1 Fetomaternal outcome in PostDated pregnancy in Tertiary care centre

# 2 Abstract

#### 3 Introduction

Postdated pregnancy contributes significantly to perinatal morbidity and mortality.
Identifying its outcomes is crucial for developing context-specific care guidelines. *Objective*:
To assess maternal morbidity, mortality, and fetal outcomes in postdated pregnancies in a
tertiary care hospital.

#### 8 Materials and Methods:

This prospective observational study was conducted from April to July 2023 in the 9 Department of Obstetrics and Gynecology at Govt. RDBP Jaipuria Hospital, Jaipur. A total of 10 11 108 women with singleton, cephalic, postdated pregnancies were enrolled using purposive 12 sampling. Women with high-risk conditions or prior cesarean sections were excluded. After informed consent, detailed obstetric histories, clinical examinations, and intrapartum 13 monitoring were conducted. Labour was managed based on Bishop's score, and outcomes 14 15 were documented until hospital discharge. Statistical analysis was performed using Microsoft Office 365, with p-values <0.05 considered significant. 16

### 17 **Results**

Most participants were aged 21–25 years (52.8%), primiparous (58.3%), and delivered between 40–41 weeks (54.6%). Vaginal deliveries (63.9%) outnumbered caesarean sections (36.1%). Common indications for caesarean included fetal distress (38.5%) and CPD/arrest of labor (25.6%). Maternal complications occurred in 7.4% of cases, with postpartum hemorrhage and chorioamnionitis being most common (2.8% each). Respiratory distress (13.9%) and meconium aspiration syndrome (5.6%) were the leading neonatal complications. The association between gestational age and complications was statistically insignificant.

### 25 Conclusion

Though most postdated pregnancies resulted in favorable outcomes, careful monitoring,
timely intervention, and individualized labour strategies are essential to minimize risks and
optimize maternal and fetal health.

*Keywords:* Gestational age, Maternal complications, Neonatal complications, Postdated
pregnancy, Vaginal delivery.

## 31 Introduction

A full-term pregnancy lasts 39–40 weeks and 6 days from the first day of the last menstrual 32 33 cycle. Late-term pregnancy is defined as 41–42 weeks of pregnancy. Gestation over 40 weeks or 280 days is referred to as post-dated pregnancy. Any pregnancy lasting 294 days or longer 34 is considered prolonged.<sup>1-3</sup> A postdated pregnancy occurs around 7% of the time.<sup>4</sup> Significant 35 risks associated with postdated pregnancy include labor dystocia (9-12% versus 2-7% at 36 37 term), severe perinatal injury related to macrosomia (3.3% versus 2.6% at term), and a doubling of the caesarean delivery rate with associated endometritis, 38 PPH. and thrombophlebitis.<sup>5</sup> 39

The origin of the majority of postdated pregnancies is unknown. Prior postdated pregnancies 40 and primigravidity are the most common observable risk factors. The likelihood of becoming 41 pregnant again increases two to three times after a postdated pregnancy, and the risk 42 quadruples after two postdated pregnancies.<sup>6</sup> The perinatal mortality rate (stillbirth plus early 43 neonatal deaths) is double that of term at more than 40 weeks of gestation (4–7 deaths against 44 2-3 deaths per 1000 babies), and it rises by a factor of 6 or more at 43 weeks and beyond. 45 46 Intrauterine infection, meconium aspiration, and uteroplacental insufficiency all raise the risk of perinatal deaths. Additionally, low 5-minute APGAR scores and low umbilical artery pH 47 levels at birth are independent risk factors for postdated pregnancy.<sup>5,7</sup> It is essential to detect 48 postdated pregnancy before to delivery by evaluating risk factors, precisely scheduling, and 49 50 providing the right care in order to prevent obstetric issues (for both the mother and the fetus) and improve the obstetric result. Therefore, this study will assist in identifying the variations 51 in perinatal outcomes of postdated pregnancy and in the development of our own care 52 guidelines for postdated pregnancy based on regional data. *Objective*- To assess the Maternal 53 Mortality, Morbidity and fetal outcome in postdated pregnancy in a tertiary care hospital. 54

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# 56 Materials and Methods

This Hospital-based Prospective Observational study was carried out in the Department of
Obstetrics and Gynecology, Govt. RDBP Jaipuria Hospital, RUHS CMS, Jaipur. This study
was conducted from April 2023 to July 2023 after institutional ethical committee approval,
NBE Registration No. 225-39129-211-239558.

61 A total of 108 postdated pregnancy were included in the study through purposive 62 sampling. Women with singleton pregnancies and cephalic presentation, who were postdated 63 with regular menstrual cycles and either a known last menstrual period (LMP) or confirmed 64 gestational age through first trimester ultrasonography. Only uncomplicated antenatal cases 65 beyond 40 weeks of gestation, who were willing to participate in the study, were included in 66 the study. High-risk pregnancies like diabetes, antepartum haemorrhage, premature rupture of 67 membranes, pregnancy-induced hypertension, heart disease, chronic hypertension, or chronic renal disease, and/or with a history of previous caesarean section, those with congenital 68 69 anomalies, multiple gestations, or malpresentation were excluded from the study.

#### 70 Methodology

Written Informed consent was obtained from all participants prior to enrolment. Privacy and confidentiality were ensured. A detailed clinical history was recorded, including the patient's age, antenatal booking status, socio-economic background, parity, menstrual history, time of onset and characteristics of leaking (amount, color, odor), association with pain or bleeding per vagina, perception of fetal movements, history of similar episodes in previous pregnancies, and any features suggestive of cervical incompetence.

Obstetric examination included assessment of the height of uterine fundus, fetal lie, 77 78 presentation and position, engagement of the presenting part, and the condition of the uterus 79 (contracted or relaxed). Uterine tenderness was assessed as a clinical sign of 80 chorioamnionitis. Fetal heart sounds were auscultated and their rate, rhythm, and tone were documented. A sterile speculum examination was performed to assess the presence of 81 82 amniotic fluid in the vaginal canal. A single pelvic examination was performed to evaluate the Bishop's score, pelvic adequacy, presence of cephalopelvic disproportion (CPD), and to 83 rule out cord prolapse. 84

Maternal monitoring included recording of pulse, blood pressure, and temperature every four hours. Fetal heart sounds were monitored every 30 minutes initially. Labour management was based on the Bishop's score. Labour was either allowed to progress spontaneously or was induced using cerviprime gel or misoprostol 25 mcg in accordance with RCOG guidelines. Throughout the intrapartum period, complications such as fetal distress, abnormal fetal heart rate patterns, and clinical signs of chorioamnionitis were closely monitored. Cases exhibiting fetal jeopardy or other obstetric complications underwent timely 92 caesarean delivery. During the third stage of labour, mothers were observed for complications 93 such as postpartum haemorrhage and retained placenta. Postpartum follow-up included 94 monitoring for puerperal sepsis, urinary tract infections, respiratory tract infections, and 95 wound infections at episiotomy or caesarean section sites. Symptoms such as foul-smelling 96 lochia and febrile illness were specifically inquired about during the puerperal period.

97 Neonates were followed postnatally for mortality and morbidity. Particular attention
98 was given to identifying complications such as birth injuries, signs of asphyxia, meconium
99 aspiration, and neonatal sepsis. Both maternal and neonatal outcomes were recorded until the
100 time of discharge from the hospital.

#### 101 Statistical Analysis

Data analysis was performed using Microsoft Office 365. Continuous variables were
 expressed as mean ± SD or median (IQR), and comparisons between groups were made using
 Student's t-test, Chi-square test, or Fisher's exact test as appropriate.<sup>8</sup> p-values <0.05 were</li>
 considered statistically significant.

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### 107 **Results**

108 [Table 1] The majority of the participants were aged between 21–25 years 109 (52.8%), followed by 26-30 years (25.0%). Most women were at 40-41 weeks of gestation (54.6%), and 58.3% were primiparous. Adequate amniotic fluid was observed in 110 111 75.9% of the cases. Most of women 60.2% had spontaneous onset, while 39.8% underwent induction. Vaginal deliveries were more common (63.9%) compared to 112 113 caesarean sections (36.1%). The most common indication was fetal distress in (38.5%, 15/39) cases, followed by cephalopelvic disproportion (CPD) or arrest of labor in (25.6%, 114 115 10/39), oligohydramnios in (20.5%, 8/39) of and failed induction was the indication in (15.4%, 6/39) of cases. 116

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118 [Table 2] Postpartum hemorrhage and chorioamnionitis each occurring in 2.8% of the 119 participants, and perineal tear reported in 1.9% of cases. However, the majority (92.6%) did 120 not have any maternal complications. Most newborns (76.9%) had no complications. The 121 most common complication was respiratory distress in 13.9% of neonates, followed by 122 meconium aspiration syndrome (5.6%), septicemia (1.9%), shoulder dystocia (0.9%), and

- stillbirth (0.9%). 81.5% of neonates were in excellent condition (score 7–10), while 18.5%
  were moderately depressed (score 4–6), and none were severely depressed at 1 min. By 5
  minutes, 93.5% of neonates scoring in the excellent range and only 6.5% remaining
  moderately depressed, with no cases of severe depression. The majority of children (83;
  76.8%) were not admitted to the NICU, while the remaining 25 (23.1%) required NICU
  admission due to complications.
- The majority of infants, 72 (66.7%), had a birth weight between 2.5–3 kg, Low birth weight
  (<2.5 kg) was observed in 16 (14.8%) newborns, while 17 (15.7%) had a birth weight</li>
  between 3–3.5 kg and 3 (2.7%) newborns weighed more than 3.5 kg.

[Table 3] A higher proportion of spontaneous labour was observed in women delivering at 40–41 weeks (60%) compared to later gestational ages, with increase in gestational age there was increase in proportion of women with induced labour, although this association was not statistically significant (P = 0.058). Vaginal delivery being most common at 40–41 weeks (69.5%), while caesarean section rates increased with advancing gestational age, this association of mode of delivery with gestational age was statistically significant (p<0.05).

- 138 [Table 4] Most maternal complications occurred in the 40–41 weeks group—66.7% of
- 139 postpartum hemorrhage and chorioamnionitis, and 50% of perineal tears. No complications
- 140 were reported in the >42 weeks group for postpartum hemorrhage or perineal tear, although
- 141 one case of chorioamnionitis (33.3%) occurred in this group. [Table 5] The 40–41 weeks
- 142 group had the highest share of fetal complications, including 66.7% of meconium aspiration
- syndrome and 46.7% of respiratory distress cases. In contrast, rare but severe outcomes such
- as shoulder dystocia and stillbirth were exclusively observed in the 41–42 weeks group.
- 145 Notably, the >42 weeks group had a smaller sample size but still showed 20% of respiratory
- 146 distress cases. Association of gestational age with maternal and fetal complications was
- 147 statistically insignificant (p>0.05).

## 148 **Discussion**

#### 149 Maternal Age Distribution

In the present study, the majority of participants (52.8%) were aged 21–25 years, while only 6.4% were above 30 years. This finding aligns with the study by Bhriegu R et al<sup>9</sup>, where 79% of the participants were within the 20–25 age group. A similar age distribution was also reported by Punya BS et al<sup>10</sup>.

#### 154 *Gestational Age Distribution*

Most women in this study (54.6%) were between 40–41 weeks of gestation, with only 5.6% beyond 42 weeks. This is consistent with findings from Bansal P et al<sup>11</sup> and Kandalgaonkar VP et al<sup>12</sup>, where the majority of postdated pregnancies also occurred within the 40–41 week range.

159 Parity

Primiparous women comprised 58.3% of the study population, suggesting a higher incidence of postdated pregnancy among primigravidas. This trend is supported by Punya BS et al<sup>10</sup> and Golait S et al<sup>13</sup>, who also observed a greater prevalence of postdated pregnancy in primigravida women, indicating a potential predisposition in this group.

#### 164 *Mode of Delivery*

Spontaneous labor occurred in 60.1% of cases, while 39.9% underwent induction. Vaginal 165 deliveries were more common at 40–41 weeks (38.7%), whereas caesarean sections peaked at 166 41-42 weeks (61.2%), a relationship that was statistically significant. Similar trends were 167 reported by Kandalgaonkar VP et al<sup>12</sup>, where 46.9% had spontaneous vaginal delivery and 168 16.7% required caesarean section. Singh N et  $al^{14}$  reported 66% vaginal deliveries. 32% 169 LSCS, and 2% instrumental deliveries. Bansal P et al<sup>11</sup> noted a higher LSCS rate in the study 170 group (36%) compared to controls (16%), along with an increased incidence of instrumental 171 deliveries (11.2% vs. 3.2%), reinforcing the association between postdated pregnancy and 172 increased operative delivery. 173

174 Maternal Complication

In the present study, the majority of women (92.5%) experienced no maternal complications.
Postpartum hemorrhage and chorioamnionitis were each observed in 2.7% of cases, while
perineal tear occurred in 1.8%. The association between gestational age and maternal
complications was not statistically significant.

In contrast, Agrawal S et al<sup>15</sup> reported a significant increase in maternal morbidity, including emergency caesarean sections, postpartum hemorrhage, and instrumental deliveries, with advancing gestational age beyond 40 weeks. Singh N et al<sup>14</sup> also observed maternal complications in 14% of cases, highlighting increased risks of PPH, perineal and cervical tears, and shoulder dystocia. And Chaudhari SN et al<sup>16</sup> found a statistically significant rise in maternal complications as gestation extended beyond term. These findings suggest a potential trend of increasing maternal risks in postdated pregnancies, although this was not statisticallyevident in the current study.

### 187 Fetal Complications

In the present study, 76.9% of neonates had no complications. Respiratory distress was the most common (13.9%), followed by meconium aspiration syndrome (5.6%), septicemia (1.9%), and both stillbirth and shoulder dystocia (0.9% each). Only a small proportion of newborns had low APGAR scores. NICU admission was required in 23.1% of cases. However, the association between gestational age and fetal complications was not statistically significant.

Comparable findings were reported by Bhriegu R et al<sup>9</sup>, who observed a 33.3% NICU 194 admission rate in pregnancies between 41 weeks 1 day and 42 weeks, with fetal distress being 195 the most frequent complication. Similarly, Punya BS et al<sup>10</sup> and Golait S et al<sup>13</sup> reported 196 increased rates of fetal distress, low APGAR scores, and NICU admissions in postdated 197 198 pregnancies, with a statistically significant association between prolonged gestation and adverse fetal outcomes. Singh N et al<sup>14</sup> noted fetal complications in 23% of cases, including 199 fetal distress, meconium aspiration, and asphyxia. Bansal P et al<sup>11</sup> found higher incidences of 200 cephalopelvic disproportion (22.2%) and acute fetal distress (25%) in postdated pregnancies. 201 Rajpriva M et al<sup>17</sup> reported that 25% of neonates required NICU care due to complications 202 such as birth asphyxia, transient tachypnea of the newborn, and neonatal sepsis. These studies 203 204 collectively reinforce that postdated pregnancy is associated with a higher risk of fetal 205 complications and supports its classification as a high-risk obstetric condition.

206 *Limitations and recommendations* 

This study offers key insights into the maternal and neonatal outcomes of postdated pregnancies, emphasizing risks related to delivery mode and neonatal complications. However, limitations include a small sample size, lack of a comparison group, potential interobserver variability, and the observational hospital-based design, which limits causal inference. A larger, longitudinal study would enhance the validity of findings.

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### 213 Conclusion

This study examined maternal and fetal outcomes in relation to gestational age, focusing on postdated pregnancies. The majority of women were young, primiparous, and delivered between 40 to 41 weeks of gestation, with spontaneous onset of labor being more common in this group. Although most women and neonates did not experience complications, maternal morbidities such as postpartum hemorrhage, chorioamnionitis, and perineal tears were more frequently reported in the 40-41 weeks group. Similarly, fetal complications—particularly respiratory distress and meconium aspiration—were also highest in this group. Rare but critical outcomes like shoulder dystocia and stillbirth were observed only in the 41–42 weeks group. Although this association between gestational age and both maternal and fetal complications were not significant. Therefore, from a clinical perspective, careful gestational age assessment, appropriate decision-making regarding the timing of delivery, and individualized labor management protocols are essential to optimize both maternal and neonatal outcomes in postdated pregnancies.

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#### Table 1- Distribution of Study Participants According to Demographic, Obstetric, and

**Clinical Characteristics** 

Variable		Frequency (n=108)	Percentage	
	< 20 years	17	15.7	
Age group	21 – 25 years	57	52.8	
(Years)	26-30 years	27	25.0	
	>30 years	7	6.5	
Costational Aga	40-41 weeks	59	54.6	
Gestational Age	41-42 weeks	43	39.8	
Category	>42 weeks	6	5.6	
Deviter	Primipara	63	58.3	
Failty	Multipara	45	41.7	
Liquor Status	Adequate	82	75.9	
Liquor Status	Inadequate	26	24.1	
Labour Type	Spontaneous	65	60.2	
	Induced	43	39.8	
Mode of	Vaginal delivery	69	63.9	
delivery	Caesarean section	39	36.1	

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#### Table 2- Distribution of Maternal and Fetal Complications, and APGAR Scores

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Maternal and Fetal complications	Frequency	Percentage
Maternal complication		
Post partum Haemorrhage	3	2.8
Perineal tear	2	1.9
Chorioamnionitis	3	2.8
No Complications	100	92.6
Fetal complication		
Meconium aspiration syndrome	6	5.6
Respiratory distress	15	13.9
Septicaemia	2	1.9
Shoulder dystocia	1	0.9
Still birth	1	0.9

Nil	83	76.9
APGAR score at 1 min		
Severely depressed (0-3)	0	-
Moderately depressed (4-6)	20	18.5
Excellent condition (7-10)	88	81.5
APGAR score at 5 min		
Severely depressed (0-3)	0	-
Moderately depressed (4-6)	7	6.5
Excellent condition (7-10)	101	93.5

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# 316 Table 3- Association of Gestational Age with Labour Type and Mode of Delivery

Variable			Test of			
		40-41 weeks	41-42 weeks >42 weeks		significance	
	Spontaneous	39 (60%)	25 (38.4%)	1 (1.5%)	X2 = 5.679,	
Labour	Induced	20 (46.5%)	18(41.8%)	5 (11.6%)	Df=2; P = 0.058	
Mode of	Vaginal	48 (69.5%)	19 (27.5%)	2 (2.8%)	X2 = 17.466, Df=2;	
Denvery	Caesarean	11 (28.2%)	24 (61.5%)	4 (10.2%)	P<0.001	

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# 318 Table 4- Association of Gestational Age with Maternal Complications

	Maternal Complication					
Gestational Age	No Complications	Post partum Hemorrhage	Perineal tear	Chorioamnionitis		
40-41 Weeks	54	2 (66.7%)	1 (50%)	2 (66.7%)		
41-42 Weeks	41	1 (33.3)	1 (50%)	0		
>42 Weeks	5	0	0	1 (33.3%)		
Total	100 (100%)	3 (100%)	2 (100%)	3 (100%)		
Chi-square = $0.426$ with 4 degrees of freedom; $P = 0.980$						

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# 320 Table 5- Association of Gestational Age with Fetal Complications

	Fetal Complication					
Gestational age	No Complications	Meconium aspiration syndrome	Respiratory distress	Septicemia	Shoulder dystocia	Still birth
40-41 Weeks	47	4 (66.7)	7 (46.7)	1 (50)	0	0

41-42 Weeks	33	2 (33.3)	5 (33.3)	1 (50)	1 (100)	1 (100)
>42 Weeks	3	0	3 (20)	0	0	0
Total	83 (100%)	6 (100%)	15 (100%)	2 (100%)	1 (100%)	1 (100%)
Chi-square = $10.339$ with 10 degrees of freedom; $P = 0.411$						