

A PROSPECTIVE COHORT STUDY OF OBSTETRIC OUTCOME IN GRAVID WOMEN WITH PREVIOUS SPONTANEOUS ABORTION

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ABSTRACT

Background: The spontaneous pregnancy loss for a women can be physically and emotionally taxing. Spontaneous abortion is the term given to a miscarriage or termination of a pregnancy that takes place before the twentieth week of gestation on its own. Pregnancies that end in a natural abortion within the first trimester are the only ones that can be referred to as having a "early pregnancy loss." Pregnancies that have a prior history of spontaneous

abortions ought to be regarded as high-risk pregnancies, and additional precautions ought to be taken during the ante-natal period in preparation for these outcomes. The goal of this study is to look into the outcomes of pregnancies among women who had a history of spontaneous abortions in previous pregnancies.

Methods: In the department of Obstetrics and Gynecology, Dr. D.Y. Patil Medical College, Hospital, and Research Centre in Pune, a prospective and comparative research was conducted. The sample size for the study was 400, with study group of 200 cases and control group of 200 cases.

Patients with history of spontaneous abortion in previous pregnancy, irrespective of cause and period of gestation were included in study population. For control group, patients with history of previous term delivery, irrespective of mode of delivery were included

Results: In threatened abortions, we observe that 20 (10%) patients had symptoms of threatened abortions while 13 (6.50%) patients had threatened abortions in control group. There are more number of cases of threatened abortion in previous abortion cases when compared to previous normal delivery.

21 patients from cases and 11 patients from controls led to abortion out of 200 samples. In abortions, number of inevitable/ incomplete abortions is same (3) in both study groups, while number of spontaneous abortions are 16 (76.19%) and 8 (72.73%) among cases and control respectively. Second trimester abortions were 2 (9.52%) and 0 (0%) from cases (n=23) and controls (n=11) respectively. The p value would be 0.032. It explains that statistical significance is present and there is a significant association amongst subjects who have history of previous abortions (p=0.032).

To study obstetrical complications, there were 179 cases and 189 controls (after excluding patients who underwent abortions). Incidence of PIH in case group was 15.08% (27), while in control group were 8.99% (17). Incidence of GDM in case group was 11.17% (20), while in controls were 8.47% (16). There were 31 patients (17.32%) in case group who had preterm labour (<34 weeks), while only 10 patients in control group who had preterm labour (5.29%). Number of incidence of IUD was 2 in case group (1.12%), whereas it was 0% in control group. 18 patients in case group had premature rupture of membranes(10.06%), while only 6 patients in control group had premature rupture of membranes(3.17%). There is significant association in patients with obstetrical complications during their pregnancy who had past history of abortion.

There was an association amongst patients with previous history of abortion and Preterm and the incidence of LSCS in current pregnancy.

Conclusions: The incidence of first trimester abortion, PIH, GDM, preterm births, PROM, IUD were significantly increased in present pregnancy with previous history of abortion.

There has been a subsequent increase in caesarean section rates with prior history of spontaneous abortion. Hence investigations are supporting the monitoring of the patient by doing ultrasound and timely antenatal check ups to avoid present pregnancy loss in high risk cases.

Judicious patient monitoring is mandatory if she has previous history of abortion. By doing so, we can segregate the high risk pregnancies and provide the proper antenatal screening in

present pregnancy. It also guides us to avoid prenatal, intrapartum and postnatal complications for better maternal and fetal outcome.

More vigilance to patients with history of previous spontaneous abortion will help to reduce maternal and fetal morbidity and mortality.

Keywords: Spontaneous abortion, Obstetrical complications, Maternal complications, Post natal complications, Mode of delivery

INTRODUCTION

The spontaneous pregnancy loss for a women can be physically and emotionally taxing. A woman's ability to become pregnant ought to be seen as a physiologically typical occurrence in the course of her life. On the other hand, the course of pregnancy can take numerous unexpected turns, which can turn an otherwise healthy pregnancy into a negative ending. The Latin word 'Aboriri', from which we get the English word abortion, literally means "To miscarry." Abortion is described as the termination of a pregnancy, either spontaneously or involuntarily, prior to the foetal viability.¹

Spontaneous abortion is the term given to a miscarriage or termination of a pregnancy that takes place before the twentieth week of gestation on its own. In everyday language, a spontaneous abortion is referred to as a "miscarriage" to avoid confusing it with an abortion that was induced by medical intervention. This is done to avoid misunderstanding with an abortion that was carried out deliberately.² Pregnancies that end in a natural abortion within the first trimester are the only ones that can be referred to as having a "early pregnancy loss."

One in every six pregnancies ends in a spontaneous abortion, often known as a miscarriage.⁴ According to research done in India, spontaneous abortion rates were much greater in urban than in rural areas.⁵ The American Pregnancy Association (APA) estimates that between 10 and 25 percent of pregnancies that are medically confirmed end in a miscarriage. It is common for the reason for a miscarriage to remain a mystery, as the causes might vary from person to person.⁶

In India, there were an estimated 15.6 million abortions in 2015, as stated by the findings of the first nationwide research to look at the incidence of abortion and unplanned pregnancy in India. The Population Council in New Delhi, the Guttmacher Institute in New York, and the International Institute for Population Sciences (IIPS) in Mumbai collaborated to perform this study. This leads to a rate of abortion that is 47 for every 1,000 women between the ages of 15 and 49, which is comparable to the rate of abortion in the nations that are adjoining South Asia. About 3.5 million abortions, or 22% of all abortions, were carried out in medical facilities, 11.5 million, or 73%, were carried out outside of facilities using medication, and 0.8 million, or 5%, were carried out outside of facilities using techniques other than medication. In total, 12.7 million (81%) of all abortions were accomplished through the use of medicine, 2.2 million (14%) were accomplished by surgical abortions, and 0.8 million (5%) were accomplished using other procedures that were most likely dangerous.⁷

The term "inevitable miscarriage" describes early-pregnancy stomach discomfort and inexplicable vaginal bleeding. Contrary to threatened miscarriage, an inevitable miscarriage also includes cervical canal dilatation. The presence of an open cervix indicates that the body is miscarrying the pregnancy.

When some pregnancy tissue is passed but not all, this is referred to as an incomplete abortion or an incomplete miscarriage. A physical examination will reveal the cervix to be open and some retained pregnancy tissue in the uterus.

It has been hypothesised that having a history of spontaneous abortion increases the risk of having a child with foetal pathology, a congenital anomaly, a low birth weight, a low APGAR score, Down syndrome in a young mother, intrauterine growth restriction, and premature labour in the subsequent pregnancy.^{8,9} Anatomical diseases, hormonal abnormalities, genetic abnormalities, and thrombophilias are the primary contributors to the occurrence of recurrent abortions.¹⁰ Research has shown that providing patients who have had past abortions with counselling and supportive treatment results in a favourable outcome, with 70–80 percent of live births being achieved.¹⁰ The goal of this study is to look into the outcomes of pregnancies among women who had a history of spontaneous abortions in previous pregnancies.

Therefore, pregnancies that have a prior history of spontaneous abortions ought to be regarded as high-risk pregnancies, and additional precautions ought to be taken during the ante-natal period in preparation for these outcomes.

METHODS

Patients who visited the Obstetrics and Gynecology OPD at the D. Y. Patil Medical College for an antenatal exam in the first trimester were included. They were monitored to track their prenatal progress up until the point at which they were admitted to the delivery room.

Every case was given a detailed history, including information on the patient's address, age, occupation, religion, literacy level, socioeconomic status, major complaints, past medical history, surgical history, menstrual history, obstetrical history, including any history of spontaneous abortions, past history of medical conditions like diabetes, hypertension, heart disease, chronic renal disease, etc., personal history and family history.

A complete physical and systemic examination was performed, taking into account the patient's built, diet, height, weight, and other vital statistics.

Every appointment comprised an abdominal examination, which included documenting the fundal height, testing for uterine contractions, examining several prenatal signs, and listening for foetal heart sounds.

Routine tests for Haemoglobin, ABO grouping and Rh type, urine routine and microscopic examination, random blood sugar, HIV and VDRL testing and counselling was done. For the purpose of determining gestational age and excluding congenital defects and anomalies of the placenta, ultrasound was performed in each instance.

In accordance with their gestational age, maternal complications like placenta previa, placental abruption, threatened abortion, inevitable/incomplete abortion, pre-eclampsia and eclampsia, GDM, intrauterine foetal death, preterm labour, premature rupture of membranes, etc. were ruled out.

A pelvic assessment was carried out during the per vaginal examination of those who were hospitalised during labour in order to rule out cephalopelvic disproportion. Progress of labour was evaluated. In consideration of maternal and foetal complications, the decision was made to continue with a vaginal delivery or LSCS.

Low birth weight, severe congenital abnormalities, low Apgar scores at 1 and 5 minutes, and similar neonatal complications along with NICU admission were obviated.

Patients who were included were

- Age group of 18 to 45 years
- Patients with history of spontaneous abortion in previous pregnancy, irrespective of cause and period of gestation were included.
- For control group, patients with history of previous term delivery, irrespective of mode of delivery were included.

Data was collected using case record forms and pre-printed data collection forms. Statistical Package for Social Sciences (SPSS) Software version 20/Epi Info/Primer/Win-pepi was utilised for analysis, while Microsoft Excel was used for data input.

Frequency and percentage variables were allotted to categorical data, and mean and standard deviation were reported as continuous variables.

A 0.05 P value was statistically judged significant at a 95% confidence level when analysing the connection between two categorical variables using the chi square test.

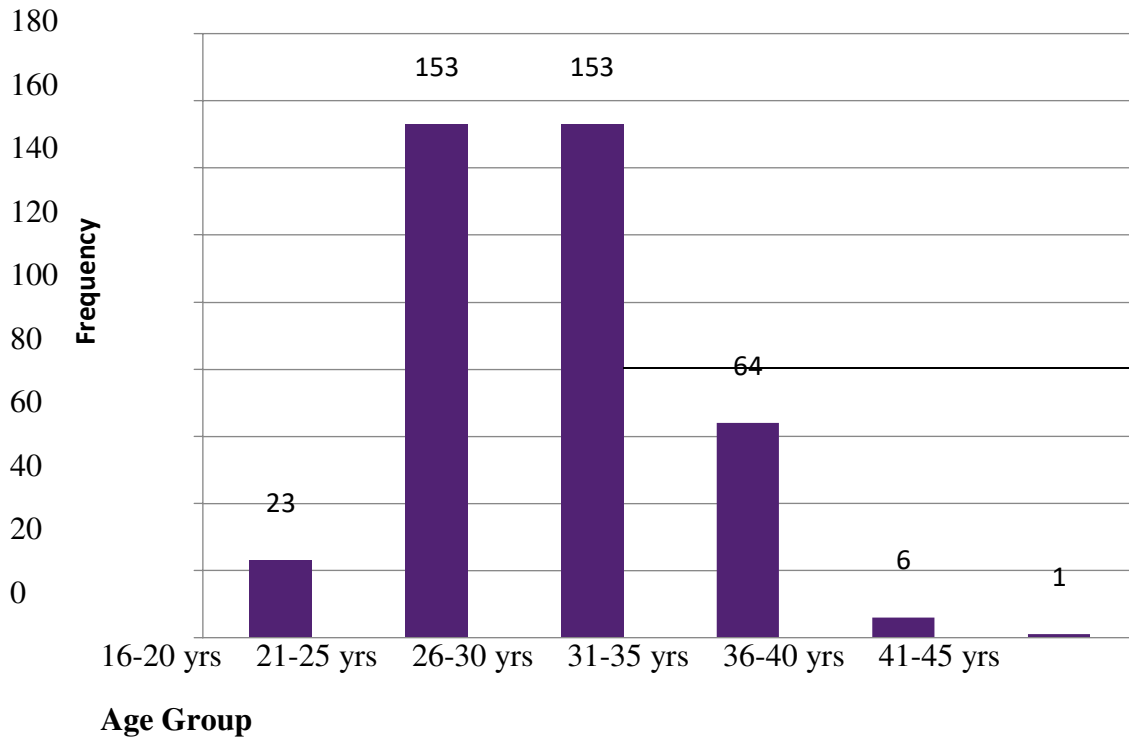
RESULTS

1) Age wise distribution of study sample

The mean age of the 400 research participants was 26.36 years (standard deviation: 4.244 years), with a range of 19 to 44 years. 153 (38.25%) samples came from the 21–25 and 26–30 age groups, respectively, while 64 (16%) subjects came from the 31–35 age group. (Table 1, Figure 1)

Age (years) Statistics	
N	400
Mean	26.36
Std. Error of Mean	.212
Std. Deviation	4.244
Range	25
Minimum	19
Maximum	44

(Table1)



(Figure

1)

2) Previous pregnancy outcome among study sample

118 (59%) of cases were having history of previous spontaneous abortion where dilatation & evacuation not done followed by 82 (41%) cases were dilatation & evacuation was performed after spontaneous abortion. While among controls 170 (85%) subjects delivered by normal vaginally after completion of full term.(Table 2)

Previous pregnancy	Case	Control	Total
FTNVD	0	170	170
Spontaneous abortion & D E done	82	0	82
Spontaneous abortion & D E not done	118	0	118
LSCS	0	30	30
Total	200	200	400

(Table 2)**3) Antepartum event among study subjects**

Variable		Case	Control	P value
Hyperemesis	Present	25	45	0.008
	Absent	175	155	

(Table 3)

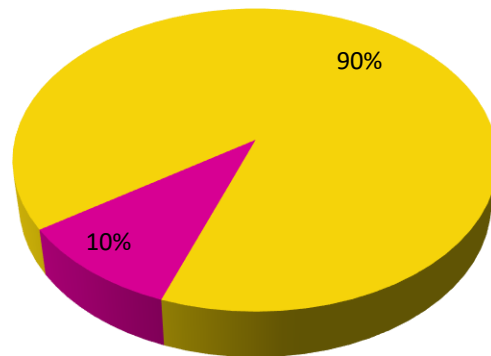
Above table shows that, 25 out 200 cases were having hyperemesis during antepartum while remaining without it while it was noted in 45 patients among control group. On application of chi square test, hyperemesis was significantly associated in pregnancy having past history of term delivery rather than previous abortion. (Table 3)

Variable		Case	Control	P value
Threatened abortion	Present	20	13	0.2033
	Absent	180	187	

(Table 4)

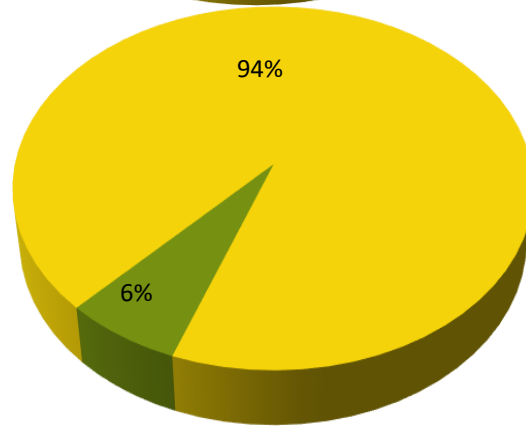
Threatened abortions in cases

■ Present ■ Absent



Threatened abortions in controls

■ Present ■ Absent

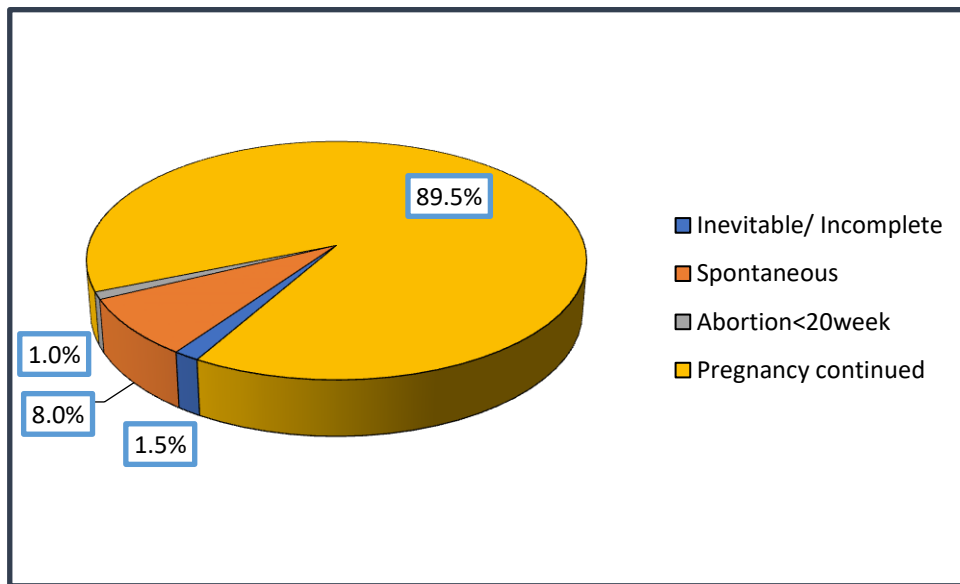


(Figure 2)

20 subjects from cases and 13 from control group out of 200 underwent threatened abortions. On application of chi square test there was no significant association between past history of abortions with threatened abortions in current pregnancy ($p=0.2033$). (Table 4, Figure 2).

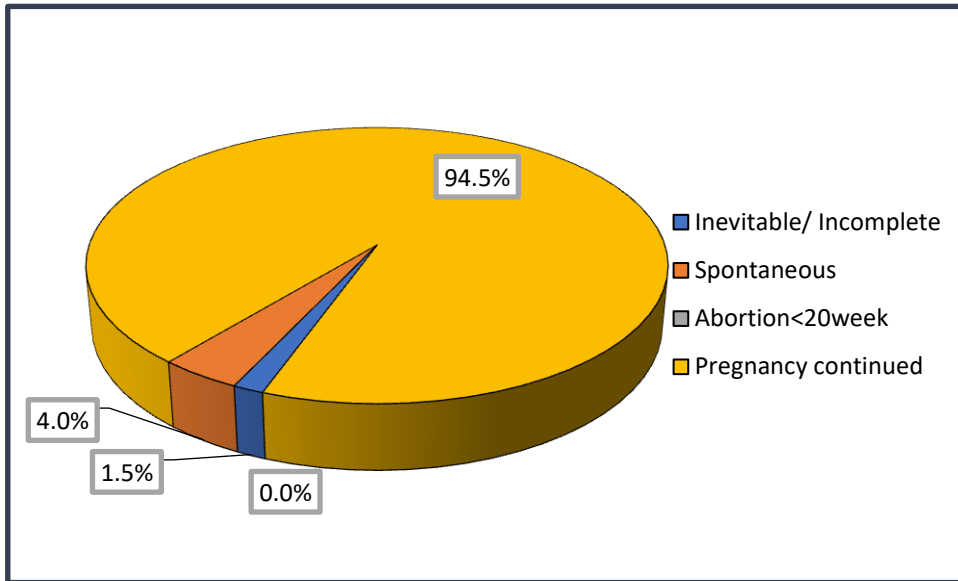
4) Incidence of abortions among study subjects

Abortions in cases



(Figure 3)

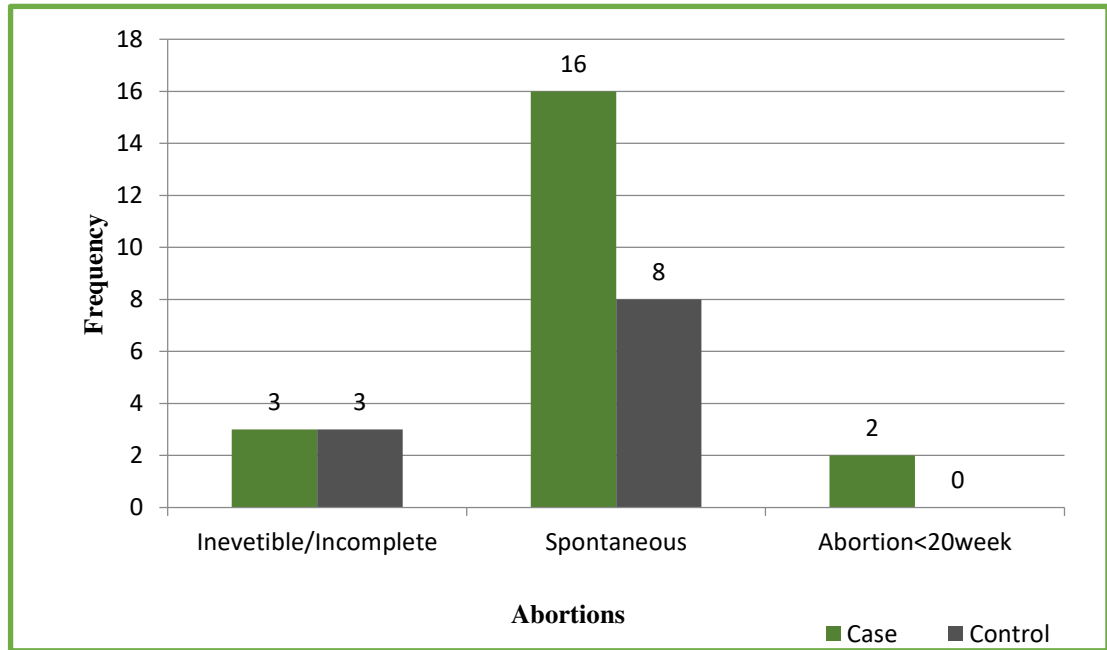
Abortions in controls



(Figure 4)

Variable		Case	Control	P value
Abortion	Inevitable/ Incomplete	3	3	0.032
	Spontaneous	16	8	
	Abortion <20 week	2	0	

(Table 5)



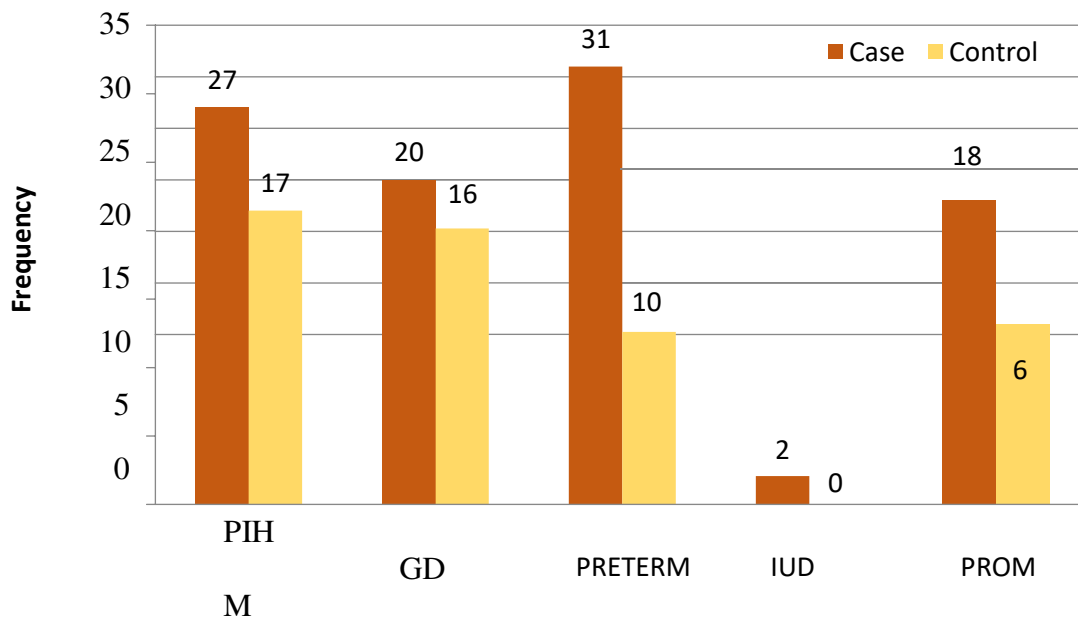
(Figure 5)

21 subjects from cases and 11 from control out of 200 subjects leads to abortion. On application of chi square test there was significant association between changes of abortions after having history of previous abortions ($p=0.032$). (Table 5, Figure 3, 4 and 5)

5) Obstetrical Complications

Obstetrical Complications			
Variable	Case	Control	P value
PIH	27 / 179	17 / 189	0.030
GDM	20 / 179	16 / 189	
Preterm (<34 week)	31 / 179	10 / 189	
IUD	2 / 179	0	
PROM	18 / 179	6 / 189	

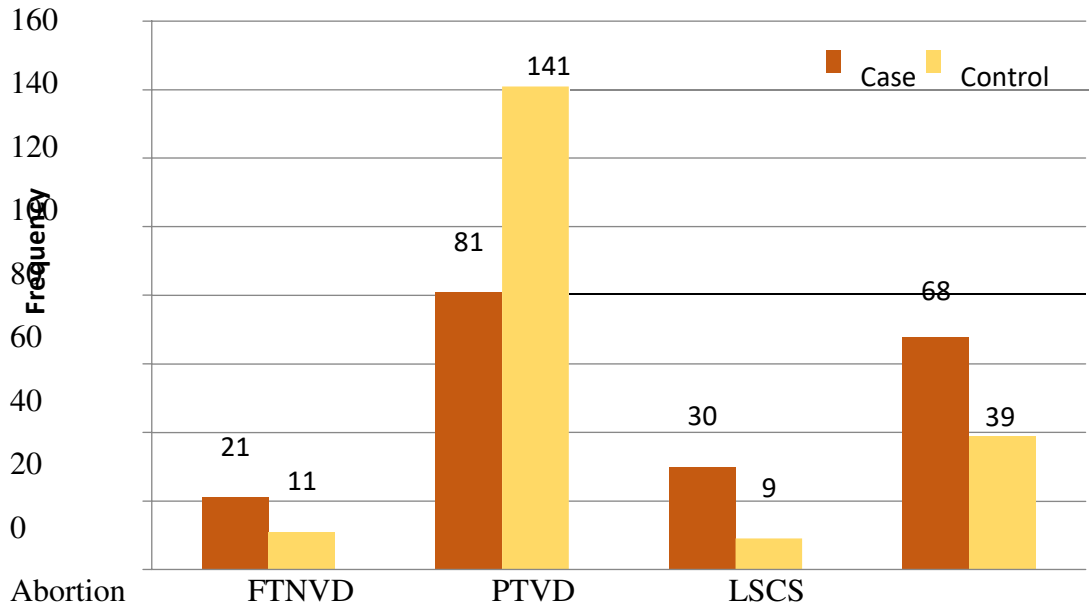
(Table 6)



OBSTETRICAL COMPLICATIONS (Figure 6)

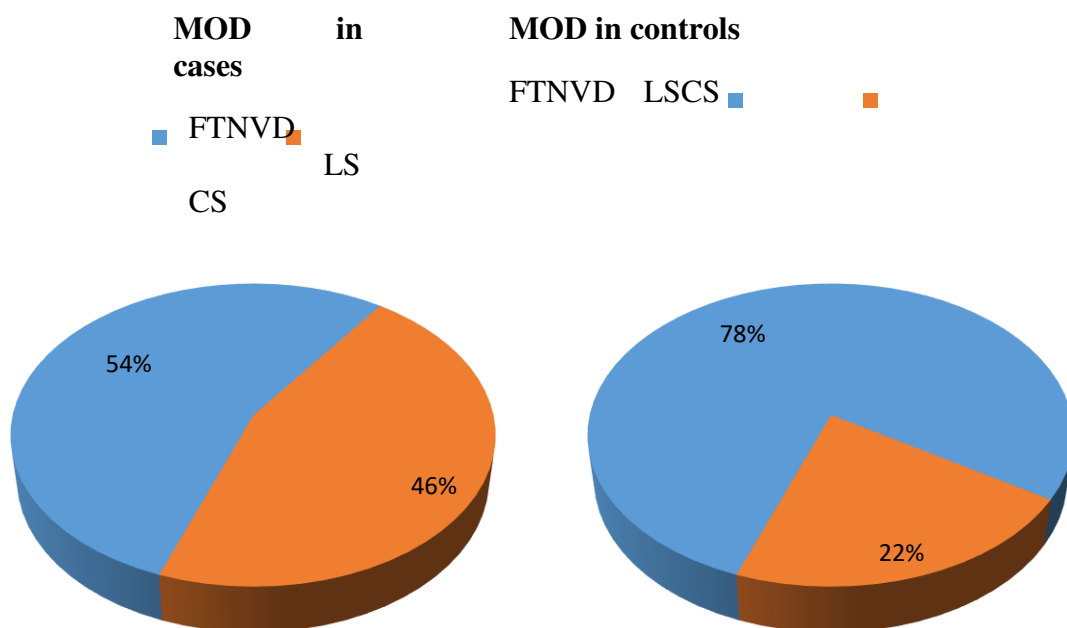
In Table 6, Incidence of PIH in cases in our study was 15.08% while incidence of PROM was 9%. Out of 179 subject 30 subject delivered preterm among cases while 9 from control group. On application of chi square test there was significant association of obstetrics complications in pregnancy after past history of abortion (p=0.030). (Figure 6)

6) Mode of delivery among study subjects



(Figure 7)

Mode of delivery

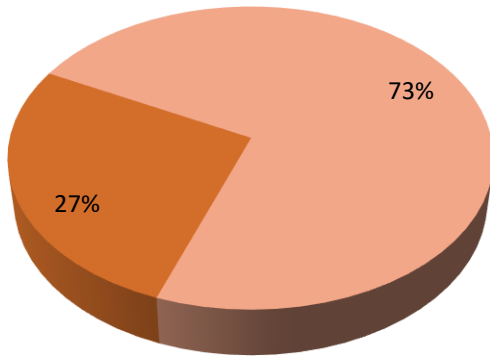


(Figure 8)

7) Gestational age at the time of delivery among study subjects

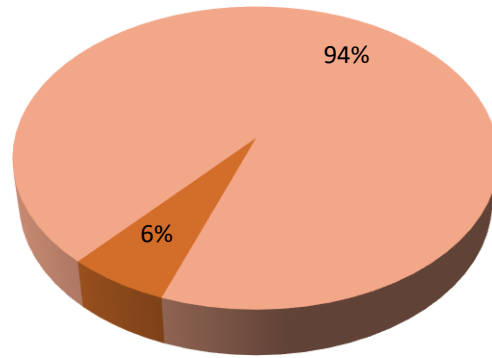
Gestational Age at delivery in cases

■ Preterm ■ full term



Gestational Age at delivery in controls

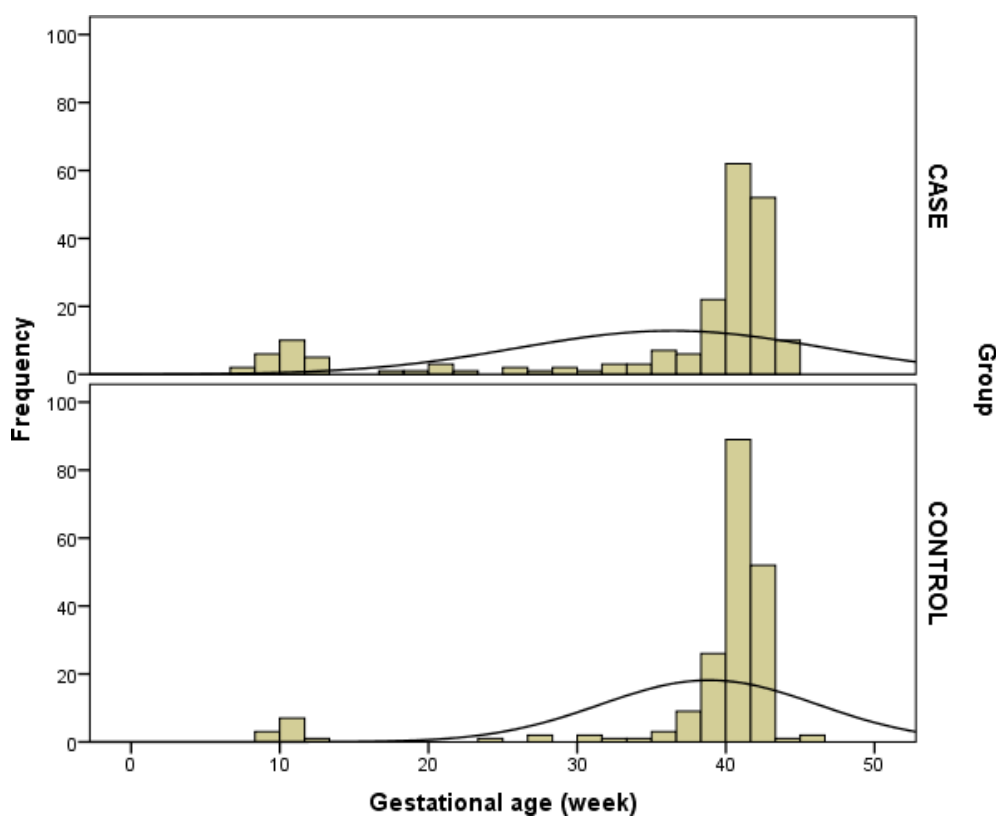
■ Present ■ Absent



(Figure

9)

Full term normal vaginal delivery was most common mode of delivery among study subjects (222 cases) followed by lower segment cesarean section (107). 81 subjects from cases & 141 subjects from control group delivered on full term normal vaginally. On application of chi square test, there was association between previous pregnancy abortions with preterm and LSCS in current pregnancy ($p=0.00001$). (Figure 7, 8 and 9)



(Figure 10)

Group Statistics

Variable	Group	N	Mean	Std. Deviation	Std. Error Mean	P value
Gestational age at delivery (weeks)	Case	179	36.37	10.375	.734	0.006
	Control	189	38.87	7.313	.517	

(Table 7)

Mean gestational age of delivery among cases (36.37 ± 10.37 weeks) was lower than controls (38.87 ± 7.313 weeks) and difference between them was statistically significant ($p=0.006$), it means past history of abortion was associated with present gestational age of delivery.

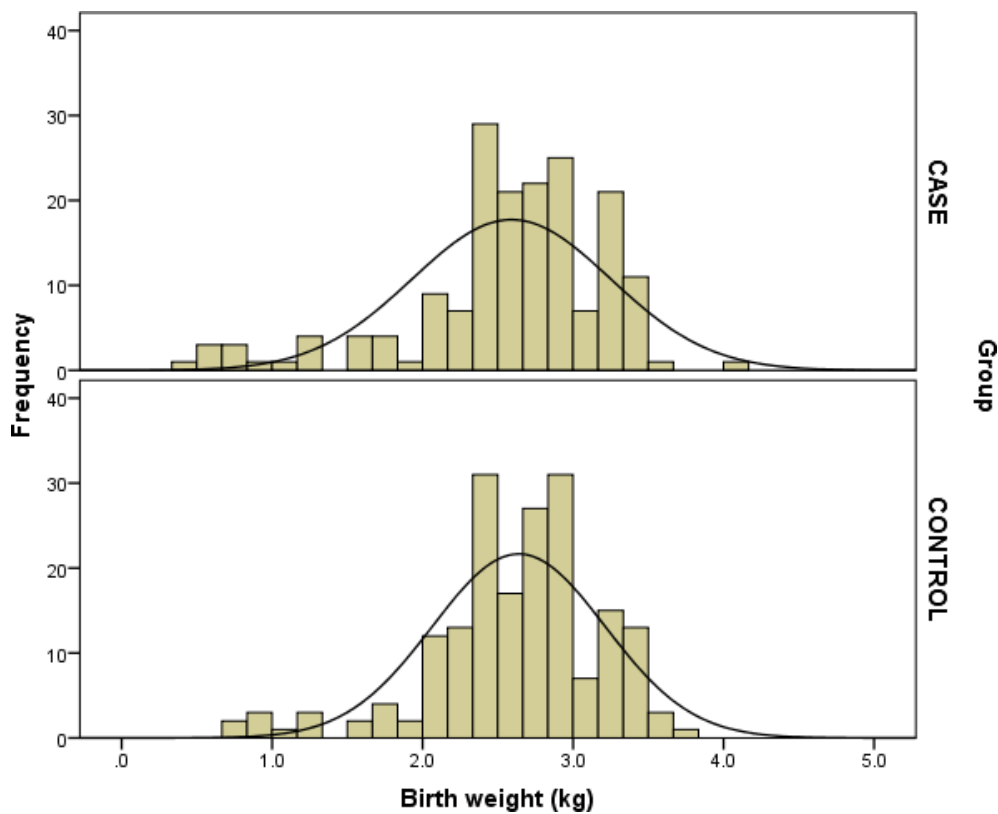
8) Postpartum event among study subjects

Variable		Case	Control	P value
PPH	Present	11	8	0.407
	Absent	168	181	

(Table 8)

Above table shows that, 11 subject’s cases and 8 subjects from control were having postpartum hemorrhage. On application of chi square test, PPH was not significantly associated past history of abortion ($p=0.407$). (Table 8)

9) Birth weight of newborns



(Figure 11)

Group Statistics

Variable	Group	N	Mean	Std. Deviation	Std. Error Mean	P value
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Birth weight (kg)	Case	177	2.590	.6598	.0497	0.455
	Control	189	2.639	.5739	.0420	

(Table 9)

Mean birth weight of newborns delivered in cases (2.59 ± 0.659 kg) was approximately similar controls (2.63 ± 0.573 kg) and difference between them was statistically not significant ($p=0.455$). (Table 9, Figure 11)

DISCUSSION

Aim of the study is to compare the outcome of pregnancies with previous spontaneous abortion to those following previous successful pregnancies.

200 patients were taken in each group. Pregnancies with group A (cases) consisted of previous abortion and group B (control) consisted of previous term delivery. For both cases and control, 200 samples were taken separately and studied.

The mean and standard deviation of age of the 400 samples are 26.36 and 4.24 years respectively. The highest age among the study population is 44 years and lowest age is 19 years. The sample were from 21-25 years, 26-30 years are 153 (38.25%) patients, 31-35 years is 64 (16%) patients, 16-20 years is 23 (5.75%) patients, 36-40 years is 6 (1.50%) patients, and 41-45 years is 1 (0.25%) patients are distributed for each age group. In this, the younger age group had the highest number of patients, 153 (38.25%) at the age of 21-25 years, 26-30 years and least number of patient is 1 (0.25%) at the age of 41-45 years. These results are comparable to study conducted by Swati Agarwal et al as in her study also majority of the patients, were in mean age group of 21-29 yrs.⁸⁰

Spontaneous abortion who underwent D&E were 82 (41%) in cases. Spontaneous abortion who did not require D&E were 118 (59%) in cases. These results were comparable to Swati Agarwal et al study published in 2017 with majority of cases with previous one spontaneous abortion was 45.7%.⁸⁰

Hyperemesis is relatively less in cases when compared to control. Among study subjects shows that 25 (12.50%) cases, 45 (22.50%) controls are present with Hyperemesis. The association of Hyperemesis with pregnancy having past history of abortion has statistically significance at $p=0.008$. Kelly Nijsten published in 2021 from Amsterdam Reproductive and Development Research Institute also found that hyperemesis is prevalent in 89% chances of recurring of hyperemesis in successive pregnancy. As compared to less incidence of hyperemesis in previous abortion cases.⁸⁷

In threatened abortions, we observe that 20 (10%) patients had symptoms of threatened abortions while 13 (6.50%) patients had threatened abortions in control group. There are more number of cases of threatened abortion in previous abortion cases when compared to previous normal delivery. This is in concordance with the findings of Lykke JA in a study conducted in 2009 also showed a similar increased incidence of threatened abortion in previous abortion cases.⁸⁸

21 patients from cases and 11 patients from controls led to abortion out of 200 samples. In abortions, number of inevitable/ incomplete abortions is same (3) in both study groups, while number of spontaneous abortions are 16 (76.19%) and 8 (72.73%) among cases and control respectively. Second trimester abortions were 2 (9.52%) and 0 (0%) from cases ($n=23$) and controls ($n=11$) respectively. The p value would be 0.032. It explains that statistical significance is present and there is a significant association amongst subjects who have

history of previous abortions ($p=0.032$). These results are in agreement with research by L. Regan, P. R. Braude, and P. L. Trembath, who came to the conclusion that a woman's first pregnancy has major effects on all subsequent pregnancies since a past abortion is the most important predictor of spontaneous abortion.⁶⁶

To study obstetrical complications, there were 179 cases and 189 controls (after excluding patients who underwent abortions). Incidence of PIH in case group was 15.08% (27), while in control group were 8.99% (17). Incidence of GDM in case group was 11.17% (20), while in controls were 8.47% (16). There were 31 patients (17.32%) in case group who had preterm labour (<34 weeks), while only 10 patients in control group who had preterm labour (5.29%). Number of incidence of IUD was 2 in case group (1.12%), whereas it was 0% in control group. 18 patients in case group had premature rupture of membranes(10.06%), while only 6 patients in control group had premature rupture of membranes(3.17%). There is significant association in patients with obstetrical complications during their pregnancy who had past history of abortion ($p=0.030$). This can be compared to study done by Muzzafar U. concluding that previous abortion increase the risk of threatened abortion(15.7%), preterm deliveries(14.2%) and PROM(9.2%), increase in caesarean section rates(50%), LBW(9.2%) and IUGR(7.1%), but some studies have shown other demonstrative higher risk complications like abruptio placenta, hypertensive disorders, Caesarean section.⁸⁵

Abortion, FTNVD, PTVD, and LSCS are the study variables for outcome of pregnancy in 200 samples of cases and controls separately. Considering abortion there were 21 patients in case group (10.50%), 11 patients in control group(5.50%). Patients of vaginal delivery were 81 (40.50%) in case group, while in control group they were 141 (70.50%); 30 patients underwent PTVD in case group (15%), control group had 9 patients(4.50%). Incidence of LSCS in case group is 34%(68), while in control group is 19.5%(39). On application of chi square test, there was an association amongst patients with previous history of abortion and Preterm and the incidence of LSCS in current pregnancy ($p=0.00001$). As postulated by J.S. Brown in 2008, we agree that there is an increased incidence of preterm delivery in patients with history of spontaneous abortion cases.⁸⁹ The relative incidence of cesarean sections in study conducted by Shree Kant Dadheech showed a similar incidence in cesarean section rates in present pregnancy following previous spontaneous abortion cases.⁹⁰

Mean gestational age of delivery among case group (36.37 ± 10.37 weeks) was lower than controls (38.87 ± 7.313 weeks) and difference between them was statistically significant ($p=0.006$), it means past history of abortion was associated with present gestational age of delivery and this also supports higher incidence of preterm delivery in cases of previous abortion. Michel A. Makhoul stated that there is increased risk of spontaneous preterm birth in the previous abortion cases.⁹¹

Mean birth weight of newborns delivered in cases (2.59 ± 0.659 kg) was approximately similar to controls (2.63 ± 0.573 kg). The difference between them was statistically not significant ($p=0.455$). In many of the studies, like Ufaque Muzaffar's study having incidence of low birth weight of 9.2% in case group, there was significant association between mean birth weight of new born in case group and control group.⁸⁵ Reason behind discrepancy may be ours being tertiary care centre, effective ANC and early pick up of IUGR case is done.

In Postpartum period there were 11 cases with post partum complications like PPH, 168 out of 179 subjects. Whereas in controls there were only 8 with complications out of 189 subjects

and rest 181 were uneventful. Here we observe that, 11 subjects from case group and 8 subjects from control were having postpartum hemorrhage. The p-value is 0.407; this means that, PPH was significantly associated with past history of spontaneous abortion. In Jing Yang's study done in 2017, there was similar higher incidence of PPH noted in previous history of spontaneous abortion cases.⁹²

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Table 1; Fig. 1: Age wise distribution of study samples; Bar diagram representing age wise distribution among study subjects

Table 2: Outcome in previous pregnancy

Table 3: Hyperemesis among study subjects

Table 4: Threatened abortions among study subjects

Fig. 2: Pie diagram showing incidence of threatened abortion in cases and controls

Fig. 3: Pie diagram representing incidence of abortions in case group

Fig. 4: Pie diagram representing incidence of abortions in control group

Table 5: Incidence of abortions in study subjects

Fig. 5: Bar diagram showing incidence of abortions in study subjects

Table 6: Obstetrical complications among study subjects

Fig. 6: Bar diagram showing obstetrical complications among study subjects

Fig. 7: Bar diagram showing mode of delivery among study subjects

Fig. 8: Pie diagram representing mode of delivery in case group and control group

Fig. 9: Pie diagram depicting gestational age at delivery among study subjects

Fig. 10: Bar diagram showing gestational age at delivery among study subjects

Table 7: Gestational age at delivery among study subjects

Table 8: Incidence of PPH among study subjects

Table 9, Fig. 11: Bar diagram depicting birth weight of new borns among study subjects