Original Research Article

# A clinical study of impact of increased maternal age on the outcomes of the pregnancy at a tertiary hospital

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## Abstract

**Background:** Advanced maternal age is defined as 35 or more years at the time of delivery, whereas very advanced maternal age is defined as 40 or more at the time of delivery. Present study was aimed to study impact of increased maternal age on the outcomes of the pregnancy at a tertiary hospital. **Material and Methods:** Present study was cross sectional, analytical study, conducted in pregnant women of age > 35 years, gestational age > 28 weeks delivered at our hospital. **Results:** During study period 76 pregnant women with maternal age > 35 years were studied. Majority of patients were from 36 -40 years age group (85.53 %) followed by 41-45 years age group (18.52 %). Majority of patients were gravida 2-3 (43.42 %). Vaginal delivery (53.95 %) was most common mode of delivery followed by Caesarean section (43.42 %). Common indications for caesarean section were previous LSCS (27.27 %), fetal distress (24.24 %), non-progress of labor (24.24 %), PROM with poor Bishop score (9.09 %), placenta previa (9.09 %) and malpresentation (6.06 %). In present study most common pregnancy complication noted was hypertensive disorders of pregnancy including eclampsia (27.63 %), followed by Preterm delivery (25.00 %), Anemia (18.42 %), Gestational diabetes mellites (10.53 %), PROM (10.53 %), Oligohydramnios (9.21 %), PPH (5.26 %), Malpresentation (3.95 %) and APH (3.95 %). Perinatal outcome was low birth weight (31.58 %), neonatal ICU Admission (30.26 %), intra uterine growth retardation (9.21 %), congenital anomaly (2.63 %) and intrauterine foetal demise (1.32 %). No neonatal mortality noted. **Conclusion:** Advanced maternal age is associated with increased risk of hypertensive disorders of pregnancy, gestational diabetes mellites and Cesarean section.

**Keywords:** Advanced maternal age, hypertensive disorders of pregnancy, gestational diabetes mellites, Cesarean section.

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## INTRODUCTION

Advanced maternal age is defined as 35 or more years at the time of delivery, whereas very advanced maternal age is defined as 40 or more at the time of delivery.[1] Changing pattern of becoming pregnant at an advanced age can be attributed to various reasons such as changes in the structure of family with more late marriages or remarriages, women's pursuit of higher education, carrier advancement, advances in assisted reproductive technique and availability of effective and safe contraceptives.[2,3] In India, the scenario is different where poor socio-economic status, lack of contraceptive knowledge, religious issues, desire for male child, concept of large family and women conceiving from marriage to menopause, are the common causes of pregnancy with advanced maternal age.[4] Advanced maternal age (≥35 years) is associated with increased stillbirths, preterm births, intrauterine growth restriction, as well as chromosomal abnormalities.[5] The perinatal morbidity like low birth weight and birth asphyxia as well as perinatal mortality is increased in these

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women as compared to their younger counterparts.[6] Present study was aimed to study impact of increased maternal age on the outcomes of the pregnancy at a tertiary hospital.

## MATERIAL AND METHODS

Present study was cross sectional, analytical study, conducted in department of Obstetrics and Gynaecology, Dr Ulhas Patil Medical College and Hospital, Jalgaon, India. Study duration was of 2 years (January 2020 to December 2021). Study approval was taken from institutional ethical committee.

**Inclusion criteria:** pregnant women of age > 35 years, gestational age > 28 weeks delivered at our hospital, willing to participate in study

**Exclusion criteria:** Pregnant women with multiple pregnancy, with choric disease such as, chronic renal failure, severe cardiac disease, chronic liver disease and chronic lung disease. Pregnant women delivered at place other than our hospital. Women not willing to participate

Study was explained and a written informed consent was taken for participation. Patient's general characteristics such as age at the time of delivery, obstetric history, gestational age, medical history, complication during pregnancy, mode of delivery, intrapartum complication and neonatal outcome was recorded in a predesigned proforma.

All patients were analysed for maternal outcome such as, pregnancy induced hypertension, diabetes mellitus, anaemia, antepartum hemorrhage, PROM(premature rupture of membrane), malpresentation and oligohydramnios. Perinatal outcome such as, preterm birth, IUGR (intra uterine growth restriction), Apgar score at 5 min, birth weight, IUFD(intra uterine fetal death), still birth and NICU (neonatal intensive care unit) admissions. Data was collected and compiled using Microsoft Excel, analysed using SPSS 23.0 version. Statistical analysis was done using descriptive statistics.

## RESULTS

During study period 76 pregnant women with maternal age > 35 years were studied. Majority of patients were from 36 - 40 years age group (85.53 %) followed by 41-45 years age group (18.52 %). Majority of patients were gravida 2-3 (43.42%).

**Table 1:** Demographic variables

| Demographic characters | Number of cases | Percentage |
|---|---|---|
| Age (in years) | | |
| 36 – 40 | 65 | 85.53% |
| 41- 45 | 10 | 18.52% |
| >45 | 1 | 1.32% |
| Gravida status | | |
| Primigravida | 25 | 32.89% |
| Gravida 2-3 | 33 | 43.42% |
| Gravida ≥ 4 | 18 | 23.68% |

In present study, majority of cases were reached up to term (75 %), 4 cases delivered between 28-32 weeks (5.26 %) while 15 cases delivered between 33-37 weeks (19.74 %). Vaginal delivery (53.95 %) was most common mode of delivery followed by Caesarean section (43.42 %). Common indications for caesarean section were previous LSCS (27.27 %), fetal distress (24.24 %), non-progress of labor (24.24 %), PROM with poor Bishop score (9.09 %), placenta previa (9.09 %) and malpresentation (6.06 %).

**Table 2:** Obstetric outcome

| Pregnancy outcome | Number of cases | Percentage |
|---|---|---|
| Gestational age at termination of pregnancy | | |
| 28-32 wks. | 4 | 5.26% |
| 33-37 wks. | 15 | 19.74% |
| 37-40wks | 54 | 71.05% |
| ≥ 40 wks. | 3 | 3.95% |
| Mode of Delivery | | |
| Caesarean section | 33 | 43.42% |
| Normal vaginal delivery | 41 | 53.95 % |
| Outlet forceps | 2 | 2.63% |
| Indication for LSCS (n=33) | | |
| Previous LSCS | 9 | 27.27% |
| Fetal distress | 8 | 24.24% |
| Non-progress of labor | 8 | 24.24% |

| | | |
|---|---|---|
| PROM with poor Bishop score | 3 | 9.09% |
| Placenta previa | 3 | 9.09% |
| Malpresentation | 2 | 6.06% |

In present study most common pregnancy complication noted was hypertensive disorders of pregnancy including eclampsia (27.63 %), followed by Preterm delivery (25.00 %), Anemia (18.42 %), Gestational diabetes mellites (10.53 %), PROM (10.53 %), Oligohydramnios (9.21 %), PPH (5.26 %), Malpresentation (3.95 %) and APH (3.95 %).

**Table 3:** Pregnancy complications.

| Complication | Number of cases | Percentage |
|---|---|---|
| Hypertensive disorders of pregnancy including eclampsia | 21 | 27.63% |
| Preterm delivery | 19 | 25.00% |
| Anemia | 14 | 18.42% |
| Gestational diabetes mellites | 8 | 10.53% |
| PROM | 8 | 10.53% |
| Oligohydramnios | 7 | 9.21% |
| PPH | 4 | 5.26% |
| Malpresentation | 3 | 3.95% |
| APH | 3 | 3.95% |

Perinatal outcome was low birth weight (31.58 %), neonatal ICU Admission (30.26 %), intra uterine growth retardation (9.21 %), congenital anomaly (2.63 %) and intrauterine foetal demise (1.32 %). No neonatal mortality noted.

**Table 4:** Perinatal outcome.

| Perinatal outcome | No. | Percentage |
|---|---|---|
| Low Birth Weight | 24 | 31.58% |
| Neonatal ICU Admission | 23 | 30.26% |
| Intra Uterine Growth Retardation | 7 | 9.21% |
| Congenital anomaly | 2 | 2.63% |
| Intrauterine foetal demise | 1 | 1.32% |

## DISCUSSION

Pregnancy after the age of 35 years can be a challenge because of the maternal and fetal risk. The chronic hypertension, diabetes mellitus, subfertility, miscarriage, ectopic pregnancy, anemia, antepartum hemorrhage, malpresentation, postpartum hemorrhage lead to increased incidence of instrumental deliveries and cesarean sections. Fetal and neonatal risk is also high due to increased incidence of chromosomal abnormalities (mainly Down's syndrome), multiple pregnancy, IUGR, prematurity leading to higher number of NICU admission. Perinatal morbidity and mortality in increased in these patients. Khalil A. *et al.*,[7] studied 76 158 singleton pregnancies, after adjusting for potential maternal and pregnancy confounding variables, advanced maternal age (defined as ≥40 years) was associated with increased risk of miscarriage (odds ratio (OR), 2.32 (95% CI, 1.83–2.93); P<0.001), pre-eclampsia (OR, 1.49 (95% CI, 1.22–1.82); P<0.001), GDM (OR, 1.88 (95% CI, 1.55–2.29); P<0.001), SGA (OR, 1.46 (95% CI, 1.27–1.69); P<0.001) and Cesarean section (OR, 1.95 (95% CI, 1.77–2.14); P<0.001), but not with stillbirth, gestational hypertension, spontaneous preterm delivery or LGA. Mahato V *et al.*,[8] noted that advanced maternal age constitute a predisposing factor for malpresentation, gestational diabetes mellitus, placenta previa, fetal distress and caesarean section. Whereas, risk of non-progress of labour, preterm birth, postpartum hemorrhage, perinatal death and congenital anomalies were increased in very advanced maternal age group. From these, statistical significance was reached in case of greater risk of malpresentation (p=0.01,OR=6.66), fetal distress (p=0.04, OR=2.6) and caesarean section(p=0.02,OR=2.06) in advanced age group when compared to the patients aged 30-34. Furthermore, very advanced age group were higher risk of postpartum hemorrhage (p=0.03, OR=2.47) and congenital anomalies, which were statistically significant (p=0.04, OR=29.57) when compared to the 30-34 years. Rajput N *et al.*,[9] studied 288 elderly pregnant patients, most of the cases were in the age group 35 to 39 years (89.93%). Multi gravida (71.8%) and grand multi para (22.22%) constituted the largest group. The causes of delay in pregnancy were preference for male child (23.95%) and unawareness of contraception (21.52%). The incidence of diabetes mellitus and chronic hypertension were increased. Overall cesarean rate was increased (35%). Incidence of abortions 28(9.72%), preterm delivery 18(6.25%), oligohydramnios 18(6.25%), APH 18(6.25%) and PROM 17(5.90%), low birth weight baby 30(13.19%), NICU admission 20 (6.94%), IUGR 11(3.81%) all were high. The preference for male child 69(23.95%) and lack of awareness 62(21.52%) were two major reason for continuing pregnancies and deliveries till

late age. Similar findings were noted in present study. Mehari M *et al.*,[10] noted that advanced maternal age pregnancy was significantly associated with pregnancy induced hypertension, ante partum hemorrhage and cesarean delivery. Furthermore, advanced maternal age pregnancy was also increasingly associated with adverse perinatal outcomes like preterm delivery, low birth weight [AOR 3.137, 95% CI (1.324–7.433), p = 0.009], perinatal death and low fifth minute APGAR score. Notwithstanding this, maternal age was not found to be associated with amniotic fluid disturbances, premature rupture of membranes and post-term pregnancy. Advanced maternal age is markedly linked with adverse obstetrical and perinatal outcomes. Bouzaglou A *et al.*,[11] studied 1982 pregnant women with > 40 years age (mean age: 41.9) on the day of their delivery and compared to other 1,982 women who were aged between 25 and 35 years old (mean age: 30.7) Preeclampsia, gestational diabetes, were significantly higher in the study group (4.6 vs. 1.5% and 14.5 vs. 6.9%, respectively, p < 0.001). They also found a significant difference for gestational hypertension (3.1 vs. 1.1% p < 0.001), preterm birth (10.4 vs. 6.5% p < 0.001), cesarean (16.6 vs. 5.4% for scheduled cesarean, and 50.4 vs. 13.9% for emergency cesarean, p < 0.001) and fetal death in utero (2.1 vs. 0.5% in the study group, p < 0.001). Similar findings were noted in present study. Increasing maternal age predisposes for adverse pregnancy outcomes as well as perinatal complications. Therefore, they should be advised to adhere to frequent antenatal visits and should be kept under the close supervision, with increased fetal surveillance for better perinatal outcome.

## CONCLUSION

Advanced maternal age is associated with increased risk of hypertensive disorders of pregnancy, gestational diabetes mellites and Cesarean section. Pregnant women, with age more than 35 years should be offered prenatal screening and prenatal diagnosis, targeted anomaly scan and liberal use of ante partum testing to ensure safe motherhood and a healthy fetus.

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