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Case Report

Management of preterm premature rupture of membrane in a high-risk pregnancy

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ABSTRACT

Preterm premature rupture of membranes (PPROM) usually has a multi factorial aetiology that is often unknown, although the most frequently reported cause is infection, others could be cervical insufficiency, over distention of uterine cavity, previous history of preterm labor, systemic inflammatory disease etc. This case report documented a rare incidence of preterm premature rupture of membranes, in a 35-year-old female with past history of 8 spontaneous abortions and 1 ectopic pregnancy. Patient had an IVF conception, amenorrheic for 7 months and 2 weeks, and came with a complaint of white discharge per vaginum. On per speculum examination, cervical os was found dilated. The patient was managed conservatively with protein and progesterone support along with prophylactic tocolytics and antibiotics, till early signs of chorioamnionitis were noticed. The decision of induction of labour and eventually preterm premature rupture of membranes lead to emergency cesarean section. Challenges faced in managing this high risk pregnancy are discussed, emphasizing the need of close monitoring and tailoring management in similar circumstances.

Keywords: Preterm premature rupture of membranes, Cervical insufficiency, Chorioamnionitis

INTRODUCTION

PPROM is defined as rupture of the foetal membranes before 37 weeks gestation and before the onset of labour. Indeed, PPROM represents a significant contributor to perinatal morbidity and mortality worldwide. Pre-viable PPROM is defined as spontaneous rupture of membrane occurring between 13 and 23 weeks 6/7 days gestational age is rare. The complications associated with PPROM are abruption placentae, need for emergency Caesarean, APGAR at 5 min less than 4, low birth weight babies, stillbirth, neonatal jaundice, and hospitalization of mother and neonates. On the contrary when tried to manage conservatively a risk of chorioamnionitis pertains.

PPROM is a condition that demands vigilant management to optimize neonatal outcomes. This case report discussed the multidisciplinary approach and interventions employed in managing a high-risk pregnancy complicated by PPROM.

CASE REPORT

A 35-year-old female, married for 10 years, with a obstetric history of gravida 10, abortions 8 ectopic 1 (G10A8E1) had *in vitro* fertilization (IVF) as the mode of conception. The chief complaint was white vaginal discharge for one week. Gestational age at presentation was 31.2 weeks. She was admitted on 25 September 2023.

She presented with a complaint of persistent non-foul-smelling white vaginal discharge for one week. The patient also complained of on-and-off pain at the lower abdomen for 2 days. She had conceived through IVF and was at a gestational age of 31.2 weeks at admission.

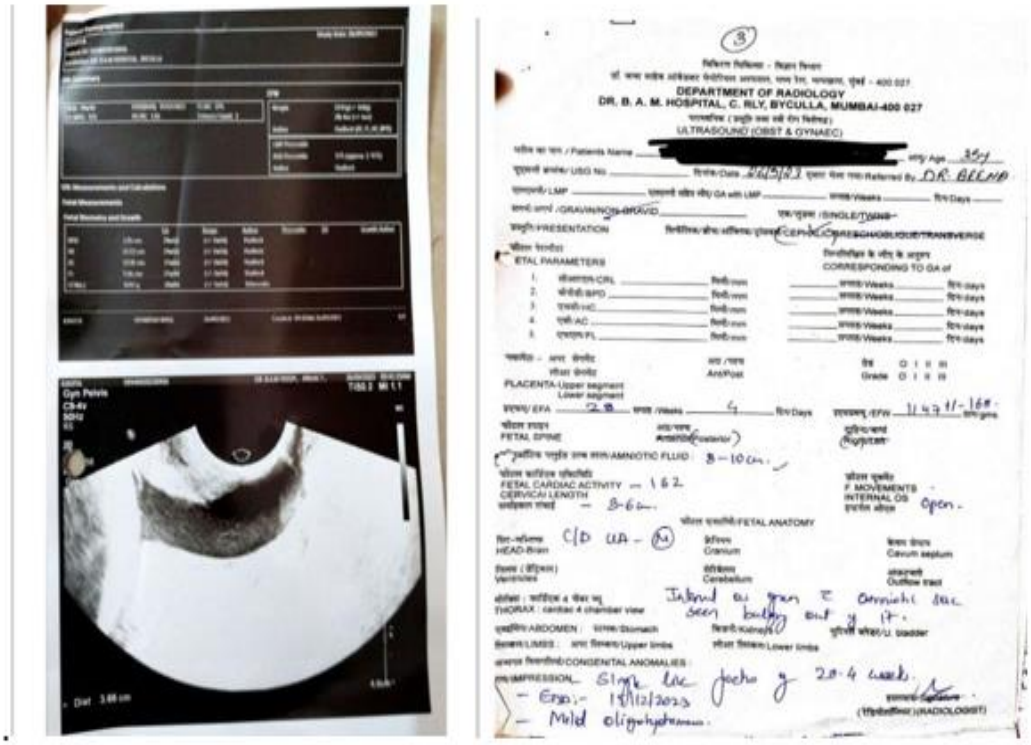

Figure 1: Scan admission showing amniotic membranes bulging through dilated cervical os.

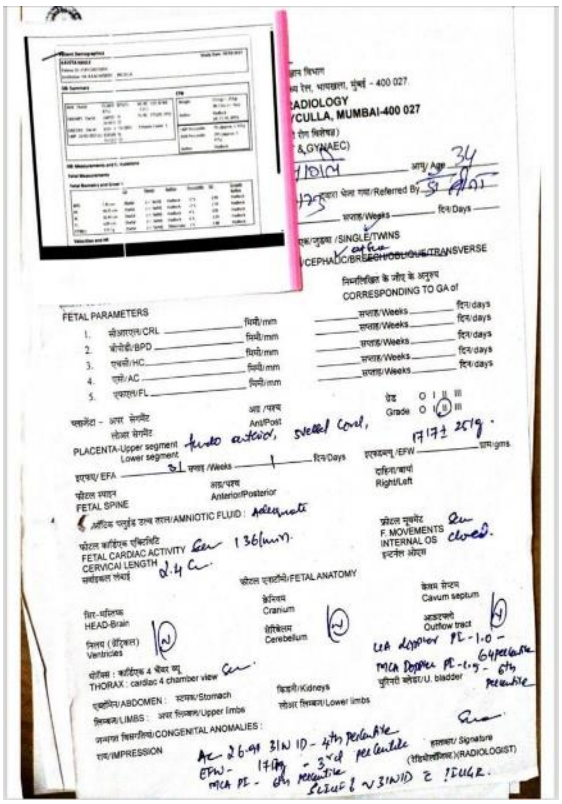

Figure 2: Growth scan with Doppler dated 14 October, 2023.

Menstrual history

The patient had regular menstrual cycles. LMP was 18 February 2023.

Obstetric history

G1-G6 spontaneous abortions at 1m of gestation, documents not available. G7 and G8 spontaneous abortions at 2.5 months of gestation, G9: left salpingectomy in view of ruptured ectopic pregnancy. G10: present pregnancy with In vitro fertilization.

Medical history

History of typhoid, treated successfully; no other significant medical or surgical history. History of left salpingectomy given ruptured ectopic pregnancy in 2019.

Examination findings

On physical examination, the patient was afebrile, with a regular rhythmic pulse rate of 100 /min and blood pressure of 110/74 mmHg, in the right hand, sitting position. Cardiovascular and respiratory examinations were unremarkable. Pelvic examination revealed an open cervical os with possible amniotic membrane bulging on per speculum examination.

An initial ultrasound examination was performed on 25t September, 2023 to assess fetal well-being. The ultrasound confirmed the presence of a single live intrauterine gestation (SLIUG) at 28.4 weeks. The cervical length measured 3.6 cm, with open internal os and amniotic sac bulging out of it, the estimated foetal weight (EFW) was 1147 grams. Doppler studies showed normal blood flow. Placenta at upper segment on anterior uterine wall. AFI was 8-10 cm.

Vaginal swab for culture and sensitivity showed no growth. Scan on admission showed amniotic membranes bulging through dilated cervical os.

She planned to manage this pregnancy conservatively as her CRP was 15.1. Upon admission, she received two doses of betamethasone (12 mg) on 25 September 2023, and 26 September 2023, to enhance foetal lung maturation. The management plan included strict bed rest in a head-down position, a high-fibre diet, and full progesterone support with Susten (300 mg twice daily) and Duphaston (10 mg thrice daily). Nutritional support included a high-protein diet, protein supplements, Alamine Forte, and arginine sachets. Prophylactically uterine relaxant tablet Depin 10 mg BD and antibiotic tablet erythromycin 500 mg BD was also given to patient.

Ten days after admission, a follow-up ultrasound performed on 6 October 2023, revealed a SLIUG at 31.2 weeks, an EFW of 1635 grams, and evidence of a short cervix with a partially open os. The amniotic fluid volume was measured at 9 cm.

On 10 October 2023, the CRP level was elevated at 34.61, raising concerns about the possibility of early chorioamnionitis. A repeat CRP test on 14 October 2023, showed a further increase, with a CRP level of 72.03. An ultrasound performed on the same date revealed an SLIUG at 31.1 weeks, an abdominal circumference below the 4th percentile, and an umbilical artery pulsatility index (UA-PI) in the 64th percentile. The EFW was estimated at 1717 grams.

Given the clinical findings and the suspicion of early chorioamnionitis, a decision was made to attempt induction of labour with Cerviprime gel (0.5 mg) on 16 October 2023. Unfortunately, the induction of labour was unsuccessful as patient had preterm premature rupture of membranes at 2 cm dilatation of cervix, necessitating an emergency caesarean section at 34 weeks of gestation.

On 16 October 2023, she underwent an emergency caesarean section at 34 weeks of gestation in view of IVF conception with IUGR with failure of induction of labour with preterm premature rupture of membrane. Intraoperative findings were lower uterine segment not being formed, a loop of cord around neck of baby, calcification of placenta and bowel adherent to posterior wall of uterus. A live female infant was extracted by vertex presentation, with a birth weight of 1.540 kg. The infant exhibited immediate crying and achieved favourable Apgar scores of 9 at one minute, 10 at five minutes, and 10 at ten minutes. By the fourth postoperative day, the neonate remained on room air and received prophylactic gentamicin. The infant was nourished through a combination of expressed breast milk from the mother and supplementary feeds administered using the katori (bowl) method.

DISCUSSION

Caring for a high risk gravida woman whose pregnancy has been complicated with PPROM plays an important role in managing conservatively with corticosteroids, antibiotics and progesterone supports.[2] In conservative management, there is a need to be familiar with potential complications and early diagnosis of those at risk. The present study used CRP as a predictor of chorioamnionits as CRP cut-off value of 17.5 mg/l was the best level to identify both intraamniotic inflammation and microbial invasion of bacteria, with sensitivity of 47%, specificity of 96%, positive predictive value of 42%, negative predictive value of 96% and possible interventions to minimize risks of chorioamnionitis and maximize the probability of desired outcomes of fetal lung maturity and neural development of fetus.[4,5] This article focused on information the doctor needs, to achieve these goals. Present study emphasised on conservative management of preterm prelabour rupture of membranes and balancing the foetal maturity with risk of developing chorioamnionitis. The present study uses low-cost predictor of choriamnionitis that is CRP and vaginal swab cultures as well as clinical findings of raised temperature, rather than expensive tests as Interleukins.

CONCLUSION

This case report highlights the intricate management of a high-risk pregnancy complicated by PPROM, IVF conception, cervical insufficiency, and the suspicion of early chorioamnionitis. The successful outcome for both the mother and neonate underscores the importance of a multidisciplinary approach, meticulous monitoring, and timely interventions in the management of complex obstetric cases involving preterm birth. This report aims to contribute to the collective knowledge in the field of obstetrics and perinatology, emphasizing the significance of personalized care and vigilant surveillance with growth scans and CRP in optimising neonatal outcomes in high risk pregnancies.

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