

**DR. AMBREEN AKHTAR**

MBBS, MCPS, FCPS, FIMSA

Associate Professor

Department of Obs &amp; Gynae

Lahore Medical &amp; Dental College/

Ghurki Trust Teaching Hospital

Lahore – Pakistan

**DR. WASEEM TALIB**

MBBS, MCPS, FCPS, FIMSA

Associate Professor

Department of Obs &amp; Gynae

Lahore Medical &amp; Dental College/

Ghurki Trust Teaching Hospital

Lahore – Pakistan

**ABSTRACT...Aims and Objectives:** To evaluate whether serial monitoring of fetuses beyond 40 weeks with biophysical profile and non-stress test improves the fetal outcome in terms of morbidity and mortality determined by APGAR score at 5 minutes, presence of meconium in liquor, weight of baby and admission of neonate in nursery and to compare the maternal morbidity associated with prolonged pregnancy, labour induction and mode of delivery in the study and control group. **Materials and Methods:** It is a prospective controlled study conducted in the department of obstetrics and gynaecology Ghurki Trust Teaching Hospital, Lahore from 1st September 2007 to 31st August 2009. 200 patients at 40 weeks of pregnancy matching the inclusion criteria were enrolled for the study. They were divided into a study and a control group consisting of 100 patients each. Patients in the study group were subjected to fetal monitoring in the form of cardiotocography (CTG) and biophysical profile (BPP) while those in the control group were evaluated clinically and by kick count chart (KCC). The outcome of the two groups beyond 40 weeks was compared with each other. **Results:** The percentage of patients reaching 42 weeks was 4 in each group. The rest went into spontaneous labour, were induced or had emergency caesarean sections due to various reasons. The difference between the rest of the parameters like maternal morbidity, mode of delivery, fetal APGAR score and admission in neonatal intensive care unit (NICU) between the two groups were not statistically different. **Conclusions:** After 40 weeks of gestation fetal monitoring should be started with proper counseling of the patient, clinical assessment and fetal kick chart. NST and biophysical profile should be used selectively in patients with sluggish fetal movement or suspected reduced liquor clinically. All patients who reach 42 weeks must be induced.

**Key words:** Biophysical profile, Cardiotocography, prolonged pregnancy, fetal APGAR score

## INTRODUCTION

The objective of every obstetrician is the delivery of a healthy baby to a healthy mother at the end of each pregnancy. Term is a period of five weeks from 37 to 42 weeks that is 260 to 294 days. Expected date of delivery is calculated from the first day of the last menstrual period to the end of 40 weeks or 280 days. The period after 40 weeks of gestation is of utmost concern both for the patient and the obstetrician. Inadequate counselling regarding expected date of delivery may create undue anxiety and distress for the patient.

The risks to the fetus increase after 40 weeks mainly due to increasing fetal weight, decline in placental function<sup>1</sup>, decreased amount of liquor, increased chances of cord compression<sup>2</sup>, and meconium aspiration<sup>3</sup>. Perinatal mortality after 42 weeks is twice<sup>4,5</sup> as compared to perinatal mortality at 40 weeks<sup>6</sup> and by 44 weeks the rate rises to almost threefold<sup>7</sup>. In cases of prolonged pregnancy fetuses are more at risk of hypoxia during labour than a fetus at term<sup>8</sup>.

All these factors compel the obstetrician to induce labour once 40 weeks are completed, even in the absence of any valid indication.

Tests of fetal well-being are usually carried out after 41 weeks because unexpected morbidity and mortality can occur after this period<sup>1</sup>. The main risk of prolonged pregnancy for the mother is the increase in maternal morbidity due to prolonged labour and an increase in the rate of caesarean and instrumental vaginal delivery. There is lack of consensus regarding clinical outlines for fetal surveillance and labour induction beyond 40 weeks. This prospective study mainly focuses on this issue.

## Aims and Objectives

To evaluate whether serial monitoring of fetuses beyond 40 weeks with biophysical profile and non-stress test improves the fetal outcome in terms of morbidity and mortality on the basis of apgar score at 5 minutes, presence of meconium in liquor, weight of baby and admission of neonate in nursery.

To compare the maternal morbidity associated with onset of labour and mode of delivery in study and control group.

## MATERIALS AND METHODS

It is a prospective controlled study conducted in the department of obstetrics and gynaecology Ghurki trust teaching hospital Lahore from 1st September 2007 to 31st August 2009.

### Selection Criteria

Two hundred pregnant ladies were selected from antenatal outpatient irrespective of age, parity and socioeconomic class. Criteria used for selection of these patients were as follows:

1. Booked patients with regular antenatal visits
2. Patients with regular periods and those who were sure of the date of their last menstrual period and had completed 40 weeks of gestation
3. Patients with no contraindication for vaginal delivery
4. Patients who signed an informed consent

Some of the patients had to be excluded from the study due to following reasons:

1. Patients with any medical problem such as hypertension, diabetes mellitus, cardiovascular disease, renal disease etc.
2. Patients with obstetrical complications like antepartum hemorrhage, premature rupture of membranes before 40 weeks of gestation, multiple pregnancy, polyhydramnios, oligohydramnios, intrauterine growth restriction, fetal congenital anomalies and any contraindications to vaginal deliveries like previous caesarean section, previous myomectomy, cephalopelvic disproportion and malpresentation etc.
3. Patients with history of taking oral contraceptive pills, injectable contraceptives or any other hormonal preparation prior to pregnancy.
4. Failure to provide consent.

At 40 weeks of gestation, patients were selected and counseled about the concept of term and about their chances of delivery with in next 2 weeks. A detailed routine antenatal check up of every patient was performed including assessment of general condition, pulse, blood pressure, temperature and weight of the patient. Abdominal examination included measurement of symphysiofundal height, lie of the fetus, presenting part, estimation of the amount of amniotic fluid, approximate fetal weight, fetal heart sounds and fetal movements.

The patients were randomly divided into two groups.

In the study group, fetal monitoring was done with biweekly biophysical profile and non-stress test, when the results were found to be normal, spontaneous onset of labour was awaited till 42 weeks. However in cases of fetal compromise, delivery was planned.

In control group, patients were called biweekly for antenatal visits. Clinical assessment of amount of amniotic fluid and enquiry about fetal kick count was done. A count of less than 10 fetal movements in 12 hours was considered to be a decreased fetal activity. With normal kick count the spontaneous onset of labour was awaited till 42 weeks, however in case of sluggish or decreased fetal movements, induction was planned.

All the patients who remained undelivered by 42 weeks were induced.

## RESULTS

The majority of patients in both the study and control group were between 20 to 30 years of age.

Age of patients				
	Study Group	Control group	Total	%
<20yrs	5	03	08	04
20-30yrs	85	80	165	82.5
>30yrs	10	17	27	13.5
Total	100	100	200	

Primigravidae constituted 33% of the total in study group and 36% in control group showing a tendency of primigravidae to become post-term.

By 41 weeks 65% of women in the study group and 60% in the control group were delivered whereas by 42 weeks 96% patients in each group were delivered. Only 8 patients remained undelivered by 42 weeks i.e. 4 in each group.

Of all the patients 80% in the study group and 89% in the control group went into spontaneous labour whereas the rest had to be induced because of sluggish fetal movements, poor biophysical profile, premature rupture of membranes and completed 42 weeks. Induction of labour was more common in the study group and the main reason was poor biophysical profile. Two patients underwent emergency caesarean section with out undergoing induction.

Onset of labour	Study group	Control group
Spontaneous	80	89
Induced	18	11
Caesarean section without induction	02	-
Total	100	100

Mode of delivery				
	Study Group	Control group	Total	%
Spontaneous vaginal delivery	86	79	165	82.5
Instrumental delivery	06	10	16	08
Emergency caesarean section	08	11	19	9.5
Total	100	100	200	

The difference between the modes of deliveries was not statistically significant (P value=0.538). The indications for emergency caesarean sections were fetal distress, failure to progress and failed induction.

Patients reaching 42 weeks were 4 in each group, constituting 4% of the total. Their outcomes were as follows.

Study group (n=100) Control group (n=100) Total (n=200) Patients who were still undelivered at 42 weeks 8/200 = 4%			
	Study group 4/100=4%	Control group 4/100=4%	%age
Spontaneous labour	2/4 = 50%	1/4 = 25%	3/8 = 37.5%
Induced labour	2/4 = 50%	3/4 = 75%	5/8 = 62.5%
Vaginal delivery	3/4 = 75%	3/4 = 75%	6/8 = 75%
Caesarean section	1/4 = 25%	1/4 = 25%	2/8 = 25%
Mean apgar score at 5 minutes	6/10	5/10	

Regarding poor apgar score characterized by less than 7/10 at 5 minutes, there was not much difference between study and control group. Only 7 babies in the study group and 6 in control group had scores of less than 7 at 5 minutes which is statistically not significant, indicating no beneficial role of antenatal fetal screening in reducing low apgar scores.

Total admissions to the new born nursery were 28 (14%), 12 from study and 16 from control group. Out of the total 10 were admitted for septic work up due to premature rupture of membranes and another 18 because of thick meconium stained liquor.

Data were analyzed in minitab-15, t-test was used, p value <0.05 was statistically significance.

**DISCUSSION**

Available data shows that when calculated from first day of last menstrual period about 90% of patients deliver before 42 weeks, while in 5-10% pregnancy continues beyond 42 weeks<sup>8,9</sup>. Results of our study have shown that 96% of patients were delivered by 41 weeks and 6 days while only 8 patients i.e. 4% in each group reached upto

42 weeks. Studies carried out by Nakling and Hovi report the rate of post-term pregnancy to be 7.6% and 6.9% respectively<sup>10,11</sup>.

It is seen that about 20-30% of women can not remember the date of their last menstrual period. Even in those patients who accurately know the date of their last menstrual period estimates of duration of gestation are subject to both error, and a tendency to overstate the duration of gestation most likely because of delayed ovulation<sup>12</sup>. Lindell described that the true incidence of prolonged pregnancy is also reduced by induction of labour earlier for reasons such as pregnancy complications and maternal request<sup>13</sup>.

Assessment of gestational age by ultrasound in early pregnancy reduces the risk of prolonged pregnancy significantly<sup>14</sup>. In our study out of the 8 patients who reached 42 weeks, 3 went into spontaneous labour and the rest of the 5 were induced. Among these, 3 delivered vaginally and 2 underwent caesarean sections because of fetal distress and failure to progress i.e. 25 % of the patients who were post-term. A similar study done in Florida showed that caesarean delivery rate was higher in post-term patients amounting to 22% whereas it was 20.1% in patients who were electively induced at 41 weeks of gestation without compromising perinatal outcome<sup>15</sup>. Chanrachakul in his study also compared expectant management with labour induction in post-term patients found that caesarean rate and fetal complications were same in both the groups. He concluded that both expectant management and labour induction are acceptable in patients with prolonged pregnancies<sup>16</sup>. James et al have also recommended the policy to induce at 41 weeks and 4 days of gestation (291days) as beyond this gestation post-term pregnancies were found to be associated with significantly more fetomaternal complications<sup>17</sup>.

We studied perinatal outcome in post-term pregnancies in terms of APGAR scores at 5 minutes, meconium staining of liquor, fetal weight and admission to neonatal unit and found that perinatal morbidity like apgar scores of less than 7 at 5 minutes, meconium staining of liquor and transfer to neonatal ICU in post-term babies was

significantly more frequent. Risk of fetal macrosomia and maternal complications like operative deliveries, caesarean deliveries and maternal hemorrhage was increased. Similar results were also observed by others. Hovi M. found that postterm infants experienced meconium passage (21.2% vs 12.8%) and intrapartum asphyxia (3.4% vs. 2.1%) significantly more often than the controls<sup>10,11</sup>. In addition to fetal morbidity, maternal morbidity like operative vaginal delivery, caesarean delivery, chorioamnionitis and endomyometritis all increased beyond 40 weeks as concluded by Caughey AB in his study<sup>18</sup>. A national register based study done in Denmark between 1978 and 1993 showed that post-term delivery was associated with significantly increased risks of perinatal and maternal complications<sup>19</sup>.

Regarding fetal monitoring in post-term pregnancies we used fetal kick count in control group and non-stress test (NST) and biophysical profile in study group. We found no difference in terms of perinatal outcome. Similarly Erkin and Mohide et al also found them to be ineffective forms of care and revealed no benefit<sup>20,21</sup>. While NST and biophysical profile added to the financial burden for patients. In some studies biophysical profile (score>8) has been found to be an accurate test in the evaluation of fetal well being and they have strongly recommended its use to help in the management of postdate pregnancies<sup>22,23</sup>. The American college of obstetricians and gynecologists sent a questionnaire to investigate the practice patterns of fellows and junior fellows pertaining to post-term pregnancies. It revealed that 48% of obstetricians defined post-term pregnancy as 42 weeks gestation or greater whereas 43.1% consider 41 weeks of gestation or greater as post-term. 73% of fellows routinely induce at 41 weeks of gestation. In those patients who were not induced after 41 weeks, fetal testing was started twice weekly<sup>24,25,26,27</sup>.

## CONCLUSION

After 40 weeks of gestation fetal monitoring should be started with proper counseling of the patient, clinical assessment and fetal kick chart. NST and biophysical profile should be used selectively in patients with sluggish fetal movement or suspected reduced liquor clinically. All patients who reach 42 weeks must be

induced.

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## REFERENCES

1. Fox H. Placental pathology, in : Studd J (ed), **Progress in Obstetrics and Gynaecology**, vol: 3. Churchill and Livingstone, Edinburgh pp 47-562.
2. Leveno KJ, Quink JG, Cunningham FG et al. **Prolonged pregnancy. Observations concerning the causes of fetal distress.** Am J Obstet Gynecol. 1984. 150: 465-4733
3. Yeh SY, Read JA. **Management of post-term pregnancy in a large obstetric population.** Obstetrics and Gynecology. 1982. 60: 282-2874
4. Grant JM. **Induction of labour confers benefits in prolonged pregnancy.** Br J Obstet Gynecol 1994. 101: 99-109
5. Grubb DK, Rabella YA, Paul RH. **Post-term pregnancy-fetal death rate with antenatal surveillance.** Obstetrics and Gynaecology. 1992. 79: 1024-10265,6.
6. Crowley P, O'herlihy C, Boylan P. **The value of ultrasound measurement of amniotic volume in management of prolonged pregnancy.** Br J Obstet Gynecol (1984) 91: 444-4487.
7. Butler NR, Bonham DG, **Perinatal mortality survey under the auspices of the national birthday trust fund.** First report, Livingstone, Edinburgh. 1963.8.
8. Bakketeig L, Bergsjø P. **Post-term pregnancy magnitude of the problem.** Chalmers I, Enkin M, Keirse MJNC (eds). Effective care in pregnancy and childbirth, vol 1, Oxford university press (1991), pp 765-77527.
9. Anderson DG. Postmaturity : a review. **Obstetrical and gynaecological survey.** 1972. 27: 65-6927,28.
10. Nakling J, Backe B. **Pregnancy risk increases from 41 weeks of gestation.** Acta Obstet Gynecol Scand. 2006;85(6):663-8
11. Hovi M, Raatikainen K, Heiskainen N, Heinonen S. **Obstetric outcome in post-term pregnancies: Time for reappraisal in clinical management.** Acta Obstet Gynecol Scand.2006; 85(7):805-9.
12. Savitz DA, Terry JW Jr, Dole N, Thorp JM Jr, Siega-Riz AM, Herring AH; **Comparison of pregnancy dating by last menstrual period, ultrasound scanning and their combination.** Am J Obstet Gynecol. 2002 Dec; 187(6); 1660-6.
13. Lindell A. **Prolonged pregnancy.** Acta Obstetrician et Gynecologia Scandinavia (1956), 35, 136-16396.
14. Bennet KA, Crane JM, O'shea P, Lecette J, Hutchens D, Copel JA. **Fist trimester ultrasound screening is effective in reducing post-term labour induction rate: randomized controlled trial.** Am J Obstet Gynecol 2004 Apr;190(4):1077-81.
15. Sanchez-Ramos L, Olivier F, Delke I, Kaunitz AM. **Labour induction versus expectant management for post-term pregnancies:A systemic review with meta-analysis.** Obstet Gynecol 2003 june;101(6):1312-8
16. Chanrachakul B, Herabutya Y. **Post-term with unfavourable cervix: Is induction necessary?** Eur J Obstet Gynecol Reprod Biol. Feb 2003.10;106(2):154-7
17. James C, George SS, Gaunekar N, Seshadri L. **Management of prolonged pregnancy: A randomized trial of induction of labour and antepartum fetal monitoring.** Natl Med J India. 2001 Sep-Oct; 14(5):270-3
18. Caughey AB, Musci TJ. **Complications of term pregnancies beyond 37 weeks of gestation.** Obstet Gynecol Jan 2004; 103(1): 57-62
19. Olesen AW, Westergaard JG, Olsen J. **Perinatal and maternal complications related to post-term delivery: a national register based study, 1978-1993** Am J Obstet Gynecol. 2003 Jul; 189(1): 222-7
20. Mohide P, Keirse MJNC. **Biophysical assessment of fetal wellbeing.** In Chambers I, Erkin M, Keirse MJNC (eds); Effective care pregnancy and childbirth, vol 1; Pregnancy. New York. Oxford University Press, 1999. p. 477
21. Erkin M, Keirse MJNC, Renfrew M, Neilson. **A Guide to effective care in pregnancy and childbirth**, 2nd edition, New York, Oxford University Press. 1995. p. 410 103,104
22. Jimenez Solis G, Izquierdo Puente JC, Barraza Espinoza RM, Sanchez Tenorio E, Garcia Alonse A. **Biophysical profile in prolonged pregnancy. Another alternative to fetal monitoring.** Ginecol Obstet Mex 1990 Oct; 58:284-8.
23. Bresadola M, Lo Mastro F, Arena V, Bellaveglia L, Di Gennaro D. **Prognostic value of biophysical profile score in postdate pregnancy.** Clin Exp Obstet Gynecol 1995; 22(4):330-8.

24. Cleary-Goldman J, Bettes B, Robinson JN, Norwitz E, and D'Alton ME, Schulkin J. **Post-term pregnancy: Practice patterns of contemporary obstetricians and gynecologists.** Am J Perinatol Jan 2006; 23(1): 15-20
25. Mandruzzato G, Alfirevic Z, Chervenak F, Gruenebaum A et al. **Guidelines for the management of postterm pregnancy.** J Perinat Med. 2010 March; 38(2): 111-9.
26. Roos N, Sahlin L, Ekman-Ordeberg G, Kieler H, Stephansson O. **Maternal risk factors for postterm pregnancy and cesarean delivery following labour induction.** Acta Obstet Gynecol Scand. 2010 August; 89(8): 1003-10.
27. Evans M. **Postdates pregnancy and complimentary therapies.** Complement Ther Clin Pract 2009 Nov; 15(4): 222-4. Epub 2009 Oct 12.

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**Correspondence Address:**

Dr. Ambreen Akhtar  
58 J, Gulberg III,  
Lahore – Pakistan  
ambreenakhtar\_pk@hotmail.com

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- Nazia Amjad, Tayyaba Imran, Ahsen Nazir Ahmed. Fetomaternal outcome of pregnancy between 40 and 42 weeks. Professional Med J Sep 2008;15(3):317-322.

