INTRODUCTION

Pregnancy beyond 294 days often invokes maternal concern about delay past the expected date of delivery. The incidence of postdate pregnancy is between 4 – 14%.1 When a pregnancy is prolonged beyond 42 weeks of gestation, perinatal mortality increases. At 41 weeks of gestation the rate is 9 per 1000 live births, and it continues to rise thereafter.2 Meta-analyses of randomized controlled trials demonstrate that a policy of induction of labour for pregnancies at or beyond 41 weeks as compared to expectant management of gestation is associated with fewer perinatal deaths.3 Accurate dating of pregnancy is essential in order to prevent pre-maturity or postdatism. Studies have shown that most pregnancies undergoing post-term induction are not post-term when assessed by ultrasound dates.4 Labour induction is the stimulation of regular uterine contraction before the spontaneous onset of labour using mechanical or pharmacological methods in order to generate progressive cervical dilatation and subsequent delivery.5 The practice is on the rise. The rate of labour induction varies from 9.5 – 33.7% of all pregnancies annually.6 It is associated with doubling in caesarean section delivery rate compared with spontaneous labour.7 However, the maternal and neonatal effects of induction of labour are unclear. Many studies compare women with induction of labour to those in spontaneous labour. This is problematic, because at any point in the management of the woman with a term gestation, the clinician has the choice between induction of labour and expectant management, not spontaneous labour. Expectant management of the pregnancy involves no intervention at any particular point in time and allowing the pregnancy to progress to a future gestational age. Thus, women undergoing expectant management may go into spontaneous labour or may require indicated induction of labour at a future gestational age.7 Cervical ripening and maturation is of fundamental importance and pre-requisite for successful induction of labour.8 Prostaglandins act on the cervix to enable ripening by a number of different mechanisms. Multiple other agents have been advocated for cervical ripening, use of Foley’s catheter is a favoured method in low resource setups.9 Misoprostol is an effective agent for cervical ripening.5 Dinoprostone has been approved by FDA for cervical ripening in women at or near term with mean induction-delivery interval of 15.6 ± 0.7 hours.10 Single dose dinoprostone is effective for initiating labour and patients with unfavourable cervix while oxytocin alone is not always successful for induction of labour.11

The objective of this study was to determine the effect of gestation length (40 or 41 weeks) on the mode of

ABSTRACT

Objective: To differentiate the effect of gestation on the mode of delivery by analysing the difference in the mode of induction, length of labour and the difference in parity or Bishop score and their effect on the mode of delivery of postdates women.

Study Design: A cross-sectional observational study.

Place and Duration of Study: PAEC General Hospital, Islamabad, from July 2006 to July 2008.

Methodology: Patients were induced at 41 weeks (Group B) and > 40 weeks (Group A) of gestation. Tab misoprostol and PGE2 tablets were administered according to amniotic fluid index (AFI) and parity. Study variables included duration of gestation, mode of induction, length of labour, difference in parity and Bishop score assessed before induction in each group. The outcome was assessed by applying Chi-square test by comparing mode of delivery with the study variables in both groups.

Results: A total of 78 patients were inducted in the study. They were divided in group B (n = 39) induced 41 weeks and group A (n = 39) induced at 40 weeks. Eighty four percent (n = 35) patients in group B delivered vaginally as compared to 71% (n = 28) in the 40 weeks group (p < 0.0001). The higher number of vaginal deliveries in 41 weeks group was independent of association between the induction agent, parity and mode of delivery.

Conclusion: The mean length of gestation was the single most important factor among the studied variables in predicting a vaginal delivery.

Key words: Postdates. Amniotic fluid. Bishop score. Induction of labour.

ORIGINAL ARTICLE

Induction of Labour in Postdates Pregnant Women

Ambreen Naveed Haq, Saadat Ahsan and Zaiba Sher

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METHODOLOGY
A cross-sectional observational study was conducted at
PAEC General Hospital, Islamabad, from July 2006 to
July 2008. Postdates booked pregnant women at PAEC
General Hospital were included. Patients with previous
caesarean section, biophysical profile of < 6/10 and AFI
< 6 were excluded from the study population.

Patients were divided in two groups, group A (40-40 ±3)
weeks and group B (41 weeks). Pregnancy was dated
according to last normal missed periods (LNMP) and
early ultrasound scan. Amniotic fluid index (AFI) in
centimetres was assessed before induction using mean
vertical pool (MVP). Tab misoprostol (100 microgram)
orally was given to patients with AFI > 8 and para 0–4.
Tab. PGE2 was advised to patients with AFI 6–8 and
para > 5. Bishop score was assessed, and induction of
labour was started at 4:00 am. Studied variables were
recorded including patients profile, obstetric, medical
and surgical history and gestational age calculated by
Naegle’s rule and confirmed by early pregnancy
ultrasound. Induction was performed according to the
pre-defined criteria and details of labour were noted
down. Induction delivery interval was calculated, mode
of delivery and fetal outcome were recorded.

Data was entered on a preformed proforma. The results
were analyzed on Statistical Package for Social Science
(SPSS) version 15.0. Relevant descriptive statistics,
frequency and percentage were computed for mode of
delivery, mode of induction and parity. Mean and
standard deviation of values were computed for
continuous variables e.g. length of gestation in weeks,
length of labour and Bishop score. Chi-square test was
used to compare mode of delivery in both the groups.
Statistical significance was considered at p < 0.001.

RESULTS
The total number of deliveries during the study period
were 1728. The total number of postdate patients were
125 with an overall frequency of 7.3%. Seventy-eight
patients were included in the study. They were divided in
to two groups, group A (40 weeks) and group B (41
weeks). The mean age of these patients was 25.0 ±
3.10 years. The two medicines were equally given in each

<table>
<thead>
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<th>Count</th>
<th>Length of gestation</th>
<th>Total</th>
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<tr>
<td></td>
<td>40 weeks</td>
<td>41 weeks</td>
</tr>
<tr>
<td>Mode of delivery</td>
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<td></td>
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<tr>
<td>SVD 40 weeks</td>
<td>25</td>
<td>0</td>
</tr>
<tr>
<td>SVD 41 weeks</td>
<td>0</td>
<td>33</td>
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<tr>
<td>INS 40 weeks</td>
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<td>INS 41 weeks</td>
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<td>CSect 40 weeks</td>
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<td>0</td>
</tr>
<tr>
<td>CSect 41 weeks</td>
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<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>39</td>
<td>39</td>
</tr>
</tbody>
</table>

Table I: Comparison of mode of delivery in both the groups.

SVD = Spontaneous vaginal delivery; INS = Instrumental delivery; CSect = Caesarean section.

Table II: Comparison of mode of induction, Bishop score and parity versus mode of delivery in 40 weeks (group A) and 41 weeks (group B).

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mode of delivery</th>
<th>p-value*</th>
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<tbody>
<tr>
<td></td>
<td>SVD</td>
<td>Instrumental delivery</td>
</tr>
<tr>
<td>Mode of induction 40 weeks</td>
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<tr>
<td>Misoprostol</td>
<td>15 (38.0)</td>
<td>2 (5.1)</td>
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<tr>
<td>PGE2</td>
<td>10 (25.4)</td>
<td>1 (2.5)</td>
</tr>
<tr>
<td>Mode of induction 41 weeks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Misoprostol</td>
<td>20 (51.20)</td>
<td>1 (2.5)</td>
</tr>
<tr>
<td>PGE2</td>
<td>12 (30.7)</td>
<td>2 (5.1)</td>
</tr>
<tr>
<td>Bishop score 40 weeks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 5</td>
<td>18 (46.1)</td>
<td>3 (7.6)</td>
</tr>
<tr>
<td>&gt; 5</td>
<td>07 (17.9)</td>
<td>0</td>
</tr>
<tr>
<td>Bishop score 41 weeks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 5</td>
<td>18 (46.1)</td>
<td>2 (5.1)</td>
</tr>
<tr>
<td>&gt; 5</td>
<td>14 (35.0)</td>
<td>1 (2.6)</td>
</tr>
<tr>
<td>Parity 40 weeks</td>
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<td>Primigravida</td>
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<td>2 (5.1)</td>
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<td>Parity 41 weeks</td>
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<tr>
<td>Primigravida</td>
<td>06 (15.3)</td>
<td>2 (5.1)</td>
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<td>Para 1–4</td>
<td>22 (56.4)</td>
<td>1 (2.5)</td>
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<tr>
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<td>04 (10.3)</td>
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</tbody>
</table>

*p < 0.001 will be taken as level of significance.
section; frequency of instrumental delivery was the same in both groups (n = 3, 7.6%).

The significantly low rate of caesarean section in the 41 weeks group of patients was independent of the association between the induction agents i.e. PGE2 and misoprostol between the two groups (p = 0.254, Table II). There was no statistically significant association in either group with respect to Bishop score (Table II). Parity showed a significant association in the 40 weeks group however, this could be taken as an incidental finding in this study (Table I). In addition there was not much difference in the mean length of labour at 40 weeks (mean = 7.8 hours) and 41 weeks 9.1 ± 3.38 hours and SD ± 4.79 (Table I).

Other findings included indications for caesarean section which were mainly fetal distress and CPD. There was no difference in the postdelivery complications in both groups. The neonatal intensive care unit admissions were negligible in both groups. An incidental finding was the coiling of cord around the neck in 7 patients in the 41 weeks group as compared to the same in 2 patients in the 40 weeks group.

**DISCUSSION**

The main result of this study was that 89% of the patients in the 41 weeks group delivered vaginally as compared to 71% in the 40 weeks group. This finding was independent of the association between Bishop score, mode of induction and parity at 41 weeks. In literature, there was no study found where this high difference was noted at or below 41 weeks. The optimal management of pregnancies at 41 weeks and beyond is unknown. It was found in 9 non-randomized controlled trials that overall, expectant management of pregnancy was associated with an approximately 22% higher odds of caesarean delivery than elective induction of labour (OR 1.22, 95%; CI: 1.07 – 1.39; absolute risk difference 1.9, 95%; CI: 0.2 – 3.7%). The majority of these studies were in women at or beyond 41 weeks of gestation (OR 1.21, 95%; CI 1.01 – 1.46). In studies of women at or beyond 41 weeks of gestation, the evidence was rated as moderate because of the size and number of studies and consistency of the findings. Among women less than 41 weeks of gestation, there were three trials which reported no difference in risk of caesarean delivery among women who were induced as compared to expectant management (OR 1.73; 95%; CI: 0.67 – 4.5, p = 0.26), but all of these trials were small, non-U.S., older, and of poor quality. Randomized controlled trials suggest that elective induction of labour at 41 weeks of gestation and beyond is associated with a decreased risk for caesarean delivery and meconium-stained amniotic fluid.

In the 1960s, Dr. Edward Bishop developed a pelvic scoring system using cervical dilatation, effacement, station, consistency and position with a possible range from 0 – 13. Based on clinical experience, he concluded that elective induction in multiparous women with uncomplicated pregnancies at term was successful with a score of > 8.

A number of studies have been performed to improve the Bishop score by giving low dose prostaglandin pessaries to the patients for outpatient use. These agents significantly improve the Bishop score and hence increase the chances of normal delivery. In this study, ripening agent for outpatient usage were not employed, however, the Bishop score was better in the 41 weeks gestation group. This is an indirect evidence of better result in terms of mode of delivery.

Another feature of this data is the use of mean vertical pool of liquor at term as an induction criterion. Though an Indian study showed that an AFI of 5 cm or less was a better predictor of fetal distress than a mean vertical pocket of 3 cm or less. Misoprostol and prostaglandins showed no major differences in the labour outcome, though there are different studies with varying results. One study showed that misoprostol appears to be more effective than conventional methods of cervical ripening and labour induction although no differences in perinatal outcome were shown in the same study. However, the studies were not sufficiently large to exclude the possibility of uncommon serious adverse effects thus misoprostol shows promise as a highly effective, in expensive and a convenient agent for labour induction but still lower dose misoprostol regimens should be investigated further.

**CONCLUSION**

The mean length of gestation was the single most important factor among the studied variables in predicting a vaginal delivery.

**REFERENCES**

7. Tan PC, Valiapen SD, Tay PY, Omar SZ. Concurrent oxytocin


