

An unexpected birth: neonatal resuscitation following a vaginal delivery by an unsuspecting mother in the emergency department: a case report

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INTRODUCTION

In Canada, neonatal prematurity remains the second leading cause of infant death.¹ In presenting this case of a preterm delivery to a mother who was unaware of her pregnancy, our objective is primarily to emphasize the importance for emergency medicine staff to be aware that premature birth does unexpectedly occur in the emergency department, and that staff should be trained and feel comfortable with the most recent neonatal resuscitation guidelines. Emergency department staff must be prepared to manage both the mother and neonate simultaneously, especially when complications arise and other specialists are not available.

CASE REPORT

This is the case of a 24-year-old female who presented to an emergency department in Northern Ontario complaining of worsening back pain for several days in addition to a scant amount of vaginal bleeding. Her past medical history was significant for polycystic ovarian syndrome. She was not known to be pregnant. Vitals signs included a blood pressure of 164/65 mmHg,

heart rate (HR) of 110 beats per minute, respiratory rate (RR) of 20 breaths per minute, oxygen saturation of 96%, and temperature of 36.6°C. Her quantitative beta human chorionic gonadotrophin was 13317.00 IU/L.

An hour after being triaged, the patient experienced severe back pain and the emergency physician was called to the bedside. Upon arrival, a neonate was lying on the stretcher, surrounded by a significant amount of blood. The mother required fluid resuscitation, was sent to the operating room for an emergency dilation and curettage and was eventually discharged home the following day. This case, however, will focus on the neonate and the events that transpired.

The neonate was initially noted to have an Apgar score of 1, followed by an Apgar score of approximately 4 at 1 minute. Cardiopulmonary resuscitation (CPR) was initiated and a code pink declared. Nursing staff in the emergency department established intravenous access. Bag mask ventilation was subsequently initiated. Suction was used and endotracheal intubation attempted. With three failed intubation attempts by two separate practitioners and oxygen saturations dropping to as low as 17%, bag mask ventilation was used to improve oxygen saturation back to 100%. At this time, the neonate was transferred to the neonatal intensive care unit for continued resuscitation.

Once in the neonatal intensive care unit, a 2.0 endotracheal tube was successfully placed and subsequent vitals recorded included a HR of 140, RR 40, and temperature 35.2°C. The neonate was promptly placed in

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an incubator. She was estimated to be 24 to 25 weeks gestational age based on her physical features and weight of 600 g.

A provincial acute care and transfer service was consulted to have the neonate transferred to a pediatric center. The helicopter transfer was delayed because of poor winter weather. The neonate was eventually transferred but died 2 weeks later from medical complications.

DISCUSSION

Premature birth can and does happen unexpectedly in the emergency department, even when the patient denies a history of pregnancy. It is estimated that for 1 in every 475 cases, the mother is unaware of the pregnancy at 20 weeks gestation.² Negative sequelae can result when emergency department staff, including nurses, physicians, and respiratory therapists, are underprepared for deliveries. When birth occurs, staff must be prepared to manage both the neonate and the mother simultaneously. Emergency departments should, therefore, consider having a checklist of equipment and supplies needed, in addition to a birth delivery action plan, with separate teams assigned to the mother and neonate.³

Given that premature neonates are at increased risk of hypothermia, the Canadian Paediatric Society offers a variety of strategies to control thermoregulation for infants less than 32 weeks gestational age. These include using a hat, preheated radiant heater, polyethylene wrap, and a thermal mattress.⁴ In this case, the neonate was placed in cellophane wrap until an incubator was located.

Moving forward, all personnel working in an emergency department should be up-to-date on the Neonatal Resuscitation Program offered by the Canadian Paediatric Society.⁵ The updated Neonatal Resuscitation Program algorithm should be readily available and followed during neonatal resuscitation in the emergency department. In this case report, an initial pulse was indeterminate. Research recommends that ventilation efforts need to be made before beginning CPR as neonatal resuscitation is often secondary to a respiratory etiology.^{4,6} Moreover, we recommend simulation sessions be used to help prepare emergency medicine staff to be comfortable following neonatal resuscitation guidelines; research suggests that these sessions can be an effective teaching tool.^{7,8}

The hospital where this case took place did not have a neonatologist on staff, and the pediatrician on call was

not in-house when initially consulted. Anesthesia was not involved in the intubation of this patient. The potential difficulty in managing a neonatal airway necessitates early use of the most experienced care provider. Research shows that the use of a laryngeal mask airway may be an alternative to an endotracheal tube; however, evidence for this is lacking in neonates <34 weeks' gestational age or birth weight <1,500 g.^{9,10}

This case also exemplifies some challenges faced when working in hospitals geographically detached from larger centers. The neonate's transfer to a specialized pediatric center was delayed for more than 6 hours because of a winter storm. This highlights the importance of emergency staff who work in rural contexts to have the clinical confidence to help manage unstable neonates.

CONCLUSION

Unexpected deliveries of premature neonates do happen in emergency departments. The rarity of these incidences may predispose emergency staff to feel unprepared in managing the competing demands of the simultaneous resuscitation of the mother and the neonate. Emergency departments should be equipped with a delivery action plan and the equipment/supplies required to care for a newborn.

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