

An Observational Study of Maternal Outcome in Term Prelabour Rupture of Membranes

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Abstract: ***Background:** Prelabour rupture of membranes PROM is a significant obstetric challenge that can transform a low - risk pregnancy into a high - risk situation for both mother and fetus. As prelabour rupture of membranes is an obstetric condition associated with significant maternal morbidity and mortality, so the purpose of this study is to analyze the maternal outcomes associated with prelabour rupture of membranes to identify the contributing factors to maternal morbidity and to suggest effective management strategies. **Methods:** This observational study, conducted over 12 months at a tertiary care institute in central India, analyzes maternal outcomes associated with PROM. Data from 125 patients diagnosed with PROM were collected and statistically analyzed. **Results:** The study found a maternal morbidity rate of 25.6, with febrile morbidity being the most common cause 8, followed by clinical chorioamnionitis 6.4. No maternal mortality was observed. The findings emphasize the need for accurate diagnosis and management of PROM to mitigate maternal morbidity. **Conclusions:** Major impact of PROM was found to increase maternal morbidity (25%). In our study population, main factors attributable to this increased morbidity were febrile morbidity followed by clinical chorioamnionitis.*

Keywords: Prelabour rupture of membranes (PROM), maternal morbidity, febrile morbidity, chorioamnionitis, obstetric outcomes

1. Introduction

Membrane rupture usually occurs during the active phase of normal labour. Premature rupture of membranes is an enigmatic condition, associated with a high risk of maternal morbidity and mortality. It is characterized by spontaneous rupture of chorioamnion before the onset of uterine contractions, leading to progressive cervical dilatation. It occurs in approximately 8% of all pregnancies. In developing countries, the incidence of prelabour rupture of membranes is about 18 - 20%.¹⁻² Maternal morbidities are found in terms of chorioamnionitis which leads to endometritis, puerperal pyrexia, wound infection and placental abruption. Further, consequences may increase due to obstetric interventions in terms of instrumental deliveries and caesarean sections which may be a result of fetal distress, dry labour or incoordinate uterine actions.³ Neonatal morbidities are mainly due to infection. Umbilical cord compression and cord prolapse may occur in PROM. PROM is associated with 20% of neonatal deaths.⁴

Maternal complications include intra amniotic infection, which occurs in 13% - 60% of women with pre labour rupture of membranes; placental abruption, and post partum endometritis.

Risk factors for prelabour rupture of membranes are previous history of PROM, low body mass index, concomitant infection of gestational tissues, tobacco smoking and nutritional deficiencies of zinc, copper and ascorbic acid.⁵ Rupture of membrane is found to be related with bacterial infection, low body mass index and inadequate weight gain, during pregnancy.⁶ It is found to be more common in low socio - economic class patients with inadequate prenatal care.

Most cases of PROM can be diagnosed on the basis of the patient's history and physical examination. Examination should be performed in a manner that minimizes the risk of introducing infection. The diagnosis of membrane rupture is typically confirmed by the visualization of amniotic fluid passing from the cervical canal and pooling into the vagina (a basic pH test of vaginal fluid or arborization of dried vaginal fluid which is identified under microscopic evaluation is helpful in diagnosis). The normal pH of vaginal secretions is generally 4.5–6.0, whereas amniotic fluid has a pH of about 7.1–7.3. Management of PROM is not clear, main uncertainty is related to induction of labour or expectant management. The key to the management of rupture of membranes is accurate assessment of gestational age, fetal position, presence or absence of chorioamnionitis and fetal heart rate monitoring.

Premature rupture of membranes is the most challenging and controversial obstetric dilemma which occurs even in low risk pregnancies and can convert a traditional pregnancy into a high risk situation for both mother and fetus. The significance of this study lies in its potential to inform clinical practices and intervention strategies to reduce maternal morbidity associated with PROM, particularly in developing countries.

2. Material and Methods

Study Type - Descriptive type of Observational study

Study Design - Hospital based prospective study

Study Period - From December 2022 till desired sample size is reached.

Study Universe - All women admitted in labor room of Obstetrics and Gynaecology department

Study Population - All women with diagnosis of pre -

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labour rupture of membranes at or more than 37 weeks of gestation

Inclusion Criteria:

- Women admitted with Prelabour rupture of membranes ≥37 weeks of gestation, singleton pregnancy with vertex presentation
- Cervical dilatation of < 3cm
- Lack of uterine contractions for at least 1 hour of PLROM
- Reactive non - stress test
- Women who understand and are willing to give written and informed consent
- Women not participating in any other study

Exclusion criteria:

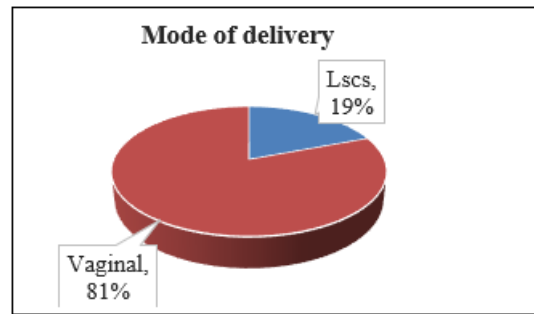
- Meconium - stained liquor
- Previous LSCS
- Contracted pelvis / cephalopelvic disproportion
- Any medical disorder
- Any complication of pregnancy - Gestational diabetes mellitus, hypertensive disease of pregnancy

Methods: A detailed history was obtained regarding age, parity, socio - economic status, antenatal check up, duration of rupture of membranes, colour of liquor, odour of liquor and onset of labour pain. Progress of labour was monitored and the outcomes were seen - Mode of delivery, Postpartum haemorrhage, Puerperal sepsis, Clinical chorioamnionitis

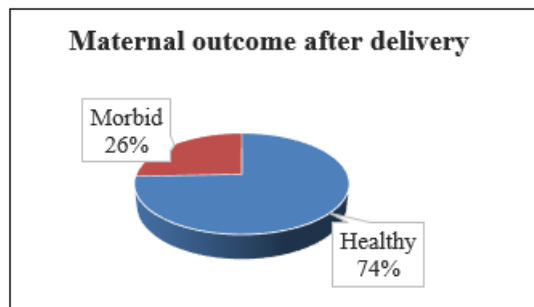
3. Observation and Results

In the present study, almost one fourth of women (25.6%, 32/125) had morbid maternal outcome, and rest women (74.4%, 93/125) have healthy maternal outcome. Among women with maternal morbidity, febrile morbidity was present in almost one third (31.3%, 10/32) of women, followed by chorioamnionitis in eight (25.0%) women, and two with wound infection were seen, and no women faced mortality. Most of the women (80.8%, 101/125) had vaginal delivery, and rest 24 (19.2%) women had LSCS. Among women with less than 16 hours of rupture of membranes to delivery interval, 13.8% faced maternal morbidity, with 16 - 24 hours of rupture of membranes to delivery interval, 21.7% faced morbidity and among women with ≥24 hours of rupture of membranes to delivery interval, 66.7% faced morbidity. This increase in proportion of maternal morbidity with increases in time to rupture of membranes to delivery interval was statistically significant (p<0.05).

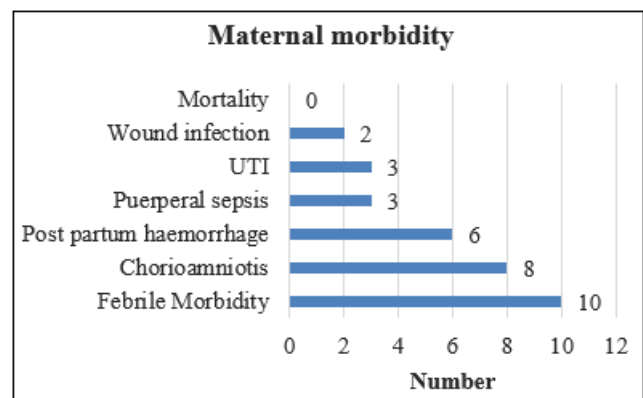
Mode of delivery	Number	Percentage
LSCS	24	19.2
Vaginal	101	80.8
Total	125	100.0



Maternal outcome	Number	Percentage
Healthy	93	74.4
Morbid	32	25.6
Total	125	100.0

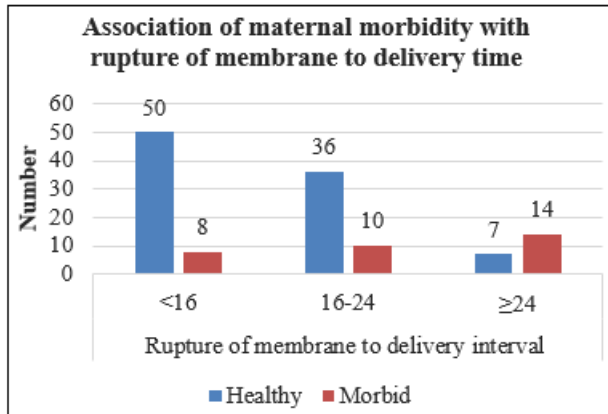


Maternal morbidity	Number	Percentage
Febrile Morbidity	10	31.3
Chorioamnionitis	8	25
Post partum haemorrhage	6	18.8
Puerperal sepsis	3	9.4
UTI	3	9.4
Wound infection	2	6.3
Mortality	0	0
Total	32	100



Maternal morbidity	Rupture of membrane to delivery interval		
	<16	16 - 24	≥24
Healthy	50 (86.2)	36 (78.3)	7 (33.3)
Morbid	8 (13.8)	10 (21.7)	14 (66.7)
Total	58 (100)	46 (100)	21 (100)

Chi - square = 23.200 with 2 degrees of freedom; P<0.001



4. Discussion

Pre - labor rupture of the membranes (PROM) is one of the common and challenging problems in obstetric and perinatal medicine. It can lead to increased maternal complications, operative procedures, neonatal morbidity and mortality. Management of PROM has gone through various cycles of masterly inactivity to immediate intervention.

In present study, almost one fourth of women (25.6%, 32/125) had morbid maternal outcome, and rest women (74.4%, 93/125) had healthy maternal outcome. The most common maternal morbidity was febrile morbidity in 10 patients (31.3%) followed by Clinical Chorioamnionitis (25%), PPH (18.8%), puerperal sepsis (9.4%), Urinary tract infection (9.4%), wound infection (6.3%).

Jaiswal AA et al⁷, prospective study assessed the maternal and fetal outcomes in patients with PROM, reported rate of maternal morbidity being 26% (54 out of 210), the most common was clinical chorio - amnionitis 11.9% (25 out of 210) followed by febrile morbidity seen in 10.5% (22 out of 210). Other maternal morbidities were in the form of wound infection i. e.1.4% (3 out of 210), puerperal sepsis 1.4% (3 out of 210), LRTI - 0.5%, MRP 0.5%.

Among women with maternal morbidity, febrile morbidity was present in almost one third (31.3%, 10/32) of women, followed by chorioamnionitis in eight (25.0%) women, and two with wound infection were seen, and no women faced mortality. Surayapalem S et al⁸ study reported maternal morbidity in 33 cases among 200 cases (17.5%) with febrile morbidity accounting to maximum 8% cases followed by wound infection 2.5% and others were LRTI (2%), UTI, PPH, MRP, Puerperal sepsis (each 1%).

Amulya MN et al⁹, a prospective cross - sectional study assessing the maternal morbidity in term PROM reported that maternal morbidity was 16.6% of which febrile morbidity accounting to maximum with 11 cases (9.16%) followed by wound infection in 4 cases (3.33%) and others were PPH and puerperal sepsis, 2 cases each (1.66% each) and clinical chorioamnionitis in 1 case (0.83%).

Lovreen S et al¹⁰ did a prospective study assessing the maternal and neonatal outcome in premature rupture of membranes and reported that PROM had higher maternal morbidity - 69 (27.8%) like post - partum fever 13%, wound

infection 4.5% and chorioamnionitis 3.6%, PPH 1.8%.

In our study, febrile morbidity is the most common, compared to clinical chorioamnionitis, as we had a protocol of starting antibiotics in cases of PROM. No case of maternal mortality was seen.

5. Conclusion

In the present study we concluded that maternal morbidity was associated with increased duration of PROM to delivery interval. This study highlights the significant maternal morbidity associated with prelabour rupture of membranes (PROM), emphasizing the need for prompt diagnosis and management to improve maternal outcomes. Regular antenatal check - ups and coordinated care by obstetricians and neonatologists are essential to ensure the health and safety of both mother and child.

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