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Maternal and Fetal Outcomes in Active versus Expectant Management of prelabor rupture of membrane

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ABSTRACT

Aim: To assess the effects of planned early birth (active treatment within 24hrs) compared to expectant management (without active treatment within 24hrs) for women at term with Prelabor Rupture of Membrane (PROM) on maternal and fetal outcomes.

Methods: This is an observational comparative study carried out in all the pregnant women who present in maternity ward of Shree Birendra Hospital with PROM at 37-41 weeks of gestation with vertex presentation during the study period between 13 April 2020 to 13 April 2021. They were randomly placed into (A) active treatment group and (B) expectant treatment group. Group (A) was induced with 25mcg of PGE1 (Misoprostol) depending on cervical score, whereas group (B) was expectantly managed for 24 hrs. PROM to delivery interval, maternal and fetal outcomes were then evaluated in both the groups.

Results: 79.5% of group A and 71.8% in group B delivered through vaginal route. 20.5% patients in group A and 28.2% patients in group B underwent Cesarean section. The average PROM to delivery interval was 15.6 hours in group A, as compared to 16.8 hours in group B. Only 2 babies in group B had an Apgar score of less than 7 at five minutes. Subsequently, in both the groups, two babies required NICU admission for respiratory distress syndrome with no neonatal mortality in both the groups.

Conclusion: Expectant management up to 24 hours can be safely offered to a woman with term PROM.

Keywords: Active treatment, expectant management, PGE1, PROM

INTRODUCTION

Premature rupture of membrane is defined as the rupture of membrane before the onset of labor. PROM occurs in approximately 5-10% of all pregnancies, of which 80% occur at term. Approximately 60-70%

of term PROM cases are followed by the onset of labor within 24 hours. Diagnosis and proper management is very important to limit various fetal and maternal complications.

The main issue in the manage-

ment of PROM is whether to allow the patient to undergo spontaneous onset of labour or to induce them immediately. Waiting for the spontaneous onset of labour may increase the risk of chorioamnionitis. Similarly it may increase the risk of neonatal morbidity as a result of decrease liquor leading to mechanical difficulties while delivering the baby. To avoid such complications, labor is usually induced, once PROM is confirmed. However, this increases the risk of Cesarean-section due to failure of induction and hyper-stimulation.

Considering the frequency of term PROM, the question of whether active or expectant management of term PROM is better in terms of maternal and fetal outcomes need to be addressed. Hence this study is designed to assess the impact of planned immediate intervention vs expectant management for women at term with PROM.

METHODS

All pregnant women with vertex presentation, who presented in the maternity ward of Shree Birendra Hospital at 37-41 weeks of gestation, between 13 April 2020 to 13 April 2021, were enrolled for this study. Patients with multiple pregnancies, malpresentation, medical disorders or other high risk factors were excluded.

After taking informed consent, women included in the study, were randomly placed in two groups- active treatment group (A) who will be induced within 24 hours and expectant management group (B) who will be under observation for first 24 hours. This was done by asking the subject to draw a card from a box containing two cards with A or B written.

Demographic profile of patient was then recorded. At the time of admission, duration of leak, its volume and colour were recorded. Temperature was noted. Systemic and obstetric examination was done to confirm the lie and the presentation of the fetus. Uterine tenderness and contraction were noted. Sterile speculum examination without any antiseptic was introduced to confirm leaking through the cervix. High Vaginal Swab was taken and TC, DC and CRP sent. Then sterile pad was kept to know the colour of the liquor. Prophylactic antibiotic, inj Ampicillin 1 gm was administered intravenously to all PROM patients and Cardiotocogram (CTG) performed. USG of abdomen was performed to assess the liquor volume. Total duration of leak was defined as the time between onset of leaking and delivery.

Active Treatment Group (A): In this group, pelvic assessment and Bishop scoring was done. If the score was 0-5, induction with 25mcg of tab misoprostol buccally was given which was then followed after 6 hrs by augmentation of labor with syntocin drip. However, in patients with the Bishop's score of 6-13, direct augmentation with injection syntocin was done in order to get optimal response of 3 contractions in 10 min each lasting for 45 seconds. Maternal pulse, uterine contractions and FHS were noted at half hour intervals. Maternal temperature and per vaginal examination

were done every 4 hours in active labor.

Expectant Management Group (B): In this group, vitals were recorded every 4hrs. Abdominal examination was performed to assess uterine contraction and descent of head. Repeated per vaginal examination was avoided. Sterile pad was inspected for the color and to note for any foul-smelling discharge. Progress of labour was maintained on the partograph. This expectant management was abandoned if the woman developed fever >100°F, maternal tachycardia >160 beats/min, uterine tenderness, foul smelling discharge, FHS <110 and >160 beats/min and maternal leucocytosis.

The mode of delivery was then noted as: Spontaneous onset of labour followed by vaginal delivery with or without augmentation, Instrumental delivery and C-section and its indication. Duration of leak was noted in both the groups. Neonatal outcomes in both groups were noted in terms of Apgar scores at 1 and 5 min, birth weight, temperature, neonatal sepsis, neonatal resuscitation and NICU admission. Maternal morbidities in both the groups were recorded in terms of fever- chorioamnionitis or endometritis, interval between leak and delivery, PPH, unhealthy lochia, operative delivery/instrumental delivery and any other complications

RESULTS

During the study period of one year, 78 antenatal cases with PROM were included in the study. Out of these, 39 cases were randomized into Group A- active treatment group and 39 cases into Group B- expectant management group.

The mean age of patients in both groups were similar- 27.64 yr in group A and 27.59 yr in group B. The demographic distribution in relation to the parity was similar in both the groups [Figure-1].

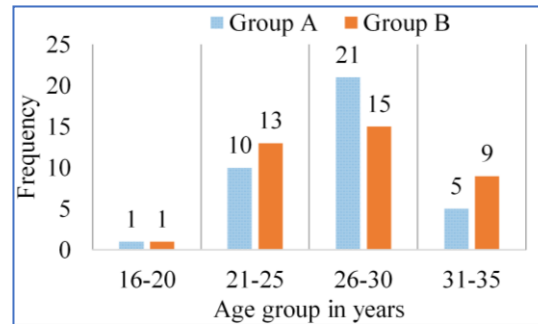


Figure-1: Age Distribution in active (A) and expectant treatment groups (B)

Group A patients presented mostly in 39-40 weeks of gestation, while group B presented in 40-41 weeks of gestation [Table-1]. Most of the patients in both the groups had a Bishop score of 3.

Table-1: Gestational age in active treatment (A) and expectant (B) groups [N=39 each]

Gestational Age	Active treatment group (A)	Expectant management group (B)	Total (N=39+39)
37-38 wks	5	9	14
38-39 wks	12	8	20
39-40wks	15	8	23
40-41wks	7	14	21

79.5% of group A and 71.8% in group B delivered through vaginal route but the difference was not statistically significant (p >0.05). In group B, 22 (56.4%) women went into spontaneous labour without augmentation, whereas 17 (43.6%) women required augmentation. As shown in Chart 2, 20.5% patients in group A and 28.2% patients in group B underwent

Cesarean section- the difference was not statistically significant ($p > 0.05$). [Figure-2]

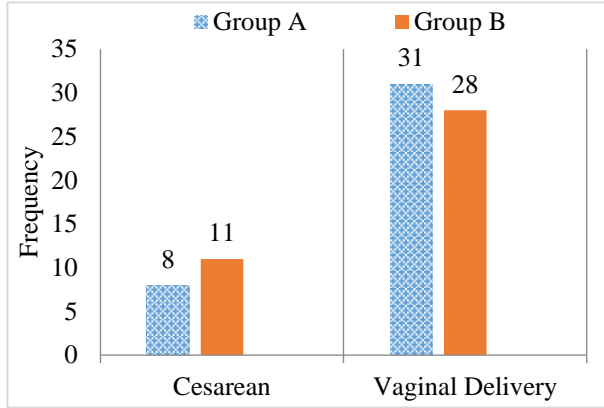


Figure-2: Mode of Delivery

Failed induction was the leading indication for Cesarean section in group A, whereas fetal distress due to meconium-stained liquor was the leading indication in group B. [Table-2]

Table-2: Indications of Cesarean Sections [N=19]

Indication of CS	Group A	Group B
Fetal Distress (Meconium)	2	5
Fetal Distress (Irregular FHS)	1	0
Deep transverse arrest	0	1
Severe Oligohydramnios	0	2
Failed induction	4	0
prolong second stage of labour	0	2
Non progress of labor	1	1
Total	8	11

Only 2 out of 28 patients who had undergone vaginal delivery in group B, had postpartum haemorrhage due to atonicity of uterus which was managed conservatively.

The average PROM to delivery interval was 15.6 hours in group A as compared to 16.8 hours in group B and the difference in time was not statistically significant ($p > 0.05$).

Out of 39 babies delivered in each group, 28 in

group A and 27 in group B had an Apgar score of < 7 at one minute, whereas only 2 babies in group B had an Apgar score of < 7 at five minutes. Subsequently, in both the groups, two babies required NICU admission for respiratory distress syndrome and all of them had a smooth recovery with no neonatal mortality in both the groups.

Only one mother in group A developed postpartum urinary retention which was managed conservatively.

DISCUSSION

PROM at term is either managed by expectant method or by induction of labour. The present study compared the early induction by buccal administration of Prostaglandin-E1 to expectant management up to 24 hours, followed by induction of labour if labour doesn't establish.

The demographic profile of women including their age, parity and the bishop score were studied and were comparable in both groups. The mean age of patients in both groups were similar- 27.64yr in group A and 27.59yr in group B. This is in keeping with most other studies representing the reproductive age group. In the study conducted by Yaqub et al, the mean age in actively managed group was 26.53 ± 3.576 years and in expectantly managed group was 26 ± 3.606 years.

In this study, Group A patients were mostly in 39-40 weeks of gestation, while group B were in 40-41 weeks of gestation. In the

study done by J Mukharya et al the mean gestational age in the actively managed group was 38.61 ± 0.95 and in expectantly managed group was 38.53 ± 0.97 .³ Similarly, in the study done by Chaudhari S et al, the mean gestational age in actively managed was 38.7 ± 1.3 and expectantly managed group 38.0 ± 1.1 . Thus the present study is comparable to other studies.

In this study, 79.5% of group A and 71.8% in group B delivered through vaginal route: the difference was not statistically significant ($p > 0.05$). This observation is similar to the study conducted by J Mukharya et al, in which the percentage of spontaneous vaginal delivery was 63% in actively managed and 71% in expectantly managed group, resulting in no significant difference between the two groups. In Shanthi et al's study, 70.1% patients had spontaneous vaginal delivery in actively managed group and 88.6% in expectantly managed group; whereas in the studies done by Chaudhuri S et al and da Graca krupa et al, the percentage of spontaneous vaginal delivery was significantly more in actively managed group as compared to expectantly managed group.⁶

In this study, in group B, 22 (56.4%) women went into spontaneous labour without augmentation, whereas 17 (43.6%) women required augmentation. In a study done by J Mukharya et al out of 71 patients who underwent spontaneous vaginal delivery, 30 patients needed augmentation after going into active labor.³ In the study done by Shanthi K et al, only seventeen women (32%) in the expectant group went into spontaneous labour without any augmentation, whereas, 67% of women in expectant group required augmentation after 24 hours.⁷ Grant et al.,

suggested that the optimum latent period should be more than 12 hours, as certain biological changes occur during this phase which favor efficient labor and spontaneous vaginal delivery.

In this study 20.5% patients in group A and 28.2% patients in group B underwent Cesarean section- the difference was not statistically significant ($p > 0.05$). This is similar to the study done by Gracakrupa et al, in which the incidences of cesarean delivery in expectant and immediate induction groups were quite similar- 22 and 24%, respectively.⁸ This is contradictory to the study done by K Shanthi et al, where the overall delivery rate was low in the expectant group i.e., 11.4% in contrast to 30% in active group, the difference being statistically significant.⁷ The high rate in cesarean section in the active management group was discussed by the authors as possibly due to lack of progress in term patients with PROM.

In our study, failed induction and fetal distress were the leading causes of Cesarean section in group A and group B respectively. In a study by Mukharya J et al, fetal distress was the indication for cesarean section in both the groups.³

In this study the average PROM to delivery interval was 15.6 hours in group A as compared to 16.8 hours in group B and the difference in time was not statistically significant ($p > 0.05$). This is contradictory to the study performed by Rawat R et al, where PROM to delivery interval was significantly more in expectant management-

ent group. Similar findings were reported by Mukharya J et al, where 46% patients in active management group and 20% patients of expectant management group had PROM to delivery interval of 10.1-15 hours.³ The difference in findings from our study may possibly be attributed to the use of multiple doses of PGE1, and a higher dose (50mcg), compared to a single dose of 25mcg of PGE1 in our study, which could have shortened the PROM to delivery interval in actively managed group.

In this study only 2 out of 28 patients who had undergone vaginal delivery in group B, had postpartum haemorrhage due to atonicity of uterus. So, this finding is comparable to other studies done by Vaishnav et al, Chaudhuri S et al, Shanthi et al and Mukhayaia J et al, where there was no significant difference found in terms of maternal morbidity among both the groups.^{3,6,7,10}

Out of 39 babies delivered in each group, 28 in group A and 27 in group B had an Apgar score of <7 at one minute, whereas only 2 babies in group B had an Apgar score of <7 at five minutes. Similar results were observed in studies done by Umairah et al and Chaudhuri S et al where there were no significant differences found in both the groups.^{5,6}

In this study, in both the groups, two babies required NICU admission for respiratory distress syndrome and both of them had a smooth recovery with no neonatal mortality in both the groups. Studies by Duffs et al, Umed Thakor et al, Shanthi et al, and Shetty et al all observed that patients with PROM may be safely managed in an expectant manner without

increased risk of maternal and neonatal infection.^{7,12-14}

CONCLUSIONS

PROM to delivery interval, Caesarean section rate, maternal and neonatal morbidity were similar in both active and expectant management groups with 24 hours cut-off. However, a larger scale trial is required before establishing the management option.

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