



Case Report

Too “Big-Headed”, to Exit, a Massive Fetal Hydrocephalus Causing Maternal Uterine Rupture

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ABSTRACT

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Uterine rupture is an obstetric emergency, defined as a complete tear of all three layers of the uterus. It carries catastrophic maternal and fetal outcomes. While most commonly associated with previous cesarean deliveries or surgical obstetric-related procedures, it may very rarely be associated with abnormally high intrauterine pressure secondary to obstructed labor. Our center experienced a referred case of a spontaneous uterine rupture occurring after augmentation of labor and instrumental delivery of a hydrocephalic intrauterine fetal demise in an unbooked 29-year-old G4P3002 woman at 33 weeks' gestation. She presented with acute hypotension and severe postpartum hemorrhage. Uterine rupture was diagnosed on clinical grounds. Early stabilization by maternal resuscitation and bleeding control was followed by an emergency total hysterectomy due to refractory hemorrhage. Our case depicted obstructed labor as a potential cause of uterine rupture and underpins the importance of routine antenatal care awareness which is still frequently overlooked in developing countries.

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INTRODUCTION

Highlighting the issue of routine Antenatal Care (ANC) in a developing country is important given the potential perinatal morbidity its neglect can give rise to. Such a program not only ensures that growing fetuses receive appropriate antenatal supplementations for optimal growth to prevent anomalies including hydrocephalus but also predicts and avoids future adverse events during the intrapartum period. Hydrocephalus is a deviate build-up of the brain's Cerebrospinal Fluid (CSF) generally during infancy^{7,15}. Among the unexpected complications in maternal is uterine rupture, an obstetric catastrophe characterized by a dissection of the endometrium, myometrium, and perimetrium^{1,6}.

Despite being associated with scarred uterus, some observational studies suggest that obstructed labor and labor augmentation account for significant etiology of ruptured uterus^{2,3}. In this case study, the authors wish to elaborate on a case of an unscarred ruptured uterus in a gravid woman after labor augmentation and instrumental deliveries due to obstructed labor and non-reassuring Fetal Heart Rate (FHR).

CASE PRESENTATION

Our patient was a 29-year-old G43002 woman at 33 weeks' gestation with no history of ANC. She was referred to our department following profuse vaginal bleeding and hypotension after vacuum-assisted vaginal delivery of an Intrauterine Fetal Demise (IUFD). The patient also inadvertently underwent labor augmentation with oxytocin infusion due to prolonged first-stage labor and reduced uterine contractility. The delivered deceased fetus (Figure 1) demonstrated an obvious fetal anomaly characterized by significant hydrocephalus and partial features of Down's syndrome. A review of her previous medical and surgical history was unremarkable. All previous pregnancies were delivered vaginally assisted by a midwife and the third baby died of asphyxia.

Upon examination, the patient was conscious and oriented, although she reported severe drowsiness. Vital signs demonstrated tachycardia (138x/minutes) and hypotension (80/64mmHg). Her conjunctiva was pale, and her pulse was weakly palpable. A bimanual examination demonstrated an abnormally shaped uterus. Repeat laboratory evaluation revealed hemoglobin of 2.7 g/dL, a massive drop compared to the baseline of 12.6 g/dL. Uterine rupture diagnosis was made on clinical grounds. Blood group and cross-match tests were requested. Two large-bore IV cannulas were inserted, and IV fluids were administered to initiate resuscitation. Ongoing bleeding was provisionally managed by uterine balloon tamponade. The decision was made for an emergency hysterectomy after hemodynamic stabilization.

A complete hysterectomy was performed under general anesthesia. Peritoneal access was made through a midline vertical incision. Exploration of the uterus visualized a break in the lower segment uterine breaks extending 5 centimeters horizontally, with neither tear extension to the neighboring ligaments nor the urinary bladder. There was no significant hemoperitoneum. A complete hysterectomy was performed successfully without intraoperative complications. Throughout the operation, the patient received a total of six lactated-ringer fluids and six-packs of red blood cells.

Postoperatively, the patient was transferred to the intensive care unit under appropriate analgesia, thromboprophylaxis, and prophylactic antibiotics. On post-operative day 4, the patient was eligible to be transferred to the ward. She was subsequently discharged one day afterward with a 1-week outpatient follow-up, in which she exhibited a progressive recuperation.

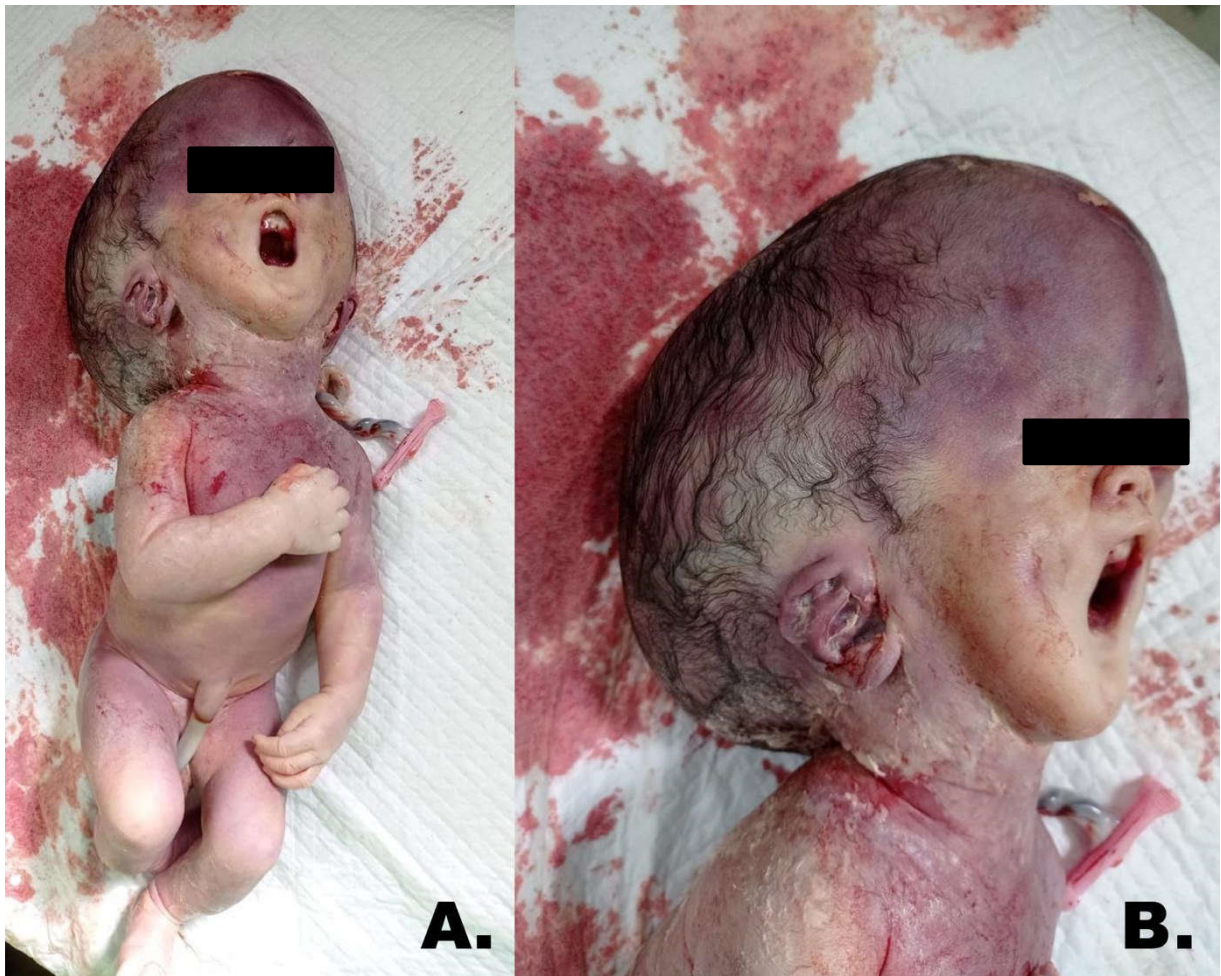


Figure 1. A delivered fetus after assisted delivery (A). The demised prematurely delivered neonate had significant hydrocephalus, which elucidated the probable etiology of the obstructed labor and ruptured uterus. Some features of Down's Syndrome were depicted, including a flat nasal bridge, upward slanting of the eyes, and low-set ears. Subgaleal hematoma is clearly demonstrated (B).

DISCUSSION

Uterine rupture in an unscarred uterus is rare. This case depicted obstructed labor, resulting from fetal hydrocephalus, as a cause of uterine rupture. A retrospective analysis of uterine rupture in low-resource countries estimated the prevalence of ruptured uterus ranges from 0.057% – 1.71%, with one-third of those caused by obstructed labor² On the other hand, the prevalence in developed countries is approximately 0.006%, in which the majority of cases occur in scarred uteri⁴.

The undetected hydrocephalus is a calamitous consequence of inadequate ANC with the subsequent absence of antenatal supplementation with folate, among other essential antenatal supplementations, as well as antenatal routine imaging^{10,13,14}. Such neglect in antenatal care is not uncommon in developing countries, with the rate of non-adherence reaching 27.94% in some regions in Indonesia⁵.

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Prenatal hydrocephalus is detected between 15-35 weeks of pregnancy, a physician examines ventricles which present hypoechoic and widening >10mm or 3 mm between the ventricle's edge and the choroid plexus is frequently regarded as pathological^{8,10,11}. This, compounded with neglect in imaging procedures upon initial presentation, makes the hydrocephalus as the cause of obstructed labor inadvertently a late discovery. The absence of contraction and arrest of the second stage of labor should raise immediate suspicion toward impending uterine rupture^{1,12}. Classically, vaginal bleeding can be profuse, but the absence of vaginal bleeding with evidence of hemodynamic instability can indicate intraabdominal hemorrhage. We believe any imaging modalities should not delay patients' hemodynamic stabilization and surgical management, which dictated our decision for emergency hysterectomy. Some doubtful cases in stable patients may mandate the use of imaging modalities.

The use of uterotonic agents to augment labor in obstructed labor should be done judiciously and with extreme caution as the evidence suggests a greater risk of rupture in such circumstances³. Injudicious use of oxytocic agents has been greatly associated with a high prevalence of ruptured uterus in developing countries, which indicates the need for evaluation in standardized practice in the region^{2,3}.

CONCLUSION

This case taught us several lessons: 1) obstructed labor secondary to fetal hydrocephalus as the potential cause of ruptured uterus; 2) the dire need for a rigorous campaign of routine ANC in the region to improve fetal and maternal outcomes; 3) the need for a thorough evaluation of obstructed labor prior to the use of oxytocic agents; 4) the appropriate adjunct with imaging modalities may assist in the cause of obstructed labor and rupture. Uterine rupture possesses catastrophic fetal and maternal outcomes with high prevalence in developing countries, and multidisciplinary actions are needed to improve outcomes.

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