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# MATERNAL AND FETAL OUTCOMES IN POST DATED PREGNANCY: A RETROSPECTIVE OBSERVATIONAL STUDY

**Dr. Aroosa[1] ,Dr. Rukhsana Sami[2], Dr. Bilal Ahmad wani[3] ,Dr. Sameena ashraf[4] ,Dr. Asifa Ali[5]**

*1,3 Resident doctors department of Gynecology and Obstetrics Lalla hospital Government medical College Srinagar Jammu and Kashmir*

*2,4,5 Senior faculty department of Gynecology and Obstetrics Lalla Ded hospital government medical College Srinagar Jammu and Kashmir*

**Corresponding Author: Dr. Bilal Ahmad wani(bilalwani039@gmail.com)**

## ABSTRACT

**Background:** Condition where the gestational age is over 42 weeks, is known as post-term pregnancy. This is linked to higher rates of maternal and fetal morbidity and mortality. Both mother and the fetus are specifically at risk in postdated pregnancies. Mother experiences issues such as increased use of inductions, instrumental deliveries, prolonged labour, LSCS, and instrumental deliveries that themselves are connected with a number of morbidities, as well as fetal problems ranging from IUGR to macrosomia. The aim of this study was to identify the maternal and perinatal problems connected to postdated pregnancy.

**Methods:** This retrospective observational study was conducted over a period of six months, from May 2022 to November 2022. A total of 71 post-dated pregnant women were included in the study, who presented Lalla Ded Hospital, Department of Obstetrics and Gynecology, Government Medical College Srinagar. Data were retrieved from medical records and analyzed using SPSS version 27. Descriptive statistics and chi-square tests were used for data analysis with P-value < 0.05 taken as statistically significant.

**Results:** The mean age of the study population was ( 27.21±4.62) years, and the majority of the patients (82%) were from rural areas. A total of 33 (46%) normal deliveries were recorded. Out of which 18 spontaneous vaginal deliveries were performed which alone contributed 55% of the total of 33 normal deliveries. The overall rate of cesarean section was 54% (38 cases).The most common indication of C-Section was Non-Reactive Cardiotocography 53% (20 out of 38 cases). Adverse maternal outcomes were recorded among the 31 cases (44%) and the most common outcome observed was prolonged hospital stay 55% (17 out of 31). Out of which stay due to wound infection (23%), and postpartum psychosis (18%) was recorded. The neonatal outcomes included admission to the neonatal intensive care unit (25%), meconium aspiration syndrome (18%), and low Apgar scores (23%).

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**Conclusion:** There is an increased risk of adverse fetomaternal outcomes during postdated pregnancies, they can be regarded as high risk pregnancies. The prevalence of post-dated pregnancies can be reduced with routine prenatal care. Appropriate fetal surveillance and management of labor can improve neonatal outcomes.

**Introduction:**

Post-term pregnancy, postdated pregnancy, post maturity and prolonged pregnancy is accepted term by the International Federation of Gynaecology and Obstetrics and WHO. This is defined as a gestational age that persists beyond 294 days or 42 weeks[1] . The reported postdated pregnancy frequency is 7%[2] .Postdated pregnancy is associated with an increased risk of adverse fetal and maternal outcomes. These outcomes can range from fetal distress, meconium aspiration syndrome, and perinatal mortality, to maternal complications such as postpartum hemorrhage, prolonged labor and infection. Fetus is more at risk of hypoxia during labor than a fetus at term and risk of fetal mortality is doubled once gestational age crossed 41weeks. Postdated pregnancies can have a variety of causes. Although the exact cause is unknown, numerous risk factors for post-term pregnancy have been identified, including parity, maternal age, a history of post-term pregnancy, genetics, and obesity[3]. Because perinatal morbidity and mortality are known to occur, prolonged pregnancy has always been recognised as a high risk pregnancy[4].

Induction of labor is commonly used to manage post-term pregnancy, According to a recent systematic study, the policy of labour induction for women with postdated pregnancies, as opposed to expectant management, is related with fewer perinatal fatalities and caesarean sections[5]. Nevertheless, the optimal timing and method of induction remains a topic of debate.

The Maternal Mortality Rate (MMR) in J&K is 46, which is the same as in Maharashtra, comparable to the 43 MMR in Kerala (the lowest in India), and significantly lower than the national MMR of 113. Assam has the highest MMR in India, at 215. According to the most recent SRS (Sample Registration System), Jammu and Kashmir has an infant mortality rate (IMR) of 20, which is lower than the national IMR of 30[6]. Despite the fact IMR and MMR for Jammu and Kashmir are lower than the rest of India ,research into the impact of postdated pregnancy on maternal and perinatal outcomes is critical to evaluate and quantify the risk factors responsible for both maternal and infant fatalities.

Postdated pregnancies are investigated in this study to assess fetomaternal outcomes, determine the route of delivery, maternal mortality, morbidity, and perinatal mortality and morbidity. A total of 107 patients were found to have postdated pregnancy throughout this time period, but only 71 met the inclusion criteria. The study looked at the forms of induction utilised in normal delivery patients and the grounds for caesarean surgery as well.

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**Methods:**

**Study Design:** This study is a retrospective observational study that was conducted at a tertiary care hospital over a period of six months from May 2022 to November 2022.

**Study Participants:** The study participants were pregnant women who were already past 40 weeks of gestation and were admitted to the hospital during the study period.

**Inclusion criteria :**

- Pregnant women beyond 40 weeks of gestation, either by first trimester USG or LMP (last 3 menstrual cycles regular, no contraception pills used in the previous 3 months, no conception during lactational amenorrhoea)
- Singleton pregnancy with vertex presentation.
- Delivered at Lalla Ded Hospital, Government Medical College Srinagar

**Exclusion criteria:**

- Pregnant women with any accompanying difficulties, including placenta previa, abruption, and a history of lower segment caesarean sections (LSCS).
- Irregular menstrual cycles and unknown LMP and not having 1st trimester ultrasonography.
- Multiple gestation
- Pregnant women who have a medical condition (such as Heart Disease, Chronic Hypertensive Disease Diabetes, or Chronic Renal disease).

A total of 71 patients were included in the final study after meeting the inclusion criteria out of 107 subjects.

**Data Collection and Analysis:** The data was extracted from the patients' medical records. Age, gestational age, booking status, the type of induction used, route of birth, indication of c-section, maternal outcomes, and neonatal outcomes were all obtained.

**Statistical Analysis:** Data was analysed using descriptive statistics such as frequencies and percentages, as well as inferential statistics such as the chi-square test. SPSS version 27 was used for the statistical analysis.

**Limitations:** The retrospective approach of this study, which limits the capacity to demonstrate causation, and the small sample size are two of its limitations. Furthermore, the study was conducted at a single centre, which may restrict the findings' generalizability.

**Conclusion:** Despite these limitations, this study provides valuable insights into the fetomaternal outcomes of post-dated pregnancies in a tertiary care hospital setting.

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**Results:**

The present retrospective observational study aimed to evaluate the fetomaternal outcomes in post-dated pregnant women at a tertiary care hospital.

The age distribution of the 71 participants with mean age ( 27.21±4.62) years showed that the majority of the patients (41%) were aged between 25-30 years, with only 8% of patients over the age of 35 years. The p-value was found statistically significant (<0.0001). (Table 1, Fig.1). The majority of the patients included in the study were from rural areas 58 (82%) and merely 13 patients ( 18%) were from the urban areas. This difference was found statistically significant (p<0.0001) ( Table 1). In this study out of 71 postdated women 79% were booked and 21% were unbooked for antenatal care ( Table 1). However, this positive difference was found statistically significant with (p <0.0001). The mean gestational age was found to be (41.14±0.66) weeks with 54% of the patients between 40 weeks 1 day to 41 weeks of gestation, while 28% were between 41 weeks 1 day to 42 weeks. The remaining 18% of patients were beyond 42 weeks of gestation. Again these proportions were found to be statistically significant with (p =0.001). ( Table 1, Fig.2).

Out of the 71 patients, 46% delivered normally while the remaining 54% underwent lower segment cesarean section (LSCS). However, this proportion was not found significantly different (p =0.342). (Table 1, Fig.1 and Fig.2)

**Table 1:Distribution of Participants According to The Basic Characteristics**

| Variable | Number of Patients | Percentage | Mean±SD | p-value |
|---|---|---|---|---|
| *Age* | | | (27.21±4.62) yrs | <0.0001* |
| 20-25 yrs | 26 | 37 | | |
| 25-30 yrs | 29 | 41 | | |
| 30-35 yrs | 10 | 14 | | |
| ≥ 35 yrs | 6 | 8 | | |
| *Locality* | | | | |
| Rural | 58 | 82 | | <0.0001* |
| Urban | 13 | 18 | | |
| *Booking Status* | | | | |
| Booked | 56 | 79 | | <0.0001* |
| Unbooked | 15 | 21 | | |
| *Gestational Age* | | | | |
| 40 weeks 1 day-41 weeks | 38 | 54 | (41.14±0.66) weeks or (288±4.65) days | 0.001* |
| 41 week 1 day-42 weeks | 20 | 28 | | |
| >42 weeks | 13 | 18 | | |
| *Mode of Delivery* | | | | |

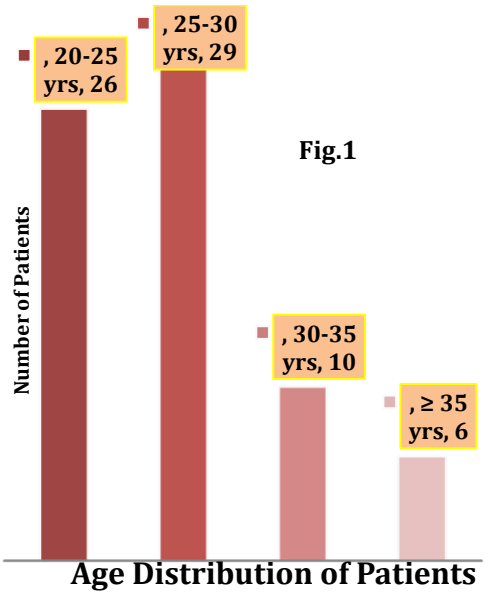


Fig.1

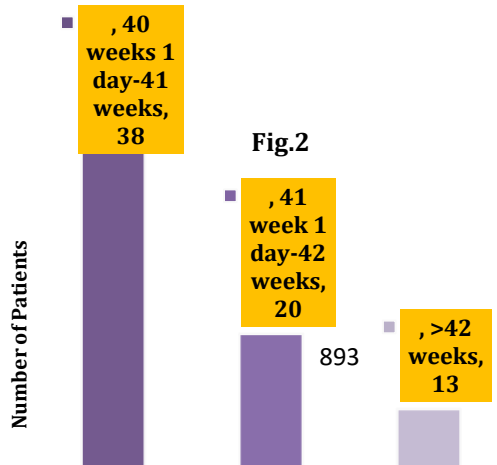


Fig.2

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| | | | | |
|---|---|---|---|---|
| Normal | 33 | 46 | | 0.34(non sig.) |
| LSCS | 38 | 54 | | |

* p-value less than 0.05 was taken as statistically significant results

Among the 33 normal deliveries recorded, 18 (55%) were spontaneous vaginal delivery , induction with PGE2 Gel done among (27% of 33), intracervical poly's catheter among (9% of 33), and sweeping was performed among (9% of 33).The difference in the proportion of the type of induction implemented was found statistically significant among these 33 patients (p<0.0001).(Table 2,Fig.3)

**Table 2: Type of Induction used for 33 Normal Delivery Patients**

| Type of Induction | Number of Patients | Percentage | p-value |
|---|---|---|---|
| Spontaneous Vaginal Delivery | 18 | 55 | <0.0001* |
| PGE2 Gel | 9 | 27 | |
| Intracervical Poly's Catheter | 3 | 9 | |
| Sweeping | 3 | 9 | |
| Total | 33 | | |

* p-value less than 0.05 was taken as statistically significant results

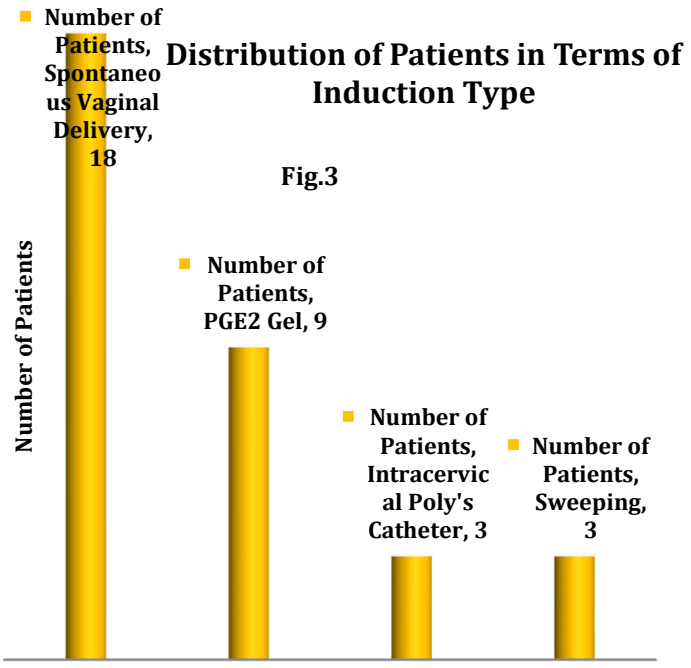


Fig.3

Among the 38 patients who underwent C-Section, Non-Reactive Cardiotocography 20 (53%) was the most common indication followed by C-Scar Pregnancy (16%) and Oligohydramnios (13%).With NDoH (5%),FoI (8%) and NPoL(5%).This proportion was found statistically significant within (p<0.0001)(Table 3,Fig.4)

**Table 3: Indication of C-Section of 38 Patients**

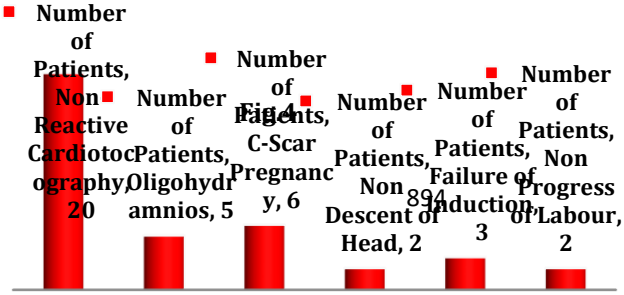


Fig.4

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| Indication | Number of Patients | Percentage | p-value |
|---|---|---|---|
| Non-Reactive Cardiotocography | 20 | 53 | <0.0001 * |
| Oligohydramnios | 5 | 13 | |
| C-Scar Pregnancy | 6 | 16 | |
| Non Descent of Head | 2 | 5 | |
| Failure of Induction | 3 | 8 | |
| Non Progress of Labour | 2 | 5 | |
| Total | 38 | | |

* p-value less than 0.05 was taken as statistically significant results

In terms of maternal outcomes, a total of 31(44%) pregnant women were found to have one or another type of complications, (p=0.285). The most prevalent complication being Prolonged Hospital Stay, which occurred in 17 (55% of 31) patients, out of which prolonged hospital stay due to wound infection contributed (23%), prolonged stay due to postpartum psychosis (18%) and prolonged stay due to baby alone contributed (59% of 17).Statistical test was applied to find if there is some statistical significance between these three reasons for prolonged hospital stay and p-value <0.0001 was found, showing there is a statistical significance. Prolonged hospital stay was followed by complications like Prolonged Labour (19%), PIH (10%), Perineal Damage (10%), Severe Laceration (6%). (Table 4, Fig.6)

**Table 4: Maternal Complications**

| Outcomes | Number of Patients | Percentage | p-value |
|---|---|---|---|
| PIH | 3 | 10 | <0.0001* |
| Prolonged Labour | 6 | 19 | |
| Perineal Damage | 3 | 10 | |
| Severe Laceration | 2 | 6 | |
| Prolonged Hospital Stay | 17 | 55 | |
| *Prolonged Stay Due to Wound Infection* | *4* | *23* | *<0.0001** |
| *Prolonged Stay Due to Postpartum Psychosis* | *3* | *18* | |
| *Staying for Baby* | *10* | *59* | |
| Total | 31 | 44 | 0.285(non sig.) |
| Patients with none of these outcomes recorded | 40 | 56 | |

* p-value less than 0.05 was taken as statistically significant results

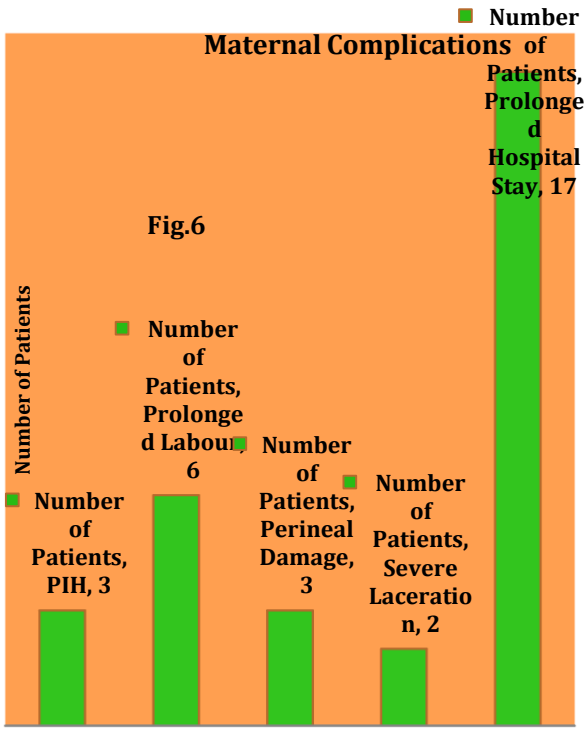


Fig.6

Neonatal outcomes revealed that 18(25%) of neonates were admitted to the neonatal intensive care unit (NICU), with Meconium Aspiration Syndrome (MAS) accounting for 72% of admissions

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alone followed by Birth Asphaxia (17%) and Hypoglycemia (11%) with (p<0.0001). Six of the eight perinatal deaths were attributable to early neonatal mortality, with three cases each in MAS and anamolous newborns (p=1.000). 2 cases of stillbirths,9 (13%)cases of Macrosomic newborns, whereas 11 (16%) post-maturity syndrome were seen.Low APGAR score was recorded among 16(23%) of newborns with 13 (81% of 16)MAS cases alone among these followed by 3(91%), Birth Asphaxia cases (p<0.0001). (Table 5, Fig.7)

**Table 5: Fetal Complications**

| Outcome | Number of Cases | Percentage | p-value |
|---|---|---|---|
| **NICU Admission** | **18** | **25** | |
| ***Indication of NICU Admission*** | | | |
| ***MAS*** | ***13*** | ***72*** | **<0.0001*** |
| ***Birth Asphaxia*** | ***3*** | ***17*** | |
| ***Hypoglycemia*** | ***2*** | ***11*** | |
| **Perinatal Mortality** | **8** | **11** | |
| ***Early Neonatal Mortality*** | ***6*** | ***75*** | **<0.0001*** |
| ***Still Births*** | ***2*** | ***25*** | |
| **Low APGAR Score** | **16** | **23** | |
| ***MAS cases with Low APGAR Score*** | ***13*** | ***81*** | **<0.0001*** |
| ***Birth Asphaxia cases with Low APGAR Score*** | ***3*** | ***19*** | |
| **Macrosomic Baby** | **9** | **13** | |
| **Post Maturity Syndrome** | **11** | **16** | |
| | | | |
| ***Perinatal Mortality among MAS Cases*** | ***3*** | ***50*** | **1.000** |
| ***Perinatal Mortality among Anamolous Babies*** | ***3*** | ***50*** | |

*** p-value less than 0.05 was taken as statistically significant results**

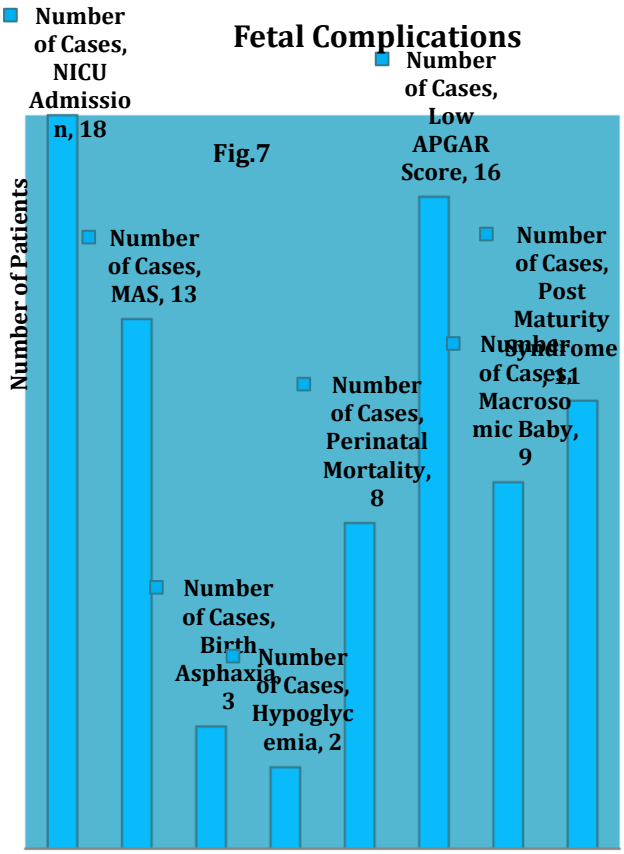


Fig.7

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The results indicate no statistically significanct difference between the rate of LSCS and NVD (p<0.342) which could possibly be due to small sample size and the study being restricted to the specific area only. NICU admissions and prolonged hospital stays being the most common fetomaternal outcomes. Further studies are needed to evaluate interventions that can improve the outcomes of post-dated pregnancies.

**Discussion:**

The present study aimed to investigate the fetomaternal outcomes in post-dated pregnant women at a tertiary care hospital. The study found that the majority of the participants 82% (Table 1) were from rural areas which is consistent with previous studies like **Sarmah et al, 2022**[7] showing 79.1% of postdated pregnancies from rural areas and 57.3% in the study conducted by **Dr. Sudesh Agrawal et al, 2020**[8] .In the present study, majority 29(41%) participants belonged to the age group of 25-30 years followed by the age group 20-25 years 26(37%) with mean age ( 27.21±4.62) years, studies like this conducted by **Bhriegu R et al, 2017**[9] show 79% falling in the age group 25-30 years, **Patel N et al, 2017**[10] shows 64% patients 20-30 years, **Beischer et al,1969**[11] in his study also found that majority of post-dated patients belonged to the age group of 25-30 years.This study shows 79% booked cases and 21% unbooked cases, similar studies like **Bhriegu R et al, 2017**[9] shows 82% booked cases and study by **Dr. Sudesh Agrawal et al, 2020**[8] recorded 46% booked cases and 54% cases were unbooked. In addition, our study revealed that 54% cases belong to the gestational age of 40-41 weeks, This finding was similar to the studies done by **Kandalgaonkar VP et al,2019**[12] showing 69% of cases and **Gupta et al,2020**[13] in 150 women with Postdated pregnancy in which maximum number of patients (69.8%) were observed between 40-41 weeks.

In our study, out of 71 patients 33(46%) had NVD and 38(54%) had LSCS,which however is quite different from the similar studies like **Lata et al,2019**[14] and **Bhriegu R et al, 2017**[9], where this percentage is almost opposite,this could possibly be because of small sample size in our study.

The study also found that spontaneous vaginal delivery was the most common mode of delivery in patients (55%) who had NVD,followed by induction through PGE2 Gel (27%) and Non-Reactive Cardiotocography (53%) was the most common indication for cesarean section followed by C-Scar Pregnancy (16%) and Oligohydramnios(13%). The study **Kandalgaonkar VP et al,2019**[12] shows 57.78% cases for PGE2 gel for IOL, study by **Verma V et al, 2017**[15] shows 70.83% cases with PGE2 gel &8.33% cases with intracervical Foley's catheterization+ PGE2 gel insertion for IOL.The study by **Dobariya PV et, al 2017**[16] shows 40.74% cases underwent LSCS, **Bhriegu R et al, 2017**[9]

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shows 23.53%, **Kandalgaonkar VP et al,2019**[12] shows 37.5% cases underwent caesarean section for foetal distress. The study by **Bhriegu R et al, 2017**[9] shows 17% cases with oligohydramnios.

The study also revealed the incidence of neonatal intensive care unit (NICU) admission was 25%, the study by **Bhriegu R et al, 2017**[9] shows 17% and **Kandalgaonkar VP et al,2019**[12] shows 12.5% cases with NICU admission. Meconium aspiration syndrome (MAS) being the most common indication for NICU admission. which is found similar with studies conducted by **Bhriegu R et al, 2017**[9] and **Singh N et al, 2020**[17] that have reported an increased incidence of MAS and other neonatal complications in post-dated pregnancies. Macrosomia was seen in 13% cases ,while the Study by **Singh N et al, 2020**[17] shows 4% of macrosomia cases. Low APGAR score was recorded in 23% of cases while the study by **Kandalgaonkar VP et al,2019**[12] shows 6.2% cases with low APGAR score. Post maturity syndrome was recorded in almost 16% cases in our study.

Furthermore, the study found that perinatal mortality was significantly higher in post-dated pregnancies, with around 3% Still births and around 8% neonatal deaths recorded.The study by **Kandalgaonkar VP et al,2019**[12] recorded around 67% stillbirth and around 33% neonatal death cases. **Verma V et al, 2017**[15] shows 2% stillbirths and 1 % neonatal deaths.

The findings suggest that post-dated pregnancies are associated with increased risks of adverse maternal and neonatal outcomes. Therefore, it is important to carefully monitor these pregnancies and to consider induction of labor to prevent adverse outcomes.

**Conclusion:**

The study's findings have vital significance for healthcare practitioners and policymakers, indicating the need for enhanced techniques for monitoring and assuring optimal maternal and neonatal outcomes, as well as adopting suitable interventions to optimise health outcomes.

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