

# Postpartum Hemorrhage from Uterine Atony in Resource-Limited Rural East Nusa Tenggara Indonesia: A Case Report

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## ABSTRACT

**Background:** Maternal mortality remains high globally, particularly in low-resource settings. Postpartum hemorrhage is the leading cause, responsible for millions of cases and thousands of deaths annually. Indonesia's maternal mortality, especially in rural provinces such as East Nusa Tenggara, reflects gaps in timely recognition and management of PPH at primary health centers.

**Case Presentation:** A 28 years old woman with a planned referral to hospital with a diagnosis of G3P2A0, 36 weeks of gestational age with severe anemia (Hb 7.00 mg/dl), refused to go to the hospital because of the local belief there. In rural parts of Indonesia local wisdom holds a more important position than health advices from professionals. This is strongly related to lower levels of education, socio-economic status, and resources constraints faced especially in the more rural parts of Indonesia. On 40 weeks of gestation, this patient came with 10 cm dilated cervix. After delivery and 3<sup>rd</sup> stage of active management was given, she suffered uterine atony which resulted in 650 cc of blood loss. For initial management of post-partum hemorrhage, the internal bimanual uterine massage was performed while two

intravenous lines with Ringer Lactate with 20 IU of oxytocin as the only uterotonic available on the facility were inserted simultaneously. Only after inserting personally procured 400mcg of Misoprostol rectally did the bleeding stop and the contraction return back to normal. Tranexamic acid was not given because it was unavailable at the facility. Referral to hospital for further management was not possible due to the family refusal and the road being blocked by landslides.

**Conclusion:** This case report highlights the importance of proper education, health promotion, adequate resources, and also proper access to advanced health facilities to be able to provide better healthcare especially in remote areas of Indonesia and therefore can suppress both the maternal and neonatal mortality number.

**Keywords:** Uterine Atony, Anemia, Remote Primary Health Care, Case Report

## INTRODUCTION

Maternal mortality remains a major global challenge, especially in developing and underdeveloped countries. Postpartum hemorrhage (PPH) is the leading cause of maternal mortality world-wide contributing in 14 million cases which result in 70.000 deaths each year globally.<sup>1</sup> Indonesia has a

maternal mortality rate of 189 death per 100.000 live birth recorded, which is way higher compared to the sustainable development goals' (SDGs) target of 70 per 100.000 live births by 2030. East Nusa Tenggara province is in the top 3 provinces with the highest maternal deaths (316 per 100.000 live births) after Papua and West Papua.<sup>2</sup>

Maternal mortality rate in Indonesia is higher in rural areas than the urban ones.<sup>2</sup> The government has tried to lower this number by providing a primary health centers (hereafter referred to as Puskesmas) which act as the first point of contact with healthcare workers free of charge. It focused on promotive, preventive, and curative care that provides general medical care including antenatal care and assistance with uncomplicated births, minor surgical procedures, and basic laboratory services then refer more complicated cases to secondary or tertiary health facilities.<sup>3</sup> But still the rate remains high. This is contributed by factors like lower level of education & socioeconomic status, primitive beliefs as local wisdom, and resources constraints faced by Puskesmas in a more rural parts of Indonesia.<sup>4,5</sup>

Postpartum hemorrhage is defined as blood loss that exceeds 500 ml after vaginal delivery or 1000 ml after section-caesarean delivery or blood loss accompanied by signs and symptoms of hypovolemia after the 3<sup>rd</sup> stage of labor.<sup>6</sup> Uterine atony is the most common cause of postpartum hemorrhage which is a condition where the myometrial tissues of the uterus contract inadequately and does not squeeze the spiral artery so bleeding occurs.<sup>6,7</sup>

## CASE PRESENTATION

A 28 years old woman came to Puskesmas Manufui for her first antenatal care meetings at 36 weeks of gestational age and was scheduled for a referral to Soe District General Hospital South Timor Tengah with a diagnosis of G3P2A0, 36 weeks of gestational age with severe anemia (Hb 7.00 mg/dl). Her past parturition history was

unknown because she gave birth at home with a shaman for her last 2 births. Both history of past illness and family illness were denied. She refused to go to the hospital because of the local beliefs from the area saying that whoever goes to the hospital, they will eventually meet their demise. On 40 weeks of gestation, she came to Puskesmas Manufui with complaints of bloody discharge, labor contractions for 8 hours before admitted, and feels like "something about to come out from the birth canal". On per vaginal examination, cervix was 10 cm dilated, fully effaced, and the head of the baby was on Hodge IV and ready to come out. Membranes were ruptured on arrival and the fluid was clear. Thus the 2<sup>nd</sup> stage of labor begins.

After delivering both the baby & placenta and 3<sup>rd</sup> stage labor management was given by the midwives, uterine tone was lost completely and there was active bleeding from the birth canal in large quantities. Inspection and exploration were carried out by the doctor to ensure that there were no lacerations nor remaining tissues left, and there was none. For initial management the internal bimanual uterine compression was performed while two intravenous lines with Ringer Lactate (RL) and urinary catheter were inserted simultaneously. One RL filled with Oxytocin 20 IU 40 drops per minute as the only uterotonic available on the facility then and the other RL drops quickly. Personally procured 400 mcg of misoprostol also inserted rectally because the contraction had not returned. After a total of 5 minutes the uterine contractions returned back to normal. Tranexamic acid cannot be given because it is not available at the facility.

Total blood loss counted around 650 cc with urine outputs around 200 ml. 4<sup>th</sup> stage monitoring issued, on examination, the state of consciousness was compos mentis, blood pressure 110/80 mmHg, pulse 99 beats per minute (bpm), breathing 18 bpm, and temperature 36.7°C. Both eye conjunctiva was anemic, neck, thorax, abdomen, and extremities examinations were normal.

Fundal examinations showed good uterus contractions and height 2 fingerbreadths below the umbilicus. Laboratory finding revealed latest hemoglobin concentration of 6.0 gr/dl using the Sahli method. Other laboratory examinations cannot be done because it is not available in the facility. Communication and referral to the hospital to get further treatment was not possible due to the loss of signal and blocked road by landslides for 3 days and also family refusal to be referred. So, the patient was closely monitored at Puskesmas for the next 24 hours. After 24 hours of observation, the patient was discharged and therapy continued with just iron supplementation for the anemia with a target of 1 gr/dl increased in Hb each month. After 6 months of close monitoring the final Hb showed level of hb 9 gr/dl.



**Figure 1.** The results of patient's latest hemoglobin examination during the fourth stage of labor using the only equipment available at the facility

## DISCUSSION

PPH is still the leading cause of maternal death in developing and under-developed countries despite advances in maternal and postnatal care.<sup>4,6</sup> The patient first arrived for an antenatal care (ANC) at 36 weeks of gestation and was immediately referred for a planned delivery at the hospital because she has severe anemia (Hb 7.00 gr/dL) and required thorough management and adequate facility at the hospital and could

not be managed at a very remote facility with limited resources like Puskesmas, especially the one in rural areas. In rural part of Indonesia local culture, customs, and wisdom play a dominant role in pregnancy-related decisions.<sup>5</sup> The people uphold their local beliefs without hesitation even if it's very contradictory with health principles and the consequences could be fatal. This is also influenced by lower socio-economic and education level in rural areas. As several studies have found, socio-economic status and education will greatly determine a mother's attitudes in service-seeking attitudes and decisions making.<sup>4,5</sup> Research conducted in Padang shows that maternal deaths due to bleeding are more common among mothers who are uneducated and has poor antenatal check-up.<sup>8</sup> In this case, the patient only came and did her antenatal check-up when she's already 36 weeks pregnant and did not want to do another antenatal care nor being referred because of the local belief that whoever goes to the hospital will eventually meet their demise. So, she then came only when she's about to give birth at 40 weeks of gestation.

Postpartum hemorrhage (PPH) has the "4Ts" mnemonic as etiologies which are the Tone (uterine tone), Tissues (retained placenta, membranes, or blood clots), Trauma (any lacerations in perineum up to uterus or inversion), and Thrombin (clotting problems).<sup>6,7</sup> The most common etiology for PPH is uterine atony which is a condition where uterus fails to contract sufficiently to squeeze the spiral artery in response to endogenous oxytocin released during delivery that then leads to hemorrhage.<sup>6,8</sup> Risk factors including uterine overdistention, labor induction, medications (tocolytic and anesthesia), labor abnormalities (rapid, prolonged, or augmented labor and chorioamnionitis), previous history of atony, parity (primiparity or high parity), and anemia.<sup>6,9</sup> In this case severe anemia was found to be the contributing factor. Severe anemia will lower uterine blood flow and its muscle strength that may contribute to inefficient

uterine contraction to squeeze spiral artery adequately which in turn will result in greater blood loss.<sup>9,10</sup> Since the patient came with 10 cm dilated she was unable to be referred right then because the nearest hospital was 3 hours away and this patient has a very high risk of PPH thus the 2<sup>nd</sup> stage of labor begin at Puskesmas with anticipations of PPH.

Profuse bleeding from the birth canal right after delivering the placenta and 3<sup>rd</sup> stage management applied indicated that there's an ongoing PPH. The initial management for PPH was maintaining the patient's hemodynamic stability while identifying and treating the underlying cause. Inspection and exploration for the etiology of the hemorrhage and initial fluid resuscitation has to be done simultaneously.<sup>6,7</sup> In this case there's no lacerations nor any tissues nor clots retained, but on fundal palpation, it was found that there's no uterine contraction thus the etiology can be ascertained. The use of isotonic crystalloids are recommended in preference to use of colloids for initial intravenous fluid resuscitation of women with PPH. *Federation Internationale de Gynecologie et d'Obstetrique* and other high-quality guidelines around the world recommend the use of oxytocin 10 IU (IV/IM) for the prevention of PPH and as primary therapy for postpartum hemorrhage.<sup>6,11</sup> Other uterotonics such as 0.2 mg ergometrine injected intramuscularly or prostaglandin drug like misoprostol with a total of 400-1000 mcg can also be given orally, sublingually, or rectally combined when oxytocin is unavailable or if the bleeding does not respond to it.<sup>11,12</sup> The use of bimanual uterine compression for PPH due to atony as a temporary measure until appropriate care available is also recommended.<sup>11</sup>

In this case 2 large bore IV line with RL was inserted for fluid resuscitation, along with Oxygen and Urine catheter for urine output monitoring. First dose of oxytocin 10 IU IM was administered during third stage active management of labor and an

additional 20 IU dose was administered with RL immediately after PPH was identified. Personally procured 400 mcg of misoprostol also inserted rectally because the bleeding still persists. After a total of 5 minutes the uterine contractions returned back to normal, the bleeding stop, and the total blood loss is around 650 cc. Latest laboratory findings on 4<sup>th</sup> stage monitoring showed the Hb result of 6.0 gr/dl using the Sahli method. Other laboratory tests such as complete blood count were not available at the facility. Early use of 1g intravenous tranexamic acid as soon as PPH is diagnosed but within 3 hours of birth is recommended.<sup>11,13</sup> In this case tranexamic acid were not administered because it was unavailable at the facility. Mobilizing emergent-care obstetrical team and preparing for the possibility of transfusion after PPH is the next step that needs to be done.<sup>6,11,14</sup> In this case, communication to the hospital for further management was not possible because both the signal and the road were blocked by landslides. The patient and her family, feeling "better" still refused to be referred, thus, the patient was closely monitored for the next 24 hours postpartum at Puskesmas. The therapy continue with just iron supplementation as the only alternatives available at the facility with a target therapy of increased Hb level 1-2 mg/dl higher each month.<sup>15</sup> After 3 months of oral iron supplementation the final Hb showed 9 mg/dl.

## CONCLUSION

Postpartum hemorrhage is the most common obstetric emergency that contributes to the high MMR rate in developing and under-developed countries. In Indonesia, MMR is higher in rural areas than the urban ones. This case provides a little insight as to why the maternal mortality rate is still higher in rural than urban areas. It is mostly due to lack of awareness of the importance of antenatal care that caused by lower education and socioeconomic status, inadequate health facilities, and poorer access to advanced

healthcare in rural areas. Therefore, good collaboration between various sectors is essential to provide optimal health service and reduce the maternal mortality rate.

### **Declaration by Authors**

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