

**Neonatal outcomes of pregnancy  
beyond 40 weeks of gestation  
in Derna-Libya.**

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**Abstract:**

Recent studies have shown that the risks to the fetus and to the mother of continuing the pregnancy beyond the estimated date of delivery are greater than originally appreciated.

**Objective:**

To assess pregnancy outcomes at 41, and 42 weeks' gestation.

**Methodology:**

The present study reviewed all pregnancies delivered at 41 or more weeks' gestation between 1/1/2009 and 31/12/2009 at Alwahda Hospital, Derna, Libya. Authors excluded women with hypertension, prior caesarean section, diabetes, malformations, breech presentation, and placenta previa. Labor characteristics and neonatal outcomes of pregnancies at 41 and 42 weeks' gestation were assessed. Gestational age was calculated from the last menstrual period (LMP), sonography when available, and clinical examination. Mode of delivery, parity, maternal age, birth weight and admission of neonate to ICU were assessed. All ethical considerations were taken.

**Results:**

The present study included 754 pregnancies: 640 at 41 weeks (G1), and 114 at 42 weeks (G2). Mean maternal age was 29.12 years, mean birth weight was 3545.55 grams, and most of cases were nullipara. Results showed that the mode of delivery in both groups was spontaneous in 691 (91.6%) cases and induced in 63 (8.4%) cases, neonatal admission to SCBU were 2 (0.3%) of cases. Neonatal outcomes were similar in both groups, including 5 minute Apgar score less than 4, admission to the neonatal intensive care unit (NICU), umbilical artery pH less than 7, and perinatal mortality. Maternal age was significantly increased in the 42 week group more than the other group ( $30.2 \pm 6.1$  versus  $28.9 \pm 5.4$  years,  $P = 0.023$ ), as was birth weight ( $3853.8$  versus  $3490.6$  grams,  $P = 0.012$ ).

**Conclusion:**

**In the present study, mode of delivery and neonatal admission to ICU did not differ with increasing gestational age.**

**Keywords:**

**Postterm pregnancy, Gestational age, Post date, Mode of delivery, Neonatal outcomes, Prolonged pregnancy.**

**Introduction:**

Postterm pregnancy is defined as a pregnancy that extends to 42 weeks and beyond.<sup>(1)</sup> The reported frequency of postterm pregnancy is approximately 3-12%.<sup>(2)</sup> However, the actual biologic variation is likely less since the most frequent cause of a postterm pregnancy diagnosis is inaccurate dating.<sup>(3,4,5,6)</sup> Risk factors for actual postterm pregnancy include primiparity, prior postterm pregnancy, male gender of the fetus, and genetic factors.<sup>(7,8,9)</sup>

Although the last menstrual period (LMP) has been traditionally used to calculate the estimated due date (EDD), many inaccuracies exist using this method in women who have irregular cycles, have been on recent hormonal birth control, or who have first trimester bleeding. In particular, women are more likely to be oligo-ovulatory than polyovulatory, so cycles longer than 28 days are not uncommonly seen.<sup>(10,11,12,13)</sup> If such a cycle is 35 days instead of 28 days, a second trimester ultrasound will not be powerful enough to redate the pregnancy. Thus, not only the LMP date, but the regularity and length of cycles must be taken into account when estimating gestational age.

When determining a management plan for an impending postterm pregnancy (>40 wk of gestation but <42 wk), the 3 options are:

1. Elective induction of labor
2. Expectant management of the pregnancy
3. Antenatal testing. Each of these 3 options may be used at any particular time during this 2-

week period.

Recent studies have shown that the risks to the fetus<sup>(14,15)</sup> and to the mother of continuing the pregnancy beyond the estimated date of delivery is greater than originally appreciated.

Antepartum stillbirths account for more perinatal deaths than either complications of prematurity at 42 weeks of gestation is twice that at 40 weeks (4-7 vs 2-3 per 1,000 deliveries, respectively) and increases 4-fold at 43 weeks and 5- to 7-fold at 44 weeks.<sup>(16,17)</sup> These data also demonstrate that, when calculated per 1000 ongoing pregnancies, fetal and neonatal mortality rates increase sharply after 40 weeks.<sup>(16)</sup>

Cotzias et al calculated the risk of stillbirth in ongoing pregnancies for each gestational age from 35-43 weeks.<sup>(17)</sup> The risk of stillbirth was 1 in 926 ongoing pregnancies at 40 weeks' gestation, 1 in 826 at 41 weeks, 1 in 769 at 42 weeks, and 1 in 633 at 43 weeks. Uteroplacental insufficiency, asphyxia (with and without meconium), intrauterine infection, and anencephaly all contribute to excess perinatal deaths, although postterm anencephaly is essentially nonexistent with modern obstetrical care.<sup>(18)</sup>

A number of key morbidities are greater in infants born to postterm pregnancies as well as pregnancies that progress to and beyond 41 weeks gestation including meconium and meconium aspiration, neonatal academia, low Apgar scores, macrosomia, and, in turn, birth injury. For example, since postterm infants are larger than term infants, with a higher incidence of fetal macrosomia, they are, in turn, at greater risk for other complications. Such complications associated with fetal macrosomia include prolonged labor, cephalopelvic disproportion, and shoulder dystocia with resultant risks of orthopedic or neurologic injury.

Routine induction at 41 weeks of gestation does not increase the cesarean delivery rate and may

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decrease it without negatively affecting perinatal morbidity or mortality. In fact, both the woman and the neonate benefit from a policy of routine induction of labor in well-dated, low-risk pregnancies at 41 weeks' gestation. Because it is associated with a lower rate of adverse outcomes, including shoulder dystocia and meconium aspiration syndrome, this policy may also prove to be more cost-effective.<sup>(19)</sup>

### Objective:

To assess pregnancy outcomes at 41, and 42 weeks' gestation..

### Patients And Method

#### Setting:

Department of Obstetrics and Gynaecology at Alwahda Hospital, Dena-Libya, started from 1.1.2009 to 31.12.2009.

#### Design:

Phase I is descriptive study and phase II is an analytic study.

#### Subjects:

The study was conducted on 754 patients and divided into two groups according to gestational age, 40 weeks+ 1 day to 41 weeks (640 cases) and 41 weeks+ 1 day to 42 weeks or more (114 cases).

Authors excluded women with hypertension, prior caesarean section, diabetes, malformations, breech presentation, and placenta previa.

Nurses present at deliveries complete data sheets that are checked by research nurses for consistency and completeness. Data on infant outcomes are abstracted from records.

Labor characteristics and neonatal outcomes of pregnancies at 41 and 42 weeks' gestation were assessed. Gestational age was calculated from the last menstrual period (LMP), sonography when available, and clinical examination.

Mode of delivery, parity, maternal age, birth weight and admission of neonate to ICU were

assessed.

Neonatal outcomes included death before 28 days of age, 5-minute Apgar scores less than 4, and umbilical artery (UA) blood pH of 7.0 or less. Umbilical cord blood was drawn in all cases for measurement of pH. Morbidity included seizures during the 24 hours after birth, and admission to the neonatal intensive care unit (NICU).

Statistical analysis was done with SPSS 12 (SPSS, Chicago, IL). A significance level of  $p < 0.05$  was used for all tests.

All ethical considerations were taken.

### Results:

Authors studied 754 pregnancies: 640 at 41 weeks (G1), and 114 at 42 weeks (G2).

Table 1 shows the mode of delivery in all studied cases. Spontaneous vaginal delivery (SVD) represented 91.6% while induced vaginal delivery (IVD) represented 8.4% of cases.

Table 1: Mode of delivery for all studied cases.

Mode Of Delivery	No. Of Cases	Percent
SVD	691	91.6
IVD	63	8.4
Total	754	100.0

Table 2 shows the admission of newborns to special care baby unit (SCBU) which was 0.3% for all post-date cases.

Table 2: Neonatal admission to SCBU among studied cases.

Admission	No. Of Cases	Percent
No	752	99.7
Yes	2	0.3
Total	754	100.0

Table 3 shows the distribution of all cases by parity. The most common parity group was nulliparity (234) representing 31% and the least was para-nine (2) representing 0.3% of cases. The rate was less with increased parity.

Table 3: Parity among studied cases.

Parity	No. of cases	Percent
0	234	31.0
1	158	21.0
2	121	16.0
3	92	12.2
4	76	10.1
5	44	5.8
6	13	1.7
7	11	1.5
8	3	0.4
9	2	0.3
Total	754	100.0

Table 4 shows that maternal age was significantly increased in the 42- week G2 than G1 (30.2+ 6.1 versus 28.9+ 5.4 years, P= 0.02), as was birth weight (3853.8 versus 3490.6 grams, P= 0.012).

Table 4: Comparison between the two studied groups as regard maternal age and birth weight.

	Group	N	Mean	S.D.	T-Test	P Value
Maternal Age (Years)	G1	640	28.9	5.38	-2.28	0.023*
	G2	114	30.2	6.06		
Birth Weight (Grams)	G1	640	3490.6	486.6	-2.53	0.012*
	G2	114	3853.8	3449.1		

\*Significant as P<0.05.

Table 5 shows that the frequency of prolonged pregnancy is increased with low parity in both groups. In group (40- 41 weeks), nullipara was more common in 32.8% while in the second group nullipara represented 21.1%.

Table 5: Comparison between groups as regard Parity

Parity	No. of cases G1	No. of cases G2
0	210	24
1	136	23
2	98	22
3	78	17
4	59	14
5	37	7
6	10	3
7	8	3
8	3	1
9	1	114
Total	640	24

Chi-square= 716, P <0.001

**Discussion:**

Clinicians must balance the risk of delivery against the fetal or maternal complications of continuing pregnancy. Such risks include prolonged labor, increased analgesic requirements, increased intervention (invasive antenatal testing, operative vaginal delivery, failed induction and caesarean section) and ultimately increased maternal morbidity.<sup>(20,21)</sup>

In the present study, authors studied 754 pregnancies: 640 at 41 weeks (G1), and 114 at 42 weeks (G2). The most of the cases of postdate were delivered spontaneously (91.6%) and only 8.4% delivered after induction of labor. The neonatal outcome was excellent and 99.7% with mother and only 0.3% admitted to SCBU. Mean maternal age was 29.12 years, mean birth weight was 3545.55 grams, and most of cases were nullipara.

Neonatal outcomes were similar in the two groups, including 5-minute Apgar score less than 4, admission to the neonatal intensive care unit (NICU), umbilical artery pH less than 7, and perinatal mortality. Maternal age was significantly increased in the 42-week group than the other group (30.2+ 6.1 versus 28.9+ 5.4 years, P= 0.023), as was birth weight (3853.8 versus 3490.6 grams, P= 0.012).

The prolonged pregnancy common with nullipara and reduced in frequency with increased parity. Mean age group was 29.12 (SD=5.5), mean birth weight was 3545 grams (SD=1415.3) .

The frequency of prolonged pregnancy is increased with low parity in both groups. In group (40- 41 weeks), nullipara was more common in 32.8% while in the second group nullipara represented 21.1%.

A study by Alexander et al<sup>(22)</sup> compared labor characteristics and neonatal outcomes of pregnancies at 40, 41 and 42 weeks' gestation. They found that labor complications (including oxytocin induction,

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length of labor, and prolonged second stage of labor, forceps use and cesarean delivery) increased from 40 to 42 weeks. Neonatal outcomes were similar in the three groups.

Otoide and Okonofua<sup>(23)</sup> evaluated whether routine induction of labor at 41-42 weeks of gestation has an increased risk for operative delivery, maternal or fetal complication compared with spontaneously initiated labor of similar gestation. There was no significant difference in caesarean section rates in the induction group, compared with spontaneously initiated labor.

Çağlar and Avşar<sup>(24)</sup> also determined the mode of delivery and fetal distress rates after 40 completed weeks of gestational age. 75% of the patients were at 40 completed weeks of gestational age, 20% were at 41 completed weeks of gestational age, 4.85% were at 42 completed weeks of gestational age. In their study, cesarean delivery and fetal distress rates were increased after 40 completed weeks of gestational age.

Another study from by Arıgüloğlu et al<sup>(25)</sup> aimed to find out the incidence of macrosomia and the best approach to the delivery of postterm pregnancy and revealed the incidence of macrosomia to be 23.5%. Cesarean section rate was 30% in postterm group and 17% in term group.

It could be concluded that post-term pregnancy is a condition that continues to evoke anxiety in clinicians and women alike. Assessing the perinatal mortality rate underestimates the risk; it is appropriate to calculate the risk of stillbirth in terms of ongoing pregnancies at a particular gestation, and this gives a six-fold increase in risk from 37 to 43 weeks gestation.

### Recommendations:

- ✘ Induction of labour at 41+ weeks significantly reduces the perinatal mortality rate and possibly the Caesarean section rate.
- ✘ Available data suggest that the simplest monitoring is as effective as most sophisticated testing.

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**المخلص**

**دراسة حالات حديثي الولادة في حالات الحمل والتي تعدت الأسبوع**

**الأربعين من العمر الرحمي**

هناك دراسات حديثة وعديدة تبين أن هناك عوامل خطيرة سواء على الجنين أو الأم وذلك في حالة استمرار الحمل بعد الفترة الطبيعية والمحسوبة للولادة.

**الهدف:**

يهدف البحث إلى تقييم حالات الأطفال حديثي الولادة عن حمل في الأسبوع ٤١ أو الأسبوع ٤٢ من العمر الرحمي.

**المنهجية:**

تم مراجعة الولادات الناتجة عن الحمل في الأسبوع الرحمي ٤١ أو بعد ذلك في قسم النساء والتوليد بمستشفى الوحدة التعليمي بدرنة- ليبيا وذلك في الفترة من بداية يناير ٢٠٠٩م وحتى نهاية ديسمبر ٢٠٠٩.

تم استبعاد الحالات التي تعاني من ارتفاع ضغط الدم أو التي سبق لها الولادة بشق البطن أو القيصرية.

لجميع الحالات تم حساب العمر الرحمي، والأشعة الموجات فوق الصوتية والكشف الاكلينيكي ونوع الولادة وعدد الولادات السابقة وعمر الأم ووزن الطفل عند الولادة وهل احتاج الطفل إلى الدخول لوحدة العناية المركزة أم لا.

**النتائج:**

شملت الدراسة ٧٥٤ حالة حمل منهم ٦٤٠ حالة تمت ولادتها في الأسبوع ٤١ من العمر الرحمي، و١١٤ حالة عند الأسبوع ٤٢ من العمر الرحمي. وكان متوسط أعمار الأمهات ٢٩,١٢ سنة. ومتوسط أوزان الأطفال عند الولادة ٣٥٤٥,٥٥ جراما، وأغلب الحالات كانت الولادة الأولى بالنسبة لهم، ونسبة الولادات الطبيعية كانت ٩١,٦% من الحالات، وأظهرت النتائج أن متوسط أعمار الأمهات ومتوسط أوزان الأطفال عند الولادة لحالات الحمل عند الأسبوع ٤٢ من العمر الرحمي أعلى بنسبة ذو دلالة إحصائية عند مقارنتها بالحالات التي تم ولادتها عند الأسبوع ٤١ من العمر الرحمي.