

ORIGINAL RESEARCH

To compare the obstetric outcomes of spontaneous labour vs induced labour in pregnancies beyond 40 weeks of gestation

¹Dr. Rashmi, ²Dr. Satyendra Kumar Pandey, ³Dr. Pankaj Kumar Mishra

¹Assistant Professor, Department of Obstetrics and Gynaecology, Mayo Institute of Medical Health Sciences, Barabanki, Uttar Pradesh, India

²Assistant Professor, Department of Anaesthesia, Mayo Institute of Medical Health Sciences, Barabanki, Uttar Pradesh, India

³Professor, Department of Community Medicine, Mayo Institute of Medical Health Sciences, Barabanki, Uttar Pradesh, India

Corresponding author

Dr. Satyendra Kumar Pandey

Assistant Professor, Department of Anaesthesia, Mayo Institute of Medical Health Sciences, Barabanki, Uttar Pradesh, India

Email: sattllrm@gmail.com

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ABSTRACT

Aim: To compare the obstetric outcomes of spontaneous labour vs induced labour in pregnancies that have beyond 40 weeks of gestation. **Materials and Methods:** The study included a cohort of 50 pregnant women who were in spontaneous labour and had reached a gestational age of 40 weeks or more. Group B consisted of a cohort of 50 pregnant women who had reached over 40 weeks of gestation and had induced labour for delivery. This research included pregnant individuals with regular menstrual cycles who were beyond 40 weeks of gestational age, up to 42 weeks. **Results:** In this study, 76% were primigravida and 24 % were multigravida in both groups. 24 % in group A and 20% in group B were augmented. It reveals that 70% of these women had vaginal delivery, whereas 4% experienced instrumental vaginal delivery. In group B, the majority of women (82%) had vaginal birth, whereas a smaller proportion (8%) underwent instrumental vaginal delivery. There is no statistically significant difference seen. In group A, 26% of women received the procedure known as Lower Segment Caesarean Section (LSCS), while in group B, this percentage was 10%. The observed distinction is deemed to be statistically significant, as shown by a p-value of less than 0.03. The incidence of meconium stained liquor was higher in group A (40%) compared to group B (20%). The observed difference is deemed to be statistically significant, as shown by a p-value of less than 0.001. **Conclusion:** The study found that there were no significant differences in maternal and foetal outcomes between the groups of women who had spontaneous labour and those who underwent induced labour throughout the gestational period of 40-41 weeks. During the gestational age range of 41-42 weeks, a notable increase in the presence of meconium staining in the amniotic fluid was seen in cases of spontaneous labour in comparison to induced labour.

Keywords: Postdate pregnancy, Expectant management, Induction of labour

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INTRODUCTION

The phrases "postdate," "post term," "post maturity," and "prolonged pregnancy" are recognised and used by the World Health Organisation (WHO) and the International Federation of Gynaecology and Obstetrics (FIGO) to characterise pregnancies that extend beyond the anticipated date of delivery. Postdate pregnancy is a term used to describe a pregnancy that has beyond 40 weeks of gestation. The definition of post-term pregnancy, as established by the World Health Organisation (WHO) and the International Federation of Gynaecology and Obstetrics (FIGO), refers to a pregnancy that exceeds

a gestational duration of 294 days. The user has provided a numerical sequence [1,2]. The prolongation of pregnancy is a complication that occurs in around 10% of all pregnancies, and it poses an elevated danger to both the mother and the foetus.[3,4] The determination of gestational age is crucial for the diagnosis and subsequent treatment of post-dated pregnancy. The primary approach for determining gestational age is by dating by the LMP, supplemented by Naegle's rule, which posits that the occurrence of labour at or after 42 weeks is around 14%. [5] The evaluated studies consistently indicate that the rate of perinatal death is higher in post-term

pregnancies compared to term pregnancies.[6] Prolonged pregnancy is often recognised as a high-risk condition because to the observed increase in perinatal morbidity and death.[7] The occurrence of pregnancy beyond the expected due date is associated with an elevated likelihood of experiencing stillbirth and neonatal mortality. There is an elevated occurrence of decreased amniotic fluid levels at or after 41 weeks of gestation.[8] The occurrence of meconium transit in amniotic fluid also exhibits a rise in cases of postdate pregnancy, with reported rates ranging from 12% to as high as 30-40%.[9] Meconium aspiration syndrome (MAS) is correlated with diminished Apgar scores and elevated rates of foetal morbidity and death.[10,11] Foetal macrosomia is a recognised problem that may arise from post-dated pregnancies, potentially resulting in heightened risks of maternal and foetal trauma such as shoulder dystocia leading to Erb's palsy, perinatal hypoxia, meconium aspiration, and post-partum haemorrhage.[12] Multiple studies have shown an elevated incidence of stillbirth after 41 weeks of gestation, whereas others have seen an increased risk starting at 40 weeks of gestation. The user has provided a numerical range, specifically [13,14]. The incidence of postdate pregnancies has been shown to range between 5.5% and 9.5% across various research, nations, and historical periods.[14] Due to the potential risks to both the foetus and the mother, there is a greater necessity for induction in cases of post-term pregnancy. There are several suggestions for the treatment of postdate pregnancy; however, no universally accepted protocol is regarded the definitive norm. Consequently, management practises differ among hospitals and countries.

MATERIALS AND METHODS

The research was done at the Department of Obstetrics and Gynaecology as a hospital-based prospective comparative study. This research included all pregnant women who had beyond their anticipated delivery date and met the specified inclusion and exclusion criteria. These women were admitted to the labour ward for birth during the designated study period. The study included a cohort of 50 pregnant women who were in spontaneous labour and had reached a gestational age of 40 weeks or more. Group B consisted of a cohort of 50 pregnant women who had reached over 40 weeks of gestation and had induced labour for delivery.

This research included pregnant individuals with regular menstrual cycles who were beyond 40 weeks of gestational age, up to 42 weeks. The inclusion

criteria also required participants to have a known LMP and a first trimester scan, if possible. Additionally, only singleton pregnancies with a vertex presentation were included in the study.

The study excluded patients who had Premature Rupture of Membranes and were also affected by medical conditions such as diabetes mellitus, cardiac diseases, renal diseases, pre-eclampsia, cord presentation, and contraindications to induction of labour, including intrauterine growth restriction, foetal distress (non-reactive CTG), cephalopelvic disproportion, placenta previa, chronic placental insufficiency, and abnormal foetal presentations (transverse lie or breech). Additionally, patients with a history of previous caesarean section were also excluded from the study.

METHODOLOGY

A comprehensive medical history was obtained and a thorough clinical examination was conducted. Standard prenatal, postnatal, and neonatal examinations were conducted as deemed necessary based on clinical indications. The process of initiating labour was carried out with the intravaginal administration of 25 micrograms of misoprostol pills every 6 hours, namely in situations where pregnancies had beyond 40 weeks of gestation and there was a medical need for intervention. The female individuals received counselling and were subjected to induction of labour after the acquisition of informed consent. The administration of oxytocin was used as a means of augmenting work when needed. The study examined the outcomes for both mothers and foetuses, focusing on various parameters including the method of delivery, rates of caesarean section, presence of meconium stained amniotic fluid, occurrence of meconium aspiration syndrome, APGAR scores at one minute and five minutes, rates of admission to the neonatal intensive care unit (NICU), perinatal mortality, and maternal complications.

STATISTICAL ANALYSIS

Analysis of collected data was done using Fisher exact test, Z test and Chi –square test. A p value of <0.05 was considered statistically significant.

RESULTS

A total of 275 births were recorded among pregnant women who exceeded 40 weeks of gestation over the duration of the research. This research had a total of 100 patients that satisfied the specified inclusion and exclusion criteria.

Table 1: Age Distribution

Age (in Years)	Group A =50		Group B =50	
	Number	Percentage	Number	Percentage
≤20	12	24	18	36
20-25	28	56	23	46
25-30	8	16	7	14

30-35	2	4	2	4
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The presented table provides an overview of the age distribution among the patients who participated in the research. The majority of patients are between the age range of 20 to 25 years. The average age of women in group A was 23.11 years, whereas in group B it was 24.02 years.

Table 2: Gestational Age Distribution

Gestational Age (In Weeks)	Group A		Group B	
	Number	Percentage	Number	Percentage
40 weeks -40 ⁺⁶ weeks 65	33	66	32	64
41weeks- 41 ⁺⁶ weeks	17	34	18	36

This table shows the distribution of gestational age in both the groups. 66% in group A and 64% in group B were in the gestational age of 40weeks-40weeks + 6 days in both the groups. Gestational age distribution is closely matched between the two groups.

Table 3: Gravidity Distribution

Gravidity	Group A		Group B	
	Number	Percentage	Number	Percentage
Primigravida	38	76	38	76
Multigravida	12	24	12	24

In this study, 76% were primigravida and 24 % were multigravida in both groups. 24 % in group A and 20% in group B were augmented. This difference between the two groups is not statistically significant (p value = 0.51).

Table 4: Distribution of Oligohydramnios

Oligohydramnios	Group A		Group B		*p Value
Present	4	Mild- 3	5	Mild- 4	
		Severe- 1		Severe- 1	
Absent	46		45		0.26

4 patients had oligohydramnios in group A as compared to 5 patients in group B, there was not much difference between the two groups as noted by the p value of 0.26 which is not statistically significant.

Table 5: Mode of Delivery

Mode of Delivery	Group A		Group B		*p Value
	Number	Percentage	Number	Percentage	
Vaginal delivery	35	70	41	82	0.19
Instrumental vaginal delivery	2	4	4	8	
LSCS	13	26	5	10	<0.03

The presented table provides information on the method of birth for women in group A. It reveals that 70% of these women had vaginal delivery, whereas 4% experienced instrumental vaginal delivery. In group B, the majority of women (82%) had vaginal birth, whereas a smaller proportion (8%) underwent instrumental vaginal delivery. There is no statistically

significant difference seen. In group A, 26% of women received the procedure known as Lower Segment Caesarean Section (LSCS), while in group B, this percentage was 10%. The observed distinction is deemed to be statistically significant, as shown by a p-value of less than 0.03.

Table 6: Indication for Cesarean Section

Indication for LSCS	Group a		Group B		*p Value
	N=13	Percentage	n=5	Percentage	
Fetal distress with pathological Cardiotocograph (CTG) with meconium stained amniotic fluid	10	76.92	4	80	0.43
Fetal distress with pathological CTG	2	15.38	1	20	
Non-progression of labour	1	7.69	0		

The presented table provides an overview of the indications for Lower Segment Caesarean Section (LSCS) as seen in the research. A total of 13 lower segment caesarean sections (LSCS) were performed in group A, whereas group B had 5 LSCS procedures due to foetal distress. The results of the statistical analysis indicate that there is no statistically significant difference between the two groups, as shown by a p-value of 0.43.

Table 7: Presence of Meconium Stained Liquor

Liquor	Group A		Group B		*p Value
	Number	Percentage	Number	Percentage	
Meconium	20	40	10	20	<0.001
Clear	30	60	40	80	

The incidence of meconium stained liquor was higher in group A (40%) compared to group B (20%). The observed difference is deemed to be statistically significant, as shown by a p-value of less than 0.001.

DISCUSSION

The management of pregnancy that extends beyond the EDD is a topic of significant concern because to its established correlation with heightened risks to both the mother and the foetus. The potential hazards include a higher occurrence of oligohydramnios caused by deteriorating placental function, compression of the umbilical cord leading to temporary or permanent reduction in foetal oxygenation, labour that does not advance, the need for instrumental delivery, and an elevated likelihood of undergoing a caesarean birth. [15]

The perinatal risk seems to be elevated for newborns who are intrauterine growth limited or small for gestational age, in comparison to infants who are of typical size for their gestational age. Nevertheless, some foetuses persist in their development and ultimately attain a state of macrosomia. Infants in this population have an increased susceptibility to shoulder dystocia. The occurrence of meconium coloured amniotic fluid and meconium aspiration syndrome is more prevalent in pregnancies that extend past the EDD. [16]

The optimal approach to managing pregnancies beyond 40 weeks of gestation remains uncertain, since there are differing viewpoints about whether to pursue expectant management or induction of labour. The decision to induce labour is deemed justifiable when the advantages of doing so surpass the potential hazards associated with prolonging the pregnancy. [16] Overall the primary caesarean section rate in the present study was 18 %. The caesarean section rate in spontaneous labour group was 26% and in induced labour group was 10%. The difference between the groups was statistically significant with the p value <0.03. Our results are similar to the study finding by Chhabra et al. who also found reduced caesarean section rates in induced labour group as compared to spontaneous labour group (15.55% vs. 24.78%). [17] A further analysis of the data by subdividing the groups into primigravida and multigravida, into different gestational ages of 40 weeks – 40 weeks + 6 days and 41 weeks- 41 weeks + 6 days was done. It is seen that incidence of caesarean section was more in primigravida than in multigravida. When gestational age was taken into consideration we found that caesarean section rates in between 40 weeks-40 weeks6 days of gestation were similar in both spontaneous and induced labour groups. The difference between the groups was not statistically significant. However, this result was not comparable with the study by Chhabra et al as there

was reduction in caesarean section rates in induced group as compared to spontaneous labour at 40weeks-41 weeks of gestation (8.5% vs. 21.65%). [17]

In gestational age 41weeks-42 weeks' gestation we found a significant reduction in caesarean section rates in induced labour compared to spontaneous labour group. Similar findings of 5.4 % rates of LSCS in induced labour were reported in the study published by James et al. However, in the study by Virginija et al reported a higher rates of caesarean section of 22% in induced labour at 41 weeks-41 weeks + 6 days of gestation compared to 10% caesarean section rates at 40 weeks-40 weeks 6 days of gestation. [18-20] The most important indication for caesarean section in spontaneous labour group was fetal distress (76.92%). The most important indication for caesarean section in induced labour group was also fetal distress (80%).

The frequency of instrumental vaginal deliveries in our study was 4% and 8% in group A and group B respectively, which is similar to the study by James et al (10.81%). However the study by Hannah et al 55 shows higher rates of instrumental vaginal deliveries of 24.5% in spontaneous labour and 21.16% in induced labour which is much higher compared to our study. [21] In our study, 20% of women in induced labour group and 40% in spontaneous labour group had meconium stained amniotic fluid. This difference between the two groups was statistically significant with p value <0.01. Studies by Heimstal et al and James et al. also had concluded that there is less incidence of meconium stained amniotic fluid in induced labour group as compared to spontaneous labour. [22,23] According to meta-analysis by Caughey et al. women who were expectantly managed were more likely to have meconium stained amniotic fluid than those who were electively induced.

CONCLUSION

The study found that there were no significant differences in maternal and foetal outcomes between the groups of women who had spontaneous labour and those who underwent induced labour throughout the gestational period of 40-41 weeks. During the gestational age range of 41-42 weeks, a notable increase in the presence of meconium staining in the amniotic fluid was seen in cases of spontaneous labour in comparison to induced labour. Additionally, the incidence of caesarean section procedures was found to be lower in the induced labour group. Additional research using a substantial sample size is necessary to validate the aforementioned results.

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