

Obstetric Outcome of Spontaneous Labour Compared to Induced Labour Beyond 40 Weeks of Gestation

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Abstract

Introduction: As the pregnancy continues beyond 40 weeks of gestation, there are higher risks of developing fetal distress, fetal death due to decline in placental function and increased operative delivery. The optimal management of pregnancy beyond 40 weeks is unclear and it includes elective induction of labour or expectant management till patient may go into spontaneous labour or require cesarean section. **Materials and Methods:** This is a prospective study conducted in the Department of Obstetrics and Gynecology, at Subbaiah Institute of Medical sciences over a period of 1 year. 200 pregnant women who have crossed their expected date of delivery and admitted to the hospital were included in the study. These women were delivered by either induced labour or spontaneous labour and their maternal and fetal outcome was noted. They were divided into two groups. Group A were women in spontaneous labour and group B were women selected for induction of labour. **Results:** The two groups were matched with respect to parity, gestational age (in weeks), presence of oligohydramnios and need for augmentation with oxytocin. Amongst the study subjects with group A, cesarean section rate was 23% and with group B it was 12%. When the groups were subdivided by gestational age, between 40 weeks- 40 weeks 6 days, cesarean section rates were similar in both the groups. At 41 completed weeks of gestation, the rates of cesarean section was less in group B (8.33%) as compared to group A (40%). This difference was statistically significant with p value <0.001. Fetal distress was the most common indication for cesarean section in both the groups. Meconium stained liquor was 13.88% in group B and 48.57% in group A during 41 weeks-41 weeks + 6 days of gestation which was a statistically significant (p-value 0.006). **Conclusion:** According to the present study, the induction of labour in pregnancy beyond 41 weeks of gestation is associated with reduction in presence of meconium staining of liquor, perinatal morbidity and decreased rates of cesarean section as compared to pregnancies who are left for spontaneous onset of labour.

Keywords: Postdate pregnancy, Expectant management, Induction of labour.

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Introduction

An important determinant of obstetric outcome is the timely onset of labour and birth. Labor is a poorly defined biologic process that involves fetal, placental, and maternal signals. [1] Ideally, it should begin spontaneously at term. But the percentage of spontaneous labour on estimated date of delivery is 4%. Expected date of delivery (EDD) is calculated from the first day of the last menstrual period to the end of 40 weeks. [2] As the pregnancy continues beyond 40 weeks of gestation, there are higher risks of developing fetal distress, fetal death due to decline in placental function and increased operative delivery. [3] The optimal management of pregnancy beyond 40 weeks is unclear and it includes elective induction of labour or expectant management till patient may go into spontaneous labour or require cesarean section. [4] Labour induction is an artificial initiation of labour before its spontaneous onset. It is one of the most common procedures done

during the pregnancy. One of the indications for labour induction is pregnancy beyond EDD. [5] The American College of Obstetricians and Gynecologists, in practice bulletin of Induction of labour states "Generally induction of labour has merit as a therapeutic option when the benefits of expeditious delivery outweigh the risks of continuing the pregnancy. [6] The benefit of labour induction must be weighed against the potential maternal or fetal risks associated with the procedure". [7] So, this study is to determine maternal and neonatal outcome in induced labour compared with spontaneous labour in pregnancies beyond 40 weeks of gestation.

Materials and Methods

It is a hospital based prospective comparative study which was conducted in the Department of Obstetrics and Gynecology at Subbaiah Institute of Medical Sciences. This study included all the pregnant women who have crossed their expected date of delivery meeting the inclusion and exclusion criteria admitted to labour ward for delivery over a period of 1 year. Group A included 100 pregnant women beyond 40 weeks of gestation who were in spontaneous labour. Group B included 100 pregnant women beyond 40 weeks of gestation who were delivered by induced labour.

Inclusion criteria

1. Pregnancy beyond 40 weeks of gestational age up to 42 weeks with regular menstrual cycles, with sure LMP and first trimester scan if available.

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2. Singleton pregnancy.
3. Vertex presentation.

Exclusion criteria

1. Premature rupture of membranes
2. Associated medical problems like diabetes mellitus, cardiac diseases, renal diseases, pre-eclampsia.
3. Cord presentation.
4. Contraindication to induction of labour such as intrauterine growth restriction, fetal distress(non-reactive CTG), cephalopelvic disproportion, placenta previa, chronic placental insufficiency, abnormal fetal presentations (transverse lie or breech)
5. Previous cesarean section.

Detailed history was taken and clinical examination was done. Routine antenatal, postnatal, neonatal investigations as clinically indicated were done. Induction of labour was done by intravaginal insertion of 25 micrograms of misoprostol tablets 6th hourly, in indicated cases of pregnancies beyond 40 weeks of gestation.

Women were counselled and induction of labour was done after taking an informed consent. Augmentation of labour was carried out wherever required with oxytocin. The maternal and fetal outcomes were analyzed, parameters such as route of delivery, rates of cesarean section, meconium stained amniotic fluid, meconium aspiration syndrome, APGAR scores at one minute and five minutes, rates of NICU admission, perinatal mortality and maternal complications were analyzed.

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

The total deliveries of pregnant women beyond 40 weeks of gestation during the study period were 386. Among them, this study included 200 cases which met the inclusion and exclusion criteria.

Table 1: Age Distribution

Age (in Years)	Group A n= 100	Group B n=100
≤20	23	38
21-25	54	44
26-30	19	16
31-35	4	2

This table shows the age distribution of the patients in the study. Majority of the patients belong to age group 21- 25 years. Mean age of women in group A was 22.61 years and in group B was 23.48 yrs.

Table 2: Gestational Age Distribution

Gestational Age (In Weeks)	Group A n= 100	Group B n=100
40 weeks -40 ⁺ 6weeks 65	65	64
41weeks- 41 ⁺ 6weeks	35	36

This table shows the distribution of gestational age in both the groups. 65% 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 n= 100	Group B n=100
Primigravida	75	74
Multigravida	25	25

In this study, 75% were primigravida and 25 % were multigravida in both groups

Table 4: Augmentation With Oxytocin

Augmentation Oxytocin With Done	Group A n= 100	Group B n=100	*p Value
Primigravida	75	74	0.60
Multigravida	25	25	

*Chi-square test was used (0.2)

23 % in group A and 19% in group B were augmented. This difference between the two groups is not statistically significant (p value = 0.60).

Table 5: Distribution of Oligohydramnios

Oligohydramnios	Group A n= 100	Group B n=100	*p Value
Present	Mild- 5	7	0.77
	Severe- 1		
Absent	94	93	

*Chi square test was used (0.08)

6 patients had oligohydramnios in group A as compared to 7 patients in group B, there was not much difference between the two groups as noted by the p value of 0.77 which is not statistically significant.

Table 6: Mode of Delivery

Mode of Delivery	Group A n= 100	Group B n=100	*p Value
Vaginal delivery	72	81	0.71
Instrumental vaginal delivery	5	7	
LSCS	23	12	<0.04

*Chi square test was used (3.20)

This table shows the mode of delivery, 72% of women in group A had vaginal delivery and 5% had instrumental vaginal delivery. 81% of women had vaginal delivery and 7% had instrumental vaginal delivery in group B. The difference is not statistically significant. 23

% women in group A underwent Lower Segment Cesarean Section (LSCS) as compared to 12 % in group B. The difference is statistically significant as noted by p value <0.04.

Table 7: Indication for Cesarean Section

Indication for LSCS	Group a		Group B		*p Value
	N=23	Percentage	n=23	Percentage	
Fetal distress with pathological Cardiotocograph (CTG) with meconium stained amniotic fluid	16	69.56	9	75	0.93
Fetal distress with pathological CTG	5	21.73	3	25	
Non-progression of labour	2	8.69	0	0	

This table shows the indications for LSCS in the study. 21 LSCS in group A and 12 in group B were done for fetal distress. There is no

statistically significant difference between the two groups (p value 0.93).

Table 8: Presence of Meconium Stained Liquor

Liquor	Group A n= 100	Group B n=100	*p Value
Meconium	39	17	<0.001
Clear	61	83	

* Chi-square test was used (10.94)

This table shows increased meconium stained liquor (39 %) in group A compared with (17%) in group B. This difference is statistically significant as noted by p value of <0.001.

Discussion

Management of pregnancy beyond EDD is a subject of concern because of its known association with increased risk to mother and fetus. The risks include increased incidence of oligohydramnios due to declining placental function, umbilical cord compression resulting in transient or permanent decreased oxygenation to the fetus, non-progressive labour, instrumental delivery and increased risk of caesarean delivery. [8] The perinatal risk seems to be higher for intrauterine growth restricted or small for gestational age infants than it is for average for gestational age infants. However, some fetuses continue to grow and become macrosomic. These babies have a greater risk of shoulder dystocia. Meconium stained amniotic fluid and meconium aspiration syndrome are seen more in labour beyond EDD. [9]The exact management in pregnancy beyond 40 weeks of gestation remains unclear as some people advocate expectant management to wait for spontaneous onset of labour and some advocate induction of labour. The induction of labour is justified when the benefits over weigh the risks of continuing the pregnancy. [9].Overall the primary cesarean section rate in the present study was 17.5 %. The cesarean section rate in spontaneous labour group was 23% and in induced labour group was 12%. The difference between the groups was statistically significant with the p value <0.04. Our results are similar to the study finding by Chhabra et al. who also found reduced cesarean section rates in induced labour group as compared to spontaneous labour group (15.55% vs. 24.78%). [10] 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 cesarean section was more in primigravida than in multigravida (21.33% vs. 6%). 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. (13.84% vs.14.06%). 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 cesarean section rates in induced group as compared to spontaneous labour at 40weeks- 41 weeks of gestation (8.5% vs. 21.65%). [10]

In gestational age 41weeks-42 weeks' gestation we found a significant reduction in cesarean section rates in induced labour compared to spontaneous labour group (8.33% vs. 40%). 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% cesarean section rates at 40 weeks-40 weeks 6 days of gestation. [11-13] The most important indication for cesarean section in spontaneous labour group was fetal distress (91.30%). The most important indication for cesarean section in induced labour group was also fetal distress (100%)

The frequency of instrumental vaginal deliveries in our study was 5% and 7% 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. [14]In our study, 17% of women in induced labour group and 39% 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. [15,16] 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. (OR. 2.04; CI 1.54-3.09).

Conclusion

Between 40-41weeks of gestation, maternal and fetal outcomes were similar in spontaneous and induced labour groups. Between 41-42weeks of gestational age, there was significantly more meconium staining of liquor in spontaneous labour compared to induced labour and there were less cesarean section rates in induced labour group. Further studies with a large study sample are required to corroborate the above findings.

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