

ORIGINAL ARTICLE

Assessment of maternal and fetal outcomes in patients undergoing induction of labor and spontaneous labor

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ABSTRACT:

Background: The present study was conducted to compare maternal and fetal outcomes in patients undergoing induction of labor and spontaneous labor. **Materials & Methods:** 56 patients of singleton pregnancy with vertex presentation were divided into 2 groups of 28 each. Group I underwent spontaneous progression of labor and patients in group II with induction. Maternal outcomes and fetal outcomes were compared. **Results:** Age group 18- 22 years had 8 in group I and 9 in group II, 22-27 years had 6 in group I and 7 in group II, 28-32 years had 5 in each group, 32-36 years had 5 in group I and 4 in group II and 37-41 years had 4 in group I and 3 in group II. Mode of delivery was normal in 20 and 16, caesarean in 5 and 10 and instrumental in 3 and 2 in group I and II respectively. Indication of caesarean section was failed induction in 1 and 2, fetal distress in 3 and 6 and prolonged PROM with nil draining liquor in 1 and 2. Complications were perineal laceration in 1 each, maternal sepsis in 1 in group I, PPH in 1 in group I and hysterectomy 1 in group I. The difference was significant ($P < 0.05$). Indications for NICU admission was low birth weight in 2 and 1, birth asphyxia in 1 and 2, respiratory distress syndrome in 2 and 4 and meconium aspiration syndrome in 4 and 6 in group I and II respectively. Causes of neonatal deaths was low birth weight in 0 and 1, birth asphyxia in 1 and 2 and respiratory distress syndrome in 1 and 1 in group I and II respectively. The difference was significant ($P < 0.05$). **Conclusion:** Induction of labor is associated with more maternal risk of higher induction delivery interval, more cases of caesarean section due to failure of induction as compared with spontaneous labor.

Key words: induction of labor, spontaneous labor, pregnancy

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INTRODUCTION

Labour is a natural physiological process characterized by progressive increase in frequency, intensity and duration of uterine contractions resulting in effacement and dilatation of the cervix with descent of the fetus through the birth canal.¹ Labour induction is one of the most common obstetrical procedures, involving nearly 20% of all deliveries; and the rate continues to rise.²

The world has seen steady and significant rise in proportion of cases of induction of labor vis-à-vis spontaneous labor. In fact, the overall rate of induction of labor is rising faster than the rate of pregnancy complications that would lead to a medically indicated induction. Reasons for this disproportionate increase are complex and multifactorial. Better planning of birth by the obstetricians, patient and her family is the most common.³

There are certain risks associated with induction of labour like prolonged labour, caesarean delivery, postpartum haemorrhage, fetal heart rate abnormalities, chorioamnionitis and possible birth trauma. Partogram is a composite graphical record of key data (maternal and fetal) during labour entered

against time on a single sheet of paper.⁴ Relevant measurements include statistics such as cervical dilatation, fetal heart rate, duration of labour and vital signs. An accurate record of the progress in labour can be obtained by it. Any delay or deviation from normal may be detected quickly and treated accordingly.^{5,6} The present study was conducted to compare maternal and fetal outcomes in patients undergoing induction of labor and spontaneous labor.

MATERIALS & METHODS

The present study comprised of 56 patients of singleton pregnancy with vertex presentation. The consent was obtained from all enrolled patients. Data such as name, age etc. was recorded. Patients were divided into 2 groups of 28 each. Group I underwent spontaneous progression of labor and patients in group II with unfavourable cervix received 0.5 mg of prostaglandin gel (PGE2) in the cervical canal. Maternal outcomes such as mode of delivery and indications for caesarean section, the duration of labor, Fetal outcomes and maternal complications in labor in both groups were compared. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Age group (years)	Group I	Group II
18-22	8	9
22-27	6	7
28-32	5	5
32-36	5	4
37-41	4	3

Table I shows that age group 18- 22 years had 8 in group I and 9 in group II, 22-27 years had 6 in group I and 7 in group II, 28-32 years had 5 in each group, 32-36 years had 5 in group I and 4 in group II and 37-41 years had 4 in group I and 3 in group II.

Table II Comparison of maternal outcome

Parameter	Variables	Group I	Group II	P value
Mode of delivery	Normal	20	16	0.05
	Caesarean	5	10	
	instrumental	3	2	
Indication of caesarean section	Failed induction	1	2	0.04
	Fetal distress	3	6	
	Prolonged PROM with nil draining liquor	1	2	
Complications	Perineal laceration	1	1	0.91
	Maternal sepsis	0	1	
	PPH	1	0	
	Hysterectomy	1	0	

Table II, graph I shows that mode of delivery was normal in 20 and 16, caesarean in 5 and 10 and instrumental in 3 and 2 in group I and II respectively. Indication of caesarean section was failed induction in 1 and 2, fetal distress in 3 and 6 and prolonged

PROM with nil draining liquor in 1 and 2. Complications were perineal laceration in 1 each, maternal sepsis in 1 in group I, PPH in 1 in group I and hysterectomy 1 in group I. The difference was significant ($P < 0.05$).

Graph I Comparison of maternal outcome

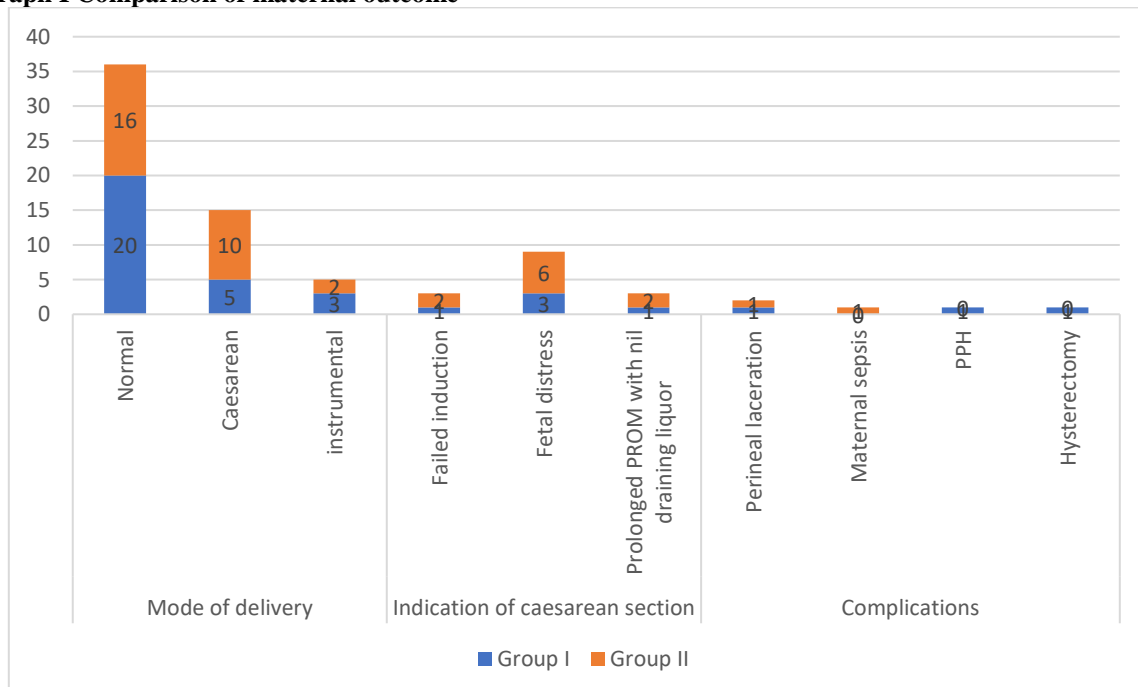


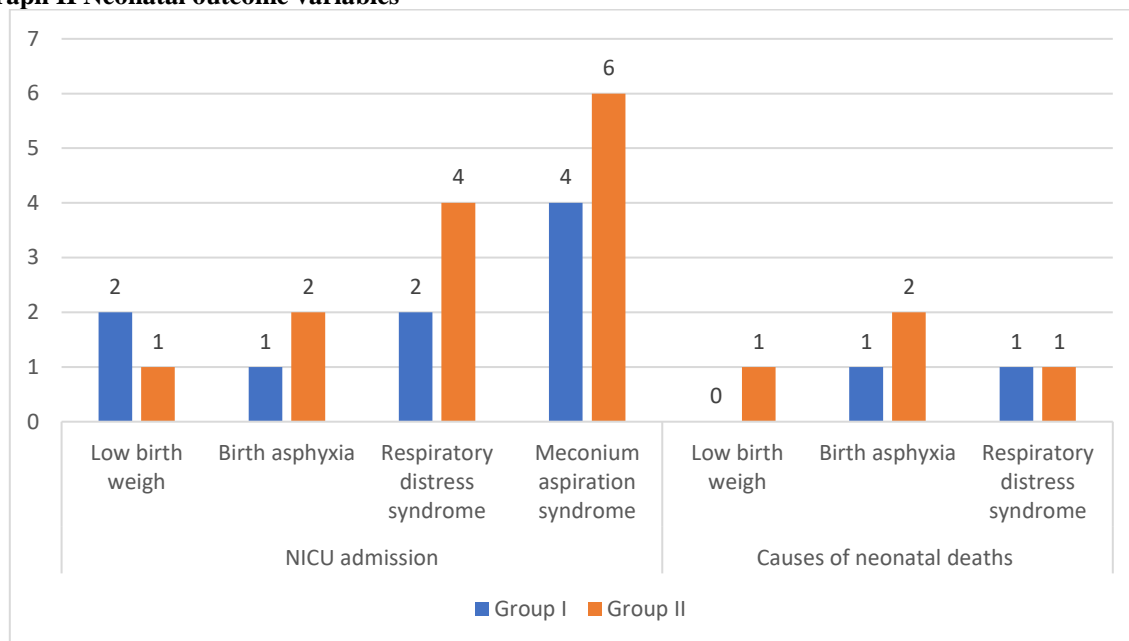
Table III Neonatal outcome variables

Parameter	Variables	Group I	Group II	P value
NICU admission	Low birth weigh	2	1	0.91
	Birth asphyxia	1	2	
	Respiratory distress syndrome	2	4	

	Meconium aspiration syndrome	4	6	
Causes of neonatal deaths	Low birth weigh	0	1	0.05
	Birth asphyxia	1	2	
	Respiratory distress syndrome	1	1	

Table III, graph II shows that indications for NICU admission was low birth weight in 2 and 1, birth asphyxia in 1 and 2, respiratory distress syndrome in 2 and 4 and meconium aspiration syndrome in 4 and 6 in group I and II respectively. Causes of neonatal deaths was low birth weight in 0 and 1, birth asphyxia in 1 and 2 and respiratory distress syndrome in 1 and 1 in group I and II respectively. The difference was significant ($P < 0.05$).

Graph II Neonatal outcome variables



DISCUSSION

Induction of labour is the artificial initiation of uterine contraction prior to their spontaneous onset, leading to progressive dilatation and effacement of the cervix and delivery of the baby.⁷ Induction of labour is indicated when benefits (maternal or fetal) of elective early delivery outweigh potential risks imposed by continuing the pregnancy, typically in instances of post-term pregnancy, premature rupture of membranes (PROM), oligohydramnios, fetal growth restriction, hypertension, diabetes mellitus, and other maternal or fetal diseases.⁸ The present study was conducted to compare maternal and fetal outcomes in patients undergoing induction of labor and spontaneous labor.

We found that age group 18- 22 years had 8 in group I and 9 in group II, 22-27 years had 6 in group I and 7 in group II, 28-32 years had 5 in each group, 32-36 years had 5 in group I and 4 in group II and 37-41 years had 4 in group I and 3 in group II.

D Chelmo wet al⁹ examined the association of prolonged latent phase with cesarean risk, subsequent labor abnormalities, and other adverse maternal and neonatal outcomes. Patients with prolonged latent phase were compared to patients with normal latent phase. We studied 10,979 singleton vertex deliveries of at least 37 weeks' gestation. Patients with risk factors for adverse outcome known before labor were

excluded from the analysis. Results showed that seven hundred thirteen patients (6.5%) had prolonged latent phase. Subsequent labor abnormalities were more frequent among patients with prolonged latent phase (42.9 versus 16.3%; $P < .05$), as was cesarean delivery (24.4 versus 6.9%; $P < .05$). Need for neonatal resuscitation, thick meconium, maternal fever, low 5-minute Apgar score, intensive care nursery admission, lengthened maternal and newborn hospital stays, and higher estimated blood loss were all significantly more frequent in patients with prolonged latent phase after controlling for mode of delivery. Multivariate linear logistic regression models were created to determine whether these risks actually reflected the prolonged latent phase. The first model controlled for other labor abnormalities, parity, epidural use, and macrosomia and showed prolonged latent phase to be associated with an increased risk for cesarean delivery (relative risk [RR] 1.65, 95% confidence interval [CI] 1.32-2.06). The second model controlled for other labor abnormalities, postdates, thick meconium, mode of delivery, and prolonged rupture of membranes and showed that both the need for newborn resuscitation and 5-minute Apgar scores less than 7 were significantly more frequent in association with a prolonged latent phase (RR 1.37 and 1.97, 95% CI 1.15-1.64 and 1.23-3.16, respectively). Authors

concluded that prolonged latent phase is independently associated with an increased incidence of subsequent labor abnormalities, need for cesarean delivery, depressed Apgar scores, and need for newborn resuscitation. The presence of prolonged latent phase should alert the clinician to an increased risk for further problems during the labor.

We found that mode of delivery was normal in 20 and 16, caesarean in 5 and 10 and instrumental in 3 and 2 in group I and II respectively. Indication of caesarean section was failed induction in 1 and 2, fetal distress in 3 and 6 and prolonged PROM with nil draining liquor in 1 and 2. Complications were perineal laceration in 1 each, maternal sepsis in 1 in group I, PPH in 1 in group I and hysterectomy in 1 in group I. We also found that indications for NICU admission was low birth weight in 2 and 1, birth asphyxia in 1 and 2, respiratory distress syndrome in 2 and 4 and meconium aspiration syndrome in 4 and 6 in group I and II respectively. Causes of neonatal deaths was low birth weight in 0 and 1, birth asphyxia in 1 and 2 and respiratory distress syndrome in 1 and 1 in group I and II respectively. In another study by Xenakis et al¹¹ of induced labor using an integrative approach (prostaglandin, amniotomy, oxytocin), it was found that the women had higher caesarean section rate (29% versus 15.4%).

A careful assessment of cases is must in order to achieve best results. Small sample size is limitation of in study.

CONCLUSION

Authors found that induction of labor is associated with more maternal risk of higher induction delivery interval, more cases of caesarean section due to failure of induction as compared with spontaneous labor.

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