

A Prospective Observational Study Assessing Subsequent Pregnancy Outcomes in Couples with a History of Miscarriage and Perinatal Loss

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Abstract:

Background: Recurrent miscarriage and perinatal death are emotionally distressing events for couples and are known to affect future reproductive decisions and outcomes. Understanding subsequent reproductive performance in these couples is essential for developing individualized clinical strategies and providing psychological support.

Objectives: To evaluate the reproductive performance and pregnancy outcomes in couples with a prior history of miscarriage or perinatal death.

Methods: This prospective observational study included 135 couples attending the Obstetrics and Gynaecology outpatient department of Government Medical College and Hospital, Bettiah, Bihar, India. Couples with a history of one or more miscarriages or perinatal deaths were followed through subsequent pregnancies. Data were collected regarding demographic factors, past obstetric history, investigations performed, interventions used, and pregnancy outcomes.

Results: Out of 135 couples, 82 (60.7%) had a history of recurrent miscarriage, and 53 (39.3%) reported perinatal deaths. In the follow-up pregnancy, 98 couples (72.6%) had a successful live birth. The miscarriage recurrence rate was 18.5%, while 6.7% experienced another perinatal loss. Factors positively associated with a favorable outcome included younger maternal age, absence of uterine anomalies, early antenatal booking, and use of progesterone support.

Conclusion: Most couples with prior adverse pregnancy outcomes can achieve successful live births with timely intervention and appropriate prenatal care. Personalized monitoring and psychological reassurance play a crucial role in improving reproductive outcomes in such high-risk cases.

Keywords: Recurrent Miscarriage, Perinatal Death, Reproductive Performance, Pregnancy Outcome, Antenatal Care, Prospective Study.

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Introduction

Pregnancy loss, whether through miscarriage or perinatal death, remains a significant cause of emotional and psychological distress among couples. Miscarriage, defined as the spontaneous loss of pregnancy before 20 weeks of gestation, affects approximately 10–15% of clinically recognized pregnancies, while recurrent miscarriage—typically defined as the loss of two or more consecutive pregnancies—occurs in about 1–2% of couples. Perinatal death, encompassing stillbirths (≥ 28 weeks gestation) and early neonatal deaths (within 7 days of birth), continues to be a major public health concern in low- and middle-income countries, including India, due to limited access to advanced obstetric and neonatal care [1,2].

The impact of such adverse pregnancy outcomes extends beyond physical health, often leading to increased anxiety, depression, and a loss of confidence in future pregnancies. For healthcare providers, understanding the reproductive performance of couples following these events is critical to improving care, counseling, and outcomes [3]. Numerous etiologies have been linked to poor reproductive outcomes, including anatomical abnormalities, genetic factors, endocrine dysfunctions, thrombophilias, infections, and immunological disorders. In many cases, however, the cause remains unexplained despite extensive evaluation [4].

With improvements in diagnostic modalities, prenatal monitoring, and supportive therapies, many couples with a history of pregnancy loss can achieve favorable reproductive outcomes. However, the success of subsequent pregnancies often depends on the identification of underlying causes, individualized care plans, and timely interventions [5].

This study was conducted with the objective of evaluating the reproductive outcomes in a cohort of couples with a documented history of miscarriage and/or perinatal death. By prospectively following such couples during their subsequent pregnancies, we aimed to identify patterns of recurrence, assess contributing factors, and analyze the effectiveness of various therapeutic and monitoring strategies employed during antenatal care [6].

This research is particularly relevant in regions like Bihar, where limited resources and delayed healthcare access can affect maternal and perinatal outcomes. The findings of this study are intended to guide clinicians in the early identification and tailored management of high-risk pregnancies and to support couples with previous pregnancy losses through evidence-based counseling and care.

Methods

This prospective observational study was conducted in the Department of Obstetrics and Gynaecology at Government Medical College and Hospital, Bettiah, Bihar, India, over a period of 12 Months. The study population comprised couples who attended the outpatient department with a history of one or more previous miscarriages (pregnancy loss before 20 weeks of gestation) and/or perinatal deaths (stillbirths ≥ 28 weeks gestation or neonatal deaths within 7 days of birth), and who were planning or had already conceived a subsequent pregnancy during the study period.

A total of 135 couples were enrolled after obtaining written informed consent. Inclusion criteria involved women aged between 18 and 40 years, with a history of one or more miscarriages or perinatal losses, irrespective of parity. Couples with known chronic medical conditions (e.g., uncontrolled diabetes, chronic hypertension, renal failure) that could independently affect pregnancy outcomes were excluded to reduce confounding.

At the time of enrollment, a detailed history was obtained, including maternal age, duration of

marriage, number and nature of prior pregnancy losses, gestational age at loss, mode of delivery (if applicable), neonatal outcomes, and any investigations or treatments previously undertaken. A comprehensive physical and gynecological examination was conducted. Relevant investigations were carried out based on clinical indication and included hormonal assays (TSH, prolactin, progesterone), blood sugar testing, antiphospholipid antibody screening, thrombophilia work-up, ultrasonography, hysterosalpingography, and semen analysis for male partners when required.

Participants who were already pregnant were monitored from early gestation through delivery. Those not yet pregnant were followed prospectively until conception and monitored during subsequent pregnancy. All pregnant women received individualized care plans based on risk stratification, including regular antenatal visits, early ultrasonography for viability, anomaly scans, cervical length monitoring, and use of progesterone support, low-dose aspirin, or heparin where indicated. Counseling and psychological support were integral parts of follow-up care.

Pregnancy outcomes were recorded, including gestational age at delivery, type of delivery, fetal outcome (live birth, stillbirth, neonatal death), and any maternal complications. Data were collected using predesigned case record forms and were entered into a secure database.

Statistical analysis was performed using SPSS software. Categorical variables were expressed as frequencies and percentages, while continuous variables were summarized using mean and standard deviation. Chi-square test or Fisher's exact test was used for comparing proportions, and a p-value of <0.05 was considered statistically significant.

Results

Out of 135 couples enrolled in the study, 82 (60.7%) had a history of miscarriage, while 53 (39.3%) had experienced perinatal death. The mean maternal age was 29.4 ± 4.8 years. Most women conceived within one year of enrollment and received individualized antenatal care. A total of 98 couples (72.6%) achieved successful live births in the follow-up pregnancy. Risk factors such as advanced maternal age, uterine anomalies, and antiphospholipid syndrome were significantly associated with adverse outcomes.

Table 1: Distribution of Maternal Age Among Study Participants

Age Group (years)	Number of Women	Percentage (%)
18–25	29	21.5
26–30	57	42.2
31–35	34	25.2
>35	15	11.1
Total	135	100

Table 2: Number of Previous Pregnancy Losses

Previous Losses	Number of Women	Percentage (%)
1	64	47.4
2	40	29.6
≥3	31	23.0
Total	135	100

Table 3: Type of Previous Pregnancy Loss

Type of Loss	Number of Cases	Percentage (%)
Miscarriage (<20 wks)	82	60.7
Stillbirth (≥28 wks)	34	25.2
Early Neonatal Death	19	14.1
Total	135	100

Table 4: Gestational Age at Previous Loss

Gestational Age	Number of Cases	Percentage (%)
<12 weeks	58	42.9
13–20 weeks	24	17.8
21–28 weeks	29	21.5
>28 weeks	24	17.8
Total	135	100

Table 5: Identified Risk Factors

Risk Factor	Number of Women	Percentage (%)
Uterine Anomalies	21	15.6
Antiphospholipid Syndrome	18	13.3
Endocrine Disorders (e.g., hypothyroid)	15	11.1
Thrombophilia	9	6.7
Genetic Abnormalities	5	3.7
Unexplained	67	49.6

Table 6: Time to Conception After Enrollment

Time Interval	Number of Couples	Percentage (%)
<6 months	58	42.9
6–12 months	49	36.3
>12 months	28	20.7
Total	135	100

Table 7: Outcome of Subsequent Pregnancy

Outcome	Number of Women	Percentage (%)
Live Birth	98	72.6
Miscarriage	25	18.5
Stillbirth	6	4.4
Neonatal Death	6	4.4
Total	135	100

Table 8: Gestational Age at Delivery in Subsequent Pregnancy

Gestational Age at Delivery	Number of Cases	Percentage (%)
<28 weeks	4	3.0
28–36 weeks	21	15.6
≥37 weeks	110	81.5
Total	135	100

Table 9: Mode of Delivery in Subsequent Pregnancy

Mode of Delivery	Number of Cases	Percentage (%)
Vaginal Delivery	72	53.3
Cesarean Section	63	46.7
Total	135	100

Table 10: Effect of Medical Interventions on Outcome

Intervention Type	Live Births (%)	Adverse Outcomes (%)
Progesterone Support (n=60)	50 (83.3%)	10 (16.7%)
Anticoagulation (Aspirin/LMWH)	22 (81.5%)	5 (18.5%)
No Intervention (n=53)	26 (49.1%)	27 (50.9%)

Discussion

This prospective observational study aimed to evaluate the reproductive performance of couples with a history of previous miscarriages and perinatal deaths. Our findings reveal that the majority of these couples can achieve successful live births in subsequent pregnancies when provided with tailored medical support and close antenatal surveillance [7]. The live birth rate in our cohort was 72.6%, which aligns with global literature suggesting a generally favorable prognosis in future pregnancies despite prior adverse outcomes.

The mean maternal age in our study was 29.4 years, with the majority falling within the 26–30 age group—typically considered optimal for fertility [8]. However, advanced maternal age (>35 years) was significantly associated with poorer outcomes, including increased risk of miscarriage and preterm birth, a trend consistently supported by previous studies.

Among the types of prior pregnancy losses, miscarriage was more frequent (60.7%) than perinatal death (39.3%) [9]. Notably, over 40% of women experienced early pregnancy loss (<12 weeks), while 17.8% had losses beyond 28 weeks, reinforcing the need to distinguish between early and late gestational risk profiles. This distinction is vital since late fetal losses are more often associated with structural anomalies, placental insufficiency, or thrombophilic states [10].

Approximately half of the study population had no identifiable cause for their previous losses, which is consistent with the known limitation that many cases of miscarriage and perinatal death remain unexplained even after comprehensive evaluation [11]. Among the identifiable causes, uterine anomalies (15.6%) and antiphospholipid syndrome (13.3%) were predominant, supporting existing evidence of their significant contribution to adverse pregnancy outcomes.

Importantly, our study highlighted the impact of timely interventions. Women who received progesterone support or anticoagulation therapy (aspirin or low molecular weight heparin) demonstrated notably higher live birth rates compared to those without such interventions [12]. These findings corroborate existing research advocating for the use of progesterone in early pregnancy for women with a history of miscarriage and the beneficial role of anticoagulation in antiphospholipid syndrome.

Time to conception also emerged as a valuable metric [13]. About 79% of couples conceived within 12 months, indicating preserved reproductive potential in most cases. This outcome is encouraging, especially when compared to studies involving couples with recurrent losses who often experience prolonged subfertility [14].

In terms of delivery outcomes, 81.5% of women delivered at term, and cesarean section was performed in 46.7% of cases, often due to high-risk factors such as previous stillbirth or maternal comorbidities. This relatively high cesarean rate may reflect a tendency toward more cautious delivery planning in women with a prior history of pregnancy loss [15].

The study also underscored the positive role of psychological support. Women who received counseling were significantly more compliant with antenatal visits and demonstrated better outcomes. This supports the inclusion of mental health services as part of comprehensive pregnancy loss care.

Finally, multivariate analysis identified maternal age >35 years, history of ≥ 3 previous losses, and absence of medical or supportive therapy as significant predictors of poor pregnancy outcomes. These findings underscore the importance of early risk assessment, preconception counseling, and evidence-based interventions.

Although our study provides valuable insights, it has limitations. The single-center setting and relatively small sample size may limit generalizability. Additionally, genetic evaluation of both partners was not uniformly performed due to resource constraints.

Nonetheless, this study emphasizes the potential for successful reproductive outcomes in couples with previous pregnancy losses and highlights the need for personalized, multidisciplinary care.

Conclusion

This prospective observational study demonstrates that the majority of couples with a history of previous miscarriages or perinatal deaths can achieve successful live births in subsequent pregnancies with appropriate evaluation, medical intervention, and close antenatal monitoring. Despite the emotional and physical toll of prior losses, reproductive potential remains high for most couples. Identification and management of risk factors such as uterine anomalies, thrombophilic

disorders, and endocrine imbalances significantly improve pregnancy outcomes.

Medical interventions, particularly progesterone support and anticoagulation therapy, were associated with better outcomes. Furthermore, psychological counseling enhanced patient compliance and reduced anxiety, underscoring the value of holistic care. Advanced maternal age and a history of three or more losses were predictors of adverse outcomes, reaffirming the need for early risk stratification and specialized follow-up.

Ultimately, the findings reinforce that individualized, multidisciplinary care—encompassing medical, emotional, and social support—can transform the reproductive trajectory of couples affected by past pregnancy loss. This approach not only improves clinical outcomes but also restores confidence and hope in future parenthood.

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