Major Postpartum Blood Loss and Massive Transfusion in a Tertiary Hospital in North-Central, Nigeria: Case Report

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Abstract

Background: Postpartum haemorrhage (PPH) which may sometimes be massive is a common cause of maternal and neonatal mortality and morbidity all over the world, and is said to be increasing. It is the most common cause of maternal death in our environment. The availability of blood and safe blood transfusion practices in many countries of Sub-Saharan Africa is lacking

Case: We present two cases of major PPH following caesarean section resulting in massive transfusion at the Obstetrics Department of Benue State University Teaching Hospital, Makurdi, North Central Nigeria. There was observed massive blood loss in one, with sepsis and continuous bleeding in the second. They were effectively treated with massive fresh whole blood transfusion, hysterectomy (case1) and conservative management (case 2).

Conclusion: We report the problems associated with the diagnosis of PPH especially by visual assessment and the availability of blood in our environment. We further, highlight the need for the identification of early warning signs of potential clients, towards early diagnosis and recourse to hysterectomy for the prevention and reduction of PPH, so as to limit the hazards of massive blood loss and transfusion especially in Nigeria.

Keywords: Postpartum haemorrhage; Massive blood transfusion; Hysterectomy

Introduction

Bleeding from the female genital track after birth referred to as postpartum haemorrhage (PPH) may be primary or secondary, and is a major cause of maternal morbidity and mortality worldwide. The highest rate is seen in the developing world as a result of dearth of facilities, trained personnel and poverty. Major blood loss in obstetrics practice is a challenge to the doctor, the haematologist and blood transfusion services, sometimes causing avoidable friction between the obstetricians, those supplying blood and the laboratory leading to unnecessary waste of time and resources with possible adverse outcome for the patient and her survival in many clinical settings in developing countries of Sub-Saharan Africa.

According to World Health Organization (WHO), obstetrics haemorrhage causes 127,000 deaths annually worldwide and is the leading cause of maternal mortality [1]. In developed countries, haemorrhage causes 13% of maternal deaths and is the third leading cause of maternal death, with higher rate in other countries [2]. Death rate from PPH has increased from approximately 2% in 1994 to 3% in 2006 in the United States and from 4% to 5% in Canada during that time [3]. The major known direct causes of PPH may be classified into four namely: uterine atony is the most common cause of PPH; genital tract trauma ranging from lacerations to uterine rupture, inversion and hematomas; the presence of intrauterine remnant of conception and placenta invasion and hematological abnormalities resulting in coagulopathy (the diagnosis should be suspected after delivery when bleeding continues despite a well contracted uterus). In Africa, due to increased prevalence of risk factors such as grand-multiparity, no routine use of prophylaxis against obstetric haemorrhage, coupled with poorly developed obstetrics services, obstetrics haemorrhage is responsible for 30% of the total maternal deaths [3]. Other factors such as lack of measures for drug and surgical management of atony are all well known.

Massive blood loss is arbitrarily defined as the loss of one blood volume within a 24 hours period [4]. On the other hand, major obstetric haemorrhage is defined as blood loss>2000 ml or rate of blood loss of 150 mls/min, or 50% blood volume loss within 3 hrs. It can also result in a decrease in Hb>4 g/dl, or acute transfusion requirement>4 units. A major obstetric haemorrhage that triggers the 'massive obstetric haemorrhage' protocol is defined as blood loss that is uncontrolled and ongoing with the rate of loss of 150 mls/minute [5,6]. Primary PPH is the most common form of major obstetric haemorrhage. The traditional definition of primary PPH is the loss of 500 ml or more of blood from the genital tract within 24 hours of the birth of a baby [7]. PPH can be minor (500-1000 ml) or major (more than 1000 ml). Major could be divided into moderate (1000-2000 ml) or severe (more than 2000 ml) [8]. On the other hand, secondary PPH is defined as abnormal or excessive bleeding from the birth canal between 24 hours and 12 weeks postnatal [9]. Haemorrhage emerges as the major cause of severe maternal morbidity in almost all 'near miss' audits in both developed and developing countries [10].

The objective of this study is to help guide health care professionals in the recognition of major obstetric haemorrhage and the challenges in management towards its early recognition and prompt and effective treatment if shock and its consequences are to be prevented in similar settings.
Case 1

A 35-years old, booked, P_2^{+1} (3A) woman with 2 previous caesarean sections presented to the emergency Obstetrics unit of Benue State University Teaching Hospital (BSUTH), Makurdi, at 37 weeks of gestation with vagina bleeding. She booked index pregnancy at 22 weeks gestation, and had four [4] regular visits but was unable to do her booking ultrasound scan due to financial reasons. She was diagnosed with major degree placenta praevia in a late ultrasound scan at 33 weeks of gestation. The ultrasound scan details showed a 33 weeks viable, singleton intrauterine fetus, with the placenta crossing the internal cervical os (placenta prævia type IV), and the fetus weighed 1.86 kgs. She was counselled on the nature of the condition and offered admission but she declined. She was then advised to come to the hospital any time she noticed vagina bleeding or contractions. Her booking blood pressure was 110/70 mmHg, packed cell volume (PCV) 36%, and urinalysis was essentially normal. Her blood group was B Rh\+ve, genotype AA, Retronviral screening test was not reactive and results of HBCAg, HCV, and VDRL tests were all negative. Her booking weight and height were 80 kg and 1.62 m respectively.

She presented with five [5] hours history of painless bleeding per vaginā at 37+5 weeks gestation. The bleeding was spontaneous with no preceding trauma to her abdomen or any other part of her body. There was associated passage of blood clots but no dizziness, fainting or loss of consciousness. There was no associated abdominal pain or labour pains. The bleeding was first noticed while defecating some days earlier and persisted over a few days as spotting per vaginām before the present episode which was said to have increased in volume. She had two previous deliveries which were all by caesarean section, in weeks gestation, and had four [4] regular visits but was unable to do another repeat ultrasound scan due to financial reasons. She was counselled on the nature of the condition and offered admission but she declined. She was then advised to come to the hospital any time she noticed vagina bleeding or contractions. Her booking blood pressure was 110/70 mmHg, packed cell volume (PCV) 36%, and urinalysis was essentially normal. Her blood group was B Rh\+ve, genotype AA, Retronviral screening test was not reactive and results of HBCAg, HCV, and VDRL tests were all negative. Her booking weight and height were 80 kg and 1.62 m respectively.

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progress. Post transfusion PCV (after 18 units of blood) at discharge was 31%.

She was seen in the post natal clinic one week after discharge and two weeks thereafter. She defaulted on her postnatal clinic review three weeks later.

**Case 2**

20 years old P_{1}^{+}0 (not alive) woman of Christian origin who lived with her husband at Adikpo in Kwande Local Government Area of Benue State was referred to us after an emergency caesarean section 3 weeks prior to presentation at a missionary hospital in the same town due to suspected big body at Term. She was delivered of a live male neonate with a poor 5 minute Apgar score who eventually died 4 hours later. She had been transflused with one pint of blood after the operation and transfused three more pints the next day before she was referred to another health facility in a nearby Local Government headquarter (Konshisha) about 30 kilometres away due to abdominal distension and ‘poor recovery’ after surgery.

She was finally referred to us from this hospital on the seventh day after the caesarean section with complaints of generalized body weakness, dyspnea and chest pain, abdominal pain and distension, fever and vagina bleeding. General examination revealed a young woman, in moderate respiratory distress (respiratory rate 20 cycles/minute), febrile (38°C), not pale, anicteric, acyanosed, not dehydrated and with no pedal oedema. The abdomen was uniformly distended and moved with respiration. She had a fresh sub-umbilical longitudinal midline scar. There was wound dehiscence just below the pouch of Douglas. The PCV was 24% and 3 units of fresh whole blood (making a total of 11 units) based on PCV of 18% on the second day. The blood clotting profile before transfusion was [Bed side clotting time was 18 minutes, PT=20 seconds [11-16] seconds. Control=14 secs, PTTK=54 seconds (30-50) seconds. Control=37 seconds] slightly deranged. She was given calcium gluconate 10 ml IV injection slowly and remained stable with steady recovery and was moved back to the female surgical ward on the fourth day after repeat laparotomy. Her tests remained essentially within normal range and she was discharged to the outpatient clinic after two weeks of admission.

Repeat follow-up visits in both the surgical and obstetric and gynaecological clinics two months later were uneventful and she was subsequently discharged.

**Discussion**

In developing countries, pregnancy and complications from child birth account for 18% of the diseases among females [11]. About 40% of the pregnant Nigerian women experience pregnancy related health problems during or after pregnancy and child birth, with 15% estimated as suffering from serious or long term complications. Although antenatal clinic attendance is expected to reduce the mortality and morbidity rates, it has been shown that women who had an apparently normal antenatal period develop complications during labour, delivery and the puerperium, and some of them die [12]. This was clearly seen in our patients as the first case had 2 previous CS and placenta praevia with antepartum bleeding but refused initial medical advice and admission, while the second had no reported risk factor or incident in the antenatal period and yet had haemorrhage and sepsis.

The recently observed increases in PPH incidence in the US and other high resource countries underscores the importance of increasing knowledge of transfusion practice among obstetricians [13]. It has been observed that even in developed countries with sophisticated systems of providing medical care, improperly executed transfusion contributes to morbidity and mortality associated with obstetric haemorrhage [14]. According to the WHO over the years, imbalance between resource-rich and resource-poor areas are probably due to a combination or increased prevalence of risk factors such as grand multiparity, lack of safe blood banking, non-routine use...
of prophylaxis against haemorrhage, and lack of measures for drug and surgical management of atony [15]. Other risk factors include multiparity, multiple gestation, caesarean section, placenta adherence, antepartum haemorrhage, genital tract lacerations in labour, uterine inversion and disseminated intravascular coagulation (DIC). Trained medical personnel may also be involved in the causation of PPH through negligence or ignorance as seen in acute uterine inversion (due to excessive traction on the cord of a fundal implanted placenta), routine use of episiotomies and inadequate aseptic procedures.

Our hospital is a major referral centre in a society with people of low socioeconomic status where case 1 presented in the antenatal clinic after two previous caesarean sections and was diagnosed with major degree placenta praevia which are major risk factors for PPH, intractable massive haemorrhage and or massive blood transfusion. She subsequently had a third CS followed by sub-total hysterectomy as a result of intractable haemorrhage.

Some patients with massive haemorrhage are also at risk of consumptive coagulopathy commonly seen in obstetrics haemorrhage, and particularly associated with placenta abruption, amniotic fluid embolism and sepsis (as was seen in our second case). These are liable to develop haemostatic failure which may be consumptive or dilutional (due to transfusion of fluids) which may have contributed in these patients. Patients being treated for massive haemorrhage are at risk of dilutional coagulopathy leading to reduced platelets, fibrinogen and other coagulation factors [16]. This occurs if volume replacement is with red cells, crystalloids and platelets [16]. This can be prevented with early infusion of fresh frozen plasma (FFP). All our cases had transfusions of many litres of crystalloids to ensure tissue perfusion and haemodynamic stability to wade off shock and its consequences. In massive haemorrhage as seen here, coagulopathy is likely to occur rapidly and regular monitoring and haematological tests are necessary to ensure good outcome.

Rapid recognition of clients at risk of PPH and early diagnosis is essential to successful management and favourable outcome of labour, ensuring optimal maternal care and prevention of complications as clearly elucidated by Olowokere et al. [15]. Many publications have reported that placenta accreta has become the most common cause of intractable PPH [17]. This may have significantly contributed to excessive bleeding in case 1.

The use of active management of the third stage of labour and avoidance of routine episiotomies have been shown to be effective in the reduction of PPH. The key to the successful prevention and management of massive/major or intractable PPH is the identification of risk factors for PPH, and its early diagnosis and treatment. Treatment options for PPH include conservative management with uterine massage, use of uterotonic drugs, elective devascularization by ligation or embolization of the uterine artery, external compression with uterine sutures (B-Lynch, Hayman, Cho), and intrauterine packing, [14-16] sometimes including hysterectomy. The choice of treatment is said to depend on several factors such as; delivery mode, the site of origin and volume of bleeding, the patients haemodynamic tolerance including the facilities and the skills available. However, postpartum hemorrhage also occurs in women with no risk factors, so physicians must be prepared to manage this condition at every delivery [18]. All our patients were successfully managed with blood transfusion, intravenous fluids and surgery for the control of bleeding and sepsis respectively, and ICU care. Secondary PPH is often associated with infection and generally treatment involves the use of antibiotics and uterotonics.

Other supportive measures for patients with massive PPH receiving massive transfusion are the use of central venous pressure monitoring by skilled anaesthetist if available and avoidance of hypothermia by warming the patient and all blood and fluids meant for transfusion. The absence of blood components in our institution was a major drawback and fresh whole blood was employed in all cases.

It is known that PPH and its sequelae are largely avoidable through skilled attendance at childbirth through proper training and retraining of all those involved with the possible use of drills, and the avoidance of delays at home, during transportation and in the hospital. It is therefore, our desire that our initial experience with these cases will help doctors and all those involved in the care of birthing women and the transfusion chain, practicing in similar environments towards the early diagnosis and treatment of PPH to avoid its ugly consequences.

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