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CASE REPORT

Anaesthetic Implications and Management of a Patient with Ruptured Uterus with Haemorrhagic Shock without Intraoperative Blood Transfusion

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ABSTRACT
Rupture of gravid uterus is rare unexpected and often catastrophic complication of pregnancy. the overall incidence is 0.07%(1:1536 pregnancies).in developed countries the rate of uterine rupture in pregnancy in unscarred uterus is 1 in 8434 pregnancies 0.012%. It is Associated with 2-10%of all maternal death and perinatal morality is 80- 90%.in who systemic review the uterus rupture worldwide found the incidence is2.3/10000 pregnancies. It is Associated with high incidence of fetal and maternal morbidity and mortality. Uterine Rupture Common in pregnancy with history of previous uterine surgery, grand multiparity, multiple pregnancy polyhydrominos, obstructed labour, fetal malpresentation, road traffic collision, incorrect use of oxytocic agentand a poorly conducted attempt at operative vaginal delivery (typically breech extraction an incomplete dilation of cervix). Correct communication with obstetrics department in emergency obstetrics operation is as vital as emergency anaesthesia and bleeding management. We aimed to present anaesthesia ,blood and fluid management of patient admittedto emergency unit for rupture uterus with hemorrhagic shock .it requires rapid attention to safeguard for maternal and fetal outcomes.

Keywords: Uterine Rupture, Hemorrhagic Shock, Anesthesia, Fluid Management, BloodTransfusion and Intensive Care

CASE REPORT
A 35-year-old woman, a grand multipara, came into our hospital from PHC Bhaktiyaapur, Saharsa, referred to a higher center due to no facility being available. The patient was refused from several private hospitals of the city in view of the extremely poor situation.

A brief obstetric history was taken with $G_8P_7L_7$ with a previous normal vaginal delivery. We have no history of previous LSCS or other gynecological surgery. The patient has a present history of twins pregnancy, delivered one baby normally per vaginally and the other one presenting with hand prolapse and intrauterine death due to a poorly conducted attempt at vaginal delivery from an unskilled hand known as a village dais.

On examination, the patient is drowsy but responding to painful stimuli (GCS-12/15). Pulse Rate: 112/min, BP-80/50mmhg, RR-26/min patient was hyperventilated, and SPO_2 was 94%. Per abdomen examination, local tenderness is present due to rupture of the uterus with the fetal part palpable and fetal heart sound not localized. Per vaginal examination, fetal hand prolapse with vaginal bleeding is present. A diagnosis of ruptured uterus with IUD with hemorrhagic shock was made. After that first ABG was sent to the emergency department, the hematocrit was 18.33%. Then, immediately for control of hypovolemic shock, intravenous access was achieved with two 18g cannula, and both crystalloid and colloid were rushed around 2 liters without development of pulmonary edema. After that, routine blood samples were sent for CBC, blood sugar, BT and CT, RFT, and viral markers.

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The patient was shifted to the ICU for further management, and vitals are stable with IV fluid, dopamine, and supplementary 100% oxygen therapy. In the blood investigation report, hemoglobin was 2 gm/dl due to acute normovolemic hemodilution of fluid resuscitation with already existing physiological hemodilution in twin pregnancies. After clinical stabilization of the patient, planning for emergency laparotomy to control the bleeding was made, and the patient was shifted to the operating theater with standard monitors showing BP 100/60in, and SpO_2 92%. Patient was given 100% oxygen therapy. The patient was accepted for surgery ASA-IVE with high-risk consent, and NPO status was confirmed.

General anesthesia with rapid sequence endotracheal intubation was planned. Anesthesia was induced with inj. ketamine 75 mg and suxamethonium 75 mg to facilitate endotracheal intubation with ETT 7.0, cuffed, oral, and fixed at the 20 cm mark after confirming bilateral equal air entry; the patient was put on mechanical. Ventilation on CMV mode ventilation with tidal volume 400 ml, respiratory rate 12/min on a closed circuit with an anesthesia machine. Anesthesia was maintained with 50% N_2O and 50% O_2 with intermittent injections of vecuronium and isoflurane as a volatile inhalation anesthesia agent in a titrated dose according to maintaining vital stability. Inotropic support with Inj Dopamine 8 micrograms/Kg/Min was given to control the mean arterial pressure more than 65 mmHg to maintain tissue perfusion because blood was not available in the hand. Intraoperative midline vertical incision was given for laparotomy. There was a frank rupture of the uterus, which involved the anterior uterine wall, extending from the right lateral uterine wall up to the left side till the lower uterine segment. The posterior uterine wall rupture extended midline 3 cm above the ligament uterisacral, involving the serosa layer.

A male IUD baby weighing 2.8 kg was delivered; approximately 1200-1500 ml of blood was evacuated from the peritoneal cavity. Uterus repair was planned because of fresh and healthy margins of the raptured uterus, which was not necrotized and repairable. Crystalloid and colloid were given quickly because intraoperative blood was not available to maintain the vital. The duration of surgery lasts 95 min. Postoperatively, patient vitals are heart rate 118/min, BP 100/60 mmHg, and SpO_2 98%. After the surgery, the patient, whose neuromuscular blockage was not reversed, was shifted to the ICU for further management. The patient was put on ventilatory support on SIMV mode of ventilation with a tidal volume of 400 ml, a respiratory rate of 12/min, and an FiO2 of 0.6. Postoperatively, after the 12-hour, 2-unit whole blood was arranged and transfused on the same day of surgery after the blood transfusion, the patient was hemodynamically stable, and inotropic support was tapered off at night.

Next day of surgery 1 unit of AB positive blood was transfused, and also injection of ironsucrose 200 mcg per day, injection of methylcobalamine 1500 IU per day, and injection of human erythropoietin 10000 IU state was also advised. The patient was hemodynamically stable without inotropic support. After stopping sedation, the patient was conscious and responding to verbal commands. The patient was given a T-piece trial, which she tolerated well, and her trachea was extubated and put on a ventimask with 100% O_2.

The patient was observed in the ICU until her hemoglobin was not controlled and she received O_2 support. On the 4th day of surgery, the patient developed altered sensorium with mild neck rigidity, which was controlled with vancomycin 500 mg after 2 days. 5th day of patient also suffered with typhoid fever, which was treated with tablet Azithromycin 500 mg and Cefixine 200 mg, and Ofloxacin 200 mg was given for 5 days. Surgery patient: 1 unit of whole blood transfusion was done, and on the 8th day of surgery, the patient plans to be discharged. Her hospital stay was uneventful. She was discharged on the 8th day after surgery.

Patient Details: Sita Devi, 35-year-old female, W/O Nanku Sharma, resident of Village Tangraha, Sonbarsha Raj, Saharsa, Bihar

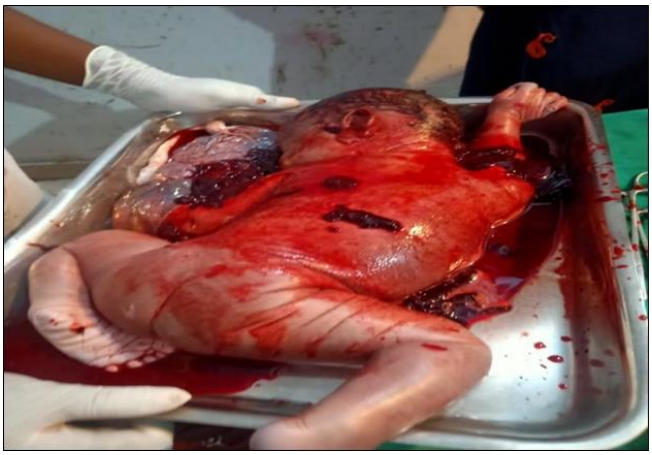

Fig.1: Intra Uterine Death of Baby after the Uterine Rupture

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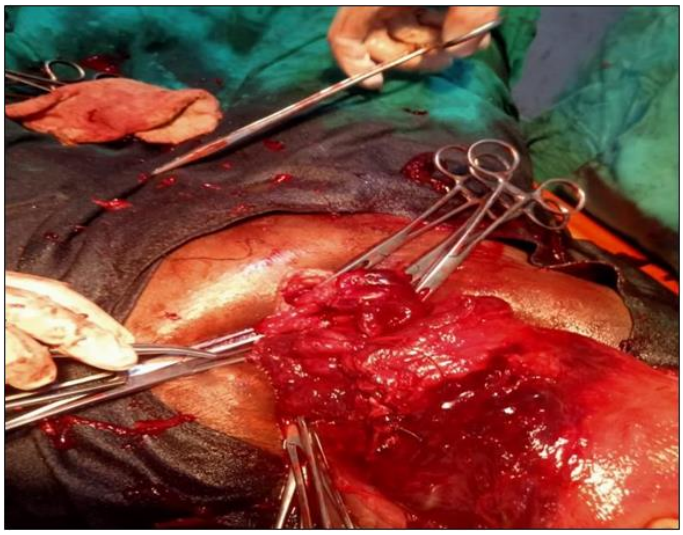

Fig.2: Complete Uterine Tear after Rupture

Fig.3: Rupture of Lower Uterine Segment and Posterior Rupture extended midline 3cm above uteriscral involving serosa layer

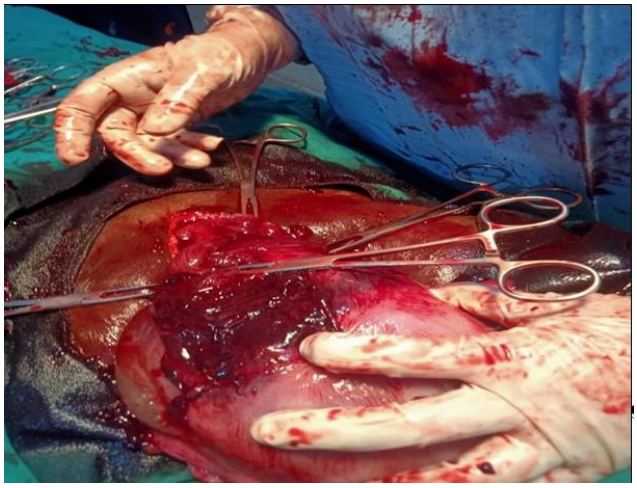

Fig.4: Complete anterior uterine wall rupture extending from the right lateral uterine wall

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Table 1: Arterial Gas Analysis

Parameter	Preoperative	Reference range
Blood Gas at 37◦c		
PH	7.47	7.35-7.45
Pco_2	26.12	(38.0-55 mmHg)
Po_2	129.30	(83-108 mmHg)
Hematocrit		
Hct	18.33	(24-54%)
So_2	93.58	(94-98%)
Electrolyte		
Na+	132	(135-150mmol/L)
K+	3.12	(3.502-5.50mmol/L)
ica	0.86	(1.18-1.35mmol/L)
Cl	96.10	(92-110mmol/L)
Calculated Parameters		
Hco_3-	19.37	(21-28mmol/L)
T co_2	16.73	(22-29mmol/L)
SBC	18.75	(21-26mmol/L)
BE	3.86	(-2.0-3.0mmol/L)
Urea	29.0	(-20-40mg/ld)
Creatinine	0.91	(0.70-1.21mg/ld)

Table 2: Blood Investigation

Parameter	Preoperative	Postoperative (D2)	Postoperative (D5)
Hb%	2gm/dl	5.6	4.6
TLC/cumm	15,200	16,500	12,600
DLC	N72L20E7M1B0	N73L18E8M1B0	N75L19E6M0B0
Plateltets	159000	159000	356000

DISCUSSION

Uterine rupture is a serious obstetrical emergency associated with a high incidence of maternal and fetal morbidity and mortality. Backward small city in Bihar, there are poor facilities of blood banks and unavailability of rare blood groups, and blood components are not reached at the time of emergency; this is a big challenge for private health care facilities to save the life of a patient who needs the blood transfusion during surgery and a part of treatment.

Uterine rupture with hemorrhagic shock is a very life-threatening condition. Early decision-making for emergency surgery depends on the clinical condition and healthcare facility and skill working experience of the health professional, which is right to save the life of a patient in an emergency situation with or without patient consent.

In this case, when the patient came to the emergency department, her hematocrit was 18.33%. In ABG, it means hemoglobin is approximately 6.1 gm/dl, but due to the management of hypovolemic shock and maintenance of vital tissue perfusion for oxygen delivery and prevention of the myocardial ischemia, a rush of IV fluids resuscitation may lead to normovolemic hemodilution.

It seems that the administration of 500 ml of IV fluids may actually decrease the hemoglobin concentration by about 1 gm/dl and about 8%. So after the fluid resuscitation in the emergency department, we were sent the routine. Investigation was so that HB concentration was shown to be relatively low HB concentration (2 gm/dl) at the time of perioperatively. So health care professionals should be aware of all physiological changes during the fluid resuscitation parameters and clinical presentation to take their decision in an emergency situation.

Postpartum meningitis is a rare condition but may occur in poor hygiene conditions in low socioeconomic status women. Group B beta-hemolytic streptococcus is commonly cultured from the genital tract of pregnant women. A group B streptococcus sensitive to penicillin and vancomycin for controlling the postpartum meningitis.

So that a critically ill patient required proper intensive care, there must be proper blood transfusion, iron supplements, and hormonal therapy (ERYTHROPOIETIN) for anemia; parental nutrition for building up the immune system and muscular activity; broad-spectrum antibiotics for proper wound care and control of sepsis; and oxygen supplements for maintaining tissue oxygen delivery and prevention of hypoxia; proper intravenous fluid for maintaining tissue perfusion; and renal perfusion until all parameters of vital and essential investigation reports could be normalized for shifting to the ward and discharge of a patient.

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CONCLUSION

Uterine rupture with hemorrhagic shock is a clinical diagnosis that must be suspected by the health professionals. We were faced with the option of not performing the surgery at all, but the almost certain cost of patient life wanted to give the patient the chance of survival. It is our moral, ethical, and professional duty to be doctors. It is decided to do the patient surgery despite the clinical condition, hospital facility, unavailability of blood, and the treatment constraints mentioned above that make for an extremely risky surgery. It is always a dilemma for a surgeon and anesthesiologist to decide whether to urgently operate on a bleeding patient with hemorrhagic shock without blood transfusion. We should believe that life-saving intervention should not be delayed for the patient with active bleeding, even though blood transfusion may not be available at the time of surgery. An anesthesiologist may manage the vitals, tissue perfusion, and preventing myocardial ischemia with appropriate intravenous fluid resuscitation and inotropic support and proper supplementary oxygen therapy.

Timely diagnosis and intervention can prevent both maternal mortality and morbidity. This case also stressed the importance of good obstetric practice and the need for qualified medical and paramedical staff with all well emergency critical facilities in a hospital. Uterine rupture with hemorrhagic shock can be a preventable complication. If the best obstetrician, anesthesiologist, and intensivist practices are ensured.

In Bihar, inadequate healthcare facilities, inexperienced medical personnel, and limited access to blood services in the government health sector contribute to some of the highest maternal and fetal mortality and morbidity rates in the country. Similar to other states in India, poorly coordinated national and state-level blood transfusion systems further compound the challenges. The lack of functional infrastructure and a trained workforce results in life-threatening delays in providing blood, particularly for patients in district hospitals who often face additional barriers due to limited literacy and financial resources. In addition to targeted changes to such policies, state and regional support for enhanced coordination is an absolute necessity; transparency in supplies and blood availability would be a reasonable first start.

The government should be supported and promoted to encourage the private hospital sector and doctors to cooperate and enhance to provide better healthcare facilities to society in backward cities in Bihar.

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