

The outcome of pregnancy in elderly primigravida at a tertiary care hospital

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Abstract

The association between age of the woman and reduced fecundability has been well documented. This decline in fecundability beginning in the early thirties and accelerates in the late thirties and early forties. The age related decline in fertility appears to be attributable to oocyte depletion. Another factor which contributes to reduced female fecundability. Is age-related decline in male fertility? A retrospective comparative study was done at Tertiary Institute. There were 85 Primigravida above 35 years of age (Group III) admitted during this period in the obstetric units of tertiary hospitals. These women were compared with two control groups comprising of 85 Primigravida in each groups aged between 20 to 25 years (Group I) and 30 to 34 years (Group II) of age by a random selection of consecutive Primigravida admitted during the same period. Rate of caesarean section was high (47.06%) in Group III and 37.65% in Group II and 15.29% in Group I. The difference is statistically significant ($p < 0.01$). New born admission to intensive care unit was highest (28.24%) among babies born to group II mother, (17.65%) babies in group III and (9.41%) babies in group I required NICU admission.

Keywords: Elderly primigravida, caesarean section, NICU admission

Introduction

The past decade has seen a remarkable shift in the demographics of childbearing in the world. In former days, pregnant women aged 35 and over tended to have several, unplanned children, whereas today there is a growing proportion of first births to elderly pregnant women.

In several studies, chronic hypertension complicates 10 to 20% of pregnancies over 35 years. Type II diabetes also increases in frequency with age, and there is a much higher incidence of gestational as well as overt diabetes in older women than in younger women. In addition, the frequency of a formidable number of medical and surgical complications of pregnancy increases with maternal age. Those include cardiovascular, neurologic, connective-tissue, renal and pulmonary disease. Thus it is not surprising that antepartum hospital admissions are

substantially more frequent among elder women than younger women ^[1].

The association between age of the woman and reduced fecundability has been well documented. This decline in fecund ability begins in the early thirties and accelerates in the late thirties and early forties. The age related decline in fertility appears to be attributable to oocyte depletion. Another factor which contributes to reduced female fecundability ^[2].

The chances of spontaneous abortion are higher with advancing age, third trimester bleedings includes placenta previa, abruption placentae and uterine bleeding of unknown etiology which is noted in elderly primigravida. The risk of placental abruption was increased because other associated complications in older women like PIH and third trimester bleeding Natural ageing of the maternal uterine environment of maternal vascular and endocrine systems, may lead to a progressive deterioration in the transfer of nutrients to the fetus IUGR is an important cause of low birth weight Although the risk of placenta previa increases with multiparity as well as advancing age, it is arguable which of these two is more important ^[3].

Malpresentations are reported to be higher. This may be due to factors like increased rates of preterm delivery in older women, presence of associated leiomyoma, etc. There are numerous reports which say that the rate, of caesarean delivery is increased among the mature women. On women having vaginal delivery, the rates of operative vaginal delivery like vacuum or forceps delivery is increased ^[4].

Pregnancy in women > 35 years is regarded as “Premium Pregnancy”. The reasons suggested for the increase in the rates of caesarean delivery (CD) include risk of malpresentation with advancing maternal age and the normal progress of cervical dilatation may differ in subtle ways from younger women leading to increased dysfunctional labour or labour abnormalities. Labour abnormalities may also be due to relative inefficiency of the ageing myometrium.

Associated obstetric

Complications like hypertension, placental accidents, preterm labor, diabetes and leiomyoma may also account for increased caesarean births.

The chances of abruption and atonic uterus due to increase in hypertension, placenta previa, associated leiomyoma of uterus are more in a response which could cause PPH and the rates of PPH may be increased due to instrumental delivery or operative delivery ^[5].

Chromosomal anomalies in the baby is known to increase as maternal age increases. This leads to fetal malformations. At around the age of 40 years chromosomal aberrations especially aneuploidies occur at a frequency in 50 years women. Advanced paternal age, which is frequently associated with maternal age, increase the risk of autosomal dominant diseases, such as achondroplasia and marfan’s syndrome, that appear to result from genetic mutations.

Perinatal morbidity and mortality is generally higher in babies born to older women. This is reflected in higher neonatal intensive care unit (NICU) admissions and prolonged stay. The higher rates of perinatal morbidity may be due to preterm birth, low-birth weight, IUGR, infections, etc. Maternal factors like prolonged labour, instrumental delivery may, also be contributory ^[6].

Low-birth weight babies, weighing < 2.5 kg are reported to be more common in elderly mothers. The causes of this include increased spontaneous or induced preterm deliveries, IUGR other factors are, poor nutrition, smoking, pregnancy complications, etc. Advancing maternal age is associated with a decreased potential for fetal growth, due to biologic ageing of maternal tissues and systems (e.g., maternal uterine environment, vascular or endocrine systems) leading to decreased transfer of nutrients to the fetus.

Methodology

A retrospective comparative study was done at Tertiary Institute. There were 85 primigravidas above 35 years of age (Group III) admitted during this period in the obstetric units of tertiary hospitals. These women were compared with two control groups comprising of 85 Primigravidas in each groups aged between 20 to 25 years (Group I) and 30 to 34 years (Group II) of age by a random selection of consecutive primigravidas admitted during the same period.

As there is a different opinion as to whom to call a woman as elderly primigravidas, we have taken 2 groups (20-25 yrs and 30-34 yrs) for comparisons of pregnancy and labour outcome.

The observations are presented in tabular, graphical forms to highlight the difference clearly. Our observations are compared with observations done by other authors in past 50 years.

The appropriate test of significance was applied to detect the difference observed among three groups are of any statistical significance or not.

Results

Table 1: Obstetric disorders associated with pregnancy

Obstetric Complications	Group I (n=85)	Group II (n=85)	Group III (n=85)
	20-25 yrs.	30-34 yrs.	>35 yrs.
PROM	-	6(7.06%)	9(10.59%)
Preterm		14(16.47%)	16(18.82%)
Malpresentation	-	-	3(3.53%)
APH	-	-	2(2.35%)
Oligohydramnios	2(2.35%)	-	5(5.88%)
IUGR	-	-	-
Post datism	1(1.18%)	1(1.18%)	8(9.41%)
Normal	83(97.65%)	64(75.29%)	42(49.41%)

P Value = $p < 0.01$.

More than half of elderly primigravidas (5.59%) had an obstetrics complications when compared to Group II (24.71%) and (2.35%) in Group I. The common complications during pregnancy were malpresentation, oligohydramnios, premature rupture of membranes, preterm delivery rate was relatively high (18.82%) among elderly primigravidas (Group III) and 16.47% in Group II and nil from Group I.

Similarly obstetrics complication of pregnancy crossing due date was seen in Group III (9.41%) and (1.18%) in Group II and nil in Group I.

P value ($p < 0.01$) is statistically significant which suggest association between age groups obstetric complications.

Table 2: Type of labour among primigravida

Type of labour	Group I (n=85)	Group II (n=85)	Group III (n=85)
	20-25 yrs.	30-34 yrs.	>35 yrs.
Spontaneous	77(90.59%)	63(74.12%)	56(65.88%)
Induced	2(2.35%)	9(10.59%)	9(10.59%)
Augmented	2(2.35%)	7(8.29%)	2(2.35%)
Not in labour	4(4.71%)	6(7.06%)	18(21.18%)

P Value = $p < 0.01$.

90% women in group I had spontaneous labour, 74% in Group II and 66% in Group III. This shows declining trend of onset of spontaneous labour with increasing maternal age at

pregnancy is statistically significant ($p < 0.01$)

The need of induction of labour was higher among Group II (10.59%) and Group III each when compared to Group I (2.35%).

21.18% of women in Group III did not experience labour as they were taken up for elective caesarean section, this was 3 to 4 times higher than Group III and Group I respectively.

Table 3: Mode of delivery among primigravidas

Mode of Delivery	Group I (n=85)	Group II (n=85)	Group III (n=85)
	20-25 yrs.	30-34 yrs.	>35 yrs.
Vaginal	67(78.82%)	40(47.06%)	40(47.06%)
El LSCS	1(1.18%)	4(4.71%)	18(21.18%)
Em. LSCS	12(14.12%)	28(32.94%)	22(25.88%)
Instrumental	5(5.88%)	13(15.29%)	5(5.88%)

P Value = $p < 0.01$

As shown in previous table 10, the need of induced and accelerated labour was higher in Group II and Group III, So is reflected in the need for caesarean section. These sections were (Table 11) done either for failed induction, failure to progress due to CPD or for foetal distress.

Rate of caesarean section was high (47.06%) in Group III and 37.65% in Group II and 15.29% in Group I. The difference is statistically significant ($p < 0.01$).

Table 4: Indications for LSCS

Indications for LSCS	Group I (n=85)	Group II (n=85)	Group III (n=85)
	20-25 yrs.	30-34 yrs.	>35 yrs.
Foetal Distress	5(5.88%)	21(24.75%)	9(10.59%)
CPD	3(3.53%)	3(3.53%)	4(4.71%)
PIH	3(3.53%)	6(7.06%)	13(15.29%)
Oligohydramnios	1(1.18%)	-	2(2.35%)
IUGR	-	-	-
Non progress of labour	-	1(1.18%)	6(7.06%)
Malpresentation	-	1(1.18%)	2(2.35%)
APH	-	-	4(4.71%)
others	-	-	-

P Value = $p < 0.05$.

Most common indications for caesarean section was pregnancy induced hypertension (PIH) which was relatively more in elderly primi with 15.29% and 3.53% in Group I and 7.06% in Group II. Foetal distress with Group I (5.88%). Group II (24.75%) and Group III (10.59%). Other common indications for LSCS were uterine inertia [(7.06%) in Group III and 1.18% in Group II]. Pregnancy induced hypertension CPD was equally prevalent among all 3 groups and accounted for 3 to 4% for LSCS Accidental Haemorrhage (probably following PIH) required caesarean section for Group III was 4.75% which has a relatively low significance statistically ($p > 0.05$).

Table 5: Birth weight f neonates at birth among primigravida

Birth weight	Group I (n=85)	Group II (n=85)	Group III (n=85)
	20-25 yrs.	30-34 yrs.	>35 yrs.
<2000 gms	6(7.06%)	7(8.24%)	5(5.88%)
2000-2500 gms	26(30.59%)	31(36.47%)	25(29.41%)
2600-3000gms	39(45.88%)	35(41.12%)	44(51.76%)

3000gms	14(16.47%)	12(14.12%)	11(12.94%)
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P Value = $p < 0.05$.

Birth weight of babies is significant factor for assessment of fetoplacental function. Babies weighing more than 2.5kg were higher in Group III (64.71%) against 62.33% in Group I and 55.29% in Group II. However, babies born with more than 3 kg were seen in young Primis 16.47%. Difference in prevalence of low birth weight (LBW) or average birth weight (ABW) or high birth weight (HBW) was not significant ($p > 0.05$) statistically.

Table 6: Neonatal outcome immediately after birth

Neonatal Outcome	Group I (n=85)	Group II (n=85)	Group III (n=85)
	20-25 yrs.	30-34 yrs.	>35 yrs.
with mother	56(65.88%)	42(48.83%)	55(64.71%)
Warm Cubic	21(24.71%)	19(22.09%)	14(16.47%)
NICU admission	8(9.41%)	24(27.91%)	15(17.65%)
Intrapartum	0(0%)	1(1.18%)	1(1.18%)

P Value = $p < 0.01$

Though maximum babies among all groups were kept with mother after birth, the babies required NICU admissions were due to maternal high risk factors or for birth being precious to elderly Primi. It was observed (Table 14) that babies born to Group II women, had higher NICU admission or required warm cubicle. P value ($p < 0.01$) is statistically significant. There was one intrapartum fetal death among mothers in group II and group III each.

Table 7: Neonatal Mortality (NICU Admission)

Neonatal Outcome	Group I (n=85)	Group II (n=85)	Group III (n=85)
	20-25 yrs.	30-34 yrs.	>35 yrs.
NICU ADMISSION	8(9.41%)	24(28.24%)	15(17.65%)
Neonatal death	0(0%)	6(25%)	2(13.33%)

P Value = $p < 0.05$

New born admission to intensive care unit was high (28.24%) among babies born to group II mother, (17.65%) babies in group III and (9.41%) babies in group I required NICU admission.

Neonatal mortality was higher in Groups II (25%) when compared in Group III (13.33%) and nil in Group I P value is not significant, statistically ($P > 0.05$).

Table 8: Lactation

Types of lactation	Group I (n=85)	Group II (n=85)	Group III (n=85)
	20-25 yrs.	30-34 yrs.	>35 yrs.
Normal	84(98.82%)	82(96.47%)	77(90.59%)
Delayed	1(1.18%)	2(2.35%)	6(7.06%)
Medically Suppressed	-	1(1.18%)	1(1.18%)
Failure	-	-	1(1.18%)

P Value = $p < 0.05$

Desire to breast feed the baby is natural but delayed lactation was seen in 7.06% of women in Group III against 2.35% in Group II and 1.18% in Group I. Though this difference is not significant ($P > 0.05$) statistically, chance of failed induction was seen to follow linear relationship with maternal age.

Discussion

54.12% of obstetrics complications constituted in group III of our study was substantially high when compared to other two groups. The increased frequency of medical complications among elderly mother causes higher rate of preterm birth, IUGR oligohydramnios, perinatal mortality and serious neonatal morbidity.

Even though oligohydramnios is said to be associated with advancing age, probably due to poor function of placental unit at cellular level, leads to Intra uterine growth retardation (IUGR), post term pregnancy, abruption, hypertension, preeclampsia, diabetes.

Our study had only 5.88% of oligohydramnios is elderly primi, but surprisingly there were no cases with intra uterine growth retardation (IUGR) in elderly primi.

Natural ageing of the maternal uterine environment or maternal vascular and endocrine systems, may lead to early diminution in the transfer of nutrients to the foetus¹⁴ IUGR is an important cause of low birth.

Third trimester bleeding includes placenta previa, abruption placentae and uterine bleeding of unknown etiology¹⁷.

Annanth *et al.* reported that there was a 26 fold increased risk for placenta previa in elderly women when compared to young primis and who found abruption to be more related to parity than age. Waters and Wagers had reported a higher incidence of antepartum haemorrhage among elderly primis, but O'Sullivan and Yound failed to confirm it.

Mehreen and Naqui reported 12.82% of Antepartum haemorrhage (APH).

However our study had 5.88% of APH cases in elderly primi. Relationship with malnutrition in elderly primi seems to be greatly related to chronic hypertension and PIH.

Although the risk of placenta previa, Increases with multiparity as well as advancing age, it is arguable which of these two is more important.

Other biologic mechanisms postulated for the increased frequency of uteroplacental bleeding disorders with age include a decrease in the uterine blood flow to the placenta as age advances¹⁸.

High incidence of malpresentation was reported by Miller in 1932 (12%) Mehreen and Azra reported 12.82%.

But in our study malpresentation was seen in 3.5% mainly as breech.

Premature rupture of membrane (PROM) the second common obstetric complication (10.5%) found in elderly primi in our study (Table 10) was associated with Edge and Laros who reported risks of PROM (3.8%) in elderly women. Whereas Bekowitz *et al.* and Bianco *et al.* found no difference between older and younger primis¹⁹.

In our study, 65.88% of elderly primigravidae were found to have spontaneous deliveries compared to higher rate in other two group Even though most of the primis delivered at term relatively there was high prevalence of preterm birth among (18.82%) and post maturity (9.41%). Preterm birth continues to be one of the most important obstetrics problems in the world, contributing to non-anomalous perinatal mortality ranging between 38 to 52%.

Our study had a relatively high prevalence of preterm deliveries compared to other authors.

The problem of the pregnancy that is prolonged past term has been the subject of some controversy with reference to the elderly primigravida Donald 5 in his text book, advocates delivery no later than a week past term, and other authorities consider fetal risk is increased past term.

Our study group had 9.41% of post term pregnancy where as Mehreen and Azra noted 7.69% of postdates pregnancy.

We too agree with other authors that prolonging pregnancy past term increases the hazard to the foetus.

The risk of allowing the patient to go beyond dates could then be intelligently balanced for the risks of induction and elective section at term. Certainly, it would be within accepted

obstetric principles to recommend that all elderly primigravidas should have the benefit of careful assessment at term with a view to deliver at that time ^[10].

Induction of labour was done in 31.76%, among them 21.18% elderly primi were taken up for elective caesarean section.

It was not surprising that the rates of both induction and prolonged labour were not a high in elderly primigravida as caesarean section was resorted to more readily.

Stewart and Bernard found that labour became more difficult with advancing age and suggested that this might be due to increased rigidity of the pelvic floor ligaments and less reserve of power in the uterus.

The rate of vaginal deliveries in our study among elderly primigravida is significantly low (47.06%) when compared to young primi. Almost one third of vaginal deliveries required rotation or extraction at the midpelvic level.

Mehreen and Azra reported 30.76% of caesarean section 28.84% vaginal deliveries, forceps (11.53%) vacuum (8.97%).

The Caesarean section rate was 47% in our study, almost equal to vaginal delivery rate.

Antenatal medical or obstetrical complications were common indications for caesarean section rather than intrapartum complications. The association of advancing age with an increased need for caesarean delivery in our population seems, therefore to result from combination of factors, some physiological and some practice related.

Pregnancy in a woman above 35 years of age is regarded as "Premium Pregnancy" Pipert J F. Nulliparous women of advanced age have reached their first pregnancy at the time of age related decreasing fertility often after years of infertility. This may in turn influence decision making in an attempt to reduce the risks of outcomes.

The 'Physician bias' that has been suggested to contribute to the increased caesarean rate in elderly primi was not clear in our study.

It should be noted that the indications for caesarean section in our study were only the primary indications. In almost every instance the age of the patient was listed as a secondary reason for caesarean section. Foetal distress was the commonest indications for LSCS among all three groups (41.67%). Which was high in group II (24.71%). Than 10.59% in group III and 5.88% in group I. 15.29% of primi in group III were taken up for caesarean section with PIH as a primary indication which is highly associated with elderly primi followed by 7.06% for non-progress of labour in elderly primi.

Other indications for LSCS in our study in elderly primis were CPD, APH, non-progress of labour, olighydramnios and malpresentation.

Low birth weight babies weighing less than 2.5kg are reported to be more common in elderly mothers 15. The causes are preterm deliveries, IUGR etc., Advancing maternal age is associated with a decreased potential for foetal growth, due to biologic aging of maternal tissues and systems (e.g. Maternal uterine environment, vascular or endocrine systems) which may lead to decreased transfer of nutrients to the foetus independent of disease or a cumulative effect of diseases.

However it was surprising to note from our study that the majority of elderly primis delivered babies with more than 2.5kg (64.71%) when compared to other two groups, 35.29% of elderly primis delivered babies below 2.5kg.

There were 25% of neonatal death in group II and 13.33% in group III Higher neonatal mortality rate in Group II is seen in mothers who had instrumental delivery. Perinatal mortality among preterm Indian babies has been reported to be 2 to 7 times higher than babies born at term ^[4].

K.S. Joseph reported 1.46% of perinatal mortality, where as in Lehman D K's study it was increased. Our study stands out in the comparison of perinatal mortality rate with others, which is relatively high ^[8].

In our study breast feeding was encouraged, all the three group mothers had substantially

normal lactation. While 7.06% had a delayed lactation among elderly women and 1.18% were medically suppressed, whereas failure of lactation was seen in only 1.18% of elderly mothers.

Conclusion

- Rate of caesarean section was high (47.06%) in Group III and 37.65% in Group II and 15.29% in Group I. The difference is statistically significant ($p < 0.01$).
- New born admission to intensive care unit was high (28.24%) among babies born to group II mother, (17.65%) babies in group III and (9.41%) babies in group I required NICU admission.
- Neonatal mortality was higher in Groups II (25%) when compared in Group III (13.33%) and nil in Group I P value is not significant, statistically ($P > 0.05$).

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