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## Original Research Article

# A case control study on obstetric outcome following a previous spontaneous abortion

Sai Priya Remadevi Jayakumar<sup>1\*</sup>, Elizabeth Jacob<sup>2</sup>,  
Rajani Somanathan<sup>1</sup>, Karen Kanagasabhpathy<sup>1</sup>

<sup>1</sup>Department of Obstetrics and Gynaecology, Little Flower Hospital and Research Center, Angamaly, Kerala, India

<sup>2</sup>Department of Obstetrics and Gynaecology, Apollo Adlux Hospital, Angamaly, Kerala, India

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### \*Correspondence:

Dr. Sai Priya Remadevi Jayakumar,

E-mail: saipriyajayakumar@gmail.com

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## ABSTRACT

**Background:** Spontaneous abortion is pregnancy resulting in miscarriages without the application of any deliberate methods to terminate it, during the early weeks after conception. Studies on effects of recurrent miscarriages on subsequent reproductive adverse outcomes are many in literature. However, studies showing outcome of pregnancy following a spontaneous complete abortion is scanty in literature. This study looks for association between a previous spontaneous abortion and recurrence of adverse maternal outcome like recurrence of abortion, preeclampsia, premature rupture of membrane (PROM), operative delivery, and fetal outcome like preterm labour (PTL), low birth weight (LBW) to that of primi gravida.

**Methods:** A case control observational study was done on 200 antenatal women who attended the obstetrics department and fulfilling the inclusion criteria. Of this, 100 pregnant women were with history of a spontaneous abortion (case group) and 100 primi gravida (control group). Maternal and fetal adverse outcome were compared between the two groups.

**Results:** Recurrence of adverse maternal outcome like recurrence of abortion, PROM, caesarean delivery and adverse fetal outcome like PTL, LBW were more in women with prior spontaneous abortion than that of primi gravida.

**Conclusions:** Women with a history of previous one spontaneous abortion are at an increased risk of maternal and fetal complications. So, these women should be considered as high-risk group and hence frequent antenatal visits and close antenatal surveillance should be provided to such women for early detection of complications and for its effective management.

**Keyword:** Abortion, Maternal outcome, Fetal outcome

## INTRODUCTION

Abortion is pregnancy termination or loss before 20 weeks' gestation or with a fetus delivered weighing <500 g. (CDC, WHO). The abortion rate was 47.0 abortions (42.2-52.1) per 1000 women aged 15-49 years.<sup>1</sup> Spontaneous abortion is pregnancy resulting in miscarriages without the application of any deliberate methods.<sup>2</sup> More than 80% of spontaneous abortions occur within the first 12 weeks of gestation. Abortion is usually accompanied by hemorrhage into the decidua basalis. This is followed by adjacent tissue

necrosis that stimulates uterine contractions and expulsion. Miscarriage causes severe psychological torment to couples. This in turn erodes their confidence in achieving future reproductive success.

Little is known about the consequences of a single miscarriage on future reproductive health even though its incidence is high 10-15%. This study looks for association between a previous spontaneous abortion and recurrence of adverse maternal outcome like recurrence of abortion, preeclampsia, PROM, operative delivery and adverse fetal

outcome like PTL, LBW to that of primi gravida so as to plan for subsequent antenatal care accordingly.

## METHODS

This is a case control observational study conducted at department of obstetrics and gynecology of little flower hospital and research centre, Angamaly which is a 610 bedded tertiary care centre in south India. Study period was from February 2020-November 2020 (9 months). Sample size was total of 200 antenatal women who attended in the hospital OPD and labour room. Case group consisted of 100 antenatal women with history of previous spontaneous abortion and control group with 100 primi gravida.

For every subject in the study population, detailed history was taken followed by general examination, systemic examination, and abdominal examination. All routine antenatal investigations were verified and pregnancy outcomes were also noted.

### Exclusion criteria

Antenatal women with a history of previous induced abortion, missed abortion, recurrent pregnancy loss, any chronic medical illness. Antenatal women with current multiple pregnancy were also excluded.

### Statistical analysis

Data collected were entered to Microsoft excel software and analysed using SPSS version 24. Qualitative variables were expressed as frequency and percentages. Quantitative variables were represented as mean and standard deviation. Continuous variable was compared using t test, while categorical variables by chi-square test and Fisher's test.  $P < 0.05\%$  was considered as statistically significant.

## RESULTS

The mean age of subjects among cases and controls were 26.3 and 28.7 respectively, which shows that the mean age of the 2 groups were comparable.

**Table 1: Age distribution of study subjects.**

Groups	N	Min. age (years)	Max. age (years)	Mean	SD
Control	100	19	32	26.3	2.61
Case	100	19	37	28.7	3.38

**Table 2: BMI of study subjects.**

BMI (kg/m <sup>2</sup> )	Control group	Case group
18.5-24.9	37	40
25-30	57	53
>30	6	7
Total	100	100

BMI of antenatal in case group and control group are comparable.

**Table 3: Socio economic class of study subjects.**

Socio-economic class	Case group	Control group
Upper (class I)	8	4
Upper middle (class II)	19	22
Lower middle (class III)	46	48
Upper lower (class IV)	12	10
Lower (class V)	15	16
Total	100	100

Maximum number of study participants in case group and control group belong to lower middle socio-economic class (Modified Kuppuswamy scale-class III).

**Table 4: Comparison of maternal outcome between the two groups.**

Outcome	Case group (G2A1) (%)	Control group (Primi) (%)	P value
Recurrence of abortion	16	84	<0.001
Prom	36	9	<0.001
Caesarean section	18	7	0.0186
Preeclampsia	2	3	0.688

On comparison of maternal outcome between the case group and control group, maternal adverse outcome like recurrent of abortion, PROM, caesarean section rate is more in case group than control group.

**Table 5: Comparison of fetal outcome between the two groups.**

Outcome	Case group (G2A1)	Control group (Primi)	P value
Pre term labour	17	7	0.024
Low birth weight	31	69	0.011

The study showed incidence of preterm labour and low birth weight is more in case group than that of control group.

## DISCUSSION

The current study aimed to compare the maternal and fetal adverse outcome of second gravida with a previous spontaneous abortion, G2A1 (case group) to that of primi

gravida (control group). The mean age for study group was 28.71 years and that of control group was 26.30 years. The distribution of maternal age for study group and control group was statistically significant with  $p < 0.001$  which means both groups were comparable. This study showed a strong association between previous abortion and recurrence of abortion with a  $p < 0.001$ . This finding matches with finding of other studies that prior miscarriage appeared to be major and independent risk factors of spontaneous abortion.<sup>3-5</sup> Defective placentation happening in early pregnancy may be the explanation for the tendency to miscarry.

Current study also showed that PROM, PTL and LBW was found to be significantly higher in those who have prior one spontaneous abortion than that of primi gravida the results were similar to findings in studies done elsewhere.<sup>6-9</sup> This finding was in contrast to another study which stated that it was induced abortions and not spontaneous ones that carry a higher risk of preterm birth and very preterm birth and low birth weight babies in the subsequent pregnancies.<sup>10</sup>

This study agrees with the study findings by Jivraj et al and Nielsen et al that the rate of caesarean section is more in those with prior spontaneous abortion to that of primi gravida.<sup>11,12</sup> But this way in contrast with the study finding by Annapurna et al that the incidence of caesarean section was high only in those with 3 or more spontaneous abortion.<sup>10</sup> The present study was unable to find an association between previous spontaneous abortion and preeclampsia. This can be due to enhanced development of maternal-fetal immunologic tolerance in pregnancy following prior spontaneous abortion, as being elaborated by other studies.<sup>13,14</sup> Thus, prior spontaneous abortion can be considered as a protective factor against preeclampsia in subsequent pregnancies.

Also, a multivariate analysis by Eskenazi support this finding stating that the disorders of pregnancy induced hypertension (PIH), which include transient hypertension, preeclampsia, the syndrome of hemolysis, elevated liver enzymes, and low platelets ('HELLP syndrome'), as well as superimposed preeclampsia, are now considered diseases of first pregnancy, rather than of subsequent ones.<sup>15</sup>

### Limitations

Limitations of the study were to small sample size-total of 200 women only 100 in each group, short duration of study and confounding factors may alter the findings, especially, since childbirth is a dynamic process influenced by a large number of environmental, social and topographical factors.

### CONCLUSIONS

Women with a history of previous one spontaneous abortion are at an increased risk of adverse maternal

outcome like recurrence of abortion, PROM, caesarean delivery the next pregnancy and also increased risk of adverse fetal outcome like PTL, LBW when compared to primi gravida, so these women should be considered as high risk group and hence frequent antenatal visits and close antenatal surveillance should be provided to such women for early detection of complications and for its effective management.

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