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An Obstetric Outcome After Previous Spontaneous Abortions

KEYWORDS

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ABSTRACT *Aim : The aim of the study is to estimate the risk of the Preterm delivery, low birth weight, intrauterine growth restriction, still birth, intrauterine death, premature rupture of membranes, recurrence of abortion or any other adverse outcome in women with previous spontaneous abortions.*

Objectives : i. To test the hypothesis that previous unfavourable pregnancy outcome increases the risk of adverse outcome in the present pregnancy.

ii. To look for association between previous spontaneous abortion and preterm delivery, intrauterine growth restriction, low birth weight, intrauterine death, premature rupture of membranes, recurrence of abortion, stillbirth, in subsequent pregnancies.

Study design: A prospective study was conductedtaking200 Pregnant Women with history of spontaneous abortions and 200 pregnant women with history of previous full term normal deliveries (with no abortion), was undertaken from Government Maternity Hospital Tirupati, to compare the obstetric outcomes between two groups.

Observation and Results : There were 200 subjects in study cohort with history of spontaneous abortions and 200 subjects in control cohort without history of spontaneous abortions in this study.

The outcome has been analysed with respect to the following factors

1. Age distribution of the patient 2. Normal full term deliveries 3.Preterm deliveries 4.Intrauterine growth restriction 5.Premature rupture of membranes 6.Low birth weight 7.Recurrent abortions.The mean age of patients in study cohort and control cohort were distributed predominantly in the 18-25 age group. 38 % of patients had 1 previous abortion, 47 % of patients had previous 2 abortions, 15 % of patients had 3 previous abortions.38% had normal deliveries, 32 5 had LSCS, 5.5% had spontaneous abortions, 1% Ectopic pregnancy. 87.5% reached fullterm, 6% preterm, 19% PROM, 1.5% PPROM, 3%IUD. Incidence of LBW – 23.6% with 1 abortion, 23.9% with 2abortions and 69% with 3abortions.

CONCLUSION: Previous abortions have a definite impact on the successful outcome of future pregnancies. Hence for such pregnancies, careful antenatal care is mandatory.Careful surveillance is required in pregnancies preceded by spontaneous abortions, for early detection of possible complications

INTRODUCTION

Spontaneous pregnancy loss is a common event, occurring in about 8 % to 20% of recognized pregnancies. About 80% of spontaneous pregnancy losses occur in first trimester.

Spontaneous abortion may indicate a high risk of adverse outcomes in subsequent pregnancies. Spontaneous abortion and adverse outcomes like low birth weight, small for gestational age, growth retardation and preterm labour share a common etiology (Eg; Immunological factors, low ratio of PGI2 / thromboxane in recurrent abortion, microthrombosis in placenta).

Hence pregnancies with prior history of spontaneous abortions should be considered a high risk pregnancy and extra precautions should be given during ante-natal period anticipating these outcomes.

In this study, patients with history of spontaneous abortion, irrespective of cause and period of gestation were included between 18-35 years of age group with 1 or more than 1 spontaneous abortions.

Patients with induced abortion history of spontaneous abortion with twin gestation, medical disorders like PIH, Chronic hypertension, GDM, Juvenile DM, Heart disease, Aneamia were excluded from the study.

SpontaneousAbortion

Abortion occurring without medical or mechanical means to empty the uterus is referred as spontaneous abortion.

BadObstetrticHistory

The term bad obstetric history is defined as the present obstetric outcome which is likely to be affected adversely by the nature of previous obstetric disaster.(2)

Risk of Recurrence of miscarriage increases with the number of abortions occurred in previous pregnancies. The Aetiology of spontaneous abortion is often complex and obscure. The causes of abortion can be foetal factors like Aneuploidy(5), Maternal factors like infections and medical disorders like Diabetes, Thyroid dysfunction, Cardiac diseases, Radiation & Chemotherapy for cancer, Nutritional factors like extreme obesity and severe Hyperemesis Gravidarum. Drug abuse and social habits like alcohol&smoking(7). Immunological factors like Anti-Phospholipid antibody syndrome.

MATERIALS AND METHODS

STUDY SUBJECTS: 200 PREGNANT WOMEN with history of spontaneous abortions and 200 pregnant women with history of previous full term normal deliveries (with

Volume : 5 | Issue : 5 | May 2015 | ISSN - 2249-555X

no abortion), was undertaken from Government Maternity Hospital Tirupati, to compare the obstetric outcomes between two groups.

INCLUSION CRITERIA

1. In this study, patients with history of spontaneous abortion, irrespective of cause and period of gestation were included.

2. Age group-18 to 35 years.

3. Patients with 1 or more than 1 spontaneous abortions.

EXCLUSION CRITERIA

1. Patients with induced abortion

2. History of spontaneous abortion with twin gestation

3. History of PIH, Chronic hypertension, GDM, Juvenile DM, heart disease, Anemia.

STUDY DESIGN:

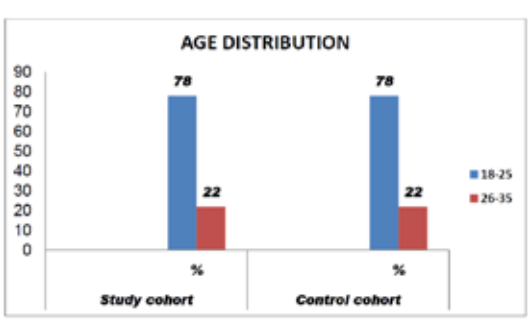
A Cohort study with 200 patients with history of one or more previous spontaneous abortions (Study cohort) and 200 patients with history of previous full term normal deliveries (Control cohort) was undertaken to compare the obstetric outcomes between the two groups. They were consecutive patients seen during the same time period. Written informed consent was obtained from all participants and institutional review board approval was given to the study. Investigations and treatment were carried as per RCOG Green – top guidelines(3).

Table 1: Age distribution of patients

	Study cohort		Control cohort	
	No	%	No	%
18-25	156	78	156	78
26-35	44	22	44	22
Total	200	100	200	100
Mean age ± SD	23.81 ± 3.16		23.3 ± 2.49	

From table -1 the mean age of patients in study cohort and control cohort were 23.81 years and 23.3 years respectively. Indicating that both the groups were distributed predominantly in the 18-25 age group.

Graph 1: Graph showing Age distribution



40

OBSERVATIONS AND RESULTS:

Table 2: Distribution of study cohort with respect to the number of previous abortions.

No. of previous Abortions	Number n = 200	%
1	76	38
2	94	47
3	30	15
Total	200	100

Table 2 shows the distribution of study cohort with respect to the number of previous abortions. 38 % of patients had 1 previous abortions, 47 % of patients had previous 2 abortions,15 % of patients had 3 previous abortions.

Graph 2 : Distribution of study cohort with respect to the number of previous abortions.

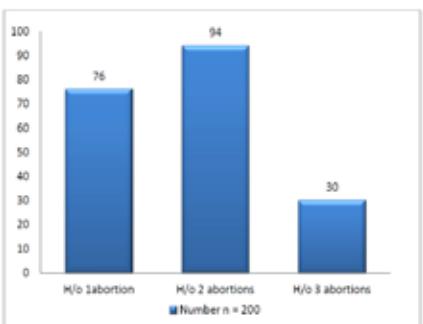


Table 3: Mode of Termination of pregnancy

Mode of termination of Pregnancy	Study cohort (n=200)		Control cohort (n=200)		P value
	No	%	No	%	
1.FTND	76	38	163	81.5	<0.001
2.LSCS-Emergency	64	32	22	11	<0.001
3. Outlet forceps	29	14.5	4	2	<0.001
4. spontaneous abortion	11	5.5	6	3	0.23
5.Abnormal labour with IUD	3	1.5	2	1	0.68
6.Abnormal labour with stillborn	3	1.5	1	0.5	0.47
7.Abnormal labour with preterm	10	5	-	-	0.004
8.Abnormal labour with preterm with IUD	2	1	-	-	0.47
9.Assisted breech delivery	0	-	2	1	0.47
9.Emergency laprotomy with unilateral salpingo-oophorectomy	2	1	0	-	0.47
Total	200	100	200	100	

Table 3 compares the mode of termination of pregnancies between two groups. 81.5% of patients with history of previous full term normal deliveries (control cohort) had normal deliveries and only 38% of study cohort had normal deliveries.11 % of control cohort had LSCS and 32 % of study cohort had LSCS. 5.5% of study cohort had spontaneous abortion.1 % of study cohort had ectopic pregnancies

Volume : 5 | Issue : 5 | May 2015 | ISSN - 2249-555X

Table 4: Comparision of Obstetric outcome between 2 Cohorts

outcome	Study cohort (n=200)		Control cohort (n=200)		P value
	No	%	No	%	
1.Full Term	175	87.5	188	94	0.027
2.Pre term	12	6	6	3	0.228
3.I Trimester abortion	13 (2ectopic pregnancies included)	6.5	4	2	0.228
4.II Trimester abortion	-	-	2	1	0.47
Total	200	100	200	100	

Table 4 compares the Obstetric outcome between the two groups. The number of patients who reached full term among control cohort was 94% and study cohort were 87.5%. The number of patients who delivered preterm among control cohort was 3 % and among study cohort was 6 %.

Graph 3 : Comparision of Obstetric outcome between 2 Cohorts

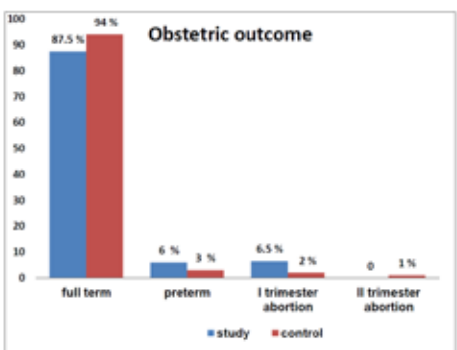


Table 5 : Comparision of Adverse Obstetric outcome between two groups.

Outcome		Study Cohort		Control Cohort		P value
		No	%	No	%	
1.PROM	Term prom	35	17.5	14	7	<0.001
	Preterm prom	3	1.5	-	-	
2.IUGR	Term IUGR	6	3	2	1	0.28
3.IUD	Term IUD	4	2	-	-	0.04
	Preterm IUD	2	1	-	-	
4.Still Birth		4	2	2	1	0.68

The percentage of patients who had PROM among Control cohort were 7 % and among Study cohort were 19 %.Preterm PROM was seen in 1.5% of patients in study cohort, whereas none of patients of control cohort had preterm PROM.3% of study cohort had IUD, whereas none had IUD in control cohort.

Table 6: Indications for LSCS

Indications for LSCS		Study cohort (n=200)	Control Cohort (n=200)	
	No	%	No	%
Total LSCS	64	32	22	11
Breech	10	5	12	6
Placenta previa	4	2	-	-
CPD	14	7	-	-
Failed Induction	10	5	-	-
Failed Progress	4	2	-	-
Severe IUGR	2	1	-	-
Obstructed Labour	4	2	-	-
Oligohydromnias	2	1	-	-
Prolonged PROM	4	2	-	-
Fetal Distress	6	3	-	-
Abruptio Placentae	4	2	2	1
Face Presentation	-	-	2	1
Cord Prolapse	-	-	3	1.5
Cord Presentation	-	-	1	0.5
Deep Transverse Arrest	-	-	2	1

Table 6 shows the indications for LSCS among both study and control cohorts. Among control cohort 11 percent of patients had LSCS. Whereas 32 percent of patients among study cohort had LSCS.

Table 7: Correlation of obstetric indices and outcomes among the control cohort

outcome	Control cohort			
	Total	G2P1L1	G3P2L2	G4P3L3
Term	188	139	41	8
Preterm	6	6	0	0
Spontaneous abortion	6	2	4	0
Total	200	147	45	8

This table shows the depiction of various obstetric indices and their pregnancy outcomes in the control cohort.

Table 8 : Correlation of obstetric indices and adverse outcomes among the control cohort

Outcome	Control cohort			
	TOTAL	G2P1L1	G3P2L2	G4P3L3
I. Antenatal complications PROM	14	4	10	-
II. Placental complications: Abruptio placentae	2	-	2	-
III. Fetal complications 1.Still birth	2	-	2	-
2. IUGR	2	-	2	-

Volume : 5 | Issue : 5 | May 2015 | ISSN - 2249-555X

Table 9: Correlation of Obstetric indices and outcomes among the study cohort

Outcome	study cohort			
	Total	G2A1	G3A2	G4A3
Term	175	72	83	20
Preterm	12	2	4	6
Abortion	13	2	7	4
Total	200	76	94	30

This table shows the distribution of various obstetric indices and their pregnancy outcomes in the study cohort

Table 10: Correlation of obstetric indices and adverse outcomes among the study cohort

Outcome		Study cohort			
		TOTAL	G2A1	G3A2	G4A3
I.Antenatal complications	Term PROM	34	14	18	2
	Preterm PROM	3	1	1	1
II.Placental complications		4	2	2	-
1.Placenta previa		4	1	3	-
2.Abruptio placentae					
III.Fetal complications					
1.TERM IUGR		6	-	6	-
2 .IUD		6	-	4	2
3.Still born		4	4	-	-

Table 11: Comparison between birth weight and the number of previous live births among the control cohort

Obstetric index	Total Number	Low birth Weight <2.5kg	%	Birth Weight Mean ± SD
G2P1L1	146	14	9.58	2.8 ± 0.52
G3P2L2	46	2	4.3	2.6 ± 0.9
G4P3L3	8	-	-	3.06± 0.42
Total	200	16	-	2.8 ± 0.63

Table 11 shows the comparison between birth weight and the number of previous live births among the control cohort. Among patients who had one previous delivery the incidence of low birth weight were 9.58 %, among patients who had 2 previous live births the incidence of low birth weight were 4.3%.

Graph 4: Comparison between birth weight and the number of previous live births among the control cohort

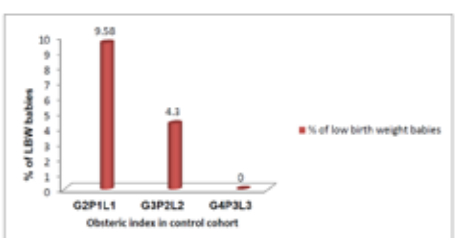


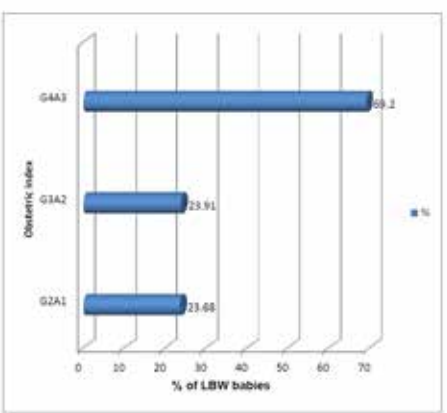
Table 12: Comparison between the birth weight and the number of previous abortions

Obstetric Index	Total Number	Low birth weight Babies		Birth weight
		No	%	Mean ± SD
G2A1	76	18	23.68	2.7 ± 0.69
G3A2	94	22	23.91	2.45 ± 0.89
G4A3	30	18	69.2	2.26 ± 1.11
Total	200	58		2.52 ± 0.87

Table 12 shows the comparison between the number of previous abortions and the low birth weight among the study cohort. Among patients who had one previous abortion the incidence of low birth weight was 23.6% were. Among patients who had two previous abortions the incidence of low birth weight babies were 23.9%. Among patients who had three previous abortions the incidence of low birth weight babies were 69%.

The incidence of low birth weight increases as the number of previous abortions increases.

Graph 5: Comparison between the birth weight and the number of previous abortions



Statistical software:

The Statistical software namely Epi info version 3.5.1 was used for the analysis of the data and Microsoft word and Excel have been used to generate tables.

DISCUSSION

There were 200 subjects in study cohort with history of spontaneous abortions and 200 subjects in control cohort without history of spontaneous abortions in this study.

The outcome has been analysed with respect to the following factors

1. Age distribution of the patient 2. Normal full term deliveries 3.Preterm deliveries 4.Intrauterine growth restriction 5.Premature rupture of membranes 6.Low birth weight 7. Recurrent abortions

In comparison with women with a previous successful pregnancy, this study data suggest that women with an initial miscarriage have an increased risk of some obstetric complications. These complications include recurrence of abortion, instrumental delivery, PROM and ectopic pregnancy. They are also more prone to preterm delivery and

Volume : 5 | Issue : 5 | May 2015 | ISSN - 2249-555X

low birth weight. Our results show that any pregnancy following an initial miscarriage is associated with increased obstetric and perinatal risk. Among 400 subjects, 78% belonged to 18 – 25 years in both cohorts. Remaining 22 % belonged to 26 – 35 years in both cohorts. The age distribution among both controls and cases were similar**.** There was no statistical difference between the two groups regarding maternal age distribution.

Out of 200 women from study cohort, 38 % of patients had 1 previous abortion, 47 % of patients had previous 2 abortions and 15 % of patients had 3 previous abortions.

In the present study, 81.5% of patients with history of previous full term normal deliveries (control cohort) had normal deliveries and only 38% of study cohort had normal deliveries. The difference is statistically significant<0.001**.**

This shows that the percentage of patients having successful term pregnancies is less with patients having prior abortion.

32 % of study cohort had LSCS and 11 % of control cohort had LSCS. **The difference is statistically significant** < 0.001.The incidence of LSCS was high in the study cohort and increase incidence of LSCS was also found in studies conducted by Kashanian M et al 9 and Chintanupadhyay e tal13.

The number of patients who reached full term among control cohort was 94% and study cohort was 87.5%. **The difference is statistically significant <0.001**. The number of patients who had previous abortions had a significantly lesser chance of continuing the pregnancy to full term.

The number of patients who delivered preterm among control cohort was 3 % and among study cohort was 6 %. Olga Basso et al.(18) and P.W.Renaild, P.W.Beard et al(20).. Studies show an increased risk of preterm labour after abortions in previous pregnancies.

The percentage of patients who had PROM among Control cohort was 7 % and among Study cohort was 19 %.Preterm PROM was seen in 1.5% of patients in study cohort, whereas none of patients of control cohort had preterm PROM.3% of study cohort had IUD, whereas none of control cohort had IUD.

Kashanian M et al 9 found that there was risk of repeat abortion (16.5%),fetal death (1.5%) and rate of cesarean section (28.1%) were increased in previous miscarriage cases.

Jivraj et al14 in Sept 2000 found that rates of preterm delivery (13%), perinatal loss 2.5% and caesarean section (36%) were significantly higher than those of control group.

According to Bhattacharya et al 2008 4, they stated that miscarriage group faced a higher risk of pre eclampsia (4.4%), threatened abortion (27.1%), rate of caesarean section (4.2%), preterm delivery (9.2%) and low birth weight (8.5%) . Incidence of high risk factors were also increased in the present study as described in above results.

Taylor et al 25 reported an increased incidence of Placenta previa in patients with a previous abortion, supporting the present study.

6% of study cohort and 3% of control cohort had recurrence of abortions.The chances of spontaneous abortion were high in the patients who had previous abortions.

Percentage of patients having IUGR in study cohort were 3 % and which was more than 1% among the control cohort, but there was no statistical difference between these two cohorts (P=0.28).The study conducted by David H.Thom et al(15) show risk of IUGR and LBW increases as number of abortions increase

In the present study, the stillbirths among the study cohort were 2 % and among the control cohort was 1%. The percentage of the patients who had IUD among the study cohort was 3% and among control cohort was nil.

CONCLUSION:

1. Previous unfavourable pregnancy outcome increases the risk of adverse outcome in the future pregnancies.

2. There is association between previous spontaneous abortion and PROM (19%),IUD (3%) in the subsequent pregnancies

3. There is increase in the incidence of IUGR, still birth, recurrence of abortion and preterm delivery in the subsequent pregnancies, preceded by spontaneous abortions.

4. As the number of previous abortions increase the incidence of successful outcome decreases.

5. As the numbers of previous abortions increase the incidence of low birth weight increases.

6. The percentage of operative deliveries is more in the cases who had previous abortions.

7. Previous abortions have a definite impact on the successful outcome of future pregnancies. Hence for such pregnancies, careful antenatal care is mandatory.

8. Careful surveillance is required in pregnancies preceded by spontaneous abortions, for early detection of possible complications.

RECOMMENDATION:

To evaluate pregnancy outcome following either a previous spontaneous abortion, the findings of the present and previous studies show that further research is required with large enough sample sizes and controlling for intervening factors, such as genital infections, immunological factors, body mass index and consanguinity

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Volume : 5 | Issue : 5 | May 2015 | ISSN - 2249-555X

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