

Study of Feto-Maternal Outcome in Pregnancy with Advanced Maternal Age

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Abstract:

Background: Advanced maternal age (AMA) is generally defined as pregnancy in women aged 35 years or older. Studies of pregnancies in older women from higher-income countries have shown higher maternal and perinatal morbidities. The objective of this study was to estimate the proportion of pregnancy with advanced maternal age and its demographic details, causes and feto-maternal outcome.

Methods: This retrospective observational study was carried out from 1st June 2018 to 31st May 2021.

Results: The proportion of pregnancies with advanced maternal age was 1.9%. Majority of the patients, 232 (69.6%) were in the age group of 35-36 years, 309 (92.8%) were coming from urban lower-middle class, 212 (63.7%) were uneducated and 303 (91%) were gravida 2 or more, 287 (86.2%) had desire for more children. Abortion, Vaginal delivery and LSCS were 23 (6.9%), 152 (45.6%) and 121 (36.3%) respectively. Anemia and hypertensive disorders were present in 77(23.1%) and in 49(14.7%) respectively. Live births were 256 (92.4%) and NICU admissions were required in 75 (29.3%).

Conclusion: Pregnancy with advanced maternal age was associated with elevated risks for feto-maternal complications. Majority of patients were uneducated and from lower socio-economic class who were desirous for more children. Education of girl child, women empowerment and awareness about various methods of contraception must be promoted. Increased maternal and fetal surveillance along with multidisciplinary approach can ensure better maternal and perinatal outcome.

Keywords: Advanced Maternal Age, Fetomaternal Outcomes, Pregnancy Complications, Pregnancy Outcomes.

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Introduction

Advanced maternal age (AMA) is generally defined as pregnancy in women aged 35 years or older. About 10% of all pregnancies occur in advanced maternal age [1]. Pregnancy with advanced maternal age is likely to increase in coming days due to increased emphasis on women's educations, late marriages and more priority to career with tendency to postpone the pregnancies. Liberal use of assisted reproductive techniques including in vitro fertilization and embryo transfer (IVF-ET) and ovum donation have further increased the chance of pregnancies in later ages including in menopausal women.

In the developed countries, in developing countries and in high socio-economic group, there is a trend to become pregnant at an advanced age due to changes in the structure of family with more late marriages or remarriages, women going for higher education, women empowerment with more women going for job/business, availability of assisted reproductive techniques and wide use of effective and safe

contraceptives. In developing countries, the scenario is different in low socio-economic group.

The women tend to become pregnant at advanced age due to concept of large family size, sometimes desire for more children and moreover due to lack of knowledge of availability of effective contraception. Complications like Gestational Diabetes Mellitus (GDM), preeclampsia, placenta previa are more common in pregnancy with advanced maternal age. There is also an increased risk for operative vaginal delivery, induction of labor, increased incidence of abnormal labor patterns and of caesarean section among older women. Aging changes in the myometrium may be a contributing factor for the increased rate of caesarean section [2,3,4]. As per recent evidence, there is a strong association of increased age with progressive genetic problems, preterm delivery, low birth weight (LBW), intrauterine fetal death (IUFD) and neonatal intensive care unit (NICU) admissions of babies. [3,4]

The objective of this study was to estimate the proportion of pregnancy with advanced maternal age and its demographic details, causes and fetomaternal outcome.

Materials and Methods

This retrospective observational study was carried out at our tertiary care teaching hospital from 1st June 2018 to 31st May 2021. The data was collected after approval of Institutional Review Board. Data was collected from the indoor case papers and hospital records as per proforma that included, demographic profile of patients, detailed history, clinical examination findings, investigations, antenatal age at the time of delivery, progress of labour, mode of delivery and fetomaternal outcome. Analysis of data was done by appropriate statistical methods.

Inclusion Criteria: All pregnant women of 35 years and older who came for management of pregnancy.

Exclusion Criteria: All pregnant women below the age of 35 years who came for management of pregnancy.

Results

During the study period, 17,469 patients were admitted for management of pregnancy at our tertiary care teaching hospital. Out of these, pregnancies of 35 years and above were 333. Hence, as shown in

Table 1, the proportion of pregnancies with advanced maternal age was 1.9%. As shown in Table 2, majority of the patients of pregnancy with advanced maternal age, 232 (69.6%) were in the age group of 35-36 years. Majority of patients of pregnancy with advanced maternal age, 252 (75.7%) were registered.

Majority of patients, 309 (92.8%) were coming from urban area and were from lower socio-economic class. Majority of the patients of advanced maternal age, 212 (63.7%) were uneducated. Majority of patients 303 (91%) of advanced maternal age were gravida 2 or more. As shown in Table 3, majority of patients 287(86.2%) had desire for more children. As shown in Table 4, MTP was performed in 34 (10.2%) patients of pregnancy with advanced maternal age. Abortion occurred in 23 (6.9%) patients. Ectopic pregnancy occurred in 3 (0.9%). Vaginal delivery occurred in 152 (45.6%) and LSCS was performed in 121 (36.3%).

More than one complication was present in some patients. As shown in Table 5, most frequent antenatal complication was anemia in 77(23.1%) followed by hypertension in 49(14.7%). Most frequent postpartum complication was PPH in 6 (1.8%) As shown in Table 6, live births were 256 (92.4%) and 21(7.6%) were IUD. NICU admissions were required in 75 (29.3%) babies.

Table 1: Proportion of Pregnancy with Advanced Maternal Age (N=333)

Pregnancies with Advanced Maternal Age	Number	Percentage %
	333	1.9%

Table 2: Demographic Details of Pregnancies with Advanced Maternal Age (N=333)

Demographic Details	Number	Percentage (%)
Age (years)	35-36	232
	37-38	66
	39-40	29
	>40	6
Booking status	Registered	252
	Unregistered	81
Residence	Urban	309
	Rural	24
Socio-economic status	Lower	309
	Middle	19
	Upper	5
Education status	Uneducated	212
	Primary	60
	Secondary	36
	Higher secondary	14
	Graduation	11
Gravidity	Primigravida	30
	2 nd Gravida	49
	3 rd Gravida	111
	4 th Gravida	85
	>5 th Gravida	58

Table 3: Causes for Pregnancies with Advanced Maternal Age (N=333)

Causes for Pregnancies at Advanced Maternal Age	Number	Percentage (%)
Late marriage	10	3
H/O second marriage	11	3.3
Infertility	25	7.5
Desirous for more children	287	86.2

Table 4: Pregnancy Outcome of Pregnancies with Advanced Maternal Age (N=333)

Pregnancy Outcome			Number	Percentage (%)
MTP			34	10.2
Abortion			23	6.9
Ectopic Pregnancy			3	0.9
Vaginal Delivery 152 (45.6%)	Normal Vaginal Delivery	Pre Term	26	7.8
		Term	110	33.0
		Post term	10	3.0
	Breech Vaginal Delivery	Pre Term	2	0.6
		Term	4	1.2
		Post term	0	0
LSCS 121(36.3%)	Pre Term	18	5.4	
	Term	99	29.7	
	Post term	4	1.2	

Table 5: Maternal Complications of Pregnancy with Advanced Maternal Age* (N=333)

Maternal Complications of Pregnancy with Advanced Maternal Age		Number	Percentage (%)
Antepartum complications			
Anemia 77(23.1%)	Mild	41	12.3
	Moderate	23	6.9
	Severe	13	3.9
Hypertension 49(14.7%)	Pre-existing hypertension	6	1.8
	Pre-eclampsia	23	6.9
	Eclampsia	2	0.6
	Gestational hypertension	18	5.4
Abortion		23	6.9
Premature rupture of membrane		23	6.9
Oligohydramnios		17	5.1
Diabetes 14(4.2%)	Pre-existing diabetes mellitus	9	2.7
	Gestational Diabetes Mellitus	5	1.5
Breech presentation		11	3.3
Antepartum Hemorrhage 11(3.3%)	Abruption placenta	7	2.1
	Placenta previa	4	1.2
Hypothyroidism		7	2.1
Twins		4	1.2
COVID-19		4	1.2
Transverse lie		2	0.6
Pregnancy with fibroid		1	0.3
Post MTP/Post abortion/Post ectopic/Postpartum Complications			
Postpartum Hemorrhage (PPH)		6	1.8
Wound Infection		5	1.5
Pleural effusion		2	0.6
Septicemia		1	0.3

*More than one complication was present in some patients

Table 6: Neonatal Outcome of Pregnancy with Advanced Maternal Age

Neonatal Outcome of Pregnancy with Advanced Maternal Age		Number	Percentage (%)
Neonatal status* N= 277	Alive	256	92.4
	IUD	21	7.6
Weight N= 277	<2.5kg	57	20.6
	2.5 to 3 kg	148	53.4
	3.1 to 3.5 kg	52	18.8
	3.6 to 4 kg	17	6.1
	4.1 to 4.5 kg	3	1.1
NICU admission N= 256	Admission	75	29.3
	No admission	181	70.7

*including 4 Twins

Discussion

In present study, proportion of pregnancy of advanced maternal age was 1.9%. Studies done by Giri A et al [5], Pawde AA et al [6] and Priyadatt D Patel et al [7] have reported 4.5%, 9.6%, 2.9% of patients of pregnancy with advanced maternal age respectively. Variation in proportion amongst these studies was because of difference in demographic data, such as age at marriage, socio-economic-cultural status, difference in level of education and difference in awareness regarding contraceptives and its usage. In our study, majority of the patients 232 (69.6%) were in the age group of 35-36 years and in the age group of 37-38 years and 39-40 years there were 66 (19.8%), 29 (8.7%) of patients respectively. Study conducted by Rajput N et al [8] had reported that 89.9% patients were in the age group of 35-49 years and 2 % of patients in >45 years. As per our study, majority of patients with advanced maternal age, 252 (75.7%) were registered and 81 (24.3%) were unregistered. Study conducted by Priyadatt D Patel et al [7] had reported 64.7% registered and 35.2% unregistered patients. In our study, majority of patients 309(92.8%) were coming from urban area. This was because as our tertiary care teaching hospital is situated in the city area. In our study, majority of patients of advanced maternal age 309(92.8%) were from lower socio-economic class having lower nutritional and educational status, inadequate knowledge and practice of contraceptives and social preference of particular gender and need for large family size. Rajput N et al [8] had reported 90% of patients of advanced maternal age from lower and 1.7% from upper socio-economic class. In present study, majority of the patients of advanced maternal age 212 (63.7%) were uneducated and only 11 (3.3%) had graduate/ postgraduate degree. Patients educated up to primary, secondary, higher secondary level were 60 (18%), 36 (10.8%), 14 (4.2%) respectively. People from lower socio-economic class do not continue their education after primary and secondary level. In our country, due to socio-cultural reasons and due to lack of education, women tend to have children right from the beginning till the end of their reproductive career. [8] Lack of education, poverty and poor health, ultimately affect our society and our physical-mental health. [9] In present study, maximum number of patients of advanced maternal age, 303 (91%) was gravida 2 or more. Majority of patients of advanced maternal age 111 (33.3%) were 3rd gravida, while 30 (9%) were primigravida. Majority of patients 287(86.2%) had desire for more children. Infertility, second marriage and late marriage were the reason for pregnancies at advanced maternal age in 25 (7.5%), 11 (3.3%) and 10 (3%) respectively. Rajput N et al [8] had reported major cause of pregnancy of advanced maternal age as desire for male child in 23.9% and late marriage in 6.5% of patients. Studies in India have identified major factors that underlie son preference as sons are more likely to help in earning and support parents during old age. Daughter is considered to be an economic liability to her parents mainly because of the heavy dowry payment demanded by the groom's

family [10] In present study, majority patients wanted more children. This may be because of lack of awareness for contraceptive methods.

In present study, MTP was performed in 34 (10.2%) patients and abortion occurred in 23(6.9%) of patients. All patients were counseled for contraception. Due to advanced maternal age, oocyte quality is affected that may be the cause of spontaneous abortion.[3] Vaginal delivery occurred in 152 (45.6%). Breech vaginal delivery occurred in 6 (1.8%). Priyadatt D Patel et al [7] had reported normal vaginal delivery and breech vaginal delivery in 68.1% and 4.3%. In present study, LSCS was performed in 121 (36.3%). Giri A et al [5], Khalil A et al [11] and Pawde AA et al [6] have reported caesarean section in 30%, 29.7%, 35% respectively. In present study, out of 273 deliveries, preterm, term and post term deliveries were 46 (16.8%), 213 (78%) and 14 (5.1%) respectively. Priyadatt D Patel et al [7] had reported preterm, term and post term delivery in 26%, 61.2% and 13% respectively. Dutta SR et al [12] had reported preterm and term delivery in 44.9% and 64.7% respectively. Chronic hypertension, diabetes mellitus and antepartum haemorrhage may be the causative factors for increased incidence of preterm delivery in addition to malpresentation and twin pregnancy in women of advanced maternal age [8]. In present study, all patients were counseled for contraception. Hence, counseling the patient, her family members especially her husband, dissemination of correct information and clearing myth associated with PPIUCD should be done [13]. In addition, those who have completed their family should be counseled for permanent method of sterilization. In present study, 121 (36.3%) patients of advanced maternal age, LSCS was performed. Age related changes in the myometrium may contribute for the increased rate of caesarean section [4].

Most common indication for caesarean section was previous caesarean section in 69(53.10%). Kalewad PS et al [14] had reported most common indication for caesarean section was as previous caesarean section 34.8%. Benli AR et al [15] had reported most common indication for caesarean section was as fetal distress 11.7%.

In present study, anemia was present in 77 (23.1%) patients of advanced maternal age. Rajput N et al [8] and Jolly M et al [16] had reported anemia in 4.1% and 21.4% respectively. As per WHO, 58% of women in developing countries are anemic and anemia is major public health problem. As per National Family Health Survey-5, prevalence of anemia among pregnant women is higher (53.7%). Risk of infection, preeclampsia, cardiac failure, PPH, puerperal sepsis, sub involution, failing lactation, chronic ill health and increase maternal and perinatal mortality is higher in anaemic women. Regular ANC can help in prevention of anemia through IFA (Iron folic Acid) tablet, nutritional advice and control of worm infestation. [17]

In present study, hypertensive disorders were present

in 49 (14.7%) patients of advanced maternal age. Pre-existing HTN, preeclampsia, gestational HTN, eclampsia were present in 6 (1.8%), 23 (6.9%), 18 (5.4%), 2 (0.6%) respectively. Giri A et al [5] and Benli AR et al [15] have reported pre-existing HTN 2.2%, 5.2% respectively. Khalil A et al [11] and Benli AR et al [15] have reported PIH in 2.3%, 2% respectively. In pregnancy with advanced maternal age, there is an impairment of maternal adaptation that results in high flow, lower resistance circulation and decrease in mean blood pressure, leading to development of preeclampsia. The incidence of chronic hypertension higher with advanced maternal age due to age induced atherosclerotic changes in maternal blood vessels.[8] In present study, PROM occurred in 23 (6.9%). Giri A et al [5], Kalewad PS et al [14] had reported PROM in 5.5% and 6% respectively. In present study, oligohydroamnios was present in 17 (5.1%). Rajput N et al [8] and Kalewad PS et al [14] had reported oligohydroamnios in 6.2% and 2% respectively.

Higher incidence of oligohydramnios in pregnancy with advanced maternal age is may be due to poor nutrition, diabetes mellitus, vascular diseases and chronic hypertension [8] In present study, pre-existing DM and GDM were present in 9 (2.7%) and 5 (1.5%) respectively. Studies conducted by Giri A et al [5] and Khalil A et al [11] have reported GDM in 1.1% and 2.4% respectively. Dixit PV et al [18] had reported pre-existing DM and GDM in 6.6% and 10% respectively. In present study, breech presentation and transverse lie were present in 11(3.3%) and 2 (0.6%) respectively. Rajput N et al [8] and Kalewad PS et al [14] had reported malpresentation in 4.1% and 6% respectively. In present study, abruptio placenta and placenta previa were present in 7 (2.1%) and 4 (1.2%) respectively. Kalewad PS et al [14] had reported abruptio placenta and placenta previa in 1% and 5% respectively. Pattnaik L et al [19] and Rajput N et al [8] have reported APH in 5.3% and 6.2% respectively. In present study, hypothyroidism was present in 7 (2.1%). Pattnaik L et al [19] and Kalewad PS et al [14] had reported hypothyroidism in 8% and 12% respectively. There are increased chances of autoimmune thyroiditis in pregnancy with advanced maternal age [12]. In present study, 4 (1.2%) patients had twin pregnancy. Rajput N et al [8] and Kalewad PS et al [14] had reported twin pregnancy in 1% and 8% respectively. In present study, 4 (1.2%) patients were COVID-19 positive. In present study, 1 (0.3%) patient had pregnancy with fibroid. Pattnaik L et al [19] had reported same in 10.6%. With advancing age, incidence of fibroid increases.

In present study, PPH occurred in 6 (1.8%) patients and obstetric hysterectomy was performed in one patient of placenta previa. Rajput N et al [8] and Priyadatt D Patel et al [7] had reported PPH in 9% and 2.9% respectively. In present study, wound infection occurred in 5 (1.5%). Jolly M et al [20] had reported wound infection in 1.1%. Disseminated Intravascular Coagulation due to septicemia in a patient having retained products of conception lead to maternal

mortality in 1 (0.3%) patient.

In present study, there were 256 (92.4%) live births and 21(7.6%) were IUD. Priyadatt D Patel et al [7] and Rajput N et al [8] had reported IUD in 8.7% and 2.7% respectively. In present study, 57 (20.6%) were LBW babies. Pawde AA et al [6], Priyadatt D Patel et al [7] and Rajput N et al [8] have reported LBW in 26%, 30.1% and 13% respectively. In present study, congenital anomalies like anencephaly, gastroschisis, and cleft lip with cleft palate were present in 5 (1.8%) babies. Benli AR et al [15] had reported congenital anomaly in 1.3%. With advanced maternal age, there is infrequent ovulation and quality of oocyte is also affected, in addition to deficiency of folic acid [8]. In present study, NICU admissions were required in 75 (29.3%) babies. Reasons for admissions in NICU were preterm, meconium aspiration syndrome, respiratory distress syndrome, LBW, weak cry, IUGR, big baby, congenital anomaly. Priyadatt D Patel et al [7] and Rajput N et al [8] have reported 15.5% and 6.9% NICU admissions respectively.

Conclusion

Pregnancy with advanced maternal age was associated with higher risks for pregnancy complications such as abortion, anemia, preeclampsia-eclampsia, gestational diabetes mellitus, antepartum hemorrhage, increased caesarean section delivery, postpartum hemorrhage, low birth weight babies and increased rate of NICU admissions in addition to medical conditions like pre-existing hypertension and pre-existing diabetes mellitus. Majority of patients were uneducated and from lower socio-economic class.

Majority of the patients were desirous for more children. Education of girl child, women empowerment and awareness about various methods of contraception must be promoted. Patients of pregnancy with advanced maternal age must be advised to adhere to frequent antenatal visits, close supervision and institutional delivery. Counselling for contraception must be started right from the antenatal visits. Increased maternal and fetal surveillance along with multidisciplinary approach can ensure better maternal and perinatal outcome.

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