

# Maternal and neonatal outcome among Iraqi women with postdate pregnancy

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## Abstract:

**Background:** Postdate pregnancy is that pregnancy, which goes beyond 40 weeks gestation being calculated from the first day of the last menstrual period and first trimester ultrasound. It occurs in approximately 10% of singleton pregnancies. Perinatal and maternal complications of such pregnancies have always been underestimated.

**Objectives:** The aim of this study is to identify whether the prolongation of pregnancy beyond the expected date of delivery has negative effects on the health of both the mothers and the neonate.

**Methods:** A prospective case-control study of (600) pregnant women fulfilling the inclusion criteria (included: Gestational age range between (37 - 42 completed weeks), history of regular menstrual cycles and known date of the last menstrual period and/or with early pregnancy ultrasound and a singleton pregnancy with vertex presentation ), divided into (250) pregnant women as case group (beyond 40 weeks of gestation) and (350) pregnant women as control group (between 37 completed weeks to 40 weeks of gestation). These mothers were admitted to the labor room at Basrah Maternity and Child Hospital from [1<sup>st</sup> of January to 1<sup>st</sup> November 2018].

**Results:** The majority of both cases and controls were between 18 and 30 years of age (62.4% and 56.3 % respectively). and multiparous (1\_4) deliveries; 55.6% and 58% respectively). Among the cases, postpartum haemorrhage was the most frequent maternal complication (16.4%), followed by prolonged labour (15.2%), perineal tear (5.2%), cervical tear and shoulder dystocia (1.6% for both) . The newborns of postdate pregnancies tend to be heavier at birth, where (19.2 %) were macrosomic (birth weight  $\geq$  4000 g) and (51.6%) weighed (3500-4000g). The majority (77.6%) had an Apgar score of ( $\geq$  7). Meconium stained liquor, meconium aspiration syndrome, admission to the neonatal intensive care unit and birth asphyxia occurred in (23.2%, 12.4%, 18.8% and 1.2%) respectively. There were no birth injuries, intrauterine growth retardation or stillbirth in both cases and controls.

**Conclusion:** In postdate pregnancies, there is a definitive risk on mother and baby.

**Keywords:** postdate pregnancy, maternal outcomes, and neonatal outcomes.

## Introduction:

Postdate pregnancy is usually defined as "pregnancy lasting more than 280 days or 40 completed weeks after the first day of last menstrual period".(1) Primigravida, previous postdate pregnancy, low socioeconomic status, maternal obesity and cigarette smoking are associated with a higher incidence of postdate pregnancy.(2) Recent data have also shown an association with male fetuses(2) (3)and cervical length at 37 weeks of gestation by transvaginal ultrasound and can predict a prolonged pregnancy.(4) The most common etiology is inaccurate dating.(5) The criteria for diagnosing postdates are the correlation between menstrual history, clinical findings and ultrasonography.(5) It is managed expectantly in the low risk women by monitoring of fetal movement, nonstress test(NST)& evaluation of amniotic fluid index(AFI) because of the significant correlation between the AFI and the fetal distress and low APGAR score.(6)(7) Oligohydromnios is considered as the main factor which determines the onset of adverse effects.(8)

Other options for fetal condition monitoring include modified Biophysical Profile(BPP), full BPP, Doppler velocimetry of the umbilical artery and the cerebroumbilical ratio( less than 10 percentile predicts with intrapartum fetal distress) and computerized fetal heart rate (FHR) analysis.(9)(10) Postdate singleton pregnancy after 41 weeks gestation rather than 42 weeks of gestation is preferably managed by induction of labour after evaluating the cervix according to the Bishop Score, since induction of labour in case of unfavorable cervix has a high risk of failed induction and subsequent Cesarean Section.(11)

## Subjects and methods:

A case-control study was conducted in Basrah Maternity and Child Hospital from 1st of January - 1<sup>st</sup> November 2018. All pregnant women who included in the study were admitted to the labour room either with spontaneous onset of labour or for induction during the same study period. The inclusion criteria included: Gestational age range between (37 - 42 completed weeks), history of regular menstrual cycles and known date of the last menstrual period and/or with early pregnancy

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ultrasound and a singleton pregnancy with vertex presentation. The exclusion criteria included: Congenital anomalies by ultrasound, patients with chronic hypertension or pre-eclampsia, preexisting or gestational diabetes, heart disease or chronic respiratory disease and antepartum bleeding. Six hundred women fulfilled the inclusion criteria and were categorized into:

1. The case group (gestational age exceeding 40 weeks) - 250 cases, and
2. The control group (gestational age between 37 - 40 completed weeks)-350 cases.

The data were collected using a prepared printed personal interview form completed through a personal interview with the mothers after taking their verbal consents. The data included the patient's age group (<18 years, 18-30 years old and >30 years old), parity (primigravida, 1-4 or  $\geq 5$ ), gestational age (categorized into case group and control group, maternal obstetrical complications (postpartum haemorrhage, prolonged labour, perineal tear, cervical tear and shoulder dystocia), and the neonatal outcome including: Birth weight ( 2500-3499 g, 3500-4000g and >4000g ), live born/stillbirth, sex, APGAR score within 5 minutes (<7 and  $\geq 7$ ), meconium stained liquor (greenish discolorization of amniotic fluid), meconium aspiration syndrome (respiratory distress due meconium aspiration and inflamed lungs), the admission to neonatal intensive care unit, birth injury (as a result of physical pressure during birth), birth asphyxia (oxygen deprivation during or after labour), intrauterine growth retardation {pathological smallness of the baby} and stillbirth. The mother and baby were monitored and the follow up was done by the researcher for four to six hours after delivery to detect complications. ). Characters like body mass index had not included because the patients were in pain and stress so refused weight and height measurement.

**Ethical considerations:** Ethical approval was obtained from Basrah Maternity and Child Hospital authority and verbal consents was taken from the patients. The researcher informed the responsible doctor in charge of the labour room about any neonatal or maternal complications.

**Statistical analysis:** The collected data was entered and analyzed using Microsoft Excel 2010. The data was presented as frequency and percentage tables and appropriate statistical tests were performed. The Chi Square test was used to compare two group samples, with a P value of <0.05 accepted as significant and a P value of < 0.01 as highly significant.

### Results:

The majority of both cases and controls were between 18 -30 years of age (62.4% and 56.3 % respectively) as shown in table (1) with no significant difference (i.e.  $P = > 0.05$ ). The majority of mothers in both groups were those with (1-4) previous deliveries (55.6% and 58% respectively).

There was no significant association between gestational age at birth and maternal age or parity.

**Table 1: Demographic characteristics of the case & control groups**

| Demographic characteristics | Case group |      | Control group |      | P Value |
|-----------------------------|------------|------|---------------|------|---------|
|                             | No.        | %    | No.           | %    |         |
| Age in years:               |            |      |               |      |         |
| <18 years                   | 49         | 19.6 | 71            | 20.3 | NS      |
| 18_30 years                 | 156        | 62.4 | 197           | 56.3 |         |
| >30 years                   | 45         | 18.0 | 82            | 23.4 |         |
| Parity:                     |            |      |               |      |         |
| Primigravida                | 84         | 33.6 | 111           | 31.7 | NS      |
| 1_4                         | 139        | 55.6 | 203           | 58.0 |         |
| $\geq 5$                    | 27         | 10.8 | 36            | 10.3 |         |
| Total:                      | 250        | 100  | 350           | 100  |         |

Postpartum haemorrhage was the most frequent maternal complication in the case group (16.4%), of whom 34.1% had five or more previous deliveries, while only (2.6%) of the control group had postpartum haemorrhage, of whom 55.6% had five or more previous deliveries. Prolonged labour occurred in (15.2%) of the case group and in (2%) of the control group. Perineal tear occurred in (5.2%) and (1.1%) of the case and the control groups respectively. Shoulder dystocia occurred in (1.6%) of the case group and was relieved by MC Robert maneuver while only (0.6%) of the control group had this complication. Cervical tears occurred in (1.6%) of postdated pregnancies and in (0.3%) of the term pregnancies. The occurrence of the main maternal complications (postpartum haemorrhage, prolonged labour and perineal tears) was significantly higher in the cases than in the controls (p value < 0.01), as shown in table (2).

**Table 2: Distribution of maternal complications in the cases and controls**

| Maternal Complications | Case group |      | Control group |     | P Value |
|------------------------|------------|------|---------------|-----|---------|
|                        | No.        | %    | No.           | %   |         |
| Postpartum haemorrhage | 41         | 16.4 | 9             | 2.6 | HS      |
| Prolonged labour       | 38         | 15.2 | 7             | 2.0 | HS      |
| Perineal tears         | 13         | 5.2  | 4             | 1.1 | HS      |
| Shoulder dystocia      | 4          | 1.6  | 2             | 0.6 | NS      |
| Cervical tears         | 4          | 1.6  | 1             | 0.3 | NS      |

The newborns in the case group tended to be significantly heavier in their birth weight where (19.2%) were macrosomic (birth weight  $\geq 4000$  g) compared to only (2.2%) of the control group. There were more newborns with birth weight between (2500- 3499g) in the control group (80.9%) compared to case group (29.2%), while birth weight of (3500-4000 g) was (51.6%) and (16.9%) in the case and control groups respectively. Nearly all of the newborns in the control group (98%) had an Apgar score at 5 minutes of ( $\geq 7$ ) compared to (77.6%) in the case group. There was a male predominance among the newborns in the case group (68.4%) versus (29.7%) in the control group. Meconium stained liquor was found in (23.2%) of

the newborns in the case group and only in (1.7%) of the control group. Meconium aspiration syndrome occurred in (12.4%) of the newborns in the postdate pregnancies compared to only (0.3%) in the control group. The newborns of postdate pregnancies needed more admission to the neonatal intensive care unit (18.8%) versus (4%) in the control group. All neonatal complications have shown a highly significant association. Birth asphyxia occurred in (1.2%) of the case group and (0.6%) of the control group. There were no birth injuries, intrauterine growth retardation or stillbirths in both cases and control groups as shown in the table 3.

**Table 3: Distribution of neonatal outcomes in the cases and controls**

| Neonatal Outcome                          | Case group |      | Control group |     | P Value |    |
|---|------------|------|---------------|-----|---------|----|
|   | No.        | %    | No.           | %   |         |    |
| Birth weight (g)                          | 2500-3499  | 73   | 29.2          | 283 | 80.9    | HS |
|   | >3500-4000 | 129  | 51.6          | 59  | 16.9    |    |
|   | >4000      | 48   | 19.2          | 8   | 2.2     |    |
| Apgar Score in 5 minutes                  | <7         | 56   | 22.4          | 7   | 2.0     | HS |
|   | ≥7         | 194  | 77.6          | 343 | 98.0    |    |
| Sex of baby                               | Male       | 171  | 68.4          | 104 | 29.7    | HS |
|   | Female     | 79   | 31.6          | 246 | 70.3    |    |
| Meconium stained liquor                   | 58         | 23.2 | 6             | 1.7 | HS      |    |
| Meconium aspiration syndrome              | 31         | 12.4 | 1             | 0.3 | HS      |    |
| Admission to neonatal intensive care unit | 47         | 18.8 | 14            | 4   | HS      |    |
| Birth asphyxia                            | 3          | 1.2  | 2             | 0.6 | NS      |    |

### Discussion:

Gestational age is an important determinant of perinatal outcomes. Most attention has been focused on predicting and preventing preterm births. This seems entirely appropriate as preterm birth is the greatest cause of perinatal morbidity and mortality. However, postdate pregnancies are also associated with increased perinatal morbidity and mortality. (3) In our study, the majority of the case and control groups were (18-30 years) of age; (62.4% and 56.3% respectively). The distribution of those with five or more previous deliveries and of primigravidas was not significantly different in the two groups. In Iraq, most women, especially those from lower socioeconomic groups become mothers before 20 years of age, which may explain the higher parity in our study groups. Maternal age older than 35 years and primigravidity have been considered as risk factors for postdate pregnancy. (3) Our study is in agreement with the results of Singh (13) in India which demonstrated and increased risk of untoward maternal and perinatal outcomes in prolonged pregnancy in which majority of case and control groups were 20-30 years old (83.4% and 82.2% respectively) and multiparous (51.2% and 67.3%

respectively). The main maternal morbidity that complicates postdate pregnancy was postpartum haemorrhage consequent to uterine atony (16.4%) followed by prolonged labour (15.2%) and perineal tears (5.2%), which were significantly higher in the cases than controls. Nikita (14) in civil hospital, Ahmedabad reported that the most frequent maternal complications were prolonged labour (68.2%) followed by postpartum haemorrhage (40.9%), while Alyasin (12) in Basrah reported no difference between the cases and the controls regarding postpartum blood loss, but in agreement with our study regarding neonatal complications. In our study, high parity ( $\geq 5$ ) was associated with higher postpartum haemorrhage in both the case and control groups. The newborns of those with postdate pregnancy tend to be heavier in their birth weights compared to the control group. More than a half (51.6%) weighed (>3500-4000 g) and (19.2%) were macrosomic so tends to increase the risk of shoulder dystocia, birth injuries and birth asphyxia. Fortunately, most of the postdated newborns were delivered in favorable conditions where (77.6%) had an Apgar score ( $\geq 7$ ); that can be explained by good fetal monitoring of the postdated newborns. Male gender was predominant among the postdated newborns (68.4%) which confirms the concept that male sex is one of the risk factors for prolonged pregnancy.(3) Similarly, Bruckner (2) reported male predominance in postdated pregnancies. Meconium stained liquor was a frequent neonatal complication of the postdate pregnancy (23.2%), significantly higher in the case than the control group, while meconium aspiration syndrome which is the leading cause of intrauterine death complicated the postdate pregnancy in (12.4%) in our study. Of all the newborns of postdate pregnancies (19%) were admitted to the neonatal intensive care unit, mainly due to meconium aspiration syndrome. These complications could be minimized by improving awareness among mothers, health education and accurate calculation of gestational age early in pregnancy.

### Conclusion:

The prolongation of pregnancy beyond 40 weeks of gestation has negative effects on the health of both the mother and the neonate.

### Recommendations:

With regular antenatal check-up, the incidence of postdate pregnancies can be decreased and that is achieved by documented last menstrual period and early pregnancy ultrasound. In order to reduce the rate of maternal and neonatal morbidity and mortality in postdate pregnancy, fetal wellbeing must be assessed and proper management should be done.

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## دراسة تأثير تأخر الحمل الى ما بعد الاربعين اسبوع على صحة كل من الام والجنين في العراق

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## الخلاصة:

**خلفية البحث:** ان نسبة حدوث تاخر الحمل مابعد الاربعين اسبوع مايقارب الـ 10% من الحمل المنفرد وان اغلب الحالات يكون سببها الحساب غير الدقيق للحمل حيث ان الحساب الدقيق يعتمد على موعد الدورة الشهرية الاخيرة وعلى السنو المجرى في الاشهر الثلاثة الاولى من الحمل.

**الهدف:** تهدف الدراسة الى معرفة التأثيرات السلبية فيما اذا تأخر الحمل مابعد الموعد المحدد له على صحة كل من الام والطفل.  
**طريقة العمل:** لقد اجريت هذه الدراسة (دراسة الحالات والشواهد) في مستشفى البصرة للولادة والطفل خلال الفترة (من الاول من كانون الثاني 2018 الى الاول من تشرين الثاني 2018) حيث شملت الدراسة (600) سيدة حامل ادخلن الى صالة الولادة خلال الفترة ذاتها وقد قسمت الى مجموعة الحالات (250) سيدة ومجموعة الشواهد (350) سيدة. لقد تم تحديد مدة الحمل بالاسابيع معتمدا على اخر دورة شهرية قبل حدوث الحمل وكذلك السنو المبكر.

**النتائج:** ان غالبية السيدات اللواتي كانت مدة الحمل لديهن اكثر من اربعين اسبوع يبلغن كن من الفئة العمرية مابين (18 - 30) سنة بنسبة (62.4 % ) كذلك كانت ذوات الولادة المتكررة (1 - 4) ولادات بنسبة (55.6 %) . وقد كان النزف مابعد الولادة هو من اكثر المضاعفات تكرارا على الام بنسبة ( 16.4 %). من المضاعفات الرئيسية التي طرأت على المولودين لمجموعة الحالات هي تصبغ السائل الامنيوتي بالعق كانت بنسبة ( 23. % ) ولكن لحسن الحظ ( 12.4 %) فقط قد اصابوا بمتلازمة الشفط العقوي. اما المولودين الذين ادخلوا الى وحدة الخدج فقد كانوا بنسبة ( 18.8 % )

**الاستنتاج:** لقد كان هناك خطر واضح على المولود في مجموعة الحالات (تاخر الحمل الى ما بعد الاربعين اسبوعا) كما ان هناك علاقة واضحة مع ازدياد اعتلال الام كذلك اعتلال المولود.

**الكلمات الدلالية:** تاخر الحمل الى ما بعد الاربعين، التأثير على الام، التأثير على المواليد.