



MATERNAL AND PERINATAL OUTCOMES IN PREGNANCY AT ADVANCED MATERNAL AGE

Obstetrics & Gynaecology

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ABSTRACT

Background: Pregnancy at advanced maternal age, traditionally defined as maternal age of 35 years or older at the expected date of delivery, is increasingly encountered in obstetric practice. Advancing maternal age is associated with an increased frequency of several maternal, fetal and neonatal complications. **Aim:** To evaluate maternal and perinatal outcomes among women with pregnancy at advanced maternal age at a tertiary care centre. **Materials and Methods:** A prospective observational study was conducted in the Department of Obstetrics and Gynaecology, G.G. Hospital, Jamnagar, over a period of 10 months. A total of 114 pregnant women aged ≥ 35 years who delivered at the study centre were included. Participants were categorized into three age groups: 35–39 years, 40–44 years and ≥ 45 years. Maternal complications, mode and indications of delivery, gestational age at delivery, birth weight, NICU admission and neonatal outcomes were assessed. Categorical variables were expressed as frequencies and percentages. The association between maternal age group and mode of delivery was assessed using the Pearson chi-square test. A two-sided p-value < 0.05 was considered statistically significant. **Results:** Among 114 women, 95 (83.3%) were aged 35–39 years, 16 (14.0%) were aged 40–44 years and 3 (2.6%) were aged ≥ 45 years. Multigravidae constituted 77.2% of the study population. The most frequently documented maternal complications were preeclampsia (21.1%), anaemia (15.8%), preterm labour (14.9%), gestational diabetes mellitus (14.0%), fetal growth restriction (11.4%) and gestational hypertension (10.5%). LSCS was performed in 73 (64.0%) women. Previous LSCS was the most frequent indication for LSCS, followed by fetal distress. A total of 72 (63.2%) deliveries occurred before 37 weeks. Birth weight was < 1500 g in 13 (11.4%) neonates, 1500–2499 g in 34 (29.8%) and ≥ 2500 g in 67 (58.8%). Twenty-two (19.3%) neonates required NICU admission. Among NICU admissions, preterm birth was the most frequently documented indication (31.8%), followed by fetal growth restriction (27.3%). Early neonatal death occurred in 15 (13.2%) and stillbirth in 6 (5.3%). There was no statistically significant association between maternal age group and mode of delivery ($\chi^2=2.887$, $df=2$, $p=0.236$). **Conclusion:** The present cohort demonstrated a substantial burden of maternal and perinatal complications among pregnancies at advanced maternal age. Hypertensive disorders, gestational diabetes, preterm delivery and caesarean delivery were frequently observed. Appropriate antenatal surveillance, individualized obstetric management and neonatal preparedness are important in this population.

KEYWORDS

Advanced Maternal Age, Pregnancy, Elderly Gravida, Maternal Outcome, Perinatal Outcome, Preeclampsia, Gestational Diabetes Mellitus, Caesarean Section, Preterm Birth, NICU Admission.

INTRODUCTION

Pregnancy at advanced maternal age has traditionally been defined as pregnancy in women aged 35 years or older at the expected date of delivery. Contemporary guidance recognizes that obstetric risk does not necessarily increase abruptly at 35 years but may increase progressively with advancing maternal age. Age-stratified assessment, particularly distinguishing women aged 35–39 years from those aged 40 years or older, may therefore provide clinically useful information. [1]

Advancing maternal age is associated with an increased frequency of several maternal, fetal and neonatal complications, including hypertensive disorders of pregnancy, gestational diabetes mellitus, operative delivery and adverse perinatal outcomes. The magnitude of risk is influenced not only by maternal age but also by parity, previous obstetric history, pre-existing medical disease and pregnancy-related complications. [1]

Women aged 40 years or older may have a different risk profile from women aged 35–39 years. Management should therefore be individualized according to maternal age, obstetric history, medical comorbidities and fetal condition rather than relying on maternal age alone as a determinant of management. [1]

Adequate antenatal care provides opportunities for maternal and fetal assessment, screening, prevention and timely identification of complications. [4]

The increasing number of women conceiving at later reproductive ages makes assessment of maternal and perinatal outcomes clinically relevant. The present study was undertaken to evaluate maternal and perinatal outcomes among women aged 35 years and above delivering at a tertiary care centre.

Aim

To evaluate maternal and perinatal outcomes among pregnancies at

advanced maternal age in a tertiary care hospital.

Objectives

1. To study the demographic and obstetric profile of women with advanced maternal age pregnancy.
2. To determine the frequency of maternal complications in pregnancies at advanced maternal age.
3. To assess the mode and indications of delivery.
4. To assess gestational age at delivery.
5. To evaluate neonatal birth weight and neonatal outcomes.
6. To assess the association between maternal age group and mode of delivery.

MATERIALS AND METHODS

Study Design

Prospective observational study.

Study Setting

The study was conducted in the Department of Obstetrics and Gynaecology, G.G. Hospital, Jamnagar, Gujarat, India.

Study Period

The study was conducted over a period of 10 months. Study period: [Insert exact starting date] to [Insert exact ending date].

Study Population

Pregnant women aged ≥ 35 years who delivered at the study centre during the study period were included. Participants were categorized into 35–39 years, 40–44 years and ≥ 45 years.

Sample Size

A total of 114 women fulfilling the eligibility criteria were included. Sample-size method: [Insert the actual method used to arrive at $n=114$.] If all eligible women presenting during the study period were recruited consecutively, this should be stated explicitly rather than describing 114 as a calculated sample size.

Inclusion Criteria

1. Pregnant women aged ≥ 35 years at the expected date of delivery.

2. Women delivering at G.G. Hospital during the study period.
3. Women willing to participate in the study.
4. Singleton or multiple pregnancies.

Exclusion Criteria

1. Women aged <35 years.
2. Women who refused participation.
3. Cases with substantially incomplete medical records.
4. Women referred elsewhere before delivery for whom maternal or neonatal outcome data were unavailable.

Data Collection

Demographic and obstetric information was recorded prospectively. Maternal variables included age, parity, previous obstetric history and pregnancy-associated complications.

Maternal complications assessed included gestational hypertension, preeclampsia, gestational diabetes mellitus, anaemia, placenta previa, antepartum haemorrhage, preterm labour and fetal growth restriction.

Delivery-related variables included gestational age at delivery, mode of delivery and indication for LSCS.

Neonatal variables included birth weight, NICU admission, indication for NICU admission, early neonatal death and stillbirth.

Statistical Analysis

Categorical variables were expressed as frequencies and percentages. The association between maternal age group and mode of delivery was assessed using the Pearson chi-square test. A two-sided p-value <0.05 was considered statistically significant.

Where expected cell counts were small, Fisher's exact or other exact methods would be preferable. Because only three participants were aged ≥45 years, comparisons involving this subgroup were interpreted cautiously.

Patient-level cross-tabulations were not available for all maternal and neonatal variables at the time of preparation of this manuscript. Therefore, additional p-values were not generated from aggregate totals.

The manuscript structure follows the principles of the STROBE recommendations for reporting observational studies. [6]

RESULTS

A total of 114 women with advanced maternal age were included in the study.

Table 1. Distribution According to Maternal Age

Maternal age	Number	Percentage
35–39 years	95	83.3%
40–44 years	16	14.0%
≥45 years	3	2.6%
Total	114	100%

Table 2. Distribution According to Parity

Parity	Number	Percentage
Primigravida	26	22.8%
Multigravida	88	77.2%
Total	114	100%

Table 3. Maternal Complications

Maternal complication	Number	Percentage
Gestational hypertension	12	10.5%
Preeclampsia	24	21.1%
Gestational diabetes mellitus	16	14.0%
Anaemia	18	15.8%
Placenta previa	6	5.3%
Antepartum haemorrhage	7	6.1%
Preterm labour	17	14.9%
Fetal growth restriction	13	11.4%

More than one complication could be present in an individual woman; therefore, percentages do not necessarily total 100%.

Preeclampsia was the most frequently documented maternal complication, followed by anaemia, preterm labour and gestational diabetes mellitus.

Table 4. Mode of Delivery

Mode of delivery	Number	Percentage
Vaginal delivery	41	36.0%
LSCS	73	64.0%
Total	114	100%

LSCS was performed in 64.0% of women.

Table 5. Indications for LSCS

Indication	Number	Percentage of LSCS
Previous LSCS	24	32.9%
Fetal distress	14	19.2%
Failed induction	8	11.0%
Non-progress of labour	7	9.6%
Malpresentation	6	8.2%
Placenta previa/APH	5	6.8%
FGR with abnormal fetal surveillance	4	5.5%
Other indications	5	6.8%
Total	73	100%

Previous LSCS was the most frequently documented indication for caesarean delivery.

Table 6. Gestational Age at Delivery

Gestational age	Number	Percentage
<34 weeks	21	18.4%
34–36+6 weeks	51	44.7%
≥37 weeks	42	36.8%
Total	114	100%

A total of 72 (63.2%) women delivered before 37 weeks.

Table 7. Birth Weight Distribution

Birth weight	Number	Percentage
<1500 g	13	11.4%
1500–2499 g	34	29.8%
≥2500 g	67	58.8%
Total	114	100%

Birth weight was ≥2500 g in 58.8% of neonates.

Table 8A. Indications for NICU Admission

Indication for NICU admission	Number	Percentage of NICU admissions
Preterm birth	7	31.8%
Fetal growth restriction (FGR)	6	27.3%
Meconium-stained liquor	5	22.7%
Respiratory problems	5	22.7%
Neonatal hypoglycaemia	4	18.2%
Hypothermia	4	18.2%
Birth asphyxia	3	13.6%
Total NICU admissions	22	100%

More than one indication could be present in the same neonate; therefore, the sum of individual indications exceeds the total number of NICU admissions.

Preterm birth was the most frequently documented indication for NICU admission.

Table 8B. Final Neonatal Outcome

Final neonatal outcome	Number	Percentage
Live birth	93	81.6%
Early neonatal death	15	13.2%
Stillbirth	6	5.3%
Total	114	100%

Table 9. Association Between Maternal Age Group and Mode of Delivery

Maternal age group	Vaginal delivery	LSCS	Total
35–39 years	37	58	95
40–44 years	4	12	16
≥45 years	0	3	3
Total	41	73	114

Pearson $\chi^2 = 2.887$; df = 2; p = 0.236. There was no statistically significant association between maternal age group and mode of delivery in the available aggregate dataset.

DISCUSSION

The present prospective observational study evaluated maternal and perinatal outcomes among 114 women with pregnancy at advanced maternal age.

The majority of participants were aged 35–39 years (83.3%), while 14.0% were aged 40–44 years and 2.6% were aged ≥ 45 years. This age distribution highlights the importance of describing advanced maternal age using clinically meaningful age categories rather than treating all women aged ≥ 35 years as a homogeneous population.

Multigravidae constituted 77.2% of the study population. Previous obstetric history is particularly relevant in this population because previous caesarean delivery and other obstetric factors may substantially influence subsequent pregnancy and delivery outcomes.

Preeclampsia was the most frequently documented maternal complication, occurring in 21.1% of women. Gestational hypertension was observed in 10.5%. These findings emphasize the importance of appropriate antenatal blood pressure surveillance and assessment for maternal and fetal complications in this population.

Gestational diabetes mellitus was observed in 14.0% of the study population. Appropriate screening and management of GDM remain important components of antenatal care.

Anaemia was present in 15.8% of women. Placenta previa and antepartum haemorrhage were documented in 5.3% and 6.1%, respectively.

Preterm labour was documented in 14.9% of women. Overall, 72 (63.2%) deliveries occurred before 37 weeks. This represents an important descriptive finding; however, in the absence of a younger control group, it cannot establish that advanced maternal age independently caused preterm delivery.

LSCS was performed in 64.0% of women. Previous LSCS was the most frequent indication, accounting for 32.9% of caesarean deliveries, followed by fetal distress at 19.2%.

The observed caesarean rate should not be interpreted as an effect of maternal age alone because mode of delivery is influenced by previous caesarean delivery, parity, fetal condition, labour progress, fetal presentation and other obstetric indications. Current ACOG guidance emphasizes individualized assessment rather than considering maternal age alone as an indication for caesarean delivery. [1]

Twenty-two neonates required NICU admission. Preterm birth was the most frequently documented indication (31.8%), followed by FGR (27.3%), meconium-stained liquor (22.7%) and respiratory problems (22.7%). Multiple indications could occur in the same neonate; therefore, these categories were appropriately reported as overlapping clinical indications rather than mutually exclusive outcomes.

The final neonatal outcomes included 93 live births, 15 early neonatal deaths and 6 stillbirths. These findings demonstrate the range of neonatal outcomes encountered in the cohort and highlight the importance of appropriate fetal surveillance, timely obstetric intervention and availability of neonatal care.

The association between maternal age group and mode of delivery was not statistically significant ($\chi^2=2.887$, $p=0.236$). However, only three women were aged ≥ 45 years, making this subgroup too small for robust age-specific inference. Therefore, the absence of statistical significance should not be interpreted as evidence that advancing age has no relationship with mode of delivery.

The present findings should be interpreted within the context of an observational study. Maternal age may coexist with other factors such as parity, previous caesarean delivery, medical comorbidities and pregnancy-related complications. Consequently, the observed outcomes cannot be attributed solely to maternal age.

LIMITATIONS

1. The study was conducted at a single tertiary care centre.
2. The sample size was relatively small ($n=114$).
3. Only three participants were aged ≥ 45 years, limiting meaningful statistical analysis of this subgroup.
4. There was no younger maternal-age control group.

5. Several outcomes may have been influenced by parity, previous LSCS, maternal comorbidities and other obstetric factors.
6. The observational design does not permit causal inference.
7. The study duration was limited to 10 months.
8. Complete patient-level cross-tabulation was not available for all variables.
9. Multivariable analysis could not be performed using the currently available aggregate dataset.

CONCLUSION

Pregnancy at advanced maternal age was associated with a substantial burden of maternal and perinatal complications in this tertiary care cohort.

Hypertensive disorders, gestational diabetes, anaemia, preterm delivery and caesarean delivery were frequently observed. LSCS was performed in 64.0% of women, while 63.2% delivered before 37 weeks.

NICU admission was required in 19.3% of neonates, with preterm birth being the most frequently documented indication. Early neonatal death and stillbirth occurred in 13.2% and 5.3% of pregnancies, respectively.

No statistically significant association was identified between maternal age group and mode of delivery in the currently available aggregate data. However, the very small ≥ 45 -year subgroup limits interpretation of this finding.

These findings support the importance of early risk assessment, appropriate antenatal surveillance, fetal monitoring, individualized delivery planning and adequate neonatal preparedness in pregnancies at advanced maternal age.

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