

Maternal Collapse: A Golden Hour in Near Miss

Pooja Asole*, Kiran Rajole, Vasant Kawade

ABSTRACT

Mortality among mothers is an important indicator of the health of mothers. Despite the continually high maternal mortality rate, maternal fatalities within communities are quite rare. To deal with this, the concept of a maternal near miss has been included as a supplemental indicator. A maternal near miss is a woman who experienced serious health issues during the pregnancy, delivery, or up to 42 days after terminating her pregnancy but lived. Multiple terminologies and criteria have been used for recognizing near-miss occurrences, resulting in a lack of standardization. To address this, the World Health Organisation (WHO) recently developed criteria based on clinical care and symptoms of organ malfunction, to simplify the organized gathering of information on maternal near misses and enhance summary statistics accuracy. Near misses are more common. Near-miss episodes are more common in developing countries, with the primary factors being equivalent to those for maternal mortality, such as blood loss, hypertensive conditions, septicaemia, and obstructed labour. By assessing maternal near-miss situations, important details on access to care delay can be acquired, helping in developing corrective steps. In addition, these instances throw light on both, the constraints of healthcare systems and the standard of maternal health care. Certain indicators have been developed to quantify maternal near misses and assess quality of care levels. Using the near-miss technique will be essential in assessing creative approaches to improve maternal health results alongside offering better care.

Keywords: Maternal collapse, near miss, quality of maternal health care, severe acute maternal morbidity

Journal of Research in Medical & Interpathy Sciences. 2(1);2024

INTRODUCTION

Maternal collapse is defined as an acute event involving the cardiorespiratory systems and/or brain resulting in a reduced or absent conscious level (and potentially death), at any stage in pregnancy and up to six weeks after delivery. If not treated on time, maternal cardiac arrest can occur. Incidence is 1 in 36000 pregnancies with a case fatality rate of 42%. Maternal mortality is one of the important indicators used to measure maternal health. Improvement of maternal health is one of the millennium development goals, MDG 5 with Target 5 A that calls for the reduction of maternal mortality ratio by three quarters between 1990 and 2015.¹ The global maternal mortality ratio is 210/100,000 births while it is about 240 in developing countries as compared to 14/100,000 in developed countries.^{2,3}

The concept of maternal near miss pertains to women who experience severe complications during pregnancy, childbirth, or within 42 days post-pregnancy, and narrowly survive. Severe Acute Maternal Morbidity (SAMM) encompasses life-threatening conditions that may result in near-miss events, with potential long-term health consequences. Women who develop SAMM often share similar pathological and contextual factors as those who succumb to maternal death. While some women tragically lose their lives, others narrowly avoid fatal outcomes. Together, near-miss events and maternal deaths are referred to as severe maternal outcomes (SMO). Data on severe maternal morbidity is critical for health policymakers as it informs the need for essential and emergency obstetric care (EmOC). This information is considered a more comprehensive indicator than maternal mortality rates alone, offering valuable insights for the design, monitoring, and evaluation of maternal health and safe motherhood programs.

Department of Obstetrics and Gynaecology, SMBT Institute of Medical Science and Research Centre, Nashik, Maharashtra, India

Corresponding Author: Pooja Asole, Department of Obstetrics and Gynaecology, SMBT Institute of Medical Science and Research Centre, Nashik, Maharashtra, India. Email: poojapsole14@gmail.com

Conflict of Interest: None

Source of Funding: None

CRITERIA FOR IDENTIFICATION NEAR MISS CASES

Criteria	Description
Clinical criteria related to a specific disease entity	Common conditions can be identified using disease-specific definitions, while serious disease is defined utilizing clinical parameters. e.g., Pre-eclampsia is a situation, and consequences such as an eclampsia condition called renal failure, and pulmonary complications such as oedema suggest severe cases.
Management specific	Management of the illness or treatment, which includes hysterectomy, transfusion of blood, or hospitalization to the critical-care intensive unit.
Organ system dysfunction or failure	According to the concept that existence is a sequence of events that lead from good health to death, Organ malfunction and failure occur prior to death. Markers of organ system malfunction or failure are determined. e.g. Jaundice, or in the presence of preeclampsia

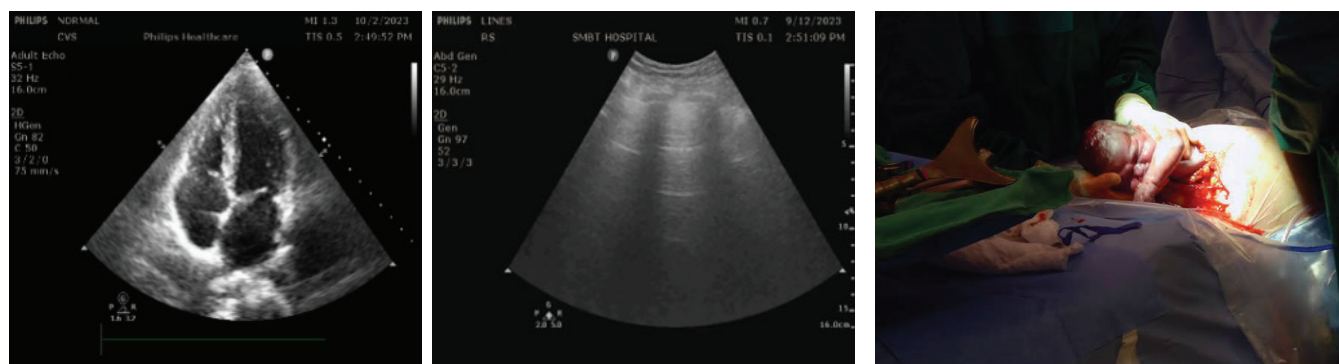


Figure 1: Ultrasound image.

CASE REPORT

A 20-year-old primigravida referred to casualty in an active stage of labour with gestational hypertension. On admission tablet Labetalol 200 mg and tablet Nifedipine 10 mg were given over the period of 2 hours as per BP monitoring. Labour was augmented with an oxytocin infusion. The patient progressed well at the rate of 1.5 cm per hour to full dilatation. Fetal heart sound dropped to 100 bpm, so the decision of instrumental delivery was taken after confirming the prerequisites for outlet forceps. Forceps were applied and it failed, so forceps delivery was abandoned. The decision to lower segment caesarean section under spinal anaesthesia in view of second-stage arrest was taken. Female child 3.0 kg delivered by modified Patwardhan method. BCIAB. The patient had mild postpartum haemorrhage treated with uterotonic and PCV. While suturing episiotomy patient had hypotension (BP 60/30 mmHg), bradycardia, (50 BPM), SpO₂ 86, breathlessness and near arrest. *Inj.* Atropine and *Inj.* Adrenaline was given and the patient was intubated. After ruling out atonic and traumatic postpartum haemorrhage patient was then shifted to ICU and bedside usg was done to rule out broad ligament haematoma and haemoperitoneum. The patient was also given inotropes. To rule out peripartum cardiomyopathy 2D echo was done. To rule out lung pathology lung ultrasound was done. FAST done. On ultrasound examination IVC was collapsible. USG-guided IJV cannulation and arterial line cannulation were performed within 8 minutes by a consultant anaesthetist. 2-point packed cell volume, 4-point fresh frozen plasma and 2-point cryoprecipitate were given. INVESTIGATION: HB 9.1gm/dL, TLC -14320 PLT- 159000, S Na – 137mmol/l, S. K⁺ 3.5 mmol/l. After 6 hours patient responded well, a reduced dose of inotropes was required, IVC, ABG and vitals improved. Post extubation was uneventful and the patient was discharged on day-8 of surgery with a healthy baby (Figure 1).

CONCLUSION

The prompt identification of maternal collapse, timely initiation of advanced life support protocols, and effective multidisciplinary collaboration are critical in stabilizing the patient and mitigating adverse outcomes. Although the

management of maternal collapse is inherently complex and multifaceted, a well-coordinated and preemptive approach can markedly influence patient prognosis, thereby enhancing the overall quality of maternal care. Obstetricians and healthcare institutions need to remain vigilant, responsive, and unwavering in their commitment to delivering optimal care to pregnant women, thus safeguarding maternal health and ensuring positive childbirth outcomes. Given that maternal near-miss cases exceed maternal mortality rates, they provide a unique opportunity to gather firsthand data on the systemic challenges and barriers encountered throughout the healthcare process. These cases serve as valuable indicators of healthcare quality across all levels of care. Accordingly, the application of the maternal near-miss framework is indispensable for the comprehensive evaluation of maternal health outcomes and the assessment of the quality of care provided.

DISCUSSION

Maternal collapse, though rare, can result from a variety of causes. Immediate multidisciplinary intervention is crucial to stabilize the pregnant patient and prevent progression to cardiac arrest. Point-of-care ultrasound can help identify the cause early, guiding both decisions and treatment. During cardiac arrest, the main priorities are high-quality CPR, manual uterine displacement, timely intubation, and resuscitative hysterotomy (peri-mortem caesarean section), alongside swift diagnosis and management of the underlying issue. In specialized centers, extracorporeal membrane oxygenation may be considered for critically ill patients or following maternal cardiac arrest

REFERENCES

1. United Nations Millennium Declaration. Fifty-fifth Session of the United Nations General Assembly. New York: United Nations; 2000, 18 September 2000 (General Assembly document, No. A/ RES/55/2).
2. World Health Organization. Maternal Mortality in 2005: estimates Developed by WHO, UNICEF, UNFPA, and the World Bank. World Health Organization, Geneva, Switzerland, 2010. p. 15-63.

3. World Health Organization. Trends in Maternal Mortality: 1990- 2010. WHO, UNICEF, UNFPA, and the World Bank Estimates. World Health Organization, Geneva, Switzerland; 2012.
4. Royal College of Obstetricians and Gynaecologists. Maternal Collapse in Pregnancy and the Puerperium 2011; Green top guideline No. 56. RCOG; January.
5. World Health Organisation. Trends in Maternal Mortality 1990- 2015 2015; Switzerland WHO, Geneva.
6. Knapp C, Bhatia K. Maternal collapse in pregnancy. Br J Hosp Med. 2022
7. Chhabra P. Maternal near miss: An indicator for maternal health and maternal care. Indian J Community Med 2014;39:132-7.