



Maternal and Fetal Outcome of Postdate Pregnancy in Wad Madani

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Abstract

Background: Background Post-date pregnancy is associated with an increased risk of fetal and neonatal mortality and morbidity as well as an increased maternal morbidity.

Purpose: To study maternal and fetal outcomes of postdate pregnancy in Wad Madani Maternity Teaching Hospital, Gazira State.

Methods: It was a case-control and hospital-based study carried out at Wad Madani Obstetrics and Gynecology Teaching Hospital from March to September 2021. Hundred-two women having pregnancy beyond 40 weeks represented the main study group, while another 204 pregnant women between 37 and 40 weeks of gestation were selected as the control group.

Results: The mean age was 31.2 ± 8.4 years among the study group (post-date women), and it was 28.3 ± 6.4 among the control group (term pregnant women). The majority of them 47.1% had primary education, and 49(48.1%) of them were multipara. About two-thirds of them 78 (76.5%) were in gestational age of 41 – 42 weeks. The complication was obstructed labor 6(5.9%), PPH 5(4.9%), perineal tear 5(4.9%), and sepsis 4(3.9%) in postdate women, while in term women obstructed labor 2 (5.9%), PPH 4 (1.9%), perineal tear 4 (1.9%) and sepsis 2 (1.0%). In the current study, postdate women showed higher fetal and neonatal morbidity and mortality compared with term pregnant women (10.8%) stillbirth against (2.9%) with a P value of 0.04.

Conclusion: Pregnancy outcomes in post-date pregnancy were significantly poor due to macrosomia, stillbirth, high incidence of cesarean section rates, and increased rate of instrumental vaginal delivery.

Keywords: Postdate Pregnancy; Maternal Outcome; Fetal Outcome; Term Pregnancy

Abbreviations: CS: Cesarean Section; CP: Cerebral Palsy; FTP: Failure to Progress; IUGR: Intrauterine Growth Restriction; IVD: Instrumental Vaginal Delivery; RDS: Respiratory Distress Syndrome; PPH: Postpartum

Hemorrhage; PG: Primigravida; SPSS: Statistical Package for Social Sciences; SMSB: Sudan Medical Specialization Board; SVD: Spontaneous Vaginal Delivery; WHO: World Health Organization; X2: Chi-Square Test.

Introduction

Post-date pregnancy is defined as a pregnancy that has lasted longer than 40 completed weeks, or 280 days, from the first day of the last menstrual cycle. This duration is thought to be the upper limit of a typical pregnancy. Pregnancy that reaches or surpasses 42 weeks of gestation is referred to as a post-term pregnancy [1]. Post-date pregnancy is associated with an increased risk of fetal and neonatal mortality and morbidity and increased maternal morbidity [2-4]. The incidence of postdate pregnancy is approximately 7% of all pregnancies [5]. Complications for the mother and fetus occur in subsequent pregnancies. It has been reported that in a pregnancy that has exceeded the expected due date; There is an increased risk of oligohydramnios, meconium-stained amniotic fluid, macrosomia, fetal post-maturity syndrome, and cesarean section, which endanger both the baby and the mother [6].

The complication rate increases when the pregnancy advances its due date before the 42nd week of pregnancy is reached [7-9]. Overall, the study found that the IOL at 41 weeks improved perinatal outcomes compared to expectant management through 42 weeks, without increasing cesarean delivery rates. This benefit was only seen in nulliparous women, whereas in multiparous women the incidence of mortality and morbidity was too low to detect an effect. The extent of risk reduction in perinatal mortality remains uncertain. Women approaching 41 weeks of pregnancy should be informed of the risk differences based on parity so that they can make an informed decision about an IOL at 41 weeks or expectant management until 42 weeks [10]. When women pass their due dates, tests to determine the risks of fetal compromise and stillbirth by mother measurement of fetal movement, Nonstress test (NST), and contraction stress test (CST) [11-13]. Ultrasound scan for amniotic fluid calculation, biophysical profile and umbilical artery Doppler, and cerebral artery flow [14,15]. Fetal estimated weight to determine the fetal risk of macrosomia (more than 4kg) [16,17].

Bishop's score for cervical conditions and success of induction [18,19]. A previous study in Sudan found the prevalence of 5% of postdated deliveries normal vaginal delivery was (79.7%) of postdate women, cesarean section (14.5%), and instrumental delivery (5.8%). Maternal complications that developed (7.2%) had post-partum hemorrhage (PPH), cervical tears (1.4%), postpartum infections (1.4%), and (.7%) perineal tears. Also, neonatal complications (14.5%), asphyxia (6.5%), meconium aspiration (5.1%), and shoulder dystocia (2.9%), neonatal death was 3% [20]. A study conducted in Nigeria among postdate women found (73.9%) delivered vaginally while cesarean sections (25.0%) of women, neonatal complications

(10.2%) developed neonatal sepsis, neonatal death (1.1%), and post-partum hemorrhage 6.8% [21].

Induction protocols for subsequent pregnancies recommend inducing labor starting at 41 weeks expectant management and fetal monitoring is also acceptable for women who refuse active treatment [22]. Local management practices such as scheduled IOLs, differences in the use of early ultrasound for gestational dating, and the frequency of elective cesarean sections (CS) affect the overall prevalence of postdate pregnancies. This study attempts to investigate the maternal and fetal outcomes of postdate pregnancies compared to term pregnancy in Wad Madani Maternity Hospital, Wad Madani, Gazira State.

Material and Methods

It was a case-control and hospital-based study carried out at Wad Madani Obstetrics and Gynecology Teaching Hospital. During the period from March to September 2021. Hundred-two women having pregnancy beyond 40 weeks without any other associated problem were enrolled in the study, representing the main study group, while another 204 pregnant women who were admitted for delivery between 37 and 40 weeks of gestation were selected as the control group. Inclusion criteria were women with regular menstrual periods before pregnancy, sure of their last menstrual date who were sure of dates, first-trimester ultrasound scan for dates undertaken, singleton pregnancy, and cephalic presentation. The study excluded uncertain dates, multiple pregnancies, and previous cesarean section delivery. Sampling by randomized methods for each postdates women case we compare with two of term pregnancies (37-40) weeks.

Participants completed a questionnaire on personal data and clinical history. Data regarding socio-demographic data and history was taken and the patient's age and last menstrual period were recorded. The period of gestation was calculated by the last menstrual period. The estimated date of delivery was calculated by adding 9 months and 7 days to the last menstrual period date Obstetric history. The outcome parameters in this study are maternal and fetal outcomes, maternal complications and outcomes, fetal, and neonatal complications, and outcomes of both groups were noted. Fetal complications include (perinatal mortality, low Apgar score, birth asphyxia, RDS, Meconium aspirations, and macrosomia). Statistical analysis was performed via SPSS software (SPSS, Chicago, IL, USA). Continuous variables were compared using the student's t-test (for paired data) or the Mann-Whitney U test for non-parametric data. For categorical data, a comparison was done using the Chi-square test (χ^2) or Fisher's exact test when appropriate. A P-value of <0.05 was considered statistically significant. Ethical

clearance and approval for conducting this research were obtained from the Sudan Medical Specialization Board, and the Education and Development Center general manager of Wad Mani Maternity Teaching Hospital, and informed written consent was obtained from every respondent who agreed to participate in the study. The respondents informed that the study is not associated with experimental or therapeutic intervention while information was collected from them.

Result

The mean age was 31.2 ± 8.4 Years among the study group (postdate women), and it was 28.3 ± 6.4 among the control group (term pregnant women). Majority of them 48(47.1) % had secondary educational, 49(48.1%) of them were multipara. About two-thirds of them 78 (76.5%) were in gestational age of 41 - 42 weeks, 15(14.7%) were obese, 9 (8.8%) had a positive history of postdate pregnancy and 7 (6.9%) had a positive family history of postdate pregnancy (Table 1). The mean gestational age was 40.9 ± 4.1 weeks among the study group (postdate women), and it was 38.2 ± 2.1 among the control group. The rate of CS is high among postdate women (45%) compared with term pregnant women (31%). In regards to maternal outcome, about 94.2% of term pregnant women were without maternal complications compared with 53. % postdates women without maternal

complication. The complication was obstructed labor 6(5.9%), PPH 5(4.9%), perineal tear 5(4.9%), and sepsis 4(3.9%) in postdate women, while in term women obstructed labor 2 (5.9%), PPH 4 (1.9%), perineal tear 4 (1.9%) and sepsis 2 (1.0%). Concerning the fetal complications, the study reported that fetal complications among postdate women such as low Apgar score (13.8%), meconium aspiration syndrome (17.6%), IUGR (3.9%) and RDS were (6.9%) less than fetal complication among term pregnant woman, low Apgar score (13.7%), meconium aspiration syndrome (1.5%), IUGR (1.9%) and RDS was (2.9%).

In the current study, postdate women showed higher fetal and neonatal morbidity and mortality compared with term pregnant women (10.8% stillbirth against 2.9% with P value 0.04) (Table 2) among post-dated subjects, the cesarean section rate was 34.5% in (40-41) weeks of pregnancy, (50%) in (41-42) weeks of pregnancy, and (66.7%) in >42 weeks of pregnancy. Among the post-dated group, the meconium was found in 29.3% of cases at (40-41) weeks, 30.0% of cases at (41-42) weeks, and 58.3% of cases at >42 weeks. Meconium aspiration in (5.2%) at 40-41 weeks, (20.0%) at 41-42 weeks, and (45.8%) at >42 weeks. Fetal outcome with APGAR score >7 is (94.8%) at 40-41 weeks, is 65% at (41-42) weeks and (29.2%) at >42 weeks (Table 3).

Demographic and clinical characteristics	Term		Postdate >40weeks		P value
	37-40 weeks		Count	%	
	Count	%			
Age in Years					0.01*
<20	21	10.40%	20	19.60%	
20-30	98	48.00%	28	27.50%	
31 -40	69	33.80%	42	41.20%	
>40	16	7.80%	12	11.70%	
Total	204	100.00%	102	100.00%	
Education					0.04*
Illiterate	22	10.80%	10	9.80%	
Primary	64	31.40%	26	25.50%	
Secondary	82	40.20%	48	47.10%	
University	36	17.60%	18	17.60%	
Total	204	100.00%	102	100.00%	
Party					0.00*
PG	62	30.40%	35	34.30%	
Multipara	95	46.60%	49	48.10%	
Grandmultipra	47	23.00%	18	17.60%	
Total	204	100.00%	102	100.00%	

Gestational age					0.00*
37-40 weeks	204	100.00%	0	0.00%	
40+1day-41 weeks	0	0.00%	58	56.90%	
41+1day-42 weeks	0	0.00%	20	19.60%	
>42 weeks	0	0.00%	24	23.50%	
Total	204	100.00%	102	100.00%	
Risk factors					0.01*
None	193	94.60%	71	69.60%	
Obesity	5	2.50%	15	14.70%	
History of postdate	2	1.00%	9	8.80%	
family history of postdate	4	1.90%	7	6.90%	
Total	204	100.00%	102	100.00%	

Table 1: Demographic and clinical characteristics of Term and Postdate Pregnancy (n=306) statistically significant at P-value .05.

Maternal and Fetal Outcome	Term		Postdate>40weeks		P value
	37-40 weeks		Count	%	
	Count	%			
Maternal Complications					0.01*
Obstructed labour	2	01.0%	6	5.90%	
Perineal tear	4	01.9%	5	4.90%	
PPH	4	1.90%	5	4.90%	
Sepsis	2	1.00%	4	3.90%	
None	192	94.2%	82	80.40%	
Fetal Complications					0.00*
None	184	90.2%	55	53.90%	
Meconium aspirations	3	01.5%	18	17.60%	
Macrosomia	5	02.5%	4	3.90%	
IUGR	4	01.9%	4	3.90%	
RDS	6	02.9%	7	6.90%	
Apgar Score < 7	2	01.0%	14	13.80%	
Total	204	100.00%	102	100.00%	
Mode of Delivery					0.01*
SVD	136	66.70%	54	52.90%	
IVD	4	1.90%	2	2.00%	
C/S	64	31.40%	46	45.10%	
Total	204	100.00%	102	100.00%	
Neonatal Outcome					0.04*
Live Birth	198	97.10%	91	89.20%	
Fresh still Birth	5	2.50%	9	8.80%	
Macerated still Birth	1	0.40%	2	2.00%	
Total	204	100.00%	102	100.00%	

Fetal Weight						0.00*
<2.5 kg	22	10.80%	4	03.9%		
2.5-3 kg	61	29.90%	18	17.6%		
3.1-3.5 kg	81	39.70%	31	30.40%		
>3.5 kg	40	19.60%	49	48.10%		
Total	204	100.00%	102	100.00%		
Apgar Score						0.00*
4-Jan	0	0.00%	6	5.90%		
7-May	2	1.00%	8	7.80%		
>7	202	99.00%	88	86.30%		
Total	204	100.00%	102	100.00%		

Table 2: Maternal and Fetal outcome correlation in Term and Postdate Pregnancy (n=306) statistically significant at P-value .05.

Pregnancy outcome among postdate		Gestational age among the post-date group						P value
		40+1day-41 weeks		41+1day-42 weeks		More than 42 weeks		
		(n = 58)		(n = 20)		(n = 24)		
		Freq.	%	Freq.	%	Freq.	%	
Mode of delivery	VD	38	65.5	10	50	8	33.3	< 0.001*
	C/S	20	34.5	10	50	16	66.7	
	Total	58	100	20	100	24	100	
Presence of meconium during labor (n =33)	Yes	17	29.3	6	30	10	58.3	0.00*
	No	41	70.7	14	70	14	41.7	
	Total	58	100	20	100	24	100	
Meconium aspiration (n = 18)	Yes	3	5.2	4	20	11	45.8	< 0.001*
	No	55	94.8	16	80	13	54.2	
	Total	58	100	20	100	24	100	
Apgar score	4-Jan	2	3.4	4	20	8	33.3	0.004*
	7-May	1	1.8	3	15	9	37.5	
	> 7	55	94.8	13	65	7	29.2	

Table 3: Gestational age of post-date women about pregnancy outcome (n=102) statistically significant at P-value .05.

Discussion

Post-date pregnancies are associated with increased fetal and neonatal mortality and morbidity as well as maternal morbidity. These risks are greater than it was originally thought. This was a case-control study aimed at studying maternal and fetal outcomes of postdate pregnancy compared with term pregnancy in Wad Madani maternity teaching hospital, Wad Madani, Gazira State, 2021. The mean age was 31.2 ± 8.4 Years among the study group (post-date women), and it was 28.3 ± 6.4 among the control group term

pregnant women. The association between age and post-date pregnancy was statistically significant. Similarly, studies by Paliulytė V et al studied age distribution among pregnancies beyond 41 weeks of gestation and found a statistically significant correlation with age [23]. Another study found a mean age of 26.34 Years within the range of (17 -40) Years [24].

The mean gestational age was 40.9 ± 4.1 weeks among the study group (post-date women), and it was 38.2 ± 2.1 among the control group. In studies done by Francis S et

al, and Patel N et al, the maximum number of patients was between 40 to 40.6 weeks which is similar to our study in which (69.8%) of our patients are between 40 to 40.6 weeks of gestation [25,26]. Singh S, et al. found 77.5% at gestational age (40 to 40 + 6) weeks, (20%) at (41 to 41 +6) weeks and 2.5% at >42 weeks [27]. The current study found that the majority of post-date patients were multiparty. Our finding was supported by Akhter S, who studied the distribution of parity among postdate pregnancies and found that a maximum (63%) of patients were multigravida [28]. The rate of CS is high among post-date women (45%) compared with term pregnant women (31%), likewise, in Egypt, Ahlam Mohamed Elsayed, et al. revealed that women with post-date pregnancy had more cesarean section and more induction of labor [29]. Moreover, in Iran, Khooshideh, et al. stated that there was a significant increase among postdate pregnant women in the rate of cesarean section [30] which was lower than Dagli and France's study found cesarean section (58%) [31]. this may be due to the presence of meconium, failed induction, and placental maturation leading to fetal jeopardy during labor.

The present study revealed that the most maternal complications were obstructed labor, followed by perineal tear, postpartum hemorrhage, and sepsis were significantly high in post-date as compared to term pregnant women. Various studies by Ahlam Mohamed Elsayed, et al. [29] revealed that women with post-term pregnancy were significantly more likely to have obstructed labor, perineal tear, primary postpartum hemorrhage, and increased duration of labor Furthermore, in India; Ritika Bhriegu, et al. [32] reported that postdated pregnancy was a significantly increased risk of obstetric complications like oligohydramnios, perineal tear, atonic PPH, and shoulder dystocia. In the current study, postdate women showed higher fetal and neonatal morbidity and mortality compared with term pregnant women (10.1% stillbirth against 2.9% with P value 0.01). Most large studies worldwide have reported similar findings [30-33]. Moreover, Maoz O et al found that perinatal mortality rates were significantly higher at postdate [33]. So, many studies concluded that post-term delivery involves higher rates of adverse perinatal outcomes and is independently associated with significant perinatal mortality [30-33], Sarmah, et al. [34] found increased maternal morbidity with an advanced gestational age wound infection (3%), atonic PPH (1.5%), cesarean rate of (32.8%), the instrumental delivery rate of (7.2%) perineal tear (9.1%), para-urethral tear (6.8%) and then cervical tear 4.5% and shoulder dystocia 4.5%. Concerning the fetal complications, the study reported that fetal complications among post-date women such as low Apgar score (11.8%), meconium aspiration syndrome (8.5%), IUGR (3.9%), and RDS (6.9%) less than fetal complication among term pregnant woman, low Apgar score (0.9%), meconium aspiration syndrome

(1.5%), IUGR (1.9%) and RDS were (2.9%).

Most large studies worldwide have reported similar findings Usher RH et al in Canada reported that fetal distress and meconium release were twice as frequent and meconium aspiration eight times as frequent in post-date [35-38]. Moreover, in Finland Laura Seikku et al added that compared with full-term pregnancies, postdate birth increased the risk for low Apgar score (<4) at 1 minute and 5 minutes, whereas risks for CP, epilepsy, sensorineural defects, and perinatal mortality (0.91, 0.69–1.22) were not increased [32,36]. Pregnancy outcomes in prolonged pregnancy were significantly poor due to macrosomia, stillbirth, high incidence of cesarean section rates, and increased rate of IVD. Their fetal well-being must be assessed and induction of labor should be considered to decrease the risk of perinatal morbidity and mortality [39,40].

Strength and Limitations

One of the strengths of the study is that it compares all sociodemographic factors, maternal outcomes, and fetal outcomes in postdate women versus term pregnant women. Also, the hospital as a referral hospital in the Gazira state enables the researcher to include an adequate sample. The limitations of the study are that methods of induction of labor and indications of cesarean section were not evaluated.

Conclusion

Pregnancy outcome of postdate pregnancy is associated with adverse maternal morbidity, perinatal morbidity, and mortality (i.e., stillbirths plus early neonatal deaths) due to macrosomia, stillbirth, high incidence of cesarean section rates, and increased rate of IVD. Women with postdate pregnancy present late with complications making surgical interventions inevitable because of fetal distress, macrosomia, FTP, and prolonged obstructed labor.

Recommendations

Based on our findings that post-term delivery is associated with higher rates of fetal and neonatal morbidity and maternal risks; then, termination before 40 weeks of gestation, and earlier birth induction is recommended in such cases. Management of pregnancies that progress past their expected dates should include counseling regarding the risks of increasing gestational age. The routine induction of labor in postdate pregnancy may reduce perinatal morbidity, as indicated in previous studies, and confirmed in our study. The outcome of postdate pregnancy can be improved by proper counseling for follow-up during pregnancy and proper monitoring and appropriate management during labor.

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Author Contribution

All authors contributed to the manuscript writing. Ahamed Al Mustafa, Sana Kamal, Bashir Abdeen, and Hajar Suliman were involved in the conception and design of the study, writing the proposal, analysis, interpretation of data, and manuscript writing. Awadalla Abdelwahid and Siddig Omer were involved in the analysis and interpretation of data, methodology, and manuscript writing.

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