital uterine anomalies in the differential diagnosis of ectopic pregnancies, particularly in resource-limited settings where early diagnosis may be challenging. While surgical intervention is often necessary, appropriate postoperative care, including blood transfusion and close monitoring, is essential for successful recovery. Further studies are needed to explore the optimal management strategies for these complex cases.

Conflicts of interests

The authors declare that there are no competing interests.

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