

## **Advanced Age Maternal Conception Modern Era Etiology for High Risk Mother, Fetus and Newborn**

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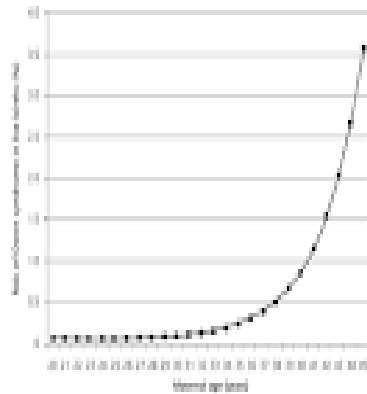
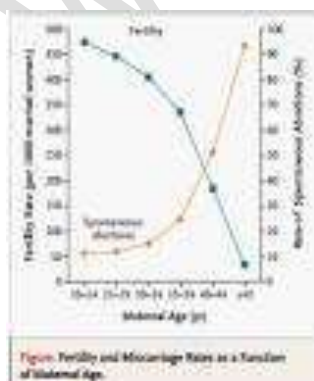
**KEY WORDS:**

*Advanced Maternal age , Delayed conception, Maternal high risks, Fetus and newborn complication*

**INTRODUCTION**

Pregnancy and child birth are normal physiological processes and outcomes of most of the pregnancies are good. However, all pregnancies and child births expose mothers and babies at risk. Data suggest that around 40% of all women develop some complication. One such risk factor is advanced age pregnancy that leads to many complications during pregnancy, labour and also for the baby

Advanced maternal age is defined as age 35 years and older at the estimated date of delivery. Over the past several decades, demographic and socioeconomic trends have resulted in an increase in the absolute number of women seeking pregnancy in their late 30's and early to mid -40's. In addition, a significant number of women in this age group are seeking evaluation and treatment for infertility. Although there is a very well demonstrated decline in female fertility as a function of age, this phenomenon has typically has been under-recognized not only by the general population, but also by many health care providers. This is probably related to the fact that in previous decades women generally had completed childbearing by the late 30's and in fact many of the pregnancies that occurred in the later reproductive years were unplanned. An increased awareness of the effects of aging on fertility for patients and health care providers is critical to the prevention of age-related infertility.



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A report from India between 2010 - 2012 estimated that proportion of late conception increased two fold in women aged more than 30, three fold in women more than 35, and four fold in women more than 40 year. The result shows dysfunctional and prolonged labour, excessive labour bleeding , hypertension, breech and malpresentations were common in late conception. (FOGSI , 2012)

### **Factors influencing the tendency for a woman to delay childbearing**

Factors influencing the tendency for a woman to delay childbearing are reflected in recent socioeconomic trends, including:

- 1) later age at first marriage,
- 2) increased level of education,
- 3) increased percentage of women employed outside the home.
- 4) Advanced reproductive technology

In addition, increased divorce rates have been associated with an increase in the number of second marriages. The “Baby Boom” period of increased birthrates observed between has resulted in a large population of women currently in their late 30’s and 40’s. Women in this age group are much more likely to experience difficulty conceiving and to seek infertility treatment.

Older patients seeking pregnancy as well as patients experiencing infertility beyond the age of 35 should seek early basic evaluation with assessment of ovarian reserve, ovulatory status, uterine and tubal anatomy, and semen parameters. In general, infertility examination is deferred until after at least one year of unprotected intercourse; however, in the older age group, it is appropriate to initiate this evaluation after as few as 6 months of attempted conception due to the rapid decline of treatment success over time. Therefore, abnormalities if present may be addressed as soon as possible, when such intervention would still allow a reasonable chance of pregnancy. Similarly, trials of infertility treatment should be concerted with fairly rapid progression to more advanced infertility treatments when indicated. It should be cautioned that normal testing for ovarian reserve (such as day 3 FSH and estradiol, and clomiphene citrate challenge test) do not negate the effects of chronologic age on oocyte quality, embryo implantation, and pregnancy rates.

### **PHYSIOLOGICAL FACTORS RESPONSIBLE ARE:**

#### **Age-related changes in the oocyte**

There are several lines of evidence documenting abnormalities of the oocyte as the predominant cause of age associated infertility. For example, oocytes from normal women in their early 40’s exhibit a high incidence of abnormalities in microtubule and chromosome

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placement at the metaphase stage of meiosis II. Higher rates of single chromatid abnormalities have been 3 reported in oocytes derived from older infertility patients following ovarian hyperstimulation . The incidence of spontaneous abortions, the majority of which are due to chromosomal abnormalities, also increase significantly with advanced maternal age.

#### **Age-related changes in the uterus**

There is also some evidence of a decrease in the functional capacity of the human uterus in older reproductive age women. For example, there is an age-related increase in the number of spontaneous abortions in which the embryo is apparently chromosomally normal. There are well-documented increases in the incidence of placental previa, dysfunctional labor, and uterine pathology. Findings from diagnostic hysteroscopy revealed an age-related increase in the incidence of endometrial polyps and fibroids in reproductive aged women. Furthermore, the proportion of myometrial arteries containing sclerotic lesions in grossly normal uterine autopsy specimens increases with age: 11% at age 17-19, 37% at 20–29, 61% at age 30–39, and 83% after age 39.

#### **Age-related changes in ovulation and hormone secretion**

Other physiologic factors contributing to the age-related decline in fertility include decline in Ovarian sensitivity to gonadotropins, evidenced by higher serum levels of follicle stimulating Hormone. This limits the efficacy of many common fertility treatments aimed at increasing the number of available oocytes. The underlying mechanism of this phenomenon is almost certainly related to the progressive depletion of the ovarian follicle pool that occurs with age.

#### **Age-related changes in the uterus**

There is also some evidence of a decrease in the functional capacity of the human uterus in older reproductive age women. For example, there is an age-related increase in the number of spontaneous abortions in which the embryo is apparently chromosomally normal (18). There are well-documented increases in the incidence of placental previa (23, 24), dysfunctional labor (23-25), and uterine pathology.

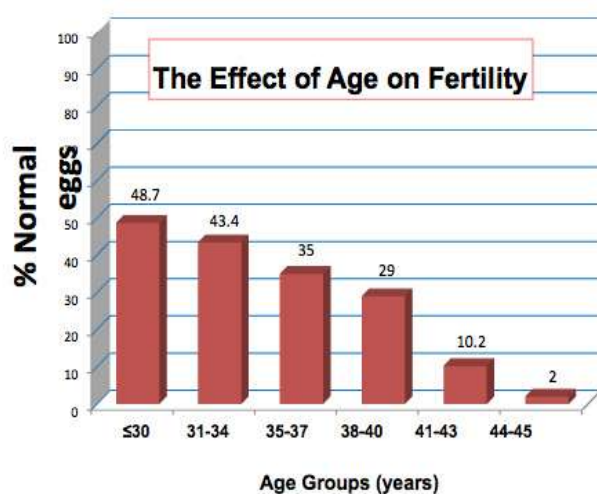
Advanced maternal age is an independent risk factor for intrauterine growth restriction .These findings suggest that screening for intrauterine growth restriction is indicated in these patients. Advanced maternal age appears to be an independent risk factor for intrauterine fetal demise.<sup>15</sup> This risk increases with advancing age, especially in women aged 40 years and older. In group, antenatal testing beginning at 37 weeks and delivery at 39 weeks<sup>16</sup> may reduce the number of unexplained term stillbirths. Ischemic placental disease has been associated with advanced maternal age and may explain a common pathophysiological mechanism for preterm birth in pregnancies complicated by preeclampsia, intrauterine growth restriction, placental abruption, and possibly intrauterine fetal demise. These associations although more common in preterm births also complicate term births.

Screening with uterine artery Doppler studies may be helpful to better assess the risks for these adverse outcomes. Cesarean delivery rates are increased in both nulliparous and multiparous patients with advanced maternal age. oocytes from normal women in their early 40's exhibit a high incidence of abnormalities in microtubule and chromosome placement.

Women are increasingly delaying pregnancy until they are in their [mid-30s](#), or older. Statistics for births in India and US show that:

- **India** : In 2013, 20 per cent of all births were to women over 35. In 2000 it was 17 per cent.
- **US** : In 2010, 27,731 women age [40](#) gave birth, compared with 15,066 in 2000.

(Wikipedia , 2013)



Studies revealed that many young mothers produced DS children than advanced age mothers in India. A total of 150 suspected DS cases were investigated cytogenetically. Randomly selected 200 healthy families in South India were used as controls. *Maternal grandmothers with advanced age reproduction are more likely to have Down syndrome grandchildren* (Suttur S Malini, et al; Mysore )

A woman's risk of having a baby with chromosomal abnormalities increases with her age. Down syndrome is the most common chromosomal birth defect, and a woman's risk of having a baby with Down syndrome increases with age.

Advanced maternal age is associated with adverse outcomes in the perinatal period, which may be caused by detrimental effects on decidual and placental development. The risk of the mother dying before the child becomes an adult increases by more advanced maternal age, such as can be demonstrated by the following data from France in 2007

<b>Maternal age at childbirth</b>	25	30	35	40	45
<b>Risk of mother not surviving until child's 18th birthday (in %)<sup>[9]</sup></b>	1.0	1.6	2.6	3.8	5.5

Advanced maternal age continues to be associated with a range of adverse pregnancy outcomes including low birth weight, pre-term birth, stillbirth, unexplained fetal death, and increased rates of Caesarean section.

In India at 2012 the total abortion occurred because of late conception is 636306 (**Robert Johnston , 6 December 2013**)

There is more chance of fetus having malpresentation at birth, particularly over 40 and if mother is primi gravid . Some research has found that [fetal distress](#) is more common in late conception , particularly above 35 years of age . There's evidence that elderly mother are more likely to have a prolonged [labour](#). This could be because the muscles of the uterus (womb) may not work as efficiently as women get older.

The risk of still birth babies is highest at around 35 years of late conception . However, the rate is still low, at less than 10 stillbirths per 1,000 births. The ratio of still births to total births in case of 10.2% in 2011 because of late conception in Assam.

(**Dr. P. Hazarika, Nilutpal Chutia , 2011**)

**Table. Risk of Down's Syndrome and Chromosomal Abnormalities at Live Birth, According to Maternal Age.\***

<b>Maternal Age at Delivery (yr)</b>	<b>Risk of Down's Syndrome</b>	<b>risk of chrom.abnormality</b>
20	1/1667	1/526
25	1/1200	1/476
30	1/952	1/385
35	1/378	1/192
40	1/106	1/66
45	1/30	1/21

International agreements affirm that girls have a right to know about information regarding reproductive health, accurate timing of conception, and child bearing. Girls receive most of these information from peers which often leads to misinformation. So Advanced maternal age is becoming more common and is associated with adverse maternal-fetal outcomes. A better understanding of these risks will enable obstetric providers to implement management schemes to improve care and pregnancy outcomes.

On the other hand, advanced maternal age is associated with a more stable family environment, higher socio-economic position, higher income and better living conditions, as well as better parenting practices,<sup>1</sup> but it is more or less uncertain whether these entities are *effects* of advanced maternal age, are *contributors* to advanced maternal age, or common effects of a certain state such as personality type Explanations for birth postponement. They

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need structured formal and informal learning packages for better future. Recent studies shows that most girls are for late conception due more carrier oriented and use of better contraceptive methods.

Women should have a baby before the age of 35 or “risk missing out on motherhood”. This was the stark message from the *Daily Mail*. Delayed conception may also cause complications during pregnancy and labour and also cause health risks in the child. Hence it is important that girls should have accurate knowledge about correct conception age and good knowledge about the health risks of first mothering in advanced maternal age. This would further help in reducing the maternal , fetal and neonatal morbidity and mortality rates .

Thus, the need of the day for India and elsewhere is implementation of prenatal screening of genetic disorders as a preventive public health programme on a priority basis as immunization program on hand.

## CONCLUSION

Global observations show that in developed countries maternal mortality ratio averages at 13 per 1,00,000 live births, in developing countries it is 440 for the same number of live births. The problems affecting the health of the mother and child still constitutes one of the most serious health problems affecting the community, particularly in the developing countries like India.

Countdown to 2015 is a global movement of academics, governments, international agencies, Health - care professional associations, donors and nongovernmental organizations . It uses country-specific data to stimulate and support country progress towards achieving the health-related Millennium Development Goals (MDGs), particularly MDGs 4 and 5. Countdown focuses on coverage of effective interventions for maternal, newborn and child health and coverage determinants, including health systems and policies, financial flows and equity.

**MDG 4: Reduce child mortality.** Target 4A: Reduce by two thirds, between 1990 and 2015 the under-five mortality rate.

**MDG 5: Improve maternal health.** Target 5A: Reduce by three quarters the maternal mortality ratio. Target 5B: Achieve universal access to reproductive health. Preventing advanced maternal age conception would help in reducing maternal and neonatal mortality to a great extent.

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