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Original Research Article

Feto-maternal outcome in term and late term pregnancies following induction of labour with misoprostol

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ABSTRACT

Background: Induction of labour is the artificial initiation of labour before its spontaneous onset for the purpose of achieving vaginal delivery of the feto-placental unit. It is a common obstetric procedure which is indicated when the benefits to mother or fetus outweigh the benefits of continuing the pregnancy. Most common indication for induction is postdated pregnancy.
Methods: Longitudinal Study carried out in department of obstetrics and gynaecology, RIMS, Imphal, Manipur, conducted for duration of two calendar years, with effect from January 2021 in 168 primigravidas who had reached full term or late term pregnancy admitted in ante-natal ward of RIMS, Obstetrics and Gynaecology department.
Results: Study was conducted on 168 pregnant women, most of the participants belonged to the age group of 18-34 years (77.9%). Vaginal delivery was the most common mode of delivery (64.8%). Most of the babies (72%) delivered were having birth weight of between 2.5 kg to 3.9 kg. PPH and uterine hyperstimulation are comparatively more in the late term pregnancy as compared to full term pregnancy. Meconium-stained liquor was slightly more in late term pregnancy group as compared to full term pregnancy. Babies delivered by full term pregnant women were having better APGAR score in 1 minute and 5 minutes than the babies delivered by late term pregnancy.
Conclusions: Late term Pregnancy is comparatively common in low socio-economic group. The CS rate is comparatively high in Late term pregnancy as compared to Full Term Pregnancy. Poor APGAR score is highly associated with Late term Pregnancy outcome.

Keywords: Feto-maternal outcome, Induction of labour, Period of gestation

INTRODUCTION

Induction of labour is the artificial initiation of labour before its spontaneous onset for the purpose of achieving vaginal delivery of the feto-placental unit. It is a common obstetric procedure which is indicated when the benefits to the mother or fetus outweigh the benefits of continuing the pregnancy.[1] Oral misoprostol is effective at inducing labour. It is as effective as vaginal misoprostol and vaginal dinoprostone, and results in fewer caesarean sections than oxytocin. Induction of labour in late pregnancy is used to prevent complications when the pregnant women or her unborn child are at risk. The artificial prostaglandin E2 (dinoprostone) can be administered vaginally to induce labour but it is unstable at room temperature and is expensive. Tablet misoprostol is cheap and heat stable.[2] Several studies have shown that the lowest incidence of perinatal morbidity and mortality occurs at around 39 weeks of gestation. Perinatal mortality starts to increase with late term and post term pregnancies.[3] Adverse

perinatal outcomes gradually increase after 40 gestational weeks and are substantially increased in post term (≥42 weeks). The risk of stillbirth has been shown to increase after term and worldwide. Furthermore, maternal complications also increase with duration of pregnancy after 40 weeks, The World Health Organisation recommends induction of labour at 41 weeks and many countries offer induction of labour between 41 and 42 weeks to avoid prolonged pregnancy.[4] This study aims to find out any significant difference in the feto-maternal outcome of full term and late term uncomplicated singleton pregnancies following induction of labour with misoprostol.

METHODS

A Longitudinal study was conducted in the period between January 2018 to December 2019. The study was conducted in Imphal, the capital city of Manipur, a state in North-Eastern region of India. All primigravidas who had reached full term or late term pregnancy admitted in ante-natal ward of Regional Institute of Medical Sciences, Obstetrics and Gynaecology department fulfilling the inclusion criteria will be selected for the study. Sample size was calculated using the formula:

$$N = 4PQ/L2$$

Where, P=Prevalence=28.9% (Prevalence of Caesarean delivery following failed induction with misoprostol from a study done by Kreft et al.[15]), Q=100-P=100-28.9=71.1, L=Absolute allowable error=7. Therefore the sample size was calculated to be 168.

Sampling technique

The study will be done by convenient sampling method in which all cases which are admitted in ante-natal ward irrespective of the unit, fulfilling the inclusion criteria will be included consecutively until the desired sample size is reached. The cases will be divided into two groups: Group 1: Full term pregnancies and Group 2: Late term pregnancies.

Data collection

Data was collected using a pre-designed proforma. Identifier of the patient in relation to age, period of gestation, indication for induction of labour. Detail clinical history history will be taken. Thorough clinical examination will be done. All patients will be subjected to trans abdominal sonography at term to know the size, location, number, presentation, fetal wellbeing, amniotic fluid index, estimated fetal weight and placental localisation. Written informed consent was obtained from the study participants before data collection. Confidentiality was maintained by limiting the identifying variables to the minimum. Access to the collected data was limited only to myself, my guide under lock and key.

Statistical analysis

Data will be checked for consistency and completeness and will be analysed by using SSPS version 27.0 IBM. Descriptive statistics like mean and standard deviation will be used to summarize age, period of gestation, APGAR score, birth weight, indication of induction of labour, mode of delivery, any complications (both fetal and maternal), sex of the baby, birth weight (low birth weight, normal birth weight) and birth outcomes (live birth/stillbirth) will be expressed in frequency and percentage.

RESULTS

Total 168 antenatal mothers were selected for this study, to study about the induction by using misoprostol in full term (period of gestation between 39 weeks to 39 weeks 6 days) and late term pregnancy (period of gestation between 40 weeks to 41 weeks 6 days) and its fetal and maternal outcome.

Table 1: Frequencies of maternal age, socio-economic and religion status in study population.

Parameters	POG	Full term, (n=84)	Late term, (n=84)	P value
Age (years)	<18	6	4	0.498
	18-34	67	64	
	≥35	11	16	
Socio economic class	Lower	3	12	0.049
	Lower middle	68	59	
	Upper middle	13	13	
	Hindu	55	56	0.647
	Muslim	19	15	
	Christian	10	13	

Table 2: Frequencies of mode of delivery in study population.

Parameters		Full term, (n=84)	Late term, (n=84)	P value
		60	49	0.204
Mode of delivery	Vaginal delivery	60	49	
	CS delivery	21	31	
	Instrumental delivery	3	4	

Out of 168 patients, 131(78%) were belong to age group 18-34 years, 27 (16.1%) were belong to age group of 35 years and above and 10 (6%) were belong to less 18 years age group. Out 168 patients, 127 (75.6%) belongs to lower middle class, 26 (15.5%) belongs to upper middle class and 15 (8.9%) belongs to lower class.

Out of 168 patients, 111 (66.1%) belongs to Hindu religion, 34 (20.2%) belongs to Muslim religion and 23 (13.7%) belongs to Christian religion. Out of 168 patients, 109 (64.9%) delivered via normal vaginal delivery, 52 (31%) delivered via caesarean section and 7 (4.2%) delivered via instrumental delivery.

Table 3. Frequencies of APGAR score of babies by study population.

Parameters		Full term, (n=84)	Late term, (n=84)	P value
APGAR score	<3	2	3	0.879
	3 -7	19	20	
	>7	63	61	
Birth weight (kg)	<2.5	22	9	0.028
	2.5-3.9	56	65	
	≥4	6	10	
NICU admissions	Yes	13	14	0.834
	No	71	70	
Maternal outcome	PPH	6	9	0.305
	Chorioamnionitis	5	3	
	Uterine hyperstimulation	1	4	

Out of 168 babies delivered by study population, 121 (72%) baby's birth weight belongs to 2.5 kg to 3.9 kg, 31 (18.5%) baby's birth weight belongs to <2.5 kg and 16 (9.5%) baby's birth weight belongs to 4 kg and above.

Out of 168 patients, 64 (38.1%) were having meconium stain liquor and 104 (61.9%) patients were having clear liquor. Out of 168 babies delivered by the study population, 138 babies are delivered without fetal distress and 30 (17.9%) baby's delivered with fetal distress. Out of 168 babies delivered by study population 124 (73.8%) baby's APGAR score at 1 minute were above 7, 39 (23.2%) baby's APGAR at 1 minute were between 3-7 and 5(3%) baby's were below 3.

Out 168 babies delivered by study population, 144 (85.7%) baby's APGAR score at 5 minutes were above 7 and 24 (14.3%) baby's APGAR score at 5 minute were between 3-7. Out of 168 babies delivered by study population, 27 (16.1%) babies required NICU admission for observation and 141 (83.9%) babies don't required NICU admission.

DISCUSSION

Induction of labour (IOL) means initiation of uterine contractions after the period of viability by any method (medical surgical or combined) for the purpose of vaginal delivery.[5] Post-term pregnancies are defined as ≥42 weeks of gestation or ≥294 days from the first day of the last menstrual period according to ACOG, late-term pregnancies refer to a pregnancy that is ≥41weeks through 41+6 weeks of gestation.[6]

In this study, age distribution in both the groups were comparable and no statistical significance was observed. Most of the patients belong to the age group 18-34 years and in which 67 were full term pregnant women and 64 were late term pregnant women. Twenty-seven pregnant women belongs to 35 years and above in which 11 were full term and 16 were late term pregnant women and only 6 full term and 4 late term were belong to age group less than 18 years. Similar study was found in the study conducted by Naz et al.[7]

In this study, those in the Lower Socio-economic group have a tendency for late term deliveries. The finding was statistically significant. Most of the patients belong to lower middle-class group with a total of 127 out of this 68 were full term and 59 were late term pregnant women.

Twenty-six pregnant women belong to upper middle class in which 13 were late term pregnant women and 13 were full term pregnant women and only 15 pregnant women in study were belong to lower class socio-economic group out of this 3 were full term and 12 were late term pregnant women. In this present study, most of the patients belong to Hindu religion with a total of 111 in which 55 full term pregnant women were Hindu and 56 late term pregnant women were Hindu. Thirty-four pregnant women in this study were Muslim out of this 19 were full term and 15 were late term pregnant women and only 10 full term pregnant women and 13 late term pregnant women were Christian.

Statistical significance was not observed. In this study, CS and instrumental delivery was slightly higher in the late term delivery group. However, statistical significance was not observed. Most common mode of delivery were vaginal delivery, 109 vaginal deliveries were found in this study out of this 60 were full term and 49 were late term pregnant women. Fifty-two caesarean deliveries found in this study in which 21 were full term and 31 were late term pregnant women. Only 7 instrumental deliveries were found in this study in which 3 were full term and 4 were late term pregnant women, this study is comparable with the study conducted by Lawani et at al, Kimet et al and Sabina et al.[7-9]

In this study, no statistical significance was observed between two groups in terms of APGAR Score. Most of the baby delivered by study population were having APGAR score of more than 7 at 1 minute and only 2 babies delivered by full term and 3 babies delivered by late term were having APGAR score of less then 3 at 1 minute. This present study can be compared with the study conducted by Punya et al in which the APGAR Score <8 at 1 min was 13.5% in 40 weeks gestation, 31.3% in 40-41 weeks gestation,66% in >41 weeks gestation.[11]

APGAR score gradually reduced with the progression in post-dated pregnancy requiring NICU admission and increasing chances of Perinatal morbidity and mortality. In this study as expected, the birth weight was significantly higher in the group with late term deliveries. Out of 168 babies delivered by study population, 121 babies were in birth weight of 2.5 kg to 3.9 kg and out of 121 babies 65 babies belong to late term pregnancies and 56 babies belong to full term pregnancies and it is statistically significant (p=0.028). In present study 72% infants were having 2.5 to 3.9 kg birth weight which was less than the study conducted by Verma et al which showed 87% infants of birth weight 2.5 to 3.9 kg.[12]

In the present study, maternal outcome was comparable between the two groups. Out of 168 patients, 15 (8.9%) had PPH in which 6 patients were full term and 9 were late term, 8 (4.8%) had chorioamnionitis in which 5 were full term and 3 were late term and 5 (3%) had uterine hyperstimulation in which 1 was full term and 4 were late term pregnancies (p=0.305).

Similar study was found in the study conducted by Chen et al, Rydahl et al, Alexander et al observed that increasing Labour complications such as Length of labour, infection, PPH and obstetrics trauma increases with gestational age.[13-15] In this study Out of 168 babies delivered by study population 27 babies required NICU admission and among 27 babies, 14 babies belong to late term pregnancies and 13 babies belong to full term pregnancies and it is not statistically significant (p=0.834). Similar study was found in the study conducted by Gurung et al.[16]

One of the major strengths of the study is that representative sample was chosen which in turn made the study generalizable to the similar kind of study population. One of the limitations which could take care of is that the period of gestation was calculated solely by using the last menstrual period of the patients, if period of gestations were calculated by using the combination of early week ultrasound and last menstrual period of the patients, then it could have increased the objective of our study finding.

CONCLUSION

Many patients in the low socio-economic group had late term delivery which could be due to their tendency to avoid going to hospital. CS rate is higher than the WHO recommended of 15% rate in both the groups However, CS rate in late term delivery is more than full term delivery (31% vs. 21%) but no statistical significance.

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