Original Article

Immediate Induction Versus Delayed Induction of Labour in term Prelabour Rupture of Membrane: Let's Find a Solution to Eliminate the Controversy & Reduce the Cesarian Births

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ABSTRACT

Objective: To compare the outcome in terms of delivery within 24 hours of induction of labour of immediate induction versus delayed induction of labour in term Pre-labour rupture of membrane.

Study Design: Randomized controlled trial

Place and Duration of Study: This study was conducted at the Department of Obstetrics & Gynecology, Civil Hospital, Bahawalpur from November 2018 to April 2019.

Materials and Methods: 154women at term (gestational age ≥37 weeks) were enrolled. All with premature rupture of membrane, & of between 18-40 years of age. They were divided in 2 equal batches (A&B). Patients with multiple pregnancy, fetal weight more than 4 kgs, uncontrolled diabetes mellitus and h/o uterine surgery were excluded. Labour induction was carried out after 6 hours and after 24 hours of presentation in group A and B patients respectively. Outcome was measured in both groups in term of delivery within 24 hours of induction of labour.

Results: The average age of participants in batch A was 27.77 ± 3.14 years and in batch B was 28.09 ± 3.38 years. The mean found for gestational age was 39.01 ± 1.31 weeks. The mean parity in batch A& batch B was 2. Satisfactory outcome in batch A (immediate induction) was seen in 68 (88.31%) while in Group B (delayed induction) was seen in 54 (70.13%) patients (p-value = 0.005).

Conclusion: This study concluded that outcome of immediate induction is better as compared to delayed induction in term, pre-labour rupture of membrane (PROM).

Key Words: Pre-labour rupture of membrane, PGE1, immediate induction, vaginal delivery, delayed induction.

Citation of article: Akhter M, Jabeen S, Manzoor S, Obgy NT, Razaque F, Siddique S. Immediate Induction Versus Delayed Induction of Labour in term Prelabour Rupture of Membrane: Let's Find a Solution to Eliminate the Controversy & Reduce the Cesarian Births. Med Forum 2020;31(11): 48-52.

INTRODUCTION

The overall incidence of Membrane rupture before the start of uterine contractions is around 20% and it doubles in cases of premature births[1]. At term, immediate delivery results in a lower complication rate along with greater maternal satisfaction, in contrast to expectant management without conferring additional risks to newborn[2].

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Received: April, 2020
Accepted: August, 2020
Printed: November, 2020

4 out of 5 pregnant presenting with P-ROM at term go into labour in first 24 hrs with majority (upto 95%) in next 72 hrs while choosing expectant management[3]. However, continuing expectant management comes at the cost of neonatal and maternal morbidity due to infection[4], thus it's better to choose induction in these to reduce prolong latency period

There is still debate about the definitive management of PROM. As the time lapse between ROM and uterine contractions increases, so does the likelihood of rise in infective morbidity for mothers leading to increased operative deliveries[5]. Therefore, some health professionals advised that labour should be stimulated (by Oxytocin or Prostaglandin E1) at term after 6hours of PROM, if woman does not go into spontaneous labour. Both Oxytocin and prostaglandin E1are effective& safe in inducing labor in women with PROM at term[6,7]. Timing of induction is controversial. Some obstetricians are of opinion, that waiting for spontaneous onset of labour is preferable, if there is no indication of compromise (fetal or maternal), so the risk

of abdominal deliveries may be lower. A study comparing early vs delayed induction of labour (IOL) in PROM at term showed a remarkable reduction in rate of cesarean section in favor of early IOL (12% vs 28%).without any significant difference in Apgar scores of newborns at 1 & 5 min[8]. Another study has summarized that immediate induction of labour is more beneficial when compared with expectant management in terms of reduction in the length of latent period without any rise in abdominal deliveries.[9]Zamzami T.Y.Y& co-workers, showed contradictory evidence that hands off strategy for managing cases of PROM at term has the advantage of high number of vaginal births without feto-maternal compromise.[10]

As the timing of labour induction is very important for better outcome and previous studies have shown argumentative results. So in order to reevaluate we carried out a research to compare the outcome of immediate induction versus delayed labour induction in cases of PROM at term. This study will not only help to resolve the controversy but will also provide the local stats & to find more suitable time for induction of labour in females with term PROM in order to reduce the caesarean rates and maternal morbidity.

MATERIALS AND METHODS

This was a Randomized controlled trial conducted at Gynecology & Obstetrics Department of, Civil Hospital-Bahawalpur. The duration of this research was 6 months (1st November 2018 to 30th April 2019).

The women fulfilling the following inclusion criteria were selected: confirmed premature rupture of membrane at term (gestational age >37weeks by LMP/ first trimester USG), having singleton viable pregnancy of cephalic presentation. The age of patients ranged from 18-40 years and parity 0-5. The patients having multiple pregnancy, cephalo-pelvic disproportion, estimated fetal weight more than 4 kg were excluded from study. The women with ante partum hemorrhage, S/S of chorioamnionitis, fetal distress, history of previous uterine surgery, & pregnancy with medical disorders were also not included.

The technique used was non-probability, consecutive sampling to take sample. 154 patients in total were registered in study with 5% level of significance.

After approval from ethical review committee, total 154 women fulfilling the inclusion criteria were selected after being admitted in department of Obstetrics & Gynecology, Civil Hospital, Bahawalpur. Informed consent in written was taken from each patient. The patients, who were selected were divided randomly into 2 equal batches (77in each) i.e. batch A (immediate induction) & batch B (delayed induction) by lottery method. All selected participants were given a chance to choose a slip from total pool of slips (1/2 slips with letter 'A' &half-slips with letter 'B') and they were placed in their respective batches. In both batches bishop score was assessed. In batch A patient, IOL was done within 6 hours of presentation by giving 50 µg sublingual PGE1. The dose was repeated after 4 hours if bishop score found to be poor & uterine contractions were <2, contractions/10 minutes. If patient did not enter in active labour after 2 doses of PGE1, oxytocin infusionin dose of 2-32mIU/minutes was started after the last dose of PGE1 via infusion pump. In batch B patients, induction of labour was done after 24 hours of presentation by following same regimen as used for batch A. Outcome was measured in both batches in terms of vaginal delivery within 24-hours after labour induction, & labelled as satisfactory: If vaginal delivery was occurred within 24 hours of induction otherwise taken as unsatisfactory.

All patients given i/v antibiotics, vaginal swab sent for culture & sensitivity & labours were monitored by maintaining partograph. This all data including the demographic data (age, BMI) was entered on a proforma.

Data Analysis: SPSS version 20.0 was used to enter and analyze all the information obtained. Age, gestational age, height, weight and BMI were calculated as mean & standard deviation. Parity &outcome (satisfactory/unsatisfactory) were mentioned as frequency & percentage. Chi square, was applied to compare the outcome of both batches and p-value $\leq$ 0.05 was labelled as significant.

Effect modifiers like parity, age, gestational age and BMI were managed through stratification. To see their effects on out-come, Post-stratification chi square was used. P-value $\leq$ 0.05 was considered as significant.

RESULTS

Age range observed in this research was from 18 to 40 years, with mean age of 27.93 ± 3.41years. The mean age of participants in batch A was 27.77 ± 3.14years & in batch B was 28.09 ± 3.38years, as shown in Table I.

The mean gestational age calculated was 39.01 ± 1.31weeks, (in batch A was 39.10 ± 1.22weeks and in batch B was 38.94 ± 1.36 weeks) (Table I). The mean parity in batch A was 2.71 ± 0.84and in batch B was2.83 ± 0.89(Table I). The mean BMI in batch A was 30.42 ± 2.36and in batch B was 30.86 ± 2.27 kg/m^2. The mean height was 158.29 ± 11.43 and weight was 75.54 ± 7.61 kg.

Satisfactory outcome in batch A (immediate induction) was seen in 68 (88.31%) while in batch B (delayed induction) was seen in 54 (70.13%) patients as exhibited in Table 2 (p-value = 0.005).

Table No.1: Demographic data

	Batch A	(n=77)	Batch B	(n=77)	Total	(n=154)
Age	No. of pts	%	No. of pts.	%	No. of patients	%
18-30yrs	60	85.81	56	72.73	122	79.22
31-40	11	14.29	21	27.27	32	20.78
Mean ± SD	27.77 ± 3.14		28.09 ± 3.38		27.93 ± 3.41	
Gestational	Age (weeks)					
37-39 weeks	49	63.64	48	62.34	97	62.99
40-42 weeks	28	36.36	29	37.66	57	37.01
Mean ± SD	39.10 ± 1.22		38.94 ± 1.36		39.01 ± 1.31	
Parity						
0-2	27	35.06	22	28.57	49	31.82
3-5	50	64.94	55	71.43	105	68.18
Mean ± SD	2.71 ± 0.84		2.83 ± 0.89		2.76 ± 0.85	

Table No.2: Comparison of outcome between both Groups (n=154)

		batch a (n=77)		batch b (n=77)	
		no. of patients	%age	no. of patients	%age
outcome	satisfactory	68	88.31	54	70.13
	unsatisfactory	09	11.69	23	29.87

P value is 0.005 which is taken as statistically significant

DISCUSSION

Premature, rupture of membranes (PROM) is referred to a condition when spontaneous rupture of membranes, occurs & evident by leakage of amniotic fluid per vagina, at or after 37 completed weeks of pregnancy. The prefix 'premature' is used if it's ahead of onset of labour. The acronym PPROM is used if it occurs before 37 weeks (preterm premature rupture of membranes). PROM affects 1 out of 10 pregnancies resulting in rise in maternal morbidity, surgical interventions & health risks for neonates.[11]

However certain researchers found that the perinatal and maternal morbidity, does not rise, with conservative management of PROM, but immediate induction results in higher rates of surgical intervention.[12]On the other hand, Neuhaus and colleagues reported a substantial rise in infection rates (both neonatal and maternal) along with fetal distress in patients where delivery is delayed by more than 24 hours after PROM. They observed, lower maternal and neonatal infection rates with short hospital stay when mediate IOL strategy was opted.[13]According to Duff P & colleagues, the rate of delivery in first 24 hours after PROM was 90% for those who were induced within 6 hours with respect to 60% in those who were managed expectantly.[14]Russel KPprovided histological evidence of chorio-amnionitis associated with increased time lapse after membrane rupture.[15]

No significant difference was found in my study & research of other colleagues between the groups regarding maternal age, parity and obstetrical complications. Age range seen in my study, ranged from 18 to 40 years, 27 years was the mean age. Majority of the participant women were (79.22%)between 18 to 30 years of age. Mean gestational age was 39weeks. Satisfactory outcome in batch A (immediate induction) was seen in 88.31% while in batch B (delayed induction) was seen in 70.13% patients (p-value = 0.005). Firdous & co researchers also agreed with results ofmy study by documenting a shorter mean delivery time (13hrs group A vs 33 hours group B respectively) with immediate (in 6 hours) induction than to delayed (after 24 hours) one. The mean age of the study population was around 28 years, with 38 weeks of gestational age & with parity of 1.[16]

A prospective case control study was carried out to compare both strategies: immediate induction of labour, &delayed induction. The study population which was shortly induced with misoprostol (intravaginal), resulted in a decline of rates of abdominal deliveries and instrumental vaginal deliveries along with a significantly elevated spontaneous vaginal birth rates.[17] The results matched with results of my study. Immediate induction was also proven beneficial by shortening the latent phase (of labour), and pre-delivery hospital stay without any statistically significant rise in morbidity of mothers & newborns which are comparable.[17]

Another prospective randomized study strengthened the outcome of my study. It compared term pregnancies complicated by PROM with expectant vs early management. The patients were randomized to either Group 1 (immediate IOL with oxytocin) or 2 (conservative management). Those in second group were divided in two groups A and B. In 2A, intervention was performed in terms of labour induction by oxytocin, if labour did not initiate after 24 hours of PROM. The 2nd set of participants (Group 2B) in whom uterine contractions started naturally within 24 hours. The base c- section rate was high in group 2. The subsequent rates of LSCS recorded in 1, 2A and 2B

were 19.2%, 60% and 12.2% respectively. Group 2 showed a notable rise in cases of fetal distress ($p<0.05$).[18]

Al calay et al. provided contradicting evidence when they discovered a reduction in duration of labour with expectant management and an increase in operative vaginal deliveries with induction secondary mainly to fetal distress. They recorded low and comparable c section rates among the groups. They inferred expectant management in cases of membrane rupture at term to be safe with reduction in operative vaginal birth rates.[19]

Beyond this point of membrane rupture, the of infection-clock starts; fetal separation & protection from external microorganisms is abolished. In 1965, Lanier and coworkers validated by observing a two-fold rise in perinatal mortality with prolong ROM. 28% of these, showed features of intra-partum (perinatal mortality was 50%.) or postpartum infection. So delay in delivery can lead to increase in feto-maternal infectious morbidity & mortality.[20]

CONCLUSION

This study concluded that the outcome of immediate induction is better as compared to delayed induction for labour in term Pre-labour, rupture of membrane. So, we recommend that immediate induction (PGE1 or Oxytocin) is more suitable treatment strategy for patients with term Pre-labour, rupture of membrane in order to reduce the caesarean rates and maternal morbidity.

Author's Contribution:

Concept & Design of Study:	Musarat Akhter
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Conflict of Interest: The study has no conflict of interest to declare by any author.

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