

## A prospective study of maternal and foetal outcome in prolonged pregnancy in tertiary care centre

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### Abstract

**Background:** Prolonged pregnancy always possess a high risk, as there is a possibility of foetal distress and foetal death due to progressive foetal hypoxia following placental insufficiency. Maternal risks due to prolonged pregnancy includes labour dystocia, increase in severe perineal injury due to macrosomia, doubling in the rate of caesarean delivery and cause anxiety. Aimed for analyse the maternal and foetal outcome, in prolonged pregnancy at tertiary care centre. **Material & Method:** All the pregnant mother hospitalized after 40 weeks of gestation at Government maternity hospital, Hanamkonda are included in present study. The study was conducted from July 2019 to September 2020 and included 150 pregnant mothers who fulfilled the inclusion criteria. **Result:** Total of 150 pregnant women with prolonged pregnancy consented to be part of study. The mean age of the pregnant women was  $23.36 \pm 2.77$ , 52% of women were primigravida and 48% were multigravida. Among the women, 88% were in 40wks to 40wks6D, 10% were in 41wks to 41wks6D and 2.0% were in >42wks of gestation. Majority of new-born with birth weight of 2.5 to 3.5kg in 80% and 14.7% new-born had higher birth weight of >3.5kg. There was no significant association between the mode of delivery and gestational age in present study ( $p > 0.05$ ). There is a significant association between the caesarean section and gravida of the pregnant women ( $p < 0.01$ ). There is a significant association between the gestational week with the APGAR score. Gestational age >42wks had the lower APGAR score of <4 ( $p < 0.01$ ). **Conclusion:** The prolonged pregnancy is associated with significant increased risk of perinatal complications like foetal distress. There are significant higher risk of obstetric complications such as cephalopelvic disproportion, deep transverse arrest and caesarean section. There was higher incidence of the maternal and foetal complications among the primigravida compared to multigravida.

**Keyword:** Prolonged pregnancy, Primigravida, Multigravida, APGAR, Foetal distress.

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### Introduction

In the United States, birth certificate data indicate that 0.33 percent of pregnancies deliver at  $\geq 42$  weeks and 6.25 percent deliver at or after 41 weeks [1,2]. A study of birth rates  $\geq 42$  weeks in 13 European countries observed a wide range across the continent: from 0.4 and 0.6 percent in Austria and Belgium to 7.5 and 8.1 percent in Sweden and Denmark. Last menstrual period and early ultrasound is the best landmark to assess the gestational period in pregnancy. However, a few women are sure to their dates and often cause anxiety when they come with prolonged period. A Prolonged pregnancy is the one which extends beyond 40 weeks or 280 days from the first day of the last menstrual period with incidence of 5 to 10%. Prolonged pregnancy always possesses a high risk, as there is a possibility of foetal distress and foetal death due to progressive foetal hypoxia following placental insufficiency. Maternal risks due to prolonged pregnancy includes labour dystocia, increase in severe perineal injury due to macrosomia, doubling in the rate of caesarean delivery and cause anxiety. Prolonged pregnancy remains an unresolved clinical problem with the threat of medicolegal consequences in cases of unfavourable outcome [3].

Management of pregnancy beyond 40 weeks gestation relies on an accurate assessment of the gestational age. So, the need for the present study is to find out the maternal and foetal risk associated with pregnancy beyond expected date of delivery.

Pregnancy management that extends to one or more weeks after EDD is a significant unresolved problem in obstetrics. The obstetrician is then faced with a decision involving a balance between the relative risks involved with expectant management and delivery. In our study we analysed the maternal and foetal outcome in Prolonged pregnancy in tertiary care centre.

### Material & method

Patients hospitalized after 40 weeks of gestation in Government maternity hospital, Hanmakonda. Study was conducted from July 2019 to September 2020 on cases whose gestational age was beyond 40 weeks in Government maternity hospital, Hanmakonda.

Detailed information was taken regarding patient's history, symptoms, ultrasonographic findings, complete general physical examination, systemic examination and a complete obstetrical examination. A routine relevant investigation was carried out. Pregnancy outcome were recorded in view of mode of delivery, duration of labour, complications noted at the time of delivery and foetal outcome was recorded and data was analysed by using appropriate statistical methods.

### Inclusion Criteria

Lady with regular menstrual cycles and known LMP with Singleton pregnancy with vertex presentation and Gestational age beyond 40 weeks of pregnancy up to 44 weeks.

### Exclusion Criteria

Gestational age > 44 weeks, Previous caesarean section cases, High risk pregnancies like diabetes, antepartum haemorrhage (APH), premature rupture of membranes (PROM) and pregnancy induced hypertension (PIH) and Congenital anomalies.

### Statistical Analysis

All the data of the patients were entered in-excel sheet and analysed using IBM SPSS v23 operating on windows 10. The demographic

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details of the subjects and the new-born are presented as frequency and percentage; the continuous variables are presented as mean and standard deviation. The data are presented with bar diagram and pie chart as required for type of the data. The difference between the continuous variables were analysed using the student t-test and the categorical variables are analysed using chi-square test. A p-value of <0.05 is considered statistically significant.

**Results**

Total of 150 mothers fulfilling the inclusion criteria were included after obtaining the informed consent. The mean age of the mothers included in present study was 23.36±2.77yrs of age. Among them, 52% were primigravida and 48% were multi gravida mothers in present study out of total 150 mothers who fulfilled inclusion criteria.

**Table-1: Variable related to mother**

Gestational Age in weeks	Frequency	Percent
40 wks to 40wks+6days	132	88.0
41 wks to 41wks+6days	15	10.0
> 42 wks	3	2.0
Total	150	100
<b>Mode of Delivery</b>		
SPVD	92	61.3
Outlet Forceps	3	2.0
Caesarean section	55	36.7
<b>Mode of Induction</b>		
Nil	92	61.3
Misoprostol	19	12.7
Dinoprostone	39	26.0
<b>Bishop score</b>		
< 4	42	28.0
5 – 6	48	32.0
> 6	60	40.0
<b>Birth weight of new-born in kg</b>		
< 2.5 kg	8	5.3
2.5 to 3.5 kg	120	80.0
> 3.5 kg	22	14.7
<b>APGAR at 1<sup>st</sup> min</b>		
< 4	16	10.7
4 to 7	14	9.3
> 7	120	80
Total	150	100
<b>APGAR at 5<sup>th</sup> min</b>		
< 4	2	1.3
4 to 7	15	10

Majority of the mothers were in gestational age group of 40 wks to 40 wks+6 days (88%). Spontaneous vaginal delivery was seen in 61.3% of women, followed with 36.7% had to undergo the caesarean section for delivery and 2% had outlet forceps mode of delivery. Induction was done majority with Dinoprostone in 67.3% of women and 32.7% received the Misoprostol. Among the 40% of the prolonged pregnancy mothers, the bishop score was >6, followed with 32% had 5 to 6 score and 28% had bishop score of <4.

All 150 mothers delivered alive new-borns, with the 80% of new-born in the weight of 2.5 to 3.5kg of birth weight, followed with 14.7% new-born were more than 3.5kg and 5.3% new-born had lower birth weight of <2.5kg. At the 1st min of time, 80% of new-born having a score of >7, 10.7% had <4 and 9.3% new-born had score of 4 to 7. On reassessing at the 5th min, 88.7% of new-born had score of >7, followed with 10% of new-born with score of 4 to 7 and only 1.3% of new-born (n=02) had <4 APGAR score at the 5th min of life.

**Table-2: Showing the comparison of gestational age with gravida**

Gestational Age in weeks	Primigravida		Multigravida		Chi- square test
	Count	Row N %	Count	Row N %	p-value
40 wks to 40wks+6days	72	54.5%	60	45.5%	2.855(0.240)
41 wks to 41wks+6days	5	33.3%	10	66.7%	
> 42 wks	1	33.3%	2	66.7%	

**Table-3: Showing the comparison of gestational age among with mode of delivery using chi-square test**

Gestational Age in weeks	Mode of Delivery						Chi-square (p-value)
	SPVD		Outlet forceps		Caesarean section		
	Count	Row N %	Count	Row N %	Count	Row N %	
40 wks to 40wks+6days	81	61.4%	3	2.3%	48	36.4%	0.485  (0.975)
41 wks to 41wks+6days	9	60.0%	0	0.0%	6	40.0%	
> 42 wks	2	66.7%	0	0.0%	1	33.3%	

\*p<0.05 is considered statistically significant, \*\*p<0.001 considered statistically highly significant

**Table-4: Showing the comparison of gestational age among the gravida with mode of delivery using chi-square test**

Gestational Age in weeks		Mode of Delivery				Chi-square p-value
		Spontaneous Vaginal delivery		Induced		
		Count	Row N %	Count	Row N %	
40 wks to 40wks+6days	Primigravida	32	44.4%	40	55.6%	17.329 (0.001)**
	Multigravida	48	80.0%	12	20.0%	

41 wks to 41wks+6days	Primigravida	1	20.0%	4	80.0%	7.350 (0.001)**
	Multigravida	9	90.0%	1	10.0%	
> 42 wks	Primigravida	0	0.0%	1	100.0%	3.00 (0.083)
	Multigravida	2	100.0%	0	0.0%	

\*p<0.05 is considered statistically significant, \*\*p<0.001 considered statistically highly significant

**Table-5: Showing the comparison of caesarean section with gravida of pregnant women using chi-square test**

		Primigravida		Multigravida		Chi-square
		Count	Column N %	Count	Column N %	p-value
Caesarean section	Nil	36	46.2%	59	81.9%	26.990 (0.001)**
	CPD	18	23.1%	2	2.8%	
	DTA	0	0.0%	2	2.8%	
	Failed Induction	8	10.3%	3	4.2%	
	Foetal Distress	16	20.5%	6	8.3%	

\*p<0.05 is considered statistically significant, \*\*p<0.001 considered statistically highly significant

**Table-6: Showing the comparison of caesarean section with Bishop score in pregnant women using chi-square test**

Gestational Age in weeks	Bishop score						Chi-square
	< 4		05-Jun		> 6		p-value
	Count	%	Count	%	Count	%	
40 wks to 40wks+6days	37	28.00%	43	32.60%	52	39.40%	1.568
41 wks to 41wks+6days	4	26.70%	5	33.30%	6	40.00%	
> 42 wks	1	33.30%	0	0.00%	2	66.70%	-0.815

\*p<0.05 is considered statistically significant, \*\*p<0.001 considered statistically highly significant

**Table 8: Showing the comparison of caesarean section with birth weight of new-born using chi-square test**

Gestational Age in weeks		Birth weight of new-born in kg						Chi-square
		< 2.5 kg		2.5 to 3.5 kg		> 3.5 kg		p-value
		Count	%	Count	%	Count	%	
Gestational Age in weeks	40 wks to 40 wks + 6 days	8	6.10 %	105	79.50 %	19	14.40%	1.982
	41 wks to 41 wks + 6 days	0	0.00 %	13	86.70 %	2	13.30%	
	> 42 wks	0	0.00 %	2	66.70 %	1	33.30%	

\*p<0.05 is considered statistically significant, \*\*p<0.001 considered statistically highly significant

**Table-9: Showing the comparison of APGAR score at 1 and 5<sup>th</sup> minute with gestational age using chi-square test**

APGAR score at 1st min	Gestational Age in weeks						Chi-square test
	40 wks to 40wks+6days		41 wks to 41wks+6days		> 42 wks		p-value
	Count	%	Count	%	Count	%	
< 4	13	9.8%	0	0.0%	3	100.0%	28.832 (0.001)**
4 to 7	11	8.3%	3	20.0%	0	0.0%	
> 7	108	81.8%	12	80.0%	0	0.0%	

\*p<0.05 is considered statistically significant, \*\*p<0.001 considered statistically highly significant

**Table 10: Showing the comparison of caesarean section with birth weight of new-born using chi-square test**

Gestational Age in weeks		Birth weight of new-born in kg						Chi-square
		< 2.5 kg		2.5 to 3.5 kg		> 3.5 kg		p-value
		Count	%	Count	%	Count	%	
Gestational Age in weeks	40 wks to 40wks+6days	8	6.10%	105	79.50%	19	14.40%	1.982
	41 wks to 41wks+6days	0	0.00%	13	86.70%	2	13.30%	
	> 42 wks	0	0.00%	2	66.70%	1	33.30%	

\*p<0.05 is considered statistically significant, \*\*p<0.001 considered statistically highly significant

**Discussion**

Post term pregnancy is defined as the ≥42+0 weeks of gestation (i.e., ≥294 days from the first day of the last menstrual period and ≥14 days from the estimated day of delivery).The most common highest risk of post-term pregnancy is the women with history of previous post-term pregnancy. Additional, other risk factors for the post-term pregnancy are nulliparity, male foetus, obesity, older maternal age, etc[4,5,6].

The post-term pregnancy is associated with maternal, foetal and neonatal complications. These complications may be equal of either excessive foetal growth or the uteroplacental insufficiency. This

study aimed to analyse the maternal and foetal outcome in prolonged pregnancy at tertiary care hospital.

The mean age of the mothers included in present study was 23.36±2.77yrs of age. Among them, 52% were primigravida and 48% were multigravida mothers in present study out of total 150 mothers who fulfilled inclusion criteria. Similar to present study, Verma V et al[7], majority of pregnant women were in age group of 20 to 30 yrs (91%). Similar to present study, they had 55.12% pregnant women were primigravida, 44.87% were multigravida. In NimbargiVetal., documented 58.8% with multigravida and 41.2% were with primigravida pregnancy[8].

Majority of the mothers were in gestational age group of 40 wks to 40wks+6days (88%), followed with 10% mothers in 41 wks to 41wks+6days and 2% were in gestational age of >42weeks. Similarly to present study, Nimbargi V et al., documented 93.7% were in 40wk-40wk6D, 5% were in 41wk-41wk6D and 1.3% were in ≥42wks group[8].

Spontaneous vaginal delivery was seen in 61.3% of women, followed with 36.7% had to undergo the caesarean section for delivery and 2% had outlet forceps mode of delivery. Induction of delivery was required in 38.7% of the mothers whereas; induction was not indicated among the 61.3% of prolonged pregnancy in present study. In our study, foetal distress (40%) and the cephalopelvic disproportion (CPD) (36.36%) were the most common cause for the caesarean section. Other causes for the caesarean section were failed induction in 20% and deep transverse arrest(DTA) in 3.6% of pregnant women. Similar to present study, VermaVetal., recorded 53.84% vaginal delivery, 42.3% with caesarean section and 3.84% were operative vaginal delivery[7]. In present study, induction was done majority with Dinoprostone in 67.3% of women and 32.7% received the Misoprostol. In study by Verma V et al., 70.83% received the prostaglandin gel, 20.83% received the oxytocin and 8.33 received the intracervical foley catheter for induction[7]. Hannah et al., also reported most common cause for the caesarean section was the foetal distress like in present study[9]. Similar to present study, Nimbargi V et al., 23.7% were with foetal distress as most common complication of the prolonged pregnancy. The foetal distress and foetal death are due to the placental insufficiency in prolonged pregnancy. Some studies have suggested that perinatal morbidity, including foetal asphyxia, intrapartum distress, meconium aspiration increases significantly each week from 40 weeks on[7]. Among the 40% of the prolonged pregnancy mothers, the bishop score was >6, followed with 32% had 5 to 6 score and 28% had bishop score of <4.

All 150 mothers delivered alive new-borns, with the 80% of new-born in the weight of 2.5 to 3.5kg of birth weight, followed with 14.7% new-born were more than 3.5kg and 5.3% new-born had lower birth weight of <2.5kg. In study by VermaVetal., majority of new-born birth weight was between 2.5 to 3kg(64.10%) followed by 23.07% new-born with 3.1 to 4kg and 3.84% showed birth weight of >4kgs[7]. In study by Beischer NA et al., documented a higher incidence of birth weight >4kg in 18.2% of infants[10].

The APGAR score was assessed in all the new-born at the 1st min and 5th min post birth. At the 1st min of time, 80% of new-born having as core of >7, 10.7% had <4 and 9.3% new-born had score of 4 to 7. On reassessing at the 5th min, 88.7% of new-born had score of >7, followed with 10% of new-born with score of 4 to 7 and only 1.3% of new-born (n=02) had <4 APGAR score at the 5th min of life. In study by Verma Vetal., 8.97% of new-born had APGAR score lower than 7[7]. Pregnancy of > 42wks were with lower APGAR score of <4, this was statistically significant finding in present study.

Complications post-delivery is very common among the new-born in post-term gestational pregnancy. However, present study did not find any complications and still birth in present study. In study by Verma V et al., documented 15.38% of new-born NICU

admissions, and two new-born had the still birth[7]. Post term pregnancy has been associated with an increased risk of perinatal mortality and morbidity including meconium stained liquor and meconium aspiration syndrome, oligohydramnios, macrosomia, foetal birth injury, foetal septicemia, rate of non reassuring foetal heart rate or foetal distress in labour and maternal complications including increased rate of caesarean delivery, cephalopelvic disproportion, cervical tear, dystocia, postpartum hemorrhage[11].

### Conclusion

The prolonged pregnancy is associated with significant increased risk of perinatal complications. There are significant higher risk of obstetric complications such as cephalopelvic disproportion, deep transverse arrest and caesarean sections. There was higher incidence of the maternal and foetal complications among the primigravida compared to multigravida. So it is better not to continue pregnancy beyond 40weeks.

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