The Professional Medical Journal
www.theprofesional.com

DOI: 10.17957/TPMJ/17.3381

ORIGINAL PROF-3381

POST TERM PREGNANCY;
EFFICACY OF PGE2 IN INDUCTION OF LABOUR

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Article received on:
19/12/2016
Accepted for publication:
25/02/2017
Received after proof reading:
06/04/2017

ABSTRACT: Post term pregnancy is used to describe pregnancy that continues for 294 days or more following the first day of last menstrual period. Post term pregnancy has been considered to occur in 10-20 % of all pregnancies. PGE2 have been used vaginally for induction of labour for the last two decades. Routine induction of labour after 41 weeks gestation appears to reduce perinatal mortality. **Objectives:** The study was done to: 1) To calculate the induction – delivery time with prostaglandins E2 in prolonged pregnancy. 2) To find frequency of normal vaginal delivery versus caesarean section after induction with prostaglandins E2. **Study design:** It was descriptive study. **Setting:** It was study of fifty patients carried out in Gynae unit 1 Allied Hospital Faisalabad. **Period:** 03 March 2005 to 02 March 2006. **Subjects: Inclusion Criteria:** 1) All patients with prolonged pregnancy of more than forty two weeks were included. 2-Only singleton pregnancies were included. **Exclusion criteria:** 1-Patients who had previous caesarean section were excluded from the study. 2) Patients who had associated obstetric condition that modify the mode of delivery were excluded. **Data collection procedure:** Detailed history and examination was carried out with availability of dating ultrasound to ascertain dates. Bishop score assessed. Tests of foetal well being carried out. After informed consent induction of labour carried out with prostin E2, and effect studied on induction – onset and delivery intervals and mode of delivery. **Results:** Induction onset interval was 3.5 hours in Primigravida, was 2.8 hours in group 2(G2 & G3) and 2.0 hours in group 3(G4 & more). Induction delivery interval was 18 hours in group 1, 14 hours in group 2 and 10-12 hours in group 3. Mean percentage of normal vaginal delivery was 78.5% in all groups. Forceps delivery was 5.6% and caesarean section was 15.7%. Number of patients successfully induced was 84.2% **Conclusion:** The study confirmed the efficacy of PGE2 tablets in achieving cervical ripening. It was also seen to decrease induction delivery interval more so in multigravida.

Key words: Post term pregnancy, Induction of labour, PGE 2 vaginal tablets.

Article Citation: Shahzad U, Manzoor U, Awais N, Azher T. Post term pregnancy; efficacy of PGE2 in induction of labour. Professional Med J 2017;24(4):500-506.
DOI: 10.17957/TPMJ/17.3381

INTRODUCTION

Post term, postdates, prolonged and post mature are all terms officially accepted by world health organization to describe pregnancy that continues for 294 days or more following the first day of last menstrual period (LMP) assuming valid dates and a regular 28 days cycle.[1]

Prostaglandin E2 and F2α evoke myometrial contractions in the woman at any age of pregnancy. Within the uterus amnion and chorion produce PGE2. Where as in decidua both PGE2 & PGF 2α are synthesized. During last two trimesters of pregnancy administration of either PGE2 & PGF2 α cause strong uterine contractions and can induce delivery of foetus.[2] Post term pregnancy has been considered to occur in 10-20 % of all pregnancies.[3]

Woman who have one previous prolonged pregnancy and those who have had two prolonged pregnancies have a 30% and 40% chance respectively of another prolonged pregnancy.[4] PGE 2 have been used vaginally for induction of labour for the last two decades. Over the last decade induction of labour has become one of the most common procedures performed in delivery room services.[6] Induction of labour is increasing by approximately 25% in United States[7] Routine induction of labour after 41 weeks gestation appears to reduce perinatal mortality.[8,9]

Perinatal mortality increases after 42 weeks, doubles at 43 weeks, quintuples at 44 weeks of gestation.[10] The main risk to mother is that of prolonged labor and operative delivery.[11] With modern use of ultrasound to determine gestational age and to detect intra uterine growth retardation (IUGR) few mother exceed 42 weeks.[12] There is definitive risk associated with post maturity. We must be sure that any measures we take to avoid it are not themselves more dangerous than post maturity.[13]

MATERIAL AND METHODS

Setting
The study was conducted in the department of obstetrics and gynecology of Allied Hospital, Faisalabad, which is a tertiary care unit, attached with the teaching institute Punjab Medical College.

Duration of study
The study was carried out in one year period from 03 march 2005 to 02 march 2006

Sample Size
The study included all cases who meet the inclusion criteria to a minimum of about 50 cases

Inclusion criteria
1. All patients with prolonged pregnancy of more than forty two week were included.
2. Only singleton pregnancies were included.

Exclusion criteria
1. Patients who had previous caesarean section were excluded from the study.
2. Patients who had associated obstetric condition that modify the mode of delivery like placenta previa, cephalopelvic disproportion were excluded.

Study design
It was descriptive study.

Data collection procedure
All the patients admitted with diagnosis of prolonged pregnancy were evaluated as;

History
Detailed history of the patient was taken including the exact date of last menstrual period and cycle length. Obstetric history was taken. Patient was enquired about any ultrasound done in 1st trimester, onset of quickening, to rule out mistaken dates.

Examination
The detailed examination was carried out abdominal examination was carried out including height, symphysio fundal height, lie, amount of liquor, presenting part and its engagement, foetal heart sounds, any uterine contractions. Bishop score was assessed.

Tests of wellbeing were carried out including movement chart, non stress test, contraction stress test; biophysical profile. Routine investigations were carried out. Induction was carried out with vaginal tablet prostin E2 was repeated as required. Efficacy of prostin E2 was studied with regard to induction-onset and induction-delivery interval and mode of delivery.
Caesarean sections were carried out for Failed induction, Failure to progress, Foetal distress.

Data analysis
Data will be entered into SPSS 10 and analyzed accordingly

Test of Significance
Since outcome of study will be qualitative, so chi-square will be used

RESULTS
During study period of one year, there were total 50 post term patients, who were induced with prostin E2. They were divided into three groups for purpose of study according to their gravidity.
- Group 1-primigravida -29 patients 58%
- Group 2- Gravida 2 &3 – 15 patients 30%
- Group 3- Gravida 4&5 or more -6 patients 12%

All groups showed an increase in the bishop score after insertion of PGE2 tablet. The effects of various factors like age, parity, booking, and bishop score on mode of delivery were studied.

The common causes for caesarean section were also identified.

In the present study prostaglandins E2 was used to induce labour in 50 patients in dose of 3mg which was repeated at six hour intervals upto a maximum dose of 9mg. The effect of prostaglandins on the cervix was assessed by measuring the improvement in the bishop score and on the uterus in the form of contractions. The age distribution covered the reproductive period of female life span eleven (22%) were aged<20years. Thirty four (68%) were aged 21-30 years, while five (10%) were aged 31-40 years.

In the present study twenty (40%) were booked patients and thirty (60%) were unbooked.

Bishop score at induction was unfavorable (0-5) in majority forty seven (94%) & was in favorable range (6-14) in only three (6%) patients. The induction onset and induction delivery interval were studied in different groups. They were influenced by parity and mean bishop score at induction, were more in Primigravida, than multi gravida. The induction onset interval was 3.5 hours in primigravida, was 2.8 hours in group 2 and 2.0 hours in group 3. Induction – delivery interval was 18 hours in group 1, 14 hours in group 2 and 10-12 hours in group 3.
Majority of patients included in study responded to a single prostin tablet. Group requiring single prostin tablet were twenty six (52%). Patients in which PGE2 was repeated once were twenty one (42%) three tablets were required in only three (6%) patients.

Mode of delivery was studied in different groups. In group 1 out of twenty nine patients twenty one (72.4%) were delivered normally and three (10.3%) patients had forceps delivery and five (17.2%) had lower segment caesarean section. In group 2 out of fifteen patients twelve (80%) patients were delivered vaginally one patient (6.6%) had forceps delivery and two (13.3%) were delivered by the lower segment caesarean section. In group 3, out of six patients, five 83.3% had normal vaginal and one (16.6%) had lower segment caesarean section, none had instrumental delivery.

Mean percentage of normal vaginal delivery was 78.5% in all groups, Mean percentage of forceps delivery was 5.6 percent Mean percentage of caesarean section was 15.7 percent Number of patients successfully induced were twenty four 82.7 % in group 1, were thirteen 86.6 % in group 2 and five 83.3% in group 3. Mean success rate in all groups were 84.2% Lower segment caesarean section were carried out for following indications

- Failure to progress 5
- Failed induction 2
- Foetal distress 2

Side effect were studied in all groups; most common were nausea and vomiting. Rare side effects were hyperstimulation, retained placenta, postpartum haemorrhage and bronchoconstriction.

The study confirmed the efficacy of prostaglandin vaginal tablets. These are safe and effective method of labour induction. The administration is simple and method is not attended with undue side effects. Outcome was studied as mean Apgar score at 1 min and 5 minutes.8 babies were born with Apgar score $\leq$6 at 1 minute, these later recovered and only 4 babies required admission in intensive care unit for meconium aspiration and apnoea . These were treated and discharge within a week. There were no perinatal losses.

Age	No of patients	Percentage
>20 yrs	11	22%
21-30 yrs	34	68%
31-40 yrs	05	10%

Table-I. Distribution of patients according to age
Mean age : 25.04 Ch- Square 39.760
Std. Deviation : 04.45 P Value 0.001 **
Minimum age : 18.00
Maximum age: 36.00 **: Highly Significant

Variables	No. of Patients	Percentage
Booked	20	40%
Un. Booked	30	60%

Table-II. Distribution of patients according to booking status

Parity	No of Patients	Percentage
Group 1 Primigravida	29	58%
Group 2 Gravida 2 & 3	15	30%
Group 3 Gravida ≥4	06	12%

Table-III. Distribution of patients according to parity

Variables	No to Patients	Percentage
Unfavorable (0-5)	47	94%
Favorable (6-14)	3	6%

Table-IV. Distribution of patients according to Bishop Score at induction

Mean Bishop Score : 3.10
Chi –Square 13.00
Std. Deviation : 1.59 P Value 0.043*
Minimum Bishop Score : 0.00
Maximum Bishop Score : 6.00
* : Significant

Variables	Induction – onset interval
Group 1 Primigravida	3.5 Hours
Group 2 Gravida 2 & 3	2.8 Hours
Group 3 Gravida 4 & 5	2.0 Hours

Table-V. Distribution of patients according to parity in relation to induction onset intervals

Chi – Square 69.379
P Value 0.001**
** : Highly Significant

Variables	Induction delivery interval
Group 1 Primigravida	3.5 Hours
Group 2 Gravida 2 & 3	2.8 Hours
Group 3 Gravida 4 & 5	2.0 Hours

Table-VI. Distribution of patients according to parity in relation to induction delivery intervals

Chi - Square 160.312
P Value 0.008**
** : Highly Significant

Parity	No of Patients	Percentage
One tablet	26	52%
Two tablet	21	42%
Three tablet	3	06%

Table-VII. Distribution of patients according to number of prostaglandins tablets required

Mean tablets : 1.54
Ch – Square 17.56
Std. Deviation : 0.61
P Value 0.000**
** : Highly Significant

Age	Group 1	Group 2	Group 3	Overall
Normal Vaginal delivery	21 (42.0%)	12 (24.0 %)	05 (10.0%)	38 (76.0%)
Forceps delivery	03 (6.0%)	01 (2.0%)	No delivery	4 (8.0%)
L.S.C.S	5 (10.0%)	02 (4.0%)	01 (2.0%)	8 (16.0%)

Table-VIII. Distribution of patients according to parity in relation to mode of delivery

Chi- Square 15.736
P Value 0.0490*
* : Significant

Parity	No of Patients	No of patients successfully induced	Percentage (successfully induced)
Group 1 Primigravida	29	24	82.7%
Group 2 Gravida 2 & 3	15	13	86.6%
Group 3 Gravida ≥4	06	05	83.3%

Table-IX. Distribution of patients according to parity in relation to successfully induced

Parity	No of cases	Percentage
Failure to progress	4	50.0%
Failed inductions	02	25.0%
Fetal distress	02	25.0%
Total Cases	08	100.0%

Table-X. Distribution of patients according to indicators of lower segment caesarean section

Age	Group 1	Group 2	Group 3	Overall
Nausea	07 (14.0%)	06 (12.0%)	03 (06.0%)	16 (32.0%)
Vomiting	06 (12.0%)	03 (06.0%)	03 (06.0%)	12 (24.0%)
Hyper-stimulation		1 (2.0%)		1 (2.0%)
Retained Placenta	1 (2.0%)			1 (2.0%)
Post-partum Hemorrhage			1 (2.0%)	1 (2.0%)
Broncho-constriction			1 (2.0%)	1 (2.0%)

Table-XI. Distribution of patients according to incidence of side effects

Chi – Square 54.492
P Value 0.094^{NS}
NS : Non Significant

DISCUSSION

The management of prolonged pregnancy is controversial.[14] All pregnancies judged to be 42 completed weeks should be managed as if abnormally prolonged[15]Prolonged pregnancy is associated with significant risk of maternal morbidity and perinatal morbidity.[16] Induction of labour is one of the most commonly performed obstetric procedure between 1990-1998 the rate of labour induction doubled from approximately 10-20%.[17] Prostaglandins are used for ripening of cervix, prostaglandins that have been the agent of choice for induction of labour is PGE_2.[18]

The results of this study confirm the efficacy of prostaglandins in ripening of cervix. It is an essential pre-requisite for induction of labour. All groups showed an increase in bishop score after insertion of PGE2 tablet. In present study indication for induction of labour was post term pregnancy. Mean success rate for labour induction was 84.2% and failure rate was 15.7%. As regard the number of prostaglandin tablets required 52 percent required one tablet only 42% required two tablets and 6% required 3 tablets.

In study carried out in Hamdard University Hospital Karachi in department of obstetrics and gynaecology from Feb. 2002 to Jan 2003 showed comparable results. In that study post date pregnancy was the commonest indication for labour induction. In the study number of patients successfully induced were 91% and failed induction was 9% 35% of patients required only a single prostin tablet, 65% required two tablets and three tablets required in none. Mode of delivery was studied in patients induced with prostin E2.53% had spontaneous vaginal delivery. 22% had instrumental delivery and 25% had caesarean section. The results are in contrast to present study where SVD spontaneous vaginal delivery was 78.5%, instrumental delivery 5.6% and caesarean section rate 15.7%. Indications for operative delivery were non progress of labour and Foetal distress. In present study indications for caesarean section were similar (failure to progress, failed induction, foetal distress) Adverse effects with PGE2 were vomiting, shivering, fever, PPH were similar to side effects noted in present study.[19] Induction – onset and induction – delivery intervals were monitored.

Roztocil reported that the parity of patients influenced the interval between the onset of induction and the onset of uterine contractions, the duration of the first and second stage of labour and the consumption of prostin tablets.[20] In a study carried out by Begum A and Sohail R at Lahore showed induction- delivery interval of 13.4 hours in multigravida and 18.3 hours in primigravida.[2] The results are comparable to present study with induction delivery interval of 10-14 hours in G2, G3 and above and 18 hours in primigravida.

In another study by Syeda Batool Mazhar in 2000 showed induction delivery time interval of 15.7 hours with prostaglandinsE2 and lower segment caesarean section rate was 16%.[21] In a study carried out at Sobhraj hospital Karachi in the department of obstetrics and gyneacology form Sep 2000 to Sep 2001. Patients with prolonged pregnancy were induced by different methods. Common causes of lower segment caesarean section in induction group were foetal distress, failed induction, prolonged second stage and non progress of labour.[22]

Another study was conducted in labour ward of gynae unit 1 services hospital Lahore, for induction of labour from Jan 1st 2000 to Jan 1st 2001. Induction of labour was carried out with prostaglandins E2 pessary with Bishop score of $\leq$6 similarly in present study 94% of patients had unfavorable cervices with Bishop score of 0-5 only 6% patients had Bishop score $\geq$6. Indications for caesarean section were similar to present study. Caesarean section was performed for failed induction, failure to progress, foetal distress and standard obstetrical indication.

In study carried out at services hospital Lahore induction – to delivery interval was 21.2 hours in nullipara. In present study induction to delivery interval in nullipara was 18 hours and was 10-14 hours in Gravida 2, 3 and multipara. In

study carried out at services hospital caesarean sections occurred in 11% of multipara and 26% of nullipara comparable to present study where caesarean section occurred in 14.9% of multipara (Gravida 2, 3 and more) and 17.2 % of nullipara.[23]

CONCLUSION

1. Prostaglandins vaginal tablets are a safe and effective method of induction.
2. The administration is simple and the method is not associated with undue side effect.
3. The study confirmed the efficacy of PGE2 tablets in achieving ripening.
4. It was also seen to decrease induction delivery interval, more so in multigravida.

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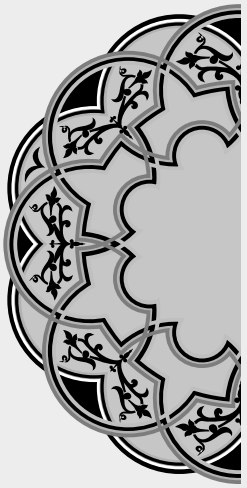

"There are decades where nothing happens; and there are weeks where decades happen"

Lenin

AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author-s Full Name	Contribution to the paper	Author=s Signature
1	Dr. Uzma Shahzad	Main author of book and research work	
2	Dr. Uzma Manzoor	Help in data collection	
3	Dr. Nadia Awais	Help in writing paper	
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