

A Comparative Study of Fetomaternal Outcome in Pregnant Women with Advanced Maternal Age versus Young Pregnant Women in a Tertiary Care Center

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Abstract:

Introduction: Age is an important determinant for maternal and fetal outcome. With changing lifestyles and to accomplish their professional goals, women are deliberately planning pregnancy in advanced age.

Aims & Objectives: The objective of the study was to compare maternal and fetal outcomes in women with advanced maternal age and young pregnant women and to evaluate the risk factors associated with advanced maternal age and analyse the relationship between maternal age and pregnancy outcome.

Methodology: This retrospective, comparative clinical study was performed in the Department of Obstetrics and Gynaecology at a tertiary care centre in Southern Rajasthan over six months. All females who delivered during this period were divided into two age groups. Group A included pregnant women of age less than 35 years & Group B included patients over 35 years or above. Data was collected from the medical record room and was analysed statistically.

Results: Most of the participants in this study were urban, educated, and booked. Significant Family history and past history (p-value .0003) were present in 40% and 68.57% of Group B females, respectively. Artificial reproductive techniques were used by 14.28% of Group B females. First-trimester complications were present in 28.57% and 71.43% Group A and Group B women, respectively (p-value=0.000336, significant). Most common being bleeding per vaginum. Artificial feeding was opted by 20% of Group B mothers. The Fisher exact test statistic value is 0.0112.

Conclusion: Despite medical advancements, age continues to be a significant factor in pregnancy. Regardless of the order of their pregnancies, middle-aged women had more first trimester and postpartum complications and chose artificial feeding more.

Keywords: Advanced Maternal Age, Pregnancy, Fetomaternal Outcome, ART.

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Introduction

The health of women and children is vital in creating a healthy world. In obstetrics, age is an essential determinant for maternal and fetal outcomes. In the modern era, with changing lifestyles and to accomplish their professional goals, women deliberately plan a pregnancy in

advanced age. Artificial reproductive technologies have also opened parenthood opportunities, even at a delayed age [1]. Advanced maternal age is defined as being pregnant at 35 years or older [2]. Such mothers are at high risk of abortion, ectopic pregnancy, chromosomal abnormalities, medical

disorders such as Hypertension, Diabetes, thyroid disorders, & cardiovascular disorders, fetal growth restriction, preterm labor, malpresentation, obstetric hemorrhage, and increased rate of instrumental and cesarean delivery. For babies, risks include preterm birth, low APGAR score, low birth weight, NICU admission, congenital disabilities, and perinatal mortality [3].

Aims & Objectives: The objective of the study was to compare maternal and fetal outcomes in women with advanced maternal age and young pregnant women.

To evaluate the risk factors associated with advanced maternal age and analyze the relationship between maternal age and pregnancy outcome.

Methodology

This retrospective, comparative clinical study was performed in the Department of Obstetrics and Gynaecology at a tertiary care center in Southern Rajasthan over six months. Ethical approval was waived by local ethical committee of University in view of the retrospective nature of study and all the procedures being performed were part of routine

care. All females who delivered during this period were studied and divided into two age groups. Group A included pregnant women of age less than 35 years. Group B included 35 patients over 35 years or above who were delivered during the study period. So the same number of patients, i.e., 35, were included in Group B. Data was collected from the medical record room and was analysed statistically.

The collected data was cross-checked and entered into Microsoft Excel Software, and descriptive statistics were carried out.

Results

All females were urban in group B, and group A had a single female belonging to the rural community. The majority of the participants had secondary education (18/35, 51.43%), closely followed by graduation (11/35, 31.43%) in group B. In group A, 88.57% (31/35) females had education till graduation. Significant Family history and past history (p-value .0003, significant) were present in 40% and 68.57% of Group B females, respectively. (Table 1)

Table 1: Sociodemographic characteristics

Serial no	Characteristics	Group A (Age < 35 years)	Group B (Age > 35 years)
1.	Rural	01 (2.8%)	-
	Urban	34 (97.2%)	35 (100%)
2.	Education		
	Illiterate	-	-
	Primary	01 (2.8%)	04 (11.4%)
	Secondary	01 (2.8%)	18 (51.42%)
	High secondary	02 (5.7%)	02 (5.7%)
	Graduation	31 (88.5%)	11 (31.42%)
	Post-graduation	-	-
3.	Family History The Fisher exact test statistic value is 0.0626. The result is not significant at p < .05		
	Significant	06 (17.14%)	14 (40%)
	Insignificant	29 (82.85%)	21 (60%)
4.	Past History The Fisher exact test statistic value is 0.0003. The result is significant at p < .05.		
	Significant	08 (22.85%)	24 (68.57%)
	Insignificant	27 (77.14%)	11 (31.42%)

Results are significant at p-value <0.05.

Two participants, each in both groups, had myoma present. Artificial reproductive techniques were used by 14.28% (5/35) of Group B females. Three out of these five mothers had multiple pregnancies.

Higher gestational order (gravida third and above) was observed more in group B (22/35, 62.86%) than in Group A (01/35). In both groups, most women (82.86% in Group A, and 80% in Group B) presented at more than 35 weeks of gestational age. First-trimester complications were present in 10/35(28.57%) and 25/35(71.43%) Group A and Group B women, respectively. The chi-square statistic 12.8571. The p-value is .000336. The

result is significant at $p < .05$. Bleeding per vaginam was the most reported complication in both groups. Second trimester complications were acknowledged in 11/35(31.42%) Group A and 17/35(48.57%) group B participants. The chi-square statistic is 2.1429. The p-value is 0.143235. The result is not significant at $p < .05$.

Third-trimester complications were present in 77.14% (27/35) of Group B and 82.85% of Group A females. Chi-square analysis yielded a value of 0.3571. At p-value 0.550097, the outcome is not significant. Two and eight women delivered vaginally in Group B and Group A, respectively.

Cesarean delivery was done in 27 women in group A and 33 in group B. All seven multiple pregnancies were delivered by cesarean section. The indications in twin fetuses were uteroplacental insufficiency, previous cesarean with both fetuses in breech presentation, and Previous cesarean with first baby breech. Cesarean myomectomy was done in two women in each group as they had the

presence of myoma. Postpartum complications occurred only in six postpartum women of group B . Complications were postpartum hemorrhage, prolonged catheterization, urinary tract infection, surgical site infection, and febrile illness. Duration of hospital stay was comparable in both groups. No fetomaternal mortality was observed in either group in the study period. (Table 2)

Table 2: Maternal Outcome

		Group A	Group B
1.	Mode of Conception: The Fisher exact test statistic value is 0.0536. The result is not significant at $p < .05$.		
	ART	-	05 (14.28%)
	Spontaneous	35 (100%)	30 (85.71%)
2.	Gravida The chi-square statistic is 31.8333. The p-value is < 0.00001 . The result is significant at $p < .05$.		
	G1	20 (57.14%)	05 (14.28%)
	G2	14 (40%)	07 (20%)
	G3	-	11 (31.42%)
	G4	01 (2.8%)	07 (20%)
	G5	-	05 (14.28%)
3.	Gestational age at presentation The chi-square statistic is 1.0175. The p-value is .601233. The result is not significant at $p < .05$		
	<26 weeks	-	-
	26-31 weeks	-	01 (2.87%)
	32-35 weeks	06 (17.14%)	06 (17.14%)
	>35 weeks	29 (82.85%)	28 (80%)
4.	Obstetrics complications in First trimester		
	Hypertension	2 (5.7%)	-
	Congenital Anomaly	-	-
	Bleeding PV	09 (25.71%)	19 (54.28%)
	Subchorionic Bleed	01 (2.8%)	06 (17.14%)
	Diabetes Mellitus	-	01 (2.8%)
5.	Obstetrics complications in Second trimester		
	Oligohydramnios	08 (22.85%)	04 (11.4%)
	Polyhydramnios	-	-
	Hypertensive disorder of Pregnancy	02 (5.71%)	02 (5.71%)
	Antepartum Hemorrhage	-	02 (5.71%)
	Gestational Diabetes Mellitus	-	-
	PROM/PPROM	01 (2.85%)	-
	FGR	03 (8.57%)	03 (8.57%)
	Others	-	-
6.	Obstetrics complications in Third trimester		
	Oligohydramnios	19 (54.28%)	04 (11.42%)
	Polyhydramnios	-	-
	Malposition	02 (5.71%)	-
	Hypertensive disorder of Pregnancy	02 (5.71%)	02 (5.71%)
	Antepartum Hemorrhage	-	02 (5.71%)
	Gestational Diabetes Mellitus	-	02 (5.71%)
	PROM/PPROM	03 (8.57%)	-
	FGR	05 (14.28%)	05 (14.28%)
	Others	07 (20%)	05 (14.28%)
7.	Postpartum Complications The Fisher exact test statistic value is 0.0248. The result is significant at $p < .05$.		

	Present	-	06 (17.4%)
	Absent	35 (100%)	29 (8.85%)
8.	Mode of Delivery: The Fisher exact test statistic value is 0.084. The result is not significant at $p < .05$.		
	Vaginal	08 (22.85%)	02 (5.71%)
	Cesarean	27 (77.14%)	33 (94.28%)
9.	Time of Cesarean Section: The chi-square statistic is 1.2788. The p-value is .258119. Not significant at $p < .05$. The chi-square statistic with Yates correction is 0.7424. The p-value is .388909. Not significant at $p < .05$.		
	Elective	15 (55.55%)	23 (69.69%)
	Emergent	12 (34.28%)	10 (30.3%)
10.	Indications of Cesarean Section		
	Previous Cesarean	04 (14.81%)	08 (24.24%)
	Multiple pregnancy	-	07 (21.21%)
	Fetal distress	04 (14.81%)	03 (9.09%)
	Previous 2 CS	-	03 (9.09%)
	Breech	02 (7.4%)	02 (6.06%)
	PROM	03 (11.11%)	02 (6.06%)
	Precious pregnancy	-	02 (6.06%)
	NPOL	08 (29.62%)	02 (6.06%)
	Failed Induction	03 (11.11%)	02 (6.06%)
	Severe Pre-eclampsia	-	01 (3.03%)
	FGR	01 (3.7%)	-

Results are significant at p-value <0.05.

In our study period, all neonates were born alive, and none had Apgar less than seven in either of the two groups. 74.28% and 68.57% of neonates in groups A and B had birth weights greater than 2.5kg. The chi-square statistic is 5.9133. The p-value came insignificant (p-value - 0.115904).

In group A, 71.43% of neonates were born at term, while 31.43% of neonates in group B were born

prematurely. However, a single neonate of group B, required neonatal intensive care out of all births, as the gestational age was 26 weeks.

All babies were breastfed in group A while 20% (07/35) of group B mothers opted for artificial feeding. The Fisher exact test statistic value is 0.0112. The association came significant at $p < .05$. (Table 3)

Table 3: Fetal Outcome

		Group A	Group B
1.	Birth weight of Newborn	The chi-square statistic is 5.9133. The p-value is .115904. The result is not significant at $p < .05$.	
	>2.5 kg	26	24
	2-2.4 kg	01	07
	1.5-1.9 kg	05	03
	<1.5 kg	02	01
2.	Maturity of the Fetus [p value - .794231]		
	Term	25 (71.42%)	24 (68.57%)
	Preterm	10 (28.57%)	11 (31.42%)

Results are significant at p-value <0.05.

Discussion

The decision to postpone pregnancy and its impact is becoming relevant in present times. Advanced maternal age is an independent risk factor for obstetrical and neonatal outcomes⁴. The advanced maternal age imposes physiological challenges because of the aging reproductive system and social discourse of risk and timing of childbearing⁵. The study highlights the risk factors associated with advanced maternal age and analyses the relationship between maternal age and

pregnancy outcome. The study also compared maternal and fetal outcomes in women with advanced maternal age and young pregnant women.

Education and occupation plays a central role in understanding antenatal care as well as its utilization. Education is also an essential factor in acknowledging health promotional activities and utilization of health services⁶. It enables them to control and change their lifestyle to improve their health during pregnancy. Most of the participants in

this study were urban, educated, and booked. Most of the advanced maternal age group participants were highly educated, as also found by Annet Thatal et al [7].

History of birth defect, developmental disability, genetic conditions and health history of both parents is an important consideration before planning pregnancy [8,9]. Significant past history of Hypertension, Diabetes Mellitus, and Thyroid disorders, was present in Group B women. (68.57%, p-value 0.003). Bianca F. et al. [10] found a family history of Diabetes Mellitus as an independent risk factor for hyperglycemia in pregnancy. Similarly, Malgorzata et al. [11] Found maternal history of Hypertension as an independent risk factor for developing pre-eclampsia and paternal history of Hypertension as a risk factor for gestational Hypertension.

Delay in child bearing due to various factors already discussed, result in an advanced age of first attempt at conception, first child at age more than or at 30 as well as higher failure rate of natural conception [12]. As age advances, the probability of spontaneous conception declines [13] due to diminished ovarian reserve. In the study, all patients in Group A had spontaneous conception, while 5/35 (14.28%) had conception with ART in Group B. Supriya S. et al. [14] found that 33.3% elderly required ART for conception.

In the study, Higher gestational order (gravida third and above) was observed more in group B (22/35, 62.86%) than in Group A (01/35).

Most patients presented at 35 weeks or above in both groups (80% in Group B). The findings are similar to the study by Annat et al. [7], where 93.4 % presented at term. Giovanna Esposito et al. Found that after adjustment for potential confounders, both advanced and young maternal age were associated with an increased risk of preterm birth [15].

Pregnancy Complications: Most of the women in Group B had some complications in the first trimester (25/35, 71.43%, p-value 0.000336). Most common being; bleeding per vaginum. A prospective register-based study done by Maria C et al [16]. Observed risk of spontaneous abortion and other types of fetal loss in women with advanced maternal age. A Janowicz-Grelewska et al. [17] also found higher incidence of sub chorionic bleed in elderly pregnant women.

Intriguingly, there was no significant difference between the two groups in terms of second and third-trimester complications. He XL et al. [18] found a significantly higher incidence of GDM and gestational Hypertension in women with advanced maternal age. This difference could be because of the smaller sample size of the study.

In the study, 33 women in group B had a cesarean delivery, out of which 23 were elective. The common indications were previous cesarean section, multiple pregnancies, precious pregnancies, and previous two cesareans. Oligohydramnios was a contributing factor in favoring cesarean section as it was associated with fetal growth restriction, fetal distress, failed induction & non-progress of labor. Eva Rydahl et al. [19] in a population register-based study found a positive association between advanced maternal age and cesarean delivery, and the risk doubled for nulliparous women aged more than 35 years. Multiparous women aged more than 35 had moderate risk. However, no association was observed in the present study.

Group B mothers 20% (07/35) opted for artificial feeding, which was significantly higher than Group A. Alemnesh Abebe Taye et al., in their community-based cross-sectional study, found the prevalence of artificial feeding was 46.2% [20]. Mothers cited insufficient milk production, maternal or infant illness, and a lack of family support as the causes. In the current study, artificial feeding was also more commonly practiced in group B due to cesarean section delivery, delayed breastfeeding initiation, education status, and mass media.

Limitations

- Reason of delaying childbirth not known
- Being a retrospective study of delivered patients, abortions, ectopic pregnancy & congenital abnormalities could not be included in the study.
- Smaller sample size

Conclusion

Advanced maternal age is a known risk factor for adverse maternal and neonatal outcomes. First-trimester complications were significantly higher in women with advanced maternal age. Therefore, it is concluded that other obstetric characteristics are equally important in addition to maternal age to determine an individual-adjusted risk for adverse pregnancy complications.

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