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Anaesthetic Management for Retained Placenta in a Patient with Hypovolumic Shock

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Abstract: ***A case of retained placenta following vaginal delivery as VBAC with history of prior lower segment cesarean section was shifted to the operation theatre in shock with severe pallor, hypotension and bleeding per vagina for removal of placenta. Following the efforts of placental removal to be in vain, the patient was planned for emergency on-table hysterectomy to control hemorrhage under general anaesthesia.***

Keywords: VBAC, retained placenta, hypovolemic shock, total hysterectomy

1. Introduction

Retained placenta is defined as failure to deliver the placenta completely within 30 minutes of delivery of the foetus and occurs in approximately 3% of vaginal deliveries. A delay in the removal of the placenta may result in excessive blood loss that can be life threatening, needing a blood transfusion, hencedemands a quick removal. When the placenta is removed from the uterus by hand, it is called manual removal. This causes considerable discomfort and pain. Prophylactic oxytocin facilitates placental separation from the uterine wall, and, on balance, prophylactic oxytocin administered before delivery of the placenta is not associated with retained placenta after vaginal birth.Anaesthesia can be general or regional, using the spinal or epidural routes; medications for pain and relaxation, such as fentanyl, midazolam, diazepam, or ketamine, can be given intravenously. The type of anaesthesia and analgesia which is, the most effective and safe for women undergoing the manual removal of a retained placenta, to be always considered.

2. Case Report

2.1 History

A 23 years old female with Gravida2Para1Live1 with prior lower segment caesarean section history, with gestational age of 37 weeks, has delivered a single, alive, male child of 2.3 kgs through VBAC(Vaginal Birth After Caesarean) section. She had an irregular antenatal records and follow up scan details were not available. The indication for her previous caesarean was fetal distress due to meconium aspiration. At present, she was allowed for a normal labor as she was admitted in heractive stage of labor and partograph also favored vaginal delivery.

Following the delivery of fetus, the obstetricians had to wait for placental delivery for a period of 30 minutes. Meanwhile the patient had a torrential bleeding per vagina with no other signs of placental separation. The patient developed hypotension, severe pallor and tachycardia. She was immediately shifted with two units of blood obtained under emergency crossmatching to the operation theatre.

2.2 Pre-Operative Evaluation

The patient was clinically assessed and was found to be in hypovolemic shock. Her systolic blood pressure was not more than 70 mm hg, pulse was thready and had a low volume with tachycardia but the patient was conscious though anxious and confused. The investigation that were available then, included a complete blood picture and coagulation profile showing the following

Table 1: Preoperative investigations

Parameters	Laboratory Values
hemoglobin	7.9 g/dl
Hematocrit	23%
Total leukocyte count	WBC-12.7*10^9/l GRA-3.9*10^9/l LYM-3*10^9/l
Fasting blood sugar	110g/dl
Coagulation profile Platelets- PT INR APTT	 199*10^9/l 19.9sec 1.27 31.8sec

2.3 Pre-Operative Precaution and Preparation

The patient's time of last oral intake was confirmed to be nil per oral of solid diet of more than 6 hours. Patient's attenders were explained about the high risk involved in providing anesthesia to the patient and high chances of on table cardiac arrest and the chances for prolonged post-operative mechanical ventilation in the critical care unit. The patient was immediately shifted into the operation theatre and was secure two wide bore intravenous cannulas of 18 gauge each in her both upper limbs. Injection noradrenaline was started in the drip at 16 drops per minute and was titrated according to the blood pressure in one line. Meanwhile, the bladder was catheterized and the monitors were connected according to the standard ASA guidelines which included NIBP, pulseoximeter, five chest leads electrocardiogram.

2.4 Intraoperative Measures

The patient was initially planned for sedation after stabilization of the hemodynamics and adequate urine output

was assured. Following the pre medication with intravenous injection midazolam 1 mg, injection glycopyrrolate 0.4 mg i.v and injection fentanyl 20 micrograms i.v, sedation was provided with an injection ketamine with initial dose of 1 mg / kg intravenously bolus. The obstetricians tried for manual removal of placenta with patient in lithotomy position. Blood pressure was stabilized with inotropic support to get a mean arterial pressure of 60 mm Hg. The patient was provided with 100% oxygen and 0.5 % halothane as an inhalational agent intermittently to avoid myocardial depression. The placenta was removed but not in toto. There were parts of retained placenta in the uterus which precipitated bleeding per vagina. Blood was started in the other intravenous line along with inotropes in the other as hemodynamics were varying.

The patient was then planned to be explored by laparotomy through pfannenstiel incision. The patient was converted to general anesthesia from sedation. The airway was secured by rapid sequence induction with a cuffed oral endotracheal tube of size 6.5 mm with laryngoscope by deepening the plane of anesthesia with additional doses of injection ketamine 2mg /kg and fentanyl 2mcg/kg intravenously. Intraoperatively, it was found that the placental remnants were adherent to the previous caesarean scar in the anterior wall of the uterus. The finding of placental accreta was not brought into notice as antenatal records were not available and the screening ultrasound was time constrained.

The orders to issue two more units of PRBCs (packed red blood cells) and 2 units of FFPs (fresh frozen plasma) were placed. There was a strict vigil on maintaining the vitals intraoperatively and adequate urine output was looked for to ensure adequate tissue perfusion. The anesthesia was maintained with 100%oxygen, injection fentanyl, with injection noradrenaline drip to maintain blood pressure. Muscle relaxation was provided by atracurium injection with a loading dose of 0.5 mg /kg and maintenance dose of 0.2 mg /kg intravenously. Inhalational agent halothane was used intermittently at 0.5% as it causes uterine relaxation though it causes myocardial depression to some extent. Injection nitroglycerine was also used intravenously at substantially low doses of 50 – 100 micrograms with a maximum dose of 200micrograms to facilitate placental separation.

As the efforts to remove the placental remnants were in vain, the patient's hemodynamics were varying due to uncontrolled hemorrhage. Hence inhalational agents were discontinued. The patient had already been transfused of one unit of PRBC at the beginning of procedure, two more units of blood were pushed as boluses to maintain the mean arterial pressure along with two units of FFPs.

Finally, it was decided by the obstetrician to go for total abdominal hysterectomy under emergency due to uncontrolled bleeding caused by uterine atony and the retained placental remnants which alarmed the patient's hemodynamic stability.

At the end of the surgery, the patient was recovering fromthe deep planes of anesthesia. When the patient had stable hemodynamics with adequate urine output, regular and adequate respiration with return of reflexes, the patient was extubated on table.

2.5 Post Operative Measures

Post-operative pain was advised to be managed with injection ketorolac 30mg intramuscular and injection tramadol 100mg intravenously per dose twice daily for three days. All blood investigations including complete blood count, liver and kidney function test, coagulation profile and serum electrolytes were advised. The recovery period was smooth and uneventful and the patient was weaned off inotropic support and was doing good.

3. Discussion

Management of a case posted for manual removal of placenta should be proceeded after proper assessment of the patient and checking the laboratory parameters that are available.In some cases, the administration of small amounts of sedatives and analgesics is adequate to allow examination and manual placental extraction by a skilled obstetrician. The choiceof anaesthesia ranges from mild sedation to regional anaesthesia to general anaesthesia depending on the stability of the patient and the degree of placental implantation in case of un noticed abnormality like: increta, accrete, percreta. Sedation and general anaesthesia could be provided by drugs like thiopentone sodium or propofol in case of hemodynamically stable patients. In case of shock, the only preferred agent is injection ketamine along with premedication to counteract its side effects.

Regional anaesthesia techniques could also be used if the patient is stable. In case of epidural catheter inserted for labour analgesia, the drug could be injected with 0.5% bupivacaine to provide blockade up to T6 level for manual exploration of uterus. In case of spinal anaesthesia, a low dose spinal segmental block with 1.5ml 0.25% plain bupivacaine and fentanyl 25micrograms has been shown to provide satisfactory operative conditions.

Table 2: Various methods of delivering anaesthesia

Technique	Advantages	Disadvantages
GA	Dose-dependent uterine relaxation by volatile agent.	Risks of general anaesthesia e.g. airway compromise, aspiration, anaphylaxis.
Spinal	Rapid establishment of profound analgesia. Avoids risks of GA.	Potential for sudden hypotension if extent of haemorrhage not recognised.
Epidural	Good if already in situ	Takes time to establish de novo
Sedation	Quick and easy	Poor uterine relaxation Unprotected airway: risk of aspiration if overdose

Following retained placenta, there is an increased incidence of endometritis (caused by a variety of organisms). Hence, it is advisable to start a patient of prophylactic antibiotic coverage during the procedure. Since the patient presented to us was in a state of hypovolemic shock with

intraoperative finding of placenta accreta, we had to proceed with general anaesthesia and the maintenance with muscle relaxant by atracurium as the liver and the renal function tests were not available at that time. While correcting hypovolemia in pregnancy under general anaesthesia, care should be taken as to not to cause fluid overload which may lead to pulmonary edema. Inhalational agent halothane, though not used commonly now a days, was used intermittently as it will cause uterine relaxation to facilitate removal along with sedation.

4. Conclusion

Retained placenta, is an obstetric emergency and is one of the causes for postpartum obstetric hemorrhage. It needs a timely management with appropriate drugs and adequate blood products available at hand for resuscitative measures. The choice of anesthesia should be prudent enough to save the patient from shock and excessive bleeding intraoperatively. The clinical assessment of the patient is more important as hemorrhage is difficult to estimate as it could be concealed. Post operatively, the patient should be watched for any coagulopathy and hemodynamic stability should be assured.

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