

## EFFECTS OF ADVANCED MATERNAL AGE ON MATERNAL AND FETAL OUTCOME

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### Abstract

**Background:** Pregnancy at advanced maternal age has become more common in both developed and developing countries over the last few decades. Although there is no definition of advanced maternal age, one common definition is of maternal age >35 years. **Materials and Methods:** This retrospective study was conducted in the department of obstetrics and gynaecology, GMC Jammu over a period of one year from January 2022 to December 2022. Pregnant women more than 35 years of age including primigravida and multigravida and Gestational age more than 24 weeks were included in the study. **Result:** Total of 207 patients were included in this study. Majority of the women were in the age group of 36-39 years (85.99%). In our study, 142(68.59 %) patients were multigravida followed by primigravida (20.77%). 22 patients (10.62 %) developed gestational hypertension, 12 patients developed GDM (5.79 %), 12 patients (5.79 %) developed cholestasis of pregnancy, 8 patients (3.86 %) developed severe preeclampsia, 11 patients (5.31 %) had twin pregnancy, 8 patients (3.86%) had placenta praevia, 2 patients (0.96%) had placenta accrete and 18 patients (8.69 %) had IUGR. 69 patients (33.33 %) had Preterm delivery, 19(9.17 %) had postpartum hemorrhage, 10 patients (4.83 %) developed chronic HTN, 6 patients (2.89 %) developed type 2 DM, 21 patients (10.14 %) developed hypothyroidism and 7 patients (3.38 %) had severe anaemia. 10 patients had congenital anomalies. 64 babies (34.13 %) had Birth weight of less than 2.5kg. 25 babies had Apgar score of less than 6 at 1minute and 193 babies had Apgar of score more than 6 at 1 minute. **Conclusion:** Advanced maternal age is an independent risk factor for adverse pregnancy outcome. In view of the increased morbidity and mortality, they should be preferably managed in a tertiary care center.

## INTRODUCTION

Pregnancy at advanced maternal age has become more common in both developed and developing countries over the last few decades.<sup>[1]</sup> Although there is no definition of advanced maternal age, one common definition is of maternal age >35 years.<sup>[2,3]</sup> Advanced maternal age is associated with decreased fertility and increased risk.<sup>[4]</sup> Infertility due to various causes is also responsible for delayed conception. The trend toward delaying pregnancy is mainly due to social, economic, cultural changes, higher education, career goals of women, advance in assisted reproductive techniques. Pregnancy after the age of 35 years is associated with maternal and fetal complications. Advanced maternal age is an independent risk factor for pregnancy outcome. Maternal complications include gestational diabetes mellitus (GDM), gestational hypertension (HTN), and cesarean delivery. Adverse perinatal outcomes

include higher rates of chromosomal abnormalities, miscarriage, pre-term labor, neonatal intensive care unit (NICU) admissions, and stillbirth.<sup>[2,3]</sup> A large number of perinatal deaths seen in older women were due to lethal congenital and chromosomal anomalies. The older woman to conceive spontaneously was 57 years of age and with ART the oldest was 66 years of age, recorded in literature.<sup>[5]</sup>

## MATERIALS AND METHODS

This retrospective study was conducted in the department of obstetrics and Gynaecology, GMC Jammu over a period of one year from January 2022 to December 2022. 207 patients were included in this study. Women who met inclusion criteria were enrolled in this study. Data was collected from the records kept in the hospital. The maternal baseline characteristics, pre-existing medical conditions,

pregnancy outcomes and obstetrics complications were studied. The aim of this study was to study the effect of advanced maternal age on pregnancy and neonatal outcomes.

## RESULTS

During the study period, out of total patient who delivered, 207 patients were of more than 35 years of age and were included in the study. Majority of the women were in the age group of 36-39 years (85.99%) followed by 40-44 years (11.59 %) and more than 44 years (2.41 %) [Table 1]. In our study, 142(68.59 %) patients were multigravida followed by primigravida (20.77% %) and grand multigravida (10.62%) [Table 2]. 185 patients (89.37 %) conceived spontaneously and 22 patients (10.62 %) conceived by assisted reproductive techniques [Table 3].

In our study, 22 patients (10.62 %) developed gestational hypertension, 12(5.79 %) patients developed GDM, 12 patients (5.79 %) developed cholestasis of pregnancy, 8 patients (3.86 %) developed severe preeclampsia, 11 patients (5.31 %) had twin pregnancy, 8 patients (3.86%) had placenta praevia 2 patients (0.96%) had placenta accrete, 18 patients (8.69 %) had IUGR, 2 patients (0.96%) had oligohydramnios, 2 patients (0.96%) had polyhydramnios. 69 patients (33.33 %) had Preterm

## Inclusion Criteria

1. Pregnant women more than 35 years of age including primigravida and multigravida.
2. Gestational age more than 24 weeks.

delivery [Table 4]. and 19 (9.17 %) had postpartum hemorrhage [Table 5].

10 patients (4.83 %) developed chronic HTN, 6 patients (2.89 %) developed type 2 DM, 21 patients (10.14 %) developed hypothyroidism, 1 patient had hyperthyroidism, 7 patients (3.38 %) had severe anaemia and 12 patients (5.79%) had malpresentation [Table 6].

Most common mode of delivery was vaginal (51.69 %) followed by LSCS (48.3 %) [Table 7]. Total numbers of live births were 202 (92.66%) and still births were 16 (7.33%). [Table 8] 64 babies (34.13 %) had Birth weight of less than 2.5kg, 120 babies (55.04 %) had birth weight between 2.5 - 3.5 kg and 28 babies (12.84 %) had birth weight between 3.5 kg-4 kg and 6 babies (2.75 %) had birth weight more than 4 kg. [Table 9]

25 babies had Apgar score of less than 6 at 1minute and 193 babies had Apgar of score more than 6. [Table 10a] 22 babies had Apgar score of less than 6 at 5 minutes and 196 babies had Apgar score of more than 6. [Table 10b] 10 patients had congenital anomalies out of which 2 babies had duodenal atresia, 1 had meningocele, 1 had ambiguous genitalia, 3 babies had anencephaly, 2 had omphalocele, 1 had holoprosencephaly.

**Table 1: Age Distribution during the Study Period**

Age	Number	percentage
36-39	178	85.99
40-44	24	11.59
>44	5	2.41

**Table 2: Distribution of Patients According to Parity**

Gravida	Number	percentage
Primi	43	20.77
multigravida	142	68.59
Grandmulti	22	10.62

**Table 3: Distribution of Patients According to Mode of Conception**

Conception	Number	Percentage
spontaneous	185	89.37
ART	22	10.62

**Table 4: Gestational Age at the Time of Delivery**

period of gestation	Number	Percentage
24-27.6 WEEKS	11	5.31
28-31.6 WEEKS	8	3.86
32-33.6 WEEKS	9	4.34
34-36.6 WEEKS	41	19.8
> 37 WEEKS	138	66.66

**Table 5: Pregnancy Specific Complications**

Pregnancy specific complications	Number	percentage
No	132	63.76
Gestational HTN	22	10.62
GDM	12	5.79
Severe preeclampsia	8	3.86
Cholestasis	12	5.79

Placenta praevia	8	3.86
Abruption	0	0
Twin	11	5.31
Placenta Accreta	2	0.96
IUGR	18	8.69
Oligohydramnios	2	0.96
Polyhydramnios	2	0.96
PPH	19	9.17
Preterm labour	69	33.33
IUFD	14	6.76

**Table 6: Chronic Medical Disorders in Pregnancy**

chronic disease	Number	percentage
No	163	78.74
Chronic HTN	10	4.83
Type 2 DM	6	2.89
Hypothyroidism	21	10.14
Hyperthyroidism	1	0.48
Severe anaemia	7	3.38

**Table 7: Mode of Delivery**

mode of delivery	number	Percentage
Vaginal	107	51.69
LSCS	100	48.3

**Table 8: Fetal Outcome**

Fetal outcome	Number	Percentage
Live	202	92.66
Stillbirth	16	7.33

**Table 9: Birth Weight of Baby**

birth weight	Number	percentage
<1 kg	12	5.50
1-1.5 kg	10	4.58
1.5-2 kg	12	5.50
2-2.5 kg	30	13.76
2.5-3 kg	59	27.06
3-3.5 kg	61	27.98
3.5 -4 kg	28	12.84
>4 kg	6	2.75

**Table 10: APGAR SCORE**

**Table 10a: Apgar score at 1 Minute**

Apgar score at 1 min	number	Percentage
<6	25	11.46
>6	193	88.53

**Table 10b: Apgar score at 5 minutes**

apgar score at 5 minutes	number	Percentage
<6	22	10.09
>6	196	88.90

## DISCUSSION

In our study, majority of the women were in the age group of 36-39 years (85.99%) followed by 40-44 years (11.59 %) and more than 44 years (2.41 %) which is similar to study conducted by Rajmohan Laxmy et al.<sup>[6]</sup> in which 89.9% patients belonged to 35-40 years. This explains inverse relationship of age with fertility. The fertility is significantly reduced with increasing age. In our study, 142 (68.59 %) patients were multigravida followed by primigravida (20.77%) and grand multigravida (10.62%). The incidence of multigravida is higher (and hence primipara is lesser) than the 57.5% reported by Neerja Singal et al.<sup>[5]</sup> 185 patients (89.37 %) conceived spontaneously and 22 patients (10.62 %) conceived by assisted reproductive techniques which is similar to the studies conducted by Kalewad P, et al.<sup>[7]</sup> (26%) and Pawde Anuya et al<sup>[8]</sup> (12.6%) which reported 26% and 12.6% respectively. 21 patients (10.14 %) developed hypothyroidism, 1 patient had hyperthyroidism, 7 patients (3.38 %) had severe anaemia. In our study, 10 patients (4.83 %) developed chronic HTN. The incidence of chronic hypertension was similar to study conducted by Kalewad P et al (5%) and was lesser than the study conducted by Palival V et al<sup>[9]</sup> (9%). 6 patients (2.89 %) developed type 2 DM which was lower than the study conducted by Kalewad P et al.<sup>[7]</sup> (5%) and Palival V et al.<sup>[9]</sup>

conceived spontaneously and 22 patients (10.62 %) conceived by assisted reproductive techniques which is similar to the studies conducted by Kalewad P, et al.<sup>[7]</sup> (26%) and Pawde Anuya et al<sup>[8]</sup> (12.6%) which reported 26% and 12.6% respectively. 21 patients (10.14 %) developed hypothyroidism, 1 patient had hyperthyroidism, 7 patients (3.38 %) had severe anaemia. In our study, 10 patients (4.83 %) developed chronic HTN. The incidence of chronic hypertension was similar to study conducted by Kalewad P et al (5%) and was lesser than the study conducted by Palival V et al<sup>[9]</sup> (9%). 6 patients (2.89 %) developed type 2 DM which was lower than the study conducted by Kalewad P et al.<sup>[7]</sup> (5%) and Palival V et al.<sup>[9]</sup>

(9%). Most common mode of delivery was vaginal (51.69 %) followed by LSCS (48.3 %). The incidence of caesarean section was less when compared to Palival V et al (74%) and Moses V et al.<sup>[10]</sup> (66%) and high when compared to Giri A et al.<sup>[11]</sup> (30%), Kalewad P et al (40%) and Chan BC et al.<sup>[12]</sup> There is higher prevalence of pregnancy specific complications in advanced maternal age. In our study, 22 patients (10.62 %) developed gestational hypertension, 12 patients developed GDM (5.79 %), 12 patients (5.79 %) developed cholestasis of pregnancy, 8 patients (3.86 %) developed severe preeclampsia, 11 patients (5.31 %) had twin pregnancy, 8 patients (3.86%) had placenta praevia, 2 patients (0.96%) had placenta accrete, 18 patients (8.69 %) had IUGR, 2 patients (0.96%) had oligohydramnios, 2 patients (0.96%) had polyhydramnios. 69 patients (33.33 %) had Preterm delivery and 19 patients (9.17%) had postpartum hemorrhage. The incidence of placenta previa was similar to the study conducted by Chan BC et al.<sup>[12]</sup> (4%). The incidence of preeclampsia was low when compared to Giri A et al (20%) and similar to studies conducted by Kalwad P et al (2%) and Moses V et al (4%). The incidence of gestational hypertension was less when compared to Moses V et al (24%) and Kalewad P et al (15%). The incidence of oligohydramnios was less when compared to Moses V. et al (10%) and Kalewad P et al (2%). The incidence of gestational diabetes mellitus was higher than Giri et al (1%), similar to study conducted by Moses V et al (6%) and less than study conducted by Kalewad P et al (15%). In our study, 18 patients (8.69 %) had IUGR. The incidence of IUGR was similar to the study conducted by Giri A et al (8.8%) and less than the study conducted by kalewad P et al (22%). In our study, 69 patients (33.33 %) had preterm delivery. The incidence of preterm delivery was higher than the studies done by Moses Vet al (10%), Giri A et al (1.1%), Chan BC et al. (17%) and Benli et al.<sup>[13]</sup> (5.8%). In our study, 11 patients (5.31 %) had twin pregnancy. The incidence of multiple pregnancy is lower than Kaliwad P et al (10.6%) but higher than Giri A et al (1.1%). Incidence of PPH was similar to study conducted by Amarin et al.<sup>[14]</sup> (9.6%). 12 patients (5.79%) had malpresentation which is comparable to study conducted by Amarin et al (6%) and Ramchandran N et al.<sup>[15]</sup> (4.76%). 8 patients (3.86%) had placenta praevia, which is less than the study conducted by Giri et al (5.5%). 2 patients (0.96%) had oligohydramnios which is less than the study done by Nagarwal et al.<sup>[16]</sup> (6.64%). 10 patients (4.83%) had congenital anomalies which are more than study done by Benil et al (1.3%). 18 patients (8.69 %) had IUGR which is more than the study done by Khalil et al (4.7%).<sup>[17]</sup> 64 babies (30.9 %) had Birth weight of less than 2.5kg, 120 babies (57.97 %) had birth weight between 2.5 - 3.5 kg, 28 babies (13.52%) had birth weight between 3.5 kg-4 kg and 8 babies (3.86) had birth weight more than 4 kg. 25 babies had Apgar score of less than 6 at

1 minute and 193 babies had Apgar of score more than 6 at 1 minute. 22 babies had Apgar score of less than 6 at 5 minutes and 196 babies had Apgar score of more than 6 at 5 minute.

## CONCLUSION

Advanced maternal age is an independent risk factor for adverse pregnancy outcome. Maternal complications include gestational diabetes mellitus (GDM), gestational hypertension (HTN), and cesarean delivery. Adverse perinatal outcomes include higher rates of chromosomal abnormalities, miscarriage, pre-term labor, neonatal intensive care unit (NICU) admissions, and stillbirth. Increasing maternal age has high risk of perinatal complication. Therefore, they should be advised frequent antenatal visits and provide proper antenatal care. Elderly women 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 foetus. In view of the increased morbidity and mortality associated with pregnancy in advanced maternal age, they should be preferably managed in a tertiary care centre.

Conflict of interest- none.

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