



Fetal Outcome In Term Premature Rupture Of Membranes: Immediate Versus Delayed Induction With PGE2 Gel

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Abstract

Introduction: Premature rupture of membranes exposes the foetus to infection and increases the risk of chorioamnionitis. A decrease in fluid volume also causes changes in the foetal heart rate and hampered progress of labour¹. The purpose of our study was to compare fetal outcome in Immediate Versus Delayed Induction with PGE 2 gel in Premature Rupture of Membranes at term.

Material And Methods: A randomized, controlled comparative study was conducted from October 2021 to August 2022 in the Department of Obstetrics and Gynecology, SMS Medical College, Jaipur. The study included 160 cases (80 cases in each group), randomly allocated to either immediate induction (Group A) or delayed induction (Group B), with gestational age between 37 to 40 weeks. They were admitted in labour room and history was elicited regarding time of rupture of membranes, duration and amount of leaking with general, systemic and obstetric examination. Labour was monitored and fetal outcome was compared in term of APGAR Score at 1 min and 5 min and neonatal intensive care unit (NICU) admission.

Results: We found that mean APGAR Score at 1 min for group A was 7.23 and for group B it was 7. The mean APGAR score at 5 min for group A was 8.33 and for group B it was 8.02. In this study at 1 min majority 91.25% of neonate in group A and 85% neonate in group B had APGAR score ≥ 7 . At 5 min majority 98.7% of neonate in group A and 96.25% neonate in group B had APGAR score ≥ 7 . We correlated mode of delivery with APGAR Score at 1 min and at 5 min. We had seen that majority women in both the group had ≥ 7 APGAR Score in both vaginal delivery and caesarean section. In this study 2.5% neonates of women in group A and 1.25% neonates of women in group B had hypoxic ischemic encephalopathy, while 1.25% neonates of women in group A and 2.5% neonates of women in group B had meconium aspiration syndrome. Only 1 out of 80 neonates of women in group B had sepsis. While neonatal sepsis was absent in group A. There was no statistically significant difference in both groups.

Conclusion: We conclude that delayed induction after waiting period of 12 hours stands as a reasonable option in term premature rupture of membranes, without compromising the neonatal outcome. There was no statistically significant difference in neonatal outcome between immediate induction and delayed induction groups.

Keywords: Premature rupture of membranes (PROM), Immediate induction, delayed induction, PGE2 gel

Introduction

Complications of PROM are chorioamnionitis, cord prolapse, abruptio placenta, oligohydramnios,

neonatal sepsis, birth asphyxia deformities and distress.¹Premature rupture of membranes exposes the foetus to infection and increases the risk of

chorioamnionitis. A decrease in fluid volume also causes changes in the foetal heart rate and hampered progress of labour¹. It has been demonstrated that immediate labour induction shortens hospital stays and decreases the likelihood of infection to the newborn¹. The risk of intrauterine infection, the most severe complication for the mother and the newborn, is directly proportional to duration of PROM¹. Immediate induction of labour has been found to shorten hospital stays and newborn infections². The study aims to analysis neonatal outcome in Immediate Versus Delayed Induction with PGE2 gel in term Premature Rupture of Membranes.

Material And Methods: This was a randomised, controlled comparative study was conducted in the Department of Obstetrics and Gynecology, SMS Medical College, Jaipur from April 2021 to February 2022 . The study included sample size of 160 cases of premature rupture of membranes (80 cases in each group) were randomly allocated to either immediate induction (Group A) or delayed induction (Group B). All patient with premature rupture of membranes at term were admitted in labour room and history was elicited regarding time of rupture of membranes, duration and amount of leaking with general, systemic and obstetric examination and follow-up for progress of labour and neonatal outcome was studied. These women were monitored for 1 hour to determine fetal well being and onset of labour. Those women who were not in labour were randomly divided by coin tossing into 2 groups:-

In **Group-A** : Women were immediately induced by intracervical instillation of 0.5 mg PGE2 gel. If Bishop’s Score did not improve after 6 hours, then application of PGE2 gel was repeated (Max. 2 doses). In **Group-B** : Women were observed for 12 hours for spontaneous onset of labour following which, induction with PGE2 gel was done.

Labour was managed as per hospital protocol. LSCS was performed for fetal distress, non-progress of labour or failure of induction. Both groups were reassessed after 12 hours, to see if they are going into labour or need PGE₂ gel. In Group-B those going in spontaneous labour were noted. The two groups were compared with respect to fetal outcome in term of APGAR Score at 1 min and 5 min and neonatal intensive care unit(NICU) admission .

Selection Criteria:

Inclusion Criteria: Singleton live term pregnancy (37-40 weeks), Cephalic presentation, Spontaneous PROM with clear liquor, PROM <8 hours, Modified Bishop’s Score <6

Exclusion Criteria: Chorioamnionitis, Gravida 4 and above, Medical or obstetric indications for prompt delivery, Not giving written consent, Participating in any other study.

Results: Out of 160 women, 80 are assigned to the immediate induction group (with PGE2 gel) and 80 to the delayed induction group(expectant management followed by induction with PGE2 gel). Baseline characteristics were similar in both the groups.

Table 1 : Comparison of both groups in terms of Apgar score.

S No.	APGAR & TIME	Group A		Group B		Total	P- Value
		No. of Women	Percentage	No. of Women	Percentage		
1	at 1 min.						
(a)	<4	0	0	0	0	0	-
(b)	4-6	7	8.75	12	15	19	0.22
(c)	≥7	73	91.25	68	85	141	0.22
2	at 5 min.						
(a)	<4	0	0	0	0	0	-

(b)	4-6	1	1.25	3	3.75	4	0.31
(c)	≥7	79	98.75	77	96.25	156	0.3

In above table we found that at 1 min 91.25% of women in group A and 85% women in group B had APGAR score ≥7. At 5 min 98.7% of women in group A and 96.25% women in group B had APGAR score ≥7.

Table 2: Comparison of mode of delivery and Apgar score in both groups.

S No.	Mode of delivery	Groups	APGAR Score	at 1 min.		at 5 min.		Total	P-value
				No. of Women	Percentage	No. of Women	Percentage		
1	Vaginal delivery	Group A (70)	<4	0	0	0	0	0	-
			4-6	4	5	1	1.25	5	0.17
			≥7	66	82.5	69	86.25	135	0.51
		Group B (67)	<4	0	0	0	0	0	-
			4-6	8	10	2	2.5	10	0.05
			≥7	59	73.75	65	81.25	124	0.25
2	LSCS	Group A(10)	<4	0	0	0	0	0	-
			4-6	3	3.75	0	0	3	0.08
			≥7	7	8.75	10	12.5	17	0.4
		Group B(13)	<4	0	0	0	0	0	-
			4-6	4	5	1	1.25	5	0.17
			≥7	9	11.25	12	15	21	0.48

In above table we correlated mode of delivery with APGAR Score at 1 min and at 5 min. We had seen that majority women in both the group had ≥7 APGAR Score in both the mode of delivery.

Table 3 : Distribution of cases according to NICU Admission.

S. No.	NICU Admission	Group A		Group B		Total	P-Value
		No. of neonate	Percentage	No. of neonate	Percentage		
1.	HIE1	2	2.5	1	1.25	3	0.56
2.	MAS	1	1.25	2	2.50	3	0.56
3.	Sepsis	-	-	1	1.25	1	0.7
3.	No. NICU admission	77	96.25	76	95	154	-
	Total	80	100	80	100.00		

(HIE 1-Hypoxic ischemic encephalopathy, MAS- meconium aspiration syndrome)

In above table we found that 2.5% neonate of women in group A and 1.25% neonate of women in group B had Hypoxic ischemic encephalopathy (HIE1) followed by 1.25% women in group A and 2.5% women in group B had meconium aspiration syndrome (MAS). Sepsis was found 1.25% women in group B. While no neonate had sepsis in group A.

Discussion

Few literatures favour early induction in PROM because of risk of infections and others favor expectant management with fetomaternal monitoring. The management is still controversial and there is no standard protocol for it.

We found that mean APGAR Score at 1 min for group A was 7.23 and for group B it was 7. The mean APGAR score at 5 min for group A was 8.33 and for group B it was 8.02. In this study at 1 min majority 91.25% of neonate in group A and 85% neonate in group B had APGAR score ≥ 7 . At 5 min majority 98.7% of neonate in group A and 96.25% neonate in group B had APGAR score ≥ 7 . Our findings were matching to **BembalgiS et al**³ as APGAR score were found to be 7.8 and 7.5 at 1 minute among expectantly and actively managed cases respectively with p value of 0.06 and APGAR score at 5 minute among expectantly and managed patients were 8.4 in both groups with p value of 0.48. So there was no statistically significant difference between the groups. The results are also comparable with study of Fatima S⁴ where there was no significant difference between two groups as far as Apgar score at 5 minutes is concerned.

In this study majority 2.5% neonate of women in group A and 1.25% neonate of women in group B had hypoxic ischemic encephalopathy, while 1.25% neonate of women in group A and 2.5% neonate of women in group B had meconium aspiration syndrome. Only 1 out of 80 neonates of women in group B had sepsis. **BembalgiS et al**³ found that neonatal complications found in 5.7% of those underwent expectant management which was successful, 15% of those underwent failed expectant management with secondary induction, 8.8% of those

underwent early induction which was successful and 22.2% of those underwent early induction failed. Induction failed group had higher chance of having neonatal complications, but it was not statistically significant.

Conclusion:

We conclude that delayed induction after waiting period of 12 hours stands as a reasonable option in term premature rupture of membranes, without compromising the neonatal outcome. There was no statistically significant difference in neonatal outcome between immediate induction and delayed induction groups.

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