

# PREGNANCY AND DELIVERY IN PRIMIGRAVIDAE AGED 35 AND OVER

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## ABSTRACT

*A retrospective study was performed on 111 consecutive primigravidae aged 35 and above (study group) who delivered in the Gynaecological Oncology Department, Kandang Kerbau Hospital, Singapore during the two-year period (1990 and 1991). For comparison, all the 10,189 patients in the department who were delivered during the same time period were also analysed and served as the control group. The aim of the study was to examine the risks involved with advanced maternal age, the obstetric performance and neonatal outcome of both groups in the context of modern obstetric care in Singapore. In the study group, pre-eclampsia was the commonest antenatal complication (17.1%), followed by preterm labour (16.2%) and diabetes mellitus (including impaired glucose tolerance test) (16.2%). In the control group, the corresponding incidences were 10.8%, 6.3% and 2.8% respectively. The incidence of labour induction (28.8%) and instrumental deliveries (31.5%) were higher in the study group than in the control group (7.1% and 7.3% respectively). The Caesarean section rate was twice as common in the study group (32.4%) than in the control group (16%). Only 15 patients (13.5%) had amniocentesis performed. The majority of patients (41.5%) who did not have amniocentesis were 35 years of age at delivery. The perinatal mortality rate of the study group was similar to that of the control group. There were no maternal deaths.*

*Keywords: primigravida, advanced maternal age, amniocentesis, obstetric performance, neonatal outcome*

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## INTRODUCTION

Throughout the centuries maternal age has been an important factor in the survival of mankind. When life expectancy was only into the fourth decade and women had no control over fertility, they had no choice but to bear children as teenagers and young adults themselves. Only recently, with a doubled life expectancy and effective birth control do women have the option of delaying childbearing. As delayed childbearing is becoming increasingly common in Singapore, it is important to understand the implications of advanced maternal age for both mother and baby. Some of the factors for postponing childbearing include women's career priorities, advanced education, infertility, control over fertility, late and second marriages and financial concerns. With the encouragement by the Singapore Government for more childbirths, more older women may embark on pregnancy than before.

Studies over a period of several decades have shown that the mature (aged 35 years or older) primigravida to be at high risk for complications including hypertension, fibroids, malpresentation, malposition, prolonged labour, instrumental delivery, premature labour, perinatal mortality, light for gestational age babies and impaired lactation.

## AIM

The aim of the study was to examine the risks involved with

advanced maternal age, the obstetric performance and neonatal outcome of primigravidae aged 35 years or older in the context of modern obstetric care in Singapore.

## MATERIALS AND METHODS

A retrospective analysis was made of 111 mature primigravidae aged 35 years or older who were delivered at the Kandang Kerbau Hospital (Gynaecological Oncology Department) between January 1, 1990 to December 31, 1991. There were a total of 111 mature primigravidae (the study group). For comparison, all the 10,189 patients who were delivered during the same time period were used as the control group. The clinical data of the study were retrieved from the computer and also from the case notes of the patients. Information regarding the demographic data, medical complications, obstetrical complications and neonatal outcome were collected and analysed.

## RESULTS

### Demographic Data

The total number of deliveries in 1990 and 1991 were 5,511 and 4,678 respectively. This constituted a total of 10,189 deliveries during the 2-year period in our department. Out of these, 2,583 (25.4%) were primigravidae, 111 patients (1.1%) were mature primigravidae and they delivered 114 babies. All were singleton pregnancies except for a twin and a triplet pregnancy.

Table I shows the ethnic group distribution amongst mature primigravidae. The study group (mature primigravidae) had a higher proportion of Chinese (67.6%) compared to the control group (50.2%).

51.4% women married when they were less than 35 years of age (Table II), 37.8% married between 35 and 38 years. It is interesting to note that 2.7% of the women were unmarried. The mean age of the mature primigravidae was 36.9 years at delivery (Table III).

Table IV shows the period between marriage and successful delivery. A total of 59 (53.2%) patients delivered within 2 years of marriage. The incidence of involuntary

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infertility ranged from 2 to 14 years in 49 (44.1%) patients. Eight (7.2%) patients delivered more than 10 years after marriage.

It is interesting to note that 62.2% of the study group had primary or no education compared to 77.3% in the control group and also that 3.6% of the study group had tertiary education compared to only 0.9% in the control group (Table V).

One hundred mature primigravidae (90.1%) were booked for delivery at our hospital. Eleven patients (9.9%) were unbooked. Ninety-eight percent of the control group were booked for delivery and 2.0% were unbooked.

**Table I – Mature primigravidae by ethnic group distribution in comparison with the control group**

Group	Chinese	Malay	Indian	Others
Study group no. (%) (n = 111)	75 (67.6)	23 (20.7)	11 (9.9)	2 (1.8)
Control group no. (%) (n = 10,189)	5,115 (50.2)	3,729 (36.6)	958 (9.4)	387 (3.8)

**Table II – Mature primigravidae by age at marriage (n = 111)**

Age (Years) at Marriage	No. (%)
Single	3 ( 2.7)
< 35	57 (51.4)
35-38	42 (37.8)
39-42	8 ( 7.2)
43-45	1 ( 0.9)
Total	111 (100)

**Table III – Mature primigravidae by age at delivery (n = 111)**

Age (years)	No. (%)
35	38 (34.2)
36	24 (21.7)
37	18 (16.2)
38	9 ( 8.1)
39	7 ( 6.3)
40	6 ( 5.4)
41	4 ( 3.6)
42	2 ( 1.8)
43	2 ( 1.8)
44	0 ( 0)
45	1 ( 0.9)
Total	111 (100)

**Table IV – Mature primigravidae by years between marriage and delivery (n=111)**

Years of marriage	No. (%)
Single	3 ( 2.7)
< 2 years	59 (53.2)
2-5 years	32 (28.8)
6-10 years	9 ( 8.1)
> 10 years	8 ( 7.2)
Total	111 (100)

**Table V – Distribution of mature primigravidae by their educational level in comparison with the control group**

Educational level	Primary or no education	“O” Level	“A” Level	Tertiary
Study group (%) (n = 111)	69 (62.2)	28 (25.2)	10 (9.0)	4 (3.6)
Control group (%) (n = 10,189)	7,876 (77.3)	2,058 (20.2)	163 (1.6)	92 (0.9)

#### Ultrasonography and amniocentesis

Ninety-six patients (86.5%) had ultrasonography performed. Fifteen patients (13.5%) did not have ultrasonography done.

Fifteen patients (13.5%) had amniocentesis performed. Eighty-two patients (73.9%) did not have amniocentesis done. Fourteen patients (12.6%) refused amniocentesis even though they were offered. 41.5% of patients who did not have amniocentesis done were 35 years of age at delivery (Table VI).

**Table VI – Distribution of patients who did not have amniocentesis performed by age in years**

Age (years)	Number	% of patients
35	34	41.5
36	20	24.4
37	12	14.6
38	5	6.1
39	7	8.5
40	1	1.2
41	2	2.4
42	1	1.2
Total	82	100

#### Medical/obstetrical complications

Pre-eclampsia was the commonest complication noted in the study group (Table VII). It occurred in 19 patients (17.1%). This was significantly higher when compared to 10.8% in the control group. None of the patients in the study group had eclampsia or abruptio placentae. There was only

one patient (0.9%) with pre-existing hypertension. The incidence of antepartum haemorrhage in the control group was 1.5%. Six patients (5.4%) had anaemia in pregnancy (haemoglobin level less than 10 g/dl).

**Table VII – Mature primigravidae by complications of pregnancy**

Complications	Number (n = 111)	% of patients
Pre-eclampsia	19	17.1
Pre-existing hypertension	1	0.9
Gestational diabetes mellitus	16	14.4
Established diabetes mellitus	2	1.8
Placenta praevia	4	3.6
Anaemia in pregnancy	6	5.4
Preterm delivery	18	16.2
Post term delivery	1	0.9
Twin pregnancy	1	0.9
Triplet pregnancy	1	0.9
Breech	3	2.7
Transverse lie	1	0.9
Intrauterine growth retardation	3	2.7
Polyhydramnios	2	1.8

Twelve patients (10.8%) had impaired oral glucose tolerance test and were managed on dietary control. Four patients (3.6%) had gestational diabetes mellitus. Three patients were on dietary control and insulin therapy and one patient was managed on diet alone. There were 2 patients (1.8%) with established diabetes mellitus and both were on insulin therapy throughout their pregnancies. Thus diabetes mellitus (including impaired glucose tolerance test) occurred in 16.2% of pregnancies in the study group. The incidence of diabetes in the control group was only 2.8%. There were 4 patients with placenta praevia (3.6%). Preterm delivery occurred in 18 patients (16.2%). The preterm delivery rate in the control group was 6.3%. Post term delivery occurred in only one patient (0.9%). Intrauterine growth retardation complicated 3 pregnancies (2.7%).

Twin pregnancy occurred in one patient. No ovulation induction agent was used. The pregnancy was complicated by severe pre-eclampsia and intrauterine growth retardation of the second twin. An elective Caesarean section was performed at 33 weeks gestation. The first twin was a live birth weighing 1620 g and the second twin was a macerated stillbirth weighing 1305 g.

There was one triplet pregnancy. No ovulation induction agent was used. The pregnancy was complicated by pre-eclampsia, impaired oral glucose tolerance test, premature rupture of membranes and preterm labour. A Caesarean section was performed at 26+ weeks gestation. Inhibition of labour was attempted with intravenous salbutamol infusion. Intramuscular dexamethasone was administered. The birth weights were 840 g, 624 g and 712 g respectively with Apgar scores at 1 minute and 5 minutes of 7 and 9, 7 and 8, and 6 and 8 respectively for the triplets. They were admitted to the neonatal intensive care unit. All 3 babies

were discharged well after 6 months.

Breech presentation occurred in 3 patients (2.7% of the study group). The incidence of breech in the control group was 3.7%. All were delivered by Caesarean section at term in the study group. Two breeches were undiagnosed until in labour. The third patient with breech presentation had primary infertility, previous myomectomy and had fibroids obstructing the lower uterine segment. There was one patient with transverse lie (0.9%). Two patients (1.8%) had polyhydramnios. There were no maternal deaths in the study and control groups.

#### Labour and delivery

Labour was induced in 32 patients (28.8%) in the study group. This was higher than the control group (7.1%). Successful induction occurred in 19 patients (59.4%) in the study group.

Forty patients (36.1%) delivered vaginally without assistance (Table VIII). Thirty-two patients (28.8%) had forceps delivery. Three patients (2.7%) had vacuum delivery. The forceps/vacuum (instrumentation) rate in the study group (31.5%) was higher than in the control group (7.3%). The indications for instrumental deliveries were foetal distress, prolonged second stage and poor maternal effort. Kielland's forceps were used in 2 patients. The first patient was in occipito-transverse position and the second was in occipito-posterior position.

**Table VIII – Mature primigravidae by mode of delivery**

Mode of delivery	No. of patients (n = 111)	%
1. Normal vaginal delivery	40	36.0
2. Forceps delivery		
a) Wrigley's	15	13.5
b) Neville Barnes'	15	13.5
c) Kielland's	2	1.8
3. Vacuum delivery	3	2.7
4. Caesarean section		
a) Elective	8	7.2
b) Emergency	28	25.2
Total	111	100

Abdominal delivery occurred in 32.4% of patients in the study group. This was double the overall Caesarean section rate in our department which was 16%. Active management of labour with judicious use of oxytocics and application of partograms assisted in the early identification of prolonged labour in 10 (27.8%) cases. Foetal distress accounted for 8 Caesarean sections (30.6%). All 3 mature primigravidae with breech presentation were delivered by Caesarean section (Table IX).

The first stage of labour was prolonged beyond 12 hours in 9 (12%) patients (Table X). The second stage exceeded one hour in 29 (38.7%) patients. None of the patients had postpartum haemorrhage. Manual removal of the placenta was performed for 3 patients (4%) with snapped cord. There was one patient (1.3%) with a third degree tear following vacuum delivery.

**Table IX – Mature primigravidae by indications for Caesarean section**

Indications	No. of patients (n = 36) (%)
1. Cephalopelvic disproportion/failure of or poor labour progress	10 (27.8)
2. Foetal distress	8 (22.2)
3. Antepartum haemorrhage	3 ( 8.3)
4. Elderly primigravida/subfertility	3 ( 8.3)
5. Breech	3 ( 8.3)
6. Pre-eclampsia	2 ( 5.6)
7. Intrauterine growth retardation/severe pre-eclampsia/foetal distress	2 ( 5.6)
8. Triplet pregnancy	1 ( 2.8)
9. Twin pregnancy/severe pre-eclampsia	1 ( 2.8)
10. Cephalopelvic disproportion/foetal distress/uterine fibroid	1 ( 2.8)
11. Elderly primigravida/previous myomectomy	1 ( 2.8)
12. Gestational diabetes/pre-eclampsia	1 ( 2.8)

**Table X – Duration of labour in vaginal deliveries**

Stage of labour	Duration (hours)	No. of patients (n = 75)	%
First stage	< 12 hours	66	88
	12-18 hours	9	12
Second stage	< 1 hour	46	61.3
	1-2 hours	29	38.7
Third stage	< 1/4 hour	75	100
	1/4-1 hour	0	0

**Puerperium**

The puerperium was uneventful in all the mothers except for one patient who had wound infection following Caesarean section and 3 patients with urinary tract infection following Caesarean section.

**Perinatal outcome**

The birth weights of the newborns are shown in Table XI. Thirteen babies (13.2%) weighed less than 2.5 kg with 4 of them weighing less than 1 kg. All 4 babies are presently well and have gone home. None of the babies weighed 4 kg or more. The heaviest baby was 3.91 kg. The mother did not have diabetes.

All the live births had Apgar score of 8 or more at 5 minutes. There was one macerated stillbirth involving the second twin in the study group. This was the only baby who died in the study group.

Five babies (4.4%) required neonatal intensive care admission. All five were premature. They are presently well and have gone home. Twenty-two babies (19.3%) required admission to the special care unit.

No Down Syndrome or other congenital abnormalities were detected in the study group. Antenatal ultrasonography showed bilateral renal pelvis dilatation in one baby. However the baby was well postnatally and has

been discharged from follow up. The postnatal ultrasonography of the kidneys and the renal function tests were all normal.

**Table XI – Mature primigravidae by birth weight of baby**

Weight of Baby (kg)	No. of babies	
	(n = 114)	%
< 1 kg	4	3.5
1.0 – 1.5 kg	2	1.8
1.5 – 2.0 kg	3	2.6
2.0 – 2.5 kg	6	5.3
2.5 – 3.0 kg	42	36.8
3.0 – 3.5 kg	41	36.0
3.5 – 4.0 kg	16	14.0

**Perinatal mortality rate**

The perinatal mortality rate of 9 per 1000 births in the study group was similar to that of the control group (10.1 per 1000 births).

**DISCUSSION**

What is “advanced maternal age”? The oldest documented pregnancy is that of Sarah in the biblical book of Genesis where at the age of 91 she was “after the manner of women” and bore a son, Isaac.

*“Then Abraham fell upon his face and laughed, and said in his heart, shall a child be born unto him that is an hundred years old? And shall Sarah that is ninety years old bear?”*

The Bible, Genesis 17:17

*“For Sarah conceived and bore Abraham a son.”*

The Bible, Genesis 21:2

More recently the definition set by the Council of the International Federation of Obstetrics in 1958 stated “an elderly primigravida is one 35 years or more at the first delivery”. Some authors have used 40 years as the lower limit and a few have indicated that 44 years and above represents advanced maternal age. Regardless of the age specific definition, pregnancies in women of advanced maternal age are considered by many to be high risk. In the eighteenth and nineteenth century this categorisation was due to concern for the mother. At present the designation of high risk is focused more on the foetus/neonate.

Societal attitudes changed so that delayed childbearing is now accepted. This change is reflected even in the obstetric literature. Terms such as the “elderly” or “premenopausal” gravida may have been appropriate at other times but today these terms are actually offensive. We now talk of the “older”, “mature” gravida or “advanced” maternal age. Mature is defined as “having completed natural growth and development, having attained a final or desired state, condition of full development.” The incidence of mature primigravida in our series was 1.1%. This was similar to the incidence quoted by other studies which varied between 0.65% and 1.4%<sup>(1,2)</sup>.

Looking at the marriages registered in Singapore under both the Women's Charter and the Muslim Law Act, we find that the average age of brides at first marriage has been

increasing. In 1990 it was 26.2 years and 24.4 years with reference to the Women's Charter and Muslim Law Act respectively.

Significantly the proportion of brides above 30 at first marriage has been increasing over the years. In 1991 brides above 30 years old accounted for 15% of all marriages as compared to 5.8% in 1975. The elevation of the average Singapore woman's socio-economic status, her financial independence, higher education level and career priority over family life have resulted in the postponement of marriage. This further leads to postponement of establishment of the family and an increase in the incidence of mature primigravida. In Singapore the mean maternal age at first parity shows a gradual upward trend from 23.2 years in 1967 to 27.0 years in 1989.

Genetic misfortune in mature gravidac has been well documented and well publicised in the literature. It has become an accepted practice to inform all women 35 years or over who are pregnant that they are at an increased risk of having a child with chromosomal abnormalities. In a study in the *Journal of the American Medical Association* one may see that although these disorders may occur at all ages, birth defects appear to rise in number at approximately 35 years of age rising sharply at 40 with a peak at 45 years of age<sup>(3)</sup>.

Hook<sup>(4)</sup> estimated risk ratios of all clinically significantly cytogenic abnormalities in live births by one year intervals from 15 years of age to age 49. He found that the rate of all clinically significantly abnormalities rises from about 2/1,000 at the youngest ages to about 2.6/1,000 at age 30, 5.6/1,000 at age 35, 15.8/1,000 at age 40, and 53.7/1,000 at age 45. In respect of Down syndrome (trisomy 21) which is the most recognised genetic abnormality in the older gravida, although only one in 1,600 children born to women in their early 20s will be afflicted, at 35 years of age one in 365 children born will demonstrate the syndrome, with one in 100 live births at age 40 and one in 32 live births at age 45.

Structural abnormalities of the foetus may also rise with increased age. Hay<sup>(5)</sup> demonstrated a correlation with midline facial defects and maternal age increases. Other differences in terms of neurologic abnormalities found in the foetus born to a woman over 35 have also been documented.

The incidence of spontaneous abortions in women 35 years of age and over has also been found to be significantly increased<sup>(6,7)</sup>. Whether the majority of these losses are secondary to genetic malformation as one would surely expect or to other unexplained factors is not known. However women must be informed of the increase in number of aneuploid conceptions and the potential increased loss of euploid conceptions so that rational decisions may be made and the individual women may be informed of the risks prior to their occurrence. The increased spontaneous abortion rate is seen even after controlling for gravidity and birth order. Women who spontaneously abort may also have more difficulty becoming pregnant either as a cause or an effect.

#### **Amniocentesis**

Amniocentesis is now routinely offered to our patients who are 35 years or more at the expected date of delivery provided the couple is agreeable to terminating the pregnancy if a major abnormality is discovered. In our study, 73.9% of patients did not have amniocentesis done. An important reason was because the patients were referred

late to our hospital by the general practitioners or polyclinic doctors. The need for all primary health care doctors to be aware of the need to refer these patients, those 35 years of age and over at delivery, early for prenatal counselling, diagnosis and follow-up cannot be overemphasised. Patient education is equally important. Mature gravidac should be educated to book early for their pregnancies. 12.6% of the study group refused amniocentesis. This was because the patients were unwilling to accept the small risk of abortion associated with the procedure. Another contributing factor was that some patients were willing to accept the possibility of the birth of an abnormal baby and were against termination of pregnancies on religious grounds.

Amniocentesis is performed at 16-18 weeks' gestation and fluid is obtained under ultrasonic guidance followed by centrifugation of fluid and culture of foetal cells with subsequent karyotyping. However, this test is not without some risks. The risk of inducing abortion is between 0.3-0.5% based on several studies. Immediate complications like vaginal bleeding or fluid leakage were found to occur in 0.3% of patients. The age of 35 is chosen for beginning amniocentesis as a recommended procedure as it is then when the overall risk of genetic disorders begins to outweigh the risk of the procedure. One must remember that the risk/benefit of these procedures must be thoroughly explained to the patient and her partner before they make a decision.

#### **Medical/obstetrical complications**

As women age, they tend to acquire chronic illnesses such as hypertension and diabetes which are risk factors for adverse obstetric outcomes.

Pre-eclampsia was the commonest complication in the study group. It occurred in 17.1% of the patients compared to 10.8% in the general pregnant population (control group). Tysoe<sup>(8)</sup> reported an incidence of 14% for elderly primigravidae and 6% for the primigravidae between the age of 25-29 from four major hospitals in Vancouver, Canada from 1963-67. Actuarial data show that levels of systolic and diastolic blood pressures increase with advancing age. Findings in the obstetric literature uniformly agree that there is a positive association between age and both chronic and pregnancy-induced hypertension for nulliparae and multiparae. The reported ranges are wide but generally show a 2 to 4 fold increase for the older women. Approximately 6% of 25 year old primiparas will have pre-eclampsia versus 9% for the 35 year old and 15% for the 40 year old. Corresponding figures for the multipara are 3%, 5% and 7% respectively.

Diabetes mellitus (including those with impaired glucose tolerance test) occurred in 16.2% of pregnancies in the study group. With advancing age there is an increase in the incidence of gestational diabetes although figures vary substantially. In Kirz's study<sup>(9)</sup> the incidence increased with age in both primiparous women (from 1.7 to 4.1 per cent) and multiparous women (from 1.3 to 6.2 per cent). Data from Mestman et al<sup>(10)</sup> showed the percentage of abnormal glucose tolerance tests increased from 3.7% in women less than 20 years old to 7.5% for those 20 to 30 years and 13.8% for those over 30 years.

3.6% of the study group had placenta praevia. None of the patients in the study group had abruptio placentae. In one large report the incidence of placenta praevia was slightly greater in older patients, however, the degree of difference was confounded by the parity of the patient<sup>(8)</sup>. Increased incidence in placenta praevia when parity was

independently controlled was not borne out in reviewing the available literature. Abruptio placenta was also shown to rise with increasing age. This finding has also been interwoven with the variable of increased parity. In one which controlled for increasing parity, Potterson<sup>(11)</sup> demonstrated an increase, albeit small, in respect to increasing age and third trimester bleeding disorders with those over 35 demonstrating a 30% increase compared to women under 25 for all degrees of gravidity. Therefore there appears to be a solid basis for an increasing risk of bleeding with gravidae over 35.

Preterm delivery occurred in 16.2% of the study group. Morrison<sup>(1)</sup> in a summary of 127 elderly primigravidae found the incidence of prematurity to be 14%. Prematurity and the small for gestational age infant has been a major concern for the gravida over 35<sup>(1,2)</sup>. The obstetrical literature is inconsistent with regards to the incidence of premature labour for nulliparous pregnant women. Walters<sup>(2)</sup> demonstrated an increase for the older nullipara women whereas Kessler<sup>(13)</sup> did not. Morrison<sup>(1)</sup> found the rate of prematurity in this population to be over two and one half times greater than in those patients under 35. In the larger study by Kane<sup>(14)</sup>, a linear increase in low birth weight (premature and small for gestational age) was identified in women over 35. More recently Kirz et al<sup>(9)</sup> in her study did not find differences in birth weight in relation to maternal age.

Post term delivery occurred in only 0.9% of the study group. This might have reflected obstetric practice as a result of higher rate of induction of labour in older primigravidae at term.

There were no maternal deaths in the study and control groups. The issue of maternal mortality and the older gravida has been well received<sup>(15,16)</sup>. Data collected from early reports in the literature demonstrated an increased age-adjusted risk for maternal mortality. This information collected primarily from the early 1970s demonstrated the leading causes of mortality to be secondary to obstetric haemorrhage and embolic phenomenon. Walters and Wagner<sup>(12)</sup> found a maternal mortality of 1.2% in the older primipara group as compared with 0.23% generally. MacDonald and MacLennan<sup>(17)</sup> reported the same maternal mortality for both the older primipara group and the general obstetric group. However more recent reports in the literature depict considerable declines in maternal mortality rates for the over 35 gravidae. In today's obstetric practice, although they are certainly exposed to slightly greater incidences of this grave problem they should be able to carry a pregnancy without difficulty. The role of the physician may then be to reassure rather than to frighten those who wish to postpone their family obligations.

#### **Labour and delivery**

Labour was induced in 32 patients (28.8%) in the study group. This was higher than the control group (7.1%). Successful induction occurred in 19 patients (59.4%) in the study group.

The instrumentation rate in the study group (31.5%) was higher than in the control group (7.3%). The use of forceps and vacuum were also seen to be higher in the older gravida<sup>(9)</sup>. This is supported by the study done by Booth and Williams<sup>(18)</sup>. A high intervention rate in elderly primigravida is a consistent finding in the literature<sup>(19)</sup>. Although specific obstetric indications are usually involved, the impression is often gained that the woman's age also

contributed strongly to the decision to intervene.

Abdominal delivery occurred in 32.4% of patients in the study group. This was double the overall Caesarean section rate in our department which was 16%. Maternal age was the primary indication recorded for 4 of the 36 (11.1%) Caesarean sections in the study group. A finding that appears to hold steady is the increased need of Caesarean section in these older patients<sup>(12,13)</sup>. The reasons for this are not clear. Whether this is secondary to the increased medical complications (eg hypertension and diabetes) present, uterine pathology or physician and patient apprehension is not elucidated. Advocation of abdominal delivery purely on grounds of advanced age should be discouraged. There is no doubt that the incidence of Caesarean section also depends on the attitude of the attending obstetrician. When treating an elderly gravida, particularly if there has been a long period of antecedent infertility or a bad obstetric history, the decision to induce labour or to perform Caesarean section is made more liberally.

The effect of maternal age on patterns in the delivery room including character of labour, mode of delivery and perinatal outcome have also been well addressed<sup>(2,20,22)</sup>. However despite a multitude of studies and data, the conclusions seem inconsistent. There do not appear to be any changes when examining the older multiparous patient. However prolonged labour does not seem to be a significant factor in primiparous patients. It is interesting to note in the recent report by Kirz et al<sup>(9)</sup> that there was no increase in prolonged labour patterns. Stanton<sup>(23)</sup> demonstrated an increase in prolonged labour among older pregnant women. Friedman<sup>(21)</sup> showed an increase in prolonged second stage with advancing age. Booth and William<sup>(18)</sup> found the length of labour to be slightly but not significantly prolonged in elderly primigravida compared to younger primigravida. They have suggested causes of prolonged labour such as increased rigidity of the mature pelvis and decreased reserve of uterine power.

The first stage of labour was prolonged beyond 12 hours in 12% of the study group. This was lower than the findings of MacDonald et al<sup>(17)</sup> who reviewed 662 primigravidae from 1950 to 1957 and reported labours of greater than 24 hours in 32.2% of elderly primigravidae. Our lower figures reflected our practice of active management of labour in the modern obstetric care.

#### **Perinatal mortality**

In terms of perinatal mortality no clear-cut evidence has been shown that the age of the patient is able to independently alter outcome in addition to the increased incidence a given medical problem may have. The perinatal mortality rate in our study group was similar to that of the control group. When medical complications are present the perinatal mortality rate is increased. However in the gravid patient it is the severity of the disease process and not age that primarily reflects these increases. Morrison<sup>(1)</sup> found an increase in perinatal morbidity and mortality. A similar finding was also reported by MacDonald and MacLennan<sup>(17)</sup>. Grimes<sup>(24)</sup> demonstrated an increased perinatal mortality in pregnancies of older black women. This increase however disappeared when hypertensive patients were excluded.

Early booking, close supervision in the antenatal and intrapartum period, appropriately timed obstetric intervention and advocacy of active management of labour may have contributed to good foetal outcome. The

improvement in the neonatal facilities in the hospital is an important contributory factor to the survival of the premature and low birth weight babies.

### CONCLUSION

The incidence of mature primigravida in our study was 1.1%. Pre-eclampsia, diabetes mellitus and preterm deliveries were the commonest complications encountered in the study group. Older gravidae have an increased risk of developing hypertensive disease in pregnancy, diabetes mellitus and antepartum haemorrhage. The incidence of labour induction, instrumental deliveries and Caesarean sections were higher than the control group. The perinatal mortality rate in the study group was similar to that of the control group. The foetus is at greater risk of having chromosomal abnormalities.

Early booking, close supervision in the antenatal and intrapartum period, active management of labour and appropriately timed obstetric intervention are essential for an optimum outcome in management of the elderly primigravida. Appropriate antenatal diagnostic procedures such as amniocentesis and ultrasound examination are also important in their care and management.

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