

A prospective study of maternal and foetal outcome in prolonged pregnancy in tertiary care centre**M.Laxmi Prasanna¹, A.Niranjani Devi¹, A.Manogya², K. Sowmya^{1*}**¹ Associate Professor, Department of Gynecology and Obstetrics, CKM, Kakatiya medical college, Warangal, India² Post Graduate, Department of Gynecology and Obstetrics, CKM, Kakatiya medical college, Warangal, India

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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±2.77, 52% of women were primigravida and 48% were multigravida. Among the women, 88% were in 40wks to 40wks 6D, 10% were in 41wks to 41wks 6D 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.

Keywords: 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 ≥42 weeks and 6.25 percent deliver at or after 41 weeks [1,2]. A study of birth rates ≥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 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

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<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 multigravida 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 |
| Mode of Delivery | | |
| SPVD | 92 | 61.3 |
| Outlet Forceps | 3 | 2.0 |
| Caesarean section | 55 | 36.7 |
| Mode of Induction | | |
| Nil | 92 | 61.3 |
| Misoprostol | 19 | 12.7 |
| Dinoprostone | 39 | 26.0 |
| Bishop score | | |
| < 4 | 42 | 28.0 |
| 5 – 6 | 48 | 32.0 |
| > 6 | 60 | 40.0 |
| Birth weight of new-born in kg | | |
| < 2.5 kg | 8 | 5.3 |
| 2.5 to 3.5 kg | 120 | 80.0 |
| > 3.5 kg | 22 | 14.7 |
| APGAR at 1st min | | |
| < 4 | 16 | 10.7 |
| 4 to 7 | 14 | 9.3 |
| > 7 | 120 | 80 |
| Total | 150 | 100 |
| APGAR at 5th min | | |
| < 4 | 2 | 1.3 |
| 4 to 7 | 15 | 10 |

Majority of the mothers were in gestational age group of 40 wks to 40wks + 6days (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 1stmin 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 5thmin, 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 p-value |
|--------------------------|--------------|---------|--------------|---------|----------------------------|
| | Count | Row N % | Count | Row N % | |
| 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 % | |
| Gestational Age in weeks | 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 p-value |
|-------------------|------------------|--------------|------------|--------------|------------|--------------------|
| | | Count | Column N % | Count | Column N % | |
| 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 | | |
| | Count | % | Count | % | Count | % | p-value |
| 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 7: 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 | | |
| | Count | % | Count | % | Count | % | p-value |
| 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% | -0.739 |
| > 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 8: Showing the comparison of APGAR score at 1st and 5th 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 | | |
| | Count | % | Count | % | Count | % | p-value |
| < 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

| APGAR at 5th min | | | | | | | |
|------------------------|--------------------------|-------|-----------------------|-------|----------|--------|------------------|
| APGAR score at 5th min | Gestational Age in weeks | | | | | | Chi-square test |
| | 40 wks to 40wks+6days | | 41 wks to 41wks+6days | | > 42 wks | | |
| | Count | % | Count | % | Count | % | p-value |
| < 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 8: Showing the comparison of caesarean section with birth weight of new-born using chi-square test

| | | Birth weight of new-born in kg | | | | | | Chi-square |
|---------------------------------|-----------------------|--------------------------------|-------|---------------|--------|----------|--------|------------|
| | | < 2.5 kg | | 2.5 to 3.5 kg | | > 3.5 kg | | |
| | | Count | % | Count | % | Count | % | p-value |
| 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% | -0.739 |
| | > 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 $\geq 42+0$ 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[4-6]. The post-term pregnancy is associated with maternal, foetal and neonatal complications. These complications may be sequelae 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 ± 2.77 yrs 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 Nimbargi Vetal., 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 >42 weeks. 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 ≥ 42 wks 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 cephalo-pelvic 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, Verma Vetal., 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 <2.5 kg. In study by Verma Vetal., 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 >4 kgs. In study by Beischer NA et al., documented a higher incidence of birth weight >4 kg 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 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. In study by Verma Vetal., 8.97% of new-born had APGAR score lower than 7. Pregnancy of >42 wks 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. 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.

Reference

1. ACOG Committee Opinion No 579: Definition of term pregnancy. *Obstet Gynecol.* 2013;122(5):1139-1140.
2. Martin JA, Drake P. Births: Final Data for 2017. *Natl Vital Stat Rep.* 2018;67(8):1-50.
3. Zeitlin J, Bréart G. Variation in rates of postterm birth in Europe: reality or artefact? *BJOG.* 2007;114(9):1097-1103.
4. Olesen AW. Risk of recurrence of prolonged pregnancy. *BMJ.* 2003;326(7387):476.
5. Morken N-H, Melve KK, Skjaerven R. Recurrence of

-
- prolonged and post-term gestational age across generations: maternal and paternal contribution. BJOG. 2011; 118(13):1630-1635.
6. Oberg AS, Frisell T, Svensson AC, Iliadou AN. Maternal and foetal genetic contributions to postterm birth: familial clustering in a population-based sample of 475,429 Swedish births. Am J Epidemiol. 2013;177(6):531-537.
7. Verma V, Kanti V, Shree P. Maternal and foetal outcome in post term pregnancy. Int J Reprod Contraception, Obstet Gynecol. 2017;6(7):2897-2899.
8. Nimbargi V, Sajith M, Katri R, Dua P, Pawar A. Maternal-Foetal Outcomes in Prolonged Pregnancy. Indian J Appl Res. 2015;5(4):592-593.
9. Hannah ME, Hannah WJ. Induction of labour as compared with serial antenatal monitoring in post-term pregnancy. A randomized controlled trial. The Canadian Multicenter Post-term Pregnancy Trial Group. N Engl J Med. 1992;326(24):1587-1592.
10. Beischer NA, Evans JH, Townsend L. Studies in prolonged pregnancy. Am J Obstet Gynecol. 1969;103(4):476-482.
11. Buist AS, McBurnie MA, et al. International variation in the prevalence of COPD (the BOLD Study): a population-based prevalence study. Lancet (London, England). 2007;370(9589):741-750.

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