



FETOMATERNAL OUTCOMES OF POSTDATED PREGNANCY- CLINICAL STUDY

Obstetrics & Gynaecology

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ABSTRACT

Background: Postdated pregnancy poses a special challenge to clinician. There is general consensus that perinatal morbidity and mortality increases several fold when pregnancy is prolonged beyond 42 weeks. Controversy is centered on adequacy of different methods of monitoring fetus at risk, method of monitoring, optimum time for delivery and mode of delivery. Thus this prospective study was conducted among 200 women beyond 40 weeks gestation to study the effect of monitoring and induction on maternal and fetal outcome in pregnancies >40 weeks. **Methods:** Prospective observational study was conducted after ethical clearance in a tertiary care center among 200 mothers admitted in antenatal ward beyond 40 weeks gestation, who were fitting into inclusion criteria and who gave consent for participation. The data was maintained, compiled and analyzed. Chi-square /Fisher Exact test had been used to find the significance of study parameters on categorical scale between two or more groups. Fisher exact test used when cell samples were very small. Data was analysed using SPSS 18.0 software. **Results:** After assessing the Bishops score, out of 200 cases, 36% were induced and delivered vaginally while 20% with good score of around 10 went into spontaneous labor. Instrumental delivery was conducted in 10% cases and 34% required cesarean section. Since fetal distress was the most common indication of cesarean section, counselling the patient and her relatives with expectations of normal vaginal delivery becomes challenging condition for the obstetrician managing such patients. Dating of pregnancy in first trimester either by Naegele's rule or first trimester scan is of utmost importance. **Conclusions:** All antenatal patients and their relatives should be educated regarding the importance of expected due date and fetal surveillance test since maternal morbidity and perinatal mortality and morbidity is high in postdated pregnancies.

KEYWORDS

postdatism in pregnancy , prolonged pregnancy , postmaturity in pregnancy , induction of labour, crumb rubber, utilization, compressive strength, low cost, sustainable

INTRODUCTION

The terms postdate, postterm, postmaturity, and prolonged pregnancy are by WHO and the International Federation of Gynecology and Obstetrics to describe pregnancy beyond expected date of delivery.¹ The assessment of the gestational age by early ultrasound examination has reduced the "incidence" of Postterm pregnancy by 50.0%²

The amniotic fluid volume reaches its peak at around 38 weeks after which a gentle decline by approximately 125 ml/week occurs with an average volume of 800 ml at 40 weeks. Placenta starts showing infarcts and calcifications as the pregnancy goes into 38 weeks.³ The risks to the fetus increase after 41 weeks mainly due to increasing fetal weight, decline in placental function, oligohydramnios increasing chances of cord compression, fetal distress by two times and meconium aspiration by eight times. Perinatal mortality after 42 weeks is twice as compared to the perinatal mortality at 40 weeks and by 44 weeks the rate is increased up to threefold.^{4,5}

In cases of prolonged pregnancy, fetus is more at risk of hypoxia during labor than a fetus at term.⁴ Though there are no specific fetal surveillance tests for Postdated pregnancy which are able to predict acute events like placental abruption or cord complications, the most commonly used tests are cardiotocography (CTG), non-stress test (NST), amniotic fluid (AF) volume assessment, fetal biophysical profile, Ultrasonography estimation for fetal weight and Doppler studies on umbilical and fetal vessels.⁶

A prospective study was conducted at our tertiary care center included mothers diagnosed with postdated pregnancy who were referred/transferred with or without complications and were counselled about the outcomes and progress of labor following induction. The decision on management was further taken based on Bishops score, admission nonstress test and obstetric ultrasonography findings and the maternal and fetal outcome was studied in all patients included in the study.

MATERIALS AND METHODS

This prospective observational study included 200 pregnant women both primigravida and multigravida beyond 40 weeks of gestation , meeting the inclusion and exclusion criteria and willing to get enrolled in the study during study period of eighteen months.

AIMS AND OBJECTIVES

1. To evaluate Bishops score on admission.
2. To study the outcome of induction methods in patients who failed to go into spontaneous labor.
3. To analyze the mode of delivery: vaginal, instrumental or caesarean section.
4. To identify the various maternal complications like 3rd and 4th degree perineal tear, postpartum hemorrhage.
5. To study the Fetal outcomes by Apgar score and NICU admissions.

Inclusion Criteria

1. Pregnant women beyond 40 weeks of gestation willing to get enrolled for this study with their written and informed consent.
2. Patient with regular menstrual cycle and known LMP and with availability of 1st trimester scan.
3. Singleton pregnancy with vertex presentation.

Exclusion Criteria

1. Pregnancies with any associated complications like previous LSCS, malpresentation, Hypertensive disorders of pregnancy, Heart disease, Placenta previa and other medical complications.
2. Patients with irregular menses, non-availability of 1st trimester scan.
3. Patients not willing to get enrolled.

In the antenatal clinics patients were selected who fulfilled the inclusion criteria. Detailed history was taken to confirm the diagnosis and examination both general and obstetric (Bishops score) was carried out and noted in these patients willing to get enrolled in the study. After filling patient information sheet and informed consent form, they were admitted and fetal surveillance test including Non stress test and ultrasonography was carried out.

Patients in whom fetal surveillance was normal were admitted for safe confinement in antenatal ward of our tertiary care hospital. Patients with good bishops score went in spontaneous labor were monitored for progress of labor and partogram was plotted. Patients with favorable Bishop's score and adequate pelvis were induced with prostaglandin E2 (Dinoprostone) gel intracervically. Such patients received two doses of 0.5mg PGE2 intracervically 6 hours apart following which those who went in labor were monitored for progress and fetal heart rate. Artificial rupture of membranes was done in active phase of labor and augmentation with oxytocin was done as and when required.

Elective LSCS was done in cases of CPD, severe oligohydramnios, non-reactive NST. Emergency LSCS was done in patients with thick meconium stained liquor, fetal distress, failed induction and non-progress of labor.

Data collection

Maternal outcome about the need for induction or spontaneous onset and progress of labor, mode of delivery including vaginal delivery, need for instrumental delivery or cesarean section were assessed. Maternal complications including perineal trauma and PPH were identified and managed. The fetal outcome was studied by APGAR score at 1 min, birth weight and fetal complications including meconium aspiration syndrome, shoulder dystocia, NICU admission, Perinatal Mortality.

Data analysis

Statistical Methods: Descriptive and inferential statistical analysis had been carried out in the present study. Results on continuous measurements were presented on Mean $\pm$ SD (Min-Max) and results on categorical measurements were presented in Number (%).significance was assessed at 5% level of significance.

The following assumptions on data was made Assumptions:

1. Dependent variables should be normally distributed
2. Samples drawn from the population should be random, cases of the sample should be independent.

Chi-square /Fisher Exact test had been used to find the significance of study parameters on categorical scale between two or more groups, Non parametric setting for qualitative data analysis. Fisher exact test used when cell samples were very small.

Significant figures

Suggestive significance (P value: 0.05-0.10)

Moderately significant (P value: 0.01-0.05)

Strongly significant (P value: $P \leq 0.01$)

Statistical Software :The Statistical software namely SPSS 18.0, and R environment ver. 3.2.2 were used for the analysis of the data and Microsoft word and Excel have been used to generate graphs, tables etc.

RESULTS

The mean age of women included in the study was 25.34 ± 5.3 years. All patients were illiterate and housewives with 88% received no schooling and 12% had schooling till 3rd standard.

Of the 200 women included in the study, 63% were primigravida while 37% were multigravida. 58% had gestational age between 40 and 40.6 weeks and 37% cases had gestational age between 41 and 41.6 weeks and 5% had gestational age more than 42 weeks. 70% cases were registered at our center with less than 3 ANC visits, 23% were referred from peripheral hospital for postdatism and 7% were unregistered.

Table 1- Distribution according to the maternal outcome

	Primigravida (N)	Multigravida (N)	
Bishops score			p=0.8
≤ 5	40	26	Not
> 5	86	48	significant, Chi square test
Mode of delivery			
Spontaneous labor and vaginal delivery	28	12	p= 0.084 Significant, Fisher Exact test
Successful induction and vaginal delivery	52	20	
Instrumental	6	14	
Caesarean section	40	28	
Total	126	74	

In Table 1, no significant association is seen between the Bishops score and the gravida of patient, while significant association is seen between the mode of delivery and gravida. Primigravida had more number of LSCS compared to the multigravida but there was no statistically significant difference for the indication for LSCS between them. ($p=0.978$, Not Significant, Fisher Exact Test)

Table 2: Distribution of maternal outcome with respect to gestational age

	40wk – 40wk 6days N(%)	41wk – 41wk 6days N(%)	≥ 42 wks N(%)	p value
Bishops score				
≤ 5	36 (31)	22(29.7)	8(80)	-
> 5	80 (69)	52(70.3)	2(20)	
Mode of delivery				
FTND(Spontaneous onset and induced labor)	74 (63.8)	36 (48.7)	2 (20%)	p =0.0135, Significant, Fisher Exact Test
LSCS	30(25.9)	30(40.5)	8 (80%)	
Instrumental	12(10.3)	8(10.8)	0	
Total	116	74	10	

In Table 2, as gestational age increases cesarean section rate increases and by using Fisher Exact Test this difference was seen statistically significant.

58.8% cases were taken for emergency LSCS of which meconium stained liquor with fetal distress was the most common indication (26.5%) followed by failure of induction (17.6%). 41.1% were taken for the elective LSCS of which severe oligohydromnios (17.6%) was the most common indication followed by non –reactive NST and CPD (11.8%) each.

Table 3: Distribution of patients according to neonatal complications

	40wk – 40wk 6days N(%)	41wk – 41wk 6days N(%)	≥ 42wks N(%)	p value
Apgar score				
4-7	2 (1.7)	2 (2.7)	2 (20)	p=0.0166, Significant, Fisher Exact test
>7	114(98.3)	70(94.6)	6(60)	
FSB	-	2(2.7)	2(20)	
Total	116	74	10	
NICU admission				
NICU	2(1.7)	2(1.8)	2(25)	p=0.0166, Significant, Fisher Exact test
Baby with Mother	114(98.3)	70(97.2)	6(75)	
Total	116	72	8	
Perinatal death rate				
FSB	-	2	2	P =0.039, Significant ,Fisher Exact Test
Live birth	116	72	8	
Total	116	74	10	
Perinatal death rate Perinatal death rate =(no of still birth)/(live birth +still birth)*100	-	2.7%	20%	

In Table 3, increase in gestation age is associated with statistically significant increase in NICU admission, poor APGAR score and increased perinatal death rate.

69% of cases had birth weight between 2.5-3.5 kg, 2% had macrosomic babies, 23% had between 3.6-4 kg and 6% had low birth weight less than 2.5 kg. The mean birth weight was 2.88 ± 1.41 kg

Table 4: Distribution according to cause of fetal complications.

	40wk – 40wk 6days N(%)	41wk – 41wk 6days N(%)	≥ 42 wks N(%)
MAS	2 (1.72)	2 (2.7)	2 (20)
Macrosomia	0	2 (2.7)	2 (20)
FGR	8 (6.9)	2 (2.7)	2 (20)
Shoulder dystocia	0	4 (5.4)	0
FSB	0	2 (2.7)	2 (20)
Total	116	74	10

In Table 4, out of 200 babies, 170 babies had a good fetal outcome while 30 babies had fetal complications including FGR in 6%, meconium aspiration syndrome in 3%, macrosomia in 2%, shoulder dystocia in 2% and fresh still birth in 2%

Table 5: Distribution of patients according to maternal complications

Maternal complications	40wk – 40wk 6days N(%)	41wk – 41wk 6days N(%)	≥42w ks	p value
Perineal Tear	4 (3.4)	6 (8.1)	0	p=1.000,Not Significant,Fisher Exact Test
Atonic PPH	4(3.4)	6 (8.1)	0	
Total	116	74	10	

In Table 5, No significant statistical difference was seen regarding the maternal complication with gestational age. 5% cases had perineal tear which were repaired in operation theatre and atonic PPH in 5% which were managed medically with prostaglandins (PgF2α).

DISCUSSION

This study includes 200 cases, both primigravida and multigravida beyond 40 weeks of gestation in Department of Obstetrics and Gynaecology at tertiary health care center.

In our center there were 16375 total confinements during the study period of which 4351 cases were postdated cases. The incidence of postdated pregnancy at our center was 22.68% where as it was 17.36% and 23.4% in Punya BS et al and Sarah J Stock et al^{7,8}

In our study, the mean age was 25.34 ± 5.3 years while the mean age in study conducted by Mahapatros et al⁹ was 24.19 ± 3.30 years and Bhriugu et al was 23.5 ± 2.75 years.¹

In the current study 63% cases were primigravida, which correlates to the Bhriugu et al study and Punya BS et al¹ study in which 62% and 59.65% cases were primigravidas respectively.^{1,8}

Bishop's score decreases as the gestational age increases. A concern expressed by Critics of labor induction in post term patients is that with an unfavorable cervix there is a potential for an increased risk of cesarean delivery. But, cesarean delivery rate is higher in women managed expectantly regardless of Baseline Bishop Score. In our study favorable Bishops score more than 6 was more in gestational age 40 weeks group compared to the gestational age 41 and beyond 42 weeks.

In the present study, 112 cases had normal vaginal delivery of which 74 patients were delivered between gestational age 40.1 weeks and 40.6 weeks, 36 cases between gestational age 41.1-41.6 weeks and 2 were more than 42 weeks while in Bhriugu et al study 64 cases had vaginal delivery of which 57 cases were between gestational age 40-41 weeks and 7 cases were between gestational age 41-42 weeks.¹

The rate of instrumental delivery in our study was 10% similar to Singhal et al study and Davinder et al's study wherein the rate of instrumental delivery was 8.6% and 10.35% respectively.^{10,11}

Overall cesarean rate was 34% which correlates to the 34% in Bhriugu et al study and 35.9% by Punya BS et al^{1,8}.

Present study has increased number of cesarean sections as all the cases with fetal distress with MSL were taken up for emergency LSCS in order to reduce perinatal morbidity and mortality.

In the present study Fetal distress was the most common indication for LSCS 26.5% followed by severe oligohydramnios and failure of induction (17.6%) which correlates to the Bhriugu et al study in which MSAF with fetal distress was the most common (23.5%) indication followed by failure of induction (20.6%) while in Mahapatro's study also fetal distress was found to be the most common indication for LSCS (66.5%) followed by severe oligohydramnios (48.57%).^{1,9}

NICU admissions in our study were 1.7%, 2.8% and 25% respectively between gestational age 40-40.6 weeks, 41-41.6 weeks and beyond 42 weeks, while in Bhriugu et al study were 17.77% and 33.33%, Punya BS et al were 23.8% and 52%, Sarah J Stock et al were 8% and 8.5% respectively between gestational age 40.1-41 weeks and 41.1-42 weeks.^{1,7,8}

Perinatal death rate in our study was 2.7% and 20% respectively between 41-41.6 weeks and beyond 42 weeks. While in Sarah J Stock et al 0.18% and 0.22% in Punya BS et al was 1.6% and 10.3% respectively between 40-40.6 and 41-41.6 weeks.^{7,8}

Fetal complications like fetal distress was most common fetal

complications of which 3% had meconium aspiration syndrome with APGAR score of less than 7 and was admitted in NICU for observation, 5% had IUGR birth weight less than 2.5 kg similar to Bhriugu et al 7% were having MAS. 1% IUGR and in Odedara KR et al 12 45% were having MAS. 2% had macrosomia and shoulder had dystocia which were managed by Mc Robert Maneuver and 2% had fresh still birth with 0 Apgar at birth^{1,12}

Maternal complications perineal tear and atonic PPH was seen in 4% and 6% of cases correlating with Odedara KR et al where 6% and 5% respectively was seen. Perineal tear 3rd and 4th degree was repaired in operation theatre under all aseptic precaution and post repair patient was given laxatives. Atonic PPH was managed medically with uterotonics PgF2α¹². There was no maternal mortality in the study.

CONCLUSION

All antenatal patients especially who are illiterate should be educated regarding the importance of expected due date and fetal surveillance test like daily fetal kick count, nonstress test, since maternal morbidity and perinatal mortality and morbidity is on the higher side for patients requiring induction and intervention as compared to those of spontaneous onset of labor. Patients and relatives who are keen for vaginal delivery should be properly counselled regarding management which includes inducing labor with medical or mechanical methods. Induction of labor in patients with unfavourable Bishops score may end up in caesarean section due to fetal distress, non-progress of labor or failure of induction. Partogram should be maintained to identify abnormalities in the course of labor and prevent prolonged trial which may lead to post-partum haemorrhage.

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