

Natural History of Preterm Pre-labour Rupture of Membranes in a Singleton Primipara in a Rural Low-Resource Setting in the Absence of Early Antibiotic Intervention: a Case Report

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Abstract

This case report presents the clinical course of a 33-year-old primiparous woman whom at 30 weeks of gestation experienced preterm pre-labour rupture of membranes (PPROM) in a low-resource setting. The patient, with a history of primary infertility, was managed conservatively without antibiotics for 28 days at a resource-limited health facility, where she was treated until clinical symptoms indicating chorioamnionitis appeared, leading to her referral. She underwent an emergency caesarean section at 34 weeks gestational age due to suspected chorioamnionitis resulting in the delivery of a healthy male infant. However, the baby developed neonatal jaundice which was successfully managed with phototherapy over five days. This case provides insight into the natural course of PPRM that lasted for 28 days, a condition that would have been ethically challenging to study in a research setting. It emphasizes the difficulties of managing PPRM in low-resource environments, especially when there is no immediate access to antibiotics and advanced neonatal care.

Keywords: Antibiotics, Ethically Challenging, Low-Resource, History, Preterm

1. Introduction

Preterm pre-labour rupture of the fetal membranes (PPROM) is a significant obstetric complication that leads to preterm delivery and is associated with increased neonatal morbidity and mortality. Premature rupture of membranes (PROM) is defined as the rupture of the membranes before the onset of labour, regardless of gestational age. It occurs in approximately 10% of pregnancies, with the majority happening at or beyond 37 weeks of gestation. Only 10% of PROM cases occur before 37 weeks. The natural course of PROM typically leads to labour, with minimal complications at term. However, PROM occurring before 37 weeks significantly increases risks for both mother and fetus [1,2].

In 2017, the criteria for diagnosing clinical chorioamnionitis (CCA) were revised, emphasizing the presence of maternal fever along with other signs such as fetal tachycardia, maternal leukocytosis, or purulent vaginal discharge. This condition poses a serious risk to neonates. Research on PPRM has primarily focused on latency periods and associated complications, but data remain limited, especially in singleton pregnancies in low-resource settings without the use of antibiotics. This case report highlights the natural history of PPRM in a singleton pregnancy without the immediate administration of antibiotics, a scenario unlikely to be ethically explored in randomised studies [3-6].

2. Case Presentation

A 33-year-old G3P1+1 (1 living child) at 34 weeks of gestation, presented to our hospital facility with PPRM and signs of imminent chorioamnionitis. She had no history of

chronic illnesses such as diabetes mellitus or hypertension, nor history of alcohol use. On clinical physical examination, she was, her blood pressure was 90/60 mmHg, and her pulse rate was 116 beats per minute. She had been managed conservatively for PPRM without antibiotics for 28 days at a resource-limited health facility, where she was treated until clinical symptoms indicating chorioamnionitis appeared, leading to her referral. Upon arrival, she was administered dexamethasone 12 mg STAT, and intravenous antibiotics (ceftriaxone and metronidazole) were started after evaluation by an obstetrician. Laboratory tests showed a hemoglobin level of 11 g/dL, with normal renal and liver function tests. A positive pooling test and bedside Amnioquick card and strip test confirmed the rupture of membranes [see Figure 1]. The patient consented to a caesarean section, during which a healthy male infant weighing 2.45 kg was delivered. No amniotic fluid was observed at the time of delivery, and the uterus, tubes, and ovaries appeared normal. The immediate postoperative condition was satisfactory. The baby was handed over to the neonatologist. The patient had a history of infertility treated with letrozole and other medications, and her husband had been treated for abnormal seminal analysis with antibiotics. Prior to the current presentation, the patient had been managed for malaria in pregnancy and had completed a course of Artemether-Lumefantrine combination therapy for associated symptoms. Twenty-eight days after the initial rupture of membranes diagnosed by pooling of liquor in the vagina, she presented with symptoms indicative of chorioamnionitis, including maternal tachycardia. Despite the prolonged period without antibiotics, the patient eventually required delivery due to the risk of infection [7,8].

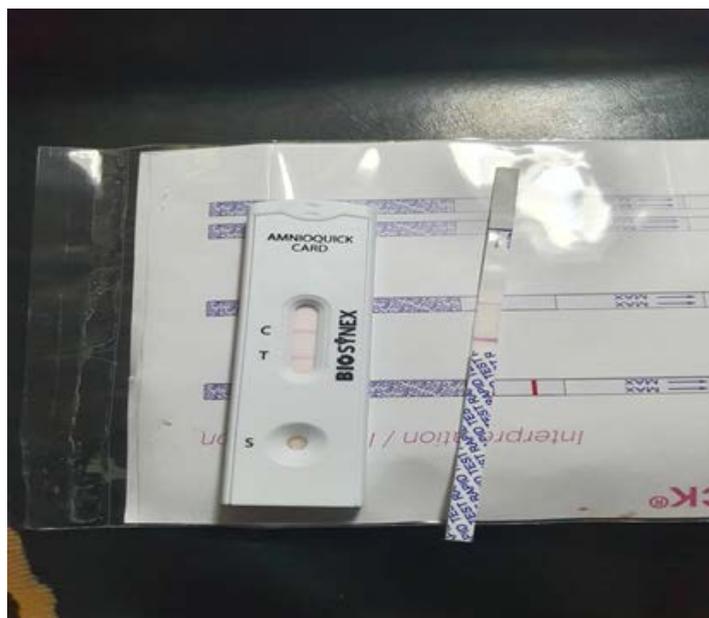


Figure 1: Amnioquick Card and Strip Test Confirming the Premature Rupture of Membranes in The Patient

3. Discussion

This case illustrates the natural progression of PPRM in a low-resource setting where immediate access to antibiotics and advanced neonatal care was not available. The patient experienced a prolonged latency period without antibiotic treatment, eventually developing signs of chorioamnionitis, which necessitated a caesarean section. The absence of amniotic fluid at delivery and the relatively stable condition of the newborn highlight the complexities of managing PPRM, particularly in settings with limited resources. PPRM is a challenging condition to manage due to the risks of infection and preterm delivery. In high-resource settings, the administration of antibiotics and corticosteroids is standard practice to prolong latency and improve neonatal outcomes. However, in low-resource settings, such interventions may not be readily available, leading to different clinical outcomes, as seen in this case [9].

This case presents a number of clinical implications. First, the case highlights the challenges of managing PPRM in settings where access to antibiotics and advanced neonatal care is limited. The prolonged latency period without antibiotic intervention increases the risk of maternal and neonatal complications, emphasizing the need for timely access to appropriate care. However, the positive impact of antibiotic prophylaxis is well established, showing significant reductions in neonatal and maternal morbidity, including neonatal and intrauterine infections, as demonstrated in large randomized controlled trials and meta-analyses. This has led to strong recommendations and widespread clinical use. However, the optimal treatment modalities, including the choice of agent, route of administration, and duration, remain subjects of debate. Second, the development of imminent chorioamnionitis after a delayed response in a PPRM case underlines the importance of close monitoring and early intervention. Clinicians should be vigilant in recognizing early signs of infection and be prepared to act

swiftly to mitigate risks. Third, the case accentuates the complexity of decision-making in the absence of standard interventions like antibiotics. Making individualised care and early referral is critical in improving maternal and neonatal outcomes. Fourth, this case can inform healthcare providers about the importance of educating patients early in pregnancy on the potential risks associated with PPRM, particularly in low-resource settings. Patients should be counseled during antenatal visits on the importance of seeking timely medical intervention and the potential outcomes if such interventions are delayed [10-16].

Notwithstanding, this case has a number of research implications. First, the case accentuates the necessity for more research that will focus on the management of PPRM in low-resource settings. Data from such studies can guide the development of case-specific guidelines that consider the limitations and challenges unique to low-and middle-income settings. Second, this case report presents an opportunity to investigate the effects of delayed or absent antibiotic administration on maternal and neonatal outcomes in PPRM cases. Understanding these outcomes could inform future guidelines and interventions tailored to resource-limited settings. Third, the case illustrates the ethical challenges of conducting randomised controlled trials in conditions that Withhold treatment, such as antibiotics, would be unethical. Alternative research designs, such as observational studies or retrospective analyses, may be necessary to gather data in these contexts. Fourth, research informed by cases like this can contribute to the development of global health guidelines that consider the variability in resource availability. This includes creating adaptable protocols for managing PPRM that can be implemented across different healthcare settings. Fifth, there is a need for research on the long-term outcomes of infants born after a prolonged latency period without antibiotics, particularly in low-resource settings. Understanding these outcomes

could help shape future neonatal care practices and improve prognostic counseling for parents [17-19].

4. Conclusion

This case provides insight into the natural course of PPRM that lasted for 28 days, a condition that would have been ethically challenging to study in a research setting. It emphasizes the difficulties of managing PPRM in low-resource environments, especially when there is no immediate access to antibiotics and advanced neonatal care.

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Disclosure

The authors declare that there is no conflict of interest in this work.

Ethical Consideration

Consent was obtained from the index patient to allow the reporting and displaying of pictures where necessary.

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Ethics Approval and Consent to Participate

Not applicable

Consent for Publication

Written informed consent was obtained from the index patient to publish this case report and any image which accompanied it.

Availability of Data and Materials

Data sharing is not applicable to this article as no datasets were generated or analysed during this study.

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