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Case Report

Outcomes of prolonged preterm premature rupture of the membrane: a report of six cases

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ABSTRACT

Preterm premature rupture of the membranes (PROM) is associated with significant maternal morbidity and perinatal mortality. With an increasing era of infertility, the main interest of an assisted reproductive technology specialist is to increase the take-home baby rate. Here authors present report on the outcomes of prolonged preterm PROM cases facilitated with expectant management. Report is based on the medical records of six women with preterm PROM between 16-31 weeks of gestation who gave their consent to continue the pregnancy. These women were diagnosed with PROM by the litmus test and per speculum examination. Ultrasound scan and clinical investigation, which included complete blood count and C-reactive protein level, were performed in all cases. Prophylactic antibiotics were administered to prevent the infection and increase the latency period. All six babies (100%) were delivered successfully. There was no foetal mortality and maternal morbidity observed. Expectant management in preterm PROM cases can increase the survival rate and hence the take-home baby rate.

Keywords: Foetal outcomes, Maternal outcomes, Premature rupture of membrane

INTRODUCTION

Premature birth is a significant health problem in many countries.¹ Preterm premature rupture of the membranes (PROM) is occurring before the threshold viability in 1% of pregnancies.² PROM refers to the interruption of foetal membranes before onset of labor, resulting in breakage of the amniotic sac. PROM is associated with foetal morbidity and mortality as well as maternal morbidity. The three main causes of foetal mortality associated with preterm PROM are pulmonary hypoplasia, sepsis and asphyxia. PROM occurs prior to 37 weeks of gestation in approximately 5-10 % of all pregnancies and 80 % occur at term.³ Use of prophylactic antibiotics in preterm PROM has decreased the complications related to infection.² Proper diagnosis is important for management of various foetal and maternal complications. Delayed diagnosis may lead to worse outcomes.⁴ Once PROM occurs before the limit of viability, a newborn mortality is

inevitable with immediate delivery. At this condition, with guarded risks of getting into a complication, conservative and expectant management of prolonging the delivery time can still lead to previable births, but some women may benefit with a take-home live baby. The latency period is defined as the time from preterm PROM until delivery.⁵ The possibility of unfavorable neonatal outcomes associated with preterm PROM decreases with prolonging latency period, if PROM occurs in previable state. Therefore, the aim of this study was to evaluate the maternal and foetal outcomes and related factors in preterm PROM cases facilitated with expectant management.

CASE REPORT

Authors report six cases of women (age 21-35 years) with a history of preterm PROM between 16-31 weeks of gestational age (Table 1). Among these, 5 cases were

conceived with an assisted reproductive technology (ART). There were no episodes of previous fever, abdominal pain and urinary symptoms during the pregnancy. After admission, all patients underwent a physical and laboratory assessment. On obstetric examination, the uterus was relaxed and non-tender. An ultrasound scan was performed to detect foetal maturity, cervical length, internal os diameter and amount of liquor. All patients with PROM were confirmed by the litmus test followed by per speculum examination. Per vaginal examination was avoided to prevent infection in cases where there was no complain of pain. Clinical investigations i.e. complete blood count (CBC) and C-reactive protein (CRP) level were done every day up to four days and then on a weekly basis post-hospital discharge (Table 1). Suture was removed in cases where cerclage was done. Prophylactic antibiotics were started for 4-5 days for all patients. Tocolytics were administered in case of labour pain. A steroid (Betnasol) was given to facilitate foetal lung maturity and magnesium sulphate (MgSO₄) for a neuroprotective effect after 26 weeks of

gestation. Patients who had preterm PROM were informed about the benefits and risks involved in continuing the pregnancy. All patients were hospitalised for 4 days and were permitted to discharge, if parameters were admissible. Out of 6 cases, 3 (case 1-3, 50%) patients were discharged and stretched to full-term, though they were having leakage but no cervical dilatation; CBC and CRP count were in normal ranges. Other 2 (case 4 and 5) patients were stretched approximately for 01 and 02 weeks respectively, due to high cervical effacement, CBC and CRP counts; and in one case (case 6) amniotic fluid was leaking from 15 weeks and stretched till 26 weeks of gestation and had to deliver for preterm pains (Table 1). The outcomes were successful delivery of 6 (100%) living infants with an Apgar score of 5 and 9 at first and fifth minute respectively. The babies were admitted into the neonatal intensive care unit (NICU) under observation. During the period of this stay in NICU, the babies were devoid of major birth defects. The babies were discharged according to weight, maturity and vitals.

Table 1: Clinical investigation.

Cases	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6
Maternal age (years)	21	28	21	35	28	30
No. of foetus	1	1	1	1	1	1
Leak date (weeks)	18	24	31	29	28	16
Delivery date (weeks)	37	37	37	31	28	27
CRP						
Visit 1	18	10	4	8	33	20
Visit 2	15	8	12	10	30	15
Visit 3	8	8		9	20	12
Visit 4	8			9		18
CBC						
Visit 1	10400	10000	11100	10500	20700	8200
Visit 2	10300	8200	10600	4700	21800	11300
Visit 3	9200	8200	10000	10200		11100
Visit 4	8200			9300		11100
USG 12-14 weeks (Before leak)	Normal	Normal	Normal	Normal	Normal	Normal
P/S	Positive	Positive	Positive	Positive	Positive	Positive
Cervix length	4.2	3.7	2	2.9	1.9	1.4
Gestational Week	37	37	31	37	29	26

DISCUSSION

All cases were observed to have PROM between 16-31 weeks of gestation. Terminating or continuing the pregnancy is a complex decision to be made in case of early PROM prior to foetal viability and women are fraught with difficulties. In present 6 cases, the parents were eager to carry on the pregnancy in spite of the risks to the mother and the baby. Out of 6 cases, 5 were ART conceived. All required is a balance decision between life-threatening maternal complication and stretching the latency period to foetal viability. In PROM and preterm

labor, leaking was confirmed by examining pooled out amniotic fluid and which resulted in positive litmus test. Chorioamnionitis in pregnancy is associated with maternal complication and risk of infection responsible for the long-term adverse outcomes.⁶ Placenta abruption is the second most recognized maternal complication of PROM. Apart from infection, other foetal complications in PROM include oligohydranmios tetrad including Potter's faices, pulmonary hypoplasia, skeletal deformities, intrauterine growth restriction, neonatal jaundice, infant respiratory distress syndrome, ophthalmic complication, intraventricular hemorrhage,

neonatal sepsis, malformations, intracranial hemorrhage, and necrotizing enterocolitis.⁷ In severe cases, amnion fusion is used to treat oligohydramnios. Although the previous study suggests that latency period was prolonged, but there was increased risk of intra-amniotic infection.² The infusion is evaded in the present cases.^{8,9} In this study, no maternal and foetal complications were observed except only in one case (case no. 6) where a baby had a mild degree of Potter's facies, which consisted of compressed ears. There was normal development and growth with no evidence of pulmonary hypoplasia during the neonatal period.

The administration of prophylactic antibiotics with PROM was known to prolong the latent period and improve outcomes.⁵ Tocolytics may prolong the latency period at least to manage the interlude of steroid and MgSO₄.¹⁰ The patients with better cervix length had a higher rate of a nearby or full-term gestational delivery. In addition to timely assessments of cervical length, effacement, internal os diameter, scrupulous management of infections and patients care lead to favorable outcomes.

Out of 6 cases, two were below 23 weeks of gestation (16 and 18 weeks), one case was below 26 weeks (24 weeks) and three cases below or at 31 weeks (two cases at 28 weeks and one at 31 weeks). Furthermore, the risk of prematurity is inevitable, especially when PROM occurs very early in pregnancy. This risk depends on the gestation at which PROM occurred and the latency period. Yang et al. reported that PROM occurred between 24-26 weeks had 100% chance of delivering a live baby, 60% at 23 weeks and 12% survived when before 23 weeks.¹¹

CONCLUSION

All patients with the history of PROM before the threshold of viability facilitated with expectant management prolonged the latency period, which in turn increased the take home baby rate. The evaluation of these cases with PROM showed the clinical stability of the mother with favorable foetal outcomes.

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