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# Obstetric Outcome in Pregnant Women with Previous Spontaneous Abortion

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***Abstract:***
*Methods: All pregnant women with a history of previous one or more spontaneous abortion booked or referred to Dr. SMCSI Medical College as per the criteria were included in the study. A detailed history was obtained. Risk factors for abortion in the present pregnancy in both the study groups were noted. Complications during present pregnancy were analysed. Analysis of the mode of termination of the present pregnancy and the neo-natal outcome were analysed. Primigravidae in the same age group were taken as a control group and the outcome in the two groups was compared. The data obtained were analysed using SPSS for Windows version 17.0, frequencies and percentages were calculated for cases and controls.*
*Results: The incidence of abortion and ectopic pregnancy was higher in the case group. The incidence of antenatal complications placenta previa and PROM were higher in the case group. The incidence of live birth was less in the present pregnancy in the case group with a higher rate of pre-term delivery as compared to the control group .. Analysis of neo-natal outcome showed the number of babies requiring neo-natal ICU care was higher in the case group, with IUGR being the most common cause for admission.*
*Conclusion: Prior spontaneous abortion is always a risk for the next pregnancy. Patients with early pregnancy loss and recurrent early pregnancy loss need education and support from their practitioner. Many controversies exist as to whether any intervention should be performed based on a suspected cause because of lacking scientific proof of therapeutic efficacy in many areas.*

***Keywords:*** *Spontaneous abortion, obstetric, outcome.*

## 1. Introduction

Miscarriage or spontaneous abortion is the spontaneous end of a pregnancy at any stage where the embryo or fetus is incapable of surviving independently. The National Centre for Health Statistics, CDC and the WHO defines miscarriage as end of a pregnancy prior to 20weeks of gestation or with the fetus being born weighing less than 500grams[1][2] . However the definition by gestational age varies by country.

The exact frequency of spontaneous abortion in the general population is unknown .With the availability of sensitive beta-human chorionic gonadotropin serum assays, early pregnancies are detected that formerly were written off as prolongations of the menstrual cycle. Very early miscarriages, those that occur before the sixth week since the woman's last menstrual period are medically termed as early pregnancy loss[2] or chemical pregnancy. Miscarriages that occur after the sixth week since the LMP are medically termed clinical spontaneous abortion.[2] Recurrent pregnancy loss, medically termed habitual abortion, refers to the occurrence of three or more consecutive miscarriages. It occurs in approximately 1% of fertile couples, although a higher incidence of 7.4% was observed by Blohm et al. [3]

Risk of spontaneous abortion changes over the course of pregnancy, and is highest during the first trimester [4][5][6] when approximately 80% of spontaneous abortions occur. The risk of miscarriage decreases sharply after the 10th week of gestation.

### *1.1. Most Common Cause for First Trimester Abortions Are*

- Genetic factors- mostly chromosomal abnormalities in 60% of the cases.
- Endocrine factors- accounts for 17-20% of the cases.
- Infections account for 0.5-5% of the cases
- Immunological factors- defective cellular or humeral immunity.

*1.2. Causes of Second Trimester Abortion Are*

- Anatomical factors -mullerian duct anomalies
- Congenital or acquired cervical incompetence which accounts for 12-16% of the cases.

A prior spontaneous abortion is always a risk for the next pregnancy. In this study an attempt has been made to evaluate the obstetric and neonatal outcome in a pregnant woman with history of previous one or more spontaneous abortion.

**2. Materials and Methods**

*2.1. Study Type*

This is a hospital based prospective cohort study of pregnancy outcome in both booked and referred cases to Dr.SMCSI Medical College.

*2.2. Study Setting/Study Population*

The study was conducted at Dr.SMCSI Medical College, Karakonam, Kerala, which is a tertiary referral center and teaching hospital in the private sector. The data of this study were collected from pregnant women either booked or referred to Dr.SMCSI Medical College, Karakonam.

*2.3. Inclusion and Exclusion Criteria*

2.3.1. Inclusion Criteria

Pregnant women with history of at least one previous spontaneous abortion, of a pregnancy detected by Urine Pregnancy Test or by ultrasonography, including both embryonic and anembryonic pregnancy.

2.3.2. Exclusion Criteria

Cases with induced abortion.

*2.4. Study Period*

All pregnant women as per the criteria mentioned above having their antenatal check ups and managed at Dr.SMCSI Medical college, Karakonam during the period from Feb 2013 to Feb 2014 were included in the study.

*2.5. Conduct of Study*

All pregnant women with a history of previous one or more spontaneous abortion booked or referred to Dr.SMCSI Medical College as per the criteria were included in the study. A detailed medical, obstetric and gynecological history was obtained. Risk factors for abortion in the present pregnancy in both the study groups were noted. Complications like PIH, GDM, PROM, etc. during present pregnancy were analysed. Analysis of the mode of termination of the present pregnancy was done. The neo-natal outcome, neonatal complications and the need for neo-natal ICU care also were analysed. Primigravidae in the same age group were taken as control group and the outcome in the two groups were compared.

*2.6. Statistical Analysis*

The data obtained were analysed using SPSS for Windows version 17.0, frequencies and percentages were calculated for cases and controls. Chi-Square test and Fischer's exact test were used to test the statistical significance of the difference in observations between cases and controls.

**3. Result**

The study was conducted over a period of one year from February 2012 to February 2014. A total of 178 women as per the inclusion and exclusion criteria were included in the study; 89 in the study group and 89 in the control group.

The mean age in the study group was 27.8 yrs (SD-4.1) & control group was 27.6 yrs (SD-4.0). In this study there were 51 women with history of previous one spontaneous abortion and no viable issues, 27 patients with previous 2 spontaneous abortions and 11 patients with 3 or more prior spontaneous abortion.75 (84%) patients in the case group gave history of management of previous abortion by Dilatation & Evacuation (D&E) and 14 (16%) patients were managed medically using misoprostol ($PGE_1$)

67% patients had risk factors for abortion in the case group as compared to 33% patients in the control group .The P value was found to be statistically significant(P= 0.0004)

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| Risk Factors | Present | Absent |
|---|---|---|
| Cases | 47 (67%) | 42 (39%) |
| Control | 23 (33%) | 66 (61%) |

*Table 1: Distribution of risk factors for abortion in the present pregnancy among cases and controls*

P= 0.0004 (significant)

The incidence of live birth in the case group was 43% as compared to 57% in the control group and this difference was found to be statistically significant ( P=0.0036).

| Outcome | Cases | Control |
|---|---|---|
| Live birth | 57 (64%) | 75(84%) |
| Pregnancy loss | 32 (36%) | 14 (16%) |

*Table 2: Outcome in present pregnancy amongst cases and controls*

P=0.0036(significant)
The incidence of term delivery was 48% in the study group as against 74% in the control group. 16% of patients in the case group had pre-term delivery, while in the control group only 10% of patients had pre-term delivery. The incidence of intra-uterine fetal demise was 3%,that of abortion was 29% and 3% of patients had ectopic pregnancy in the case group as compared to 5%,11% and 0% respectively in the control group.
The incidence of pre-term delivery was 16% in the case group and 10% in the control group.
The incidence of intra-uterine fetal demise was comparable in both the study group with no statistically significant difference in incidence between the two groups. P=0.005(significant)
The incidence of abortion was found to be 29% in the case group as against 11% in the control group with the difference in incidence being statistically significant (P=0.005).
34% of patients delivered vaginally in the case group as against 40% in the control group and the incidence of caesarean delivery was found to be 30% in the case group and 44% in the control group.
The incidence of elective LSCS was comparable in both the study groups while the incidence of emergency LSCS was found to be higher in the control group, 36% as compared to 22% in the control group. The P value was however not statistically significant. The most frequent indication for LSCS in the control group was ante-partum haemorrhage (7%) in the case group, followed by CPD(6%), fetal distress(4%), failed trial(4%) and IUGR(3%) . In the control group the most frequent indication was fetal distress (15%) followed by CPD (9%) ad failed trial (8%).
The incidence of low birth weight was found to be comparable in both the study groups.
The incidence of neo-natal ICU admission was higher in the case group (63%) as compared to the control group (40%) which was statistically significant. P=0.013

**4. Discussion**
The total number of deliveries during the period between Feb. 2013to Feb. 2014 at Dr. SMCSI Medical College, Karakonam was 1084. Among these there were 508 primi gravida and 89 patients with history of one or more spontaneous abortions and no viable issues prior to the index pregnancies.

*4.1. Comparative Analysis of Incidence*
The incidence in Dr. SMCSI Medical College, Karakonam during the year Feb. 2013 to Feb. 2014 is 8%.Under reported and unrecognized spontaneous abortion and differences in definitions lead to diverse estimated rates of spontaneous abortion across studies.
Warburton [7]et al, estimated the incidence of clinical spontaneous abortion to be 14.7%, while Regan[8]et al, 1989 reported it to be 10.3%.Everett[9] et al, and Blohm [3] et al observed the overall incidence of clinical spontaneous abortion to be 12%.

*4.2. Antenatal Complications*
The incidence of complications increases with the number of previous abortions, parental age, the underlying pathology attributed to miscarriage, the inter-pregnancy interval and treatment modality.

4.2.1. Pre-Eclampsia
Present study has shown the incidence of pre-eclampsia in the case group to be 10% and that in the control group to be 13%.
S. Bhattacharya[10] et al in 2008 studied the obstetric outcome in women with one miscarriage and observed a high risk (4.4%) of pre-eclampsia in those with one miscarriage. Kashanian[11] et al. in 2006 also found a 3% increased incidence of pre-eclampsia in those with a prior single miscarriage. Jivraj[12] et al. in 2001 observed a 6.7 % increased incidence of pre-eclampsia in those with history of recurrent miscarriage.

4.2.3. Placenta Praevia and Abruptio placentae
There is a controversy regarding the role of prior spontaneous abortion and development of placenta praevia in subsequent pregnancy. A single previous miscarriage is not associated with an increased risk of placenta- Praevia or Abruptio placentae, as observed by Schoenbaun[13] et al., Thom [14] et al. Bhattacharya[10]et al too observed no increase in incidence of ante-partum haemorrhage following one prior miscarriage. (0.5 % placenta praevia and 0.8 % abruption placentae). However Kashanian[11] et al., showed a higher incidence of placenta praevia(3%) and a comparable incidence of abruption placentae (3.5%) following a single previous miscarriage.
In a large study by Sheiner[15] et al, a higher incidence of placenta previa with a relative risk of 1.7 for placenta previa and 1.5 for Abruptio placentae was observed in women with prior two or more spontaneous abortion.

Present study observed an incidence of 6% of placenta previa as compared to 3% in the controlled group and an incidence of 1% in abruption placentae as compared to 0% in the control group.

4.2.4. Diabetes Mellitus

Present study demonstrated a lower incidence of Gestational Diabetes Mellitus (GDM) in the case group (11%) as compared to the control group (16%) while a slightly higher incidence (6%) in Overt Diabetes Mellitus(ODM) was observed in the study group as compared to control group(4%).

Bhattacharya[10] et al., 2008 showed no difference in the incidence of DM in those with prior one miscarriage. Similar observations in incidence of DM (1.7%) were also made by Jivraj[12] et al in those with recurrent miscarriage.

4.2.5. Pre-Mature Rupture of Membranes (prom)

In the present study the incidence of PROM was found to be higher with a rate of 11% as compared to 4% in the control group.

Kashanian[11] et al, observed an incidence of 27% in PROM in those with previous one abortion. Similar observation of higher incidence in PROM was also made by Buchmayer[16] et al, and Sheiner[15] et al, among those with recurrent miscarriage.

4.2.6. Pre-term Delivery

In the present study the rate of pre- term delivery was found to be 16% as compared to 10% in the control group.

It is difficult to explain the increased risk of pre-term delivery in women with history of miscarriage. It is possible that this may be related to surgical management (D&C) of previous incomplete abortion.

Bhattacharya[10] et al, observed an incidence of 9.2% in pre-term delivery and Kashanian[11] et al, demonstrated a pre-term delivery rate of 14.02% amongst those with history of prior one spontaneous abortion. Hughes[17] et al, demonstrated an incidence of 12.5% in pre-term delivery rate in those with recurrent miscarriage. Similar observations were also made by Tulppala[19] et al, 1993 and Jivraj[20] et al, with an incidence of 13.3% in pre-term delivery in those with recurrent miscarriage.

4.2.7. Intra-Uterine Foetal Death

Present study demonstrated a comparable incidence in IUFD with 3% in the case group and 4% in the control group.

Bhattacharya[10] et al, demonstrated an incidence of 1% in IUFD amongst those with prior one spontaneous abortion. Kashanian[11] et al, also made a similar observation with an incidence of 1.5% in IUFD.

Jivraj[12] et al, and Tulppala[18] et al, demonstrated an increased incidence of peri-natal lose in those with recurrent miscarriage.

4.2.8. Abortion

Present study demonstrated an increased abortion rate of 29% in the case group as compared to 11% in the control group.

Kashanian[11] et al, demonstrated a repeat abortion rate of 16.5% in the case group following a prior spontaneous one miscarriage. Similar observations were also made by Everett[9] et al., 1997 with an incidence of 15%, Knudsen[19] et al, 1990 with an incidence of 16%, Regan[8] et al., 1989 with an incidence of 16-20% following prior one miscarriage. Knudsen[19] et al demonstrated that the risk of abortion increases to 25% in those with prior two miscarriages and 45% and 54% in those with 3 and 4 prior miscarriages respectively.

4.2.9. Caesarian Section Rate

The caesarean section rate observed in the present study was 30% as compared to a higher rate of 44% in the control group.

Kashanian[11] et al, 2005 demonstrated a caesarian section rate of 28.14% in those with prior one spontaneous abortion as compared to 13.48% in the control group. Tulppala[18] et al., demonstrated an increased incidence of caesarian section rate (36%) in those with recurring miscarriage. Jivraj[12] et al., also demonstrated a caesarian section rate of 36% in those with recurrent miscarriage.

Analysis of neo-natal outcome showed the number of babies with low birth weight to be 15 in the case group as against 16 in the control group.36 neo-nates required admission to neo-natal ICU in the case group as compared to 30 in the control group. Most of the admissions were for IUGR in the case group while in the control group it was mainly for IUGR and neo-natal hyperbilirubinemia.

4.2.10. Intra Uterine Growth Restriction

In the present study, incidence of IUGR was found to be comparable in both groups with 9% in the case group as compared to 8% in the control group.

Tulppala[18] et al, 1993 observed an increased incidence of 20% in IUGR in those with recurrent miscarriage. Similar observation was also made by Jivraj[12] et al, 2001 with an incidence of 13% in patients with recurrent miscarriage.

*4.3. Low Birth Weight*

Present study demonstrated an incidence of 17% in LBW in the case group as compared to 18 % in the control group. The incidence of LBW following one abortion is not significant as observed by Kashanian[11] et al, (8.53%) and Bhattacharya[10] et al, (8.5%). However, an increased incidence in LBW was observed by Thom[14] et al, Schoenbaum[13] et al, Paz[20] et al, in those with recurrent miscarriage.

*4.4. 1NICU Admission*

In the present study the incidence of NICU admission was 63% as compared to 40% in the control group.

Tulppala[18] et al, 1993 demonstrated an increased incidence of 9.9% in NICU admission in those with recurrent miscarriage. Similar observations were also made by Jivraj[12] et al, 2001 (9.9%).

The higher incidence observed in the present study may be due to the tertiary referral centre setting of the institution.

**5. Conclusion**

Prior spontaneous abortion is always a risk for the next pregnancy. The incidence of abortion and ectopic pregnancy was higher in the case group. The incidence of antenatal complications like placenta praevia and PROM were higher in the case group. The incidence of live birth was less in the present pregnancy in the case group with a higher rate of pre-term delivery as compared to the control group. Analysis of neo-natal outcome showed a comparable incidence of low birth weight babies while the number of babies requiring neo-natal ICU care was higher in the case group with IUGR being the most common cause for admission.

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