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Original Research Article

Pregnancy Outcomes in Women with Polycystic Ovary Syndrome: A Prospective Comparative Study from a Tertiary Care Center

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Conflict of interest: Nil

Abstract:

Background: Polycystic ovary syndrome (PCOS) is a prevalent endocrine disorder among reproductive-aged women and is frequently associated with metabolic dysfunction and adverse obstetric outcomes. Despite global evidence, regional prospective data from Eastern India remain limited. This study aimed to evaluate maternal and obstetric outcomes in pregnant women with PCOS compared to women without PCOS.

Methods: This prospective comparative study was conducted in the Department of Obstetrics and Gynecology at Patna Medical College and Hospital between January 2025 and September 2025. A total of 120 antenatal women were enrolled, including 60 women diagnosed with PCOS according to Rotterdam criteria and 60 age-matched controls. Participants were followed from early pregnancy until delivery. Primary outcomes included gestational diabetes mellitus (GDM), pregnancy-induced hypertension (PIH), spontaneous abortion (SAB), preterm birth, and mode of delivery. Statistical analysis was performed using SPSS version 25.

Results: Women with PCOS demonstrated a significantly higher prevalence of overweight and obesity. The incidence of GDM (20% vs 8%), PIH (25% vs 13%), and preterm delivery (30% vs 15%) was notably higher in the PCOS group. Cesarean section rates were also increased among women with PCOS (65% vs 40%).

Conclusion: PCOS is associated with a substantially increased risk of adverse pregnancy outcomes. Pregnancies complicated by PCOS should be managed as high-risk, with early screening and vigilant antenatal monitoring to optimize maternal and neonatal outcomes.

Keywords: PCOS, Gestational Diabetes Mellitus, Pregnancy Induced Hypertension, Spontaneous Abortion, Preterm Delivery.

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Introduction

Polycystic ovary syndrome (PCOS) is one of the most frequently encountered endocrine disorders in women of reproductive age, affecting approximately 6–15% of this population worldwide [1]. The syndrome is characterized by ovulatory dysfunction, hyperandrogenism, and polycystic ovarian morphology as defined by the Rotterdam consensus criteria [4].

Beyond reproductive dysfunction, PCOS is strongly associated with insulin resistance, central obesity, dyslipidemia, and chronic low-grade inflammation. These metabolic abnormalities are believed to contribute to adverse pregnancy outcomes, including gestational diabetes mellitus (GDM), hypertensive disorders of pregnancy, miscarriage, and preterm birth [2,3,8].

While several international studies have documented these associations, prospective hospital-based evidence from Eastern India remains scarce. Therefore, this study was undertaken at Patna Medical College and Hospital to evaluate pregnancy outcomes in women with PCOS compared to non-PCOS pregnant women.

Materials and Methods

Study Design and Setting: This was a prospective observational comparative study conducted over one year (January 2025–September 2025) at Patna Medical College and Hospital.

Study Population: A total of 120 antenatal women aged 18–40 years were included:

- **Group A (PCOS group):** 60 pregnant women diagnosed with PCOS prior to conception or in early pregnancy as per Rotterdam criteria [4].
- **Group B (Control group):** 60 age-matched pregnant women without PCOS.

Inclusion Criteria

- Singleton pregnancy
- Confirmed gestation in first trimester
- Willingness for follow-up until delivery

Exclusion Criteria

- Pre-existing diabetes mellitus
- Chronic hypertension
- Thyroid disorders
- Multiple gestation
- Other endocrine or systemic disorders

Data Collection

Detailed demographic and clinical information was recorded, including:

- Maternal age
- Body mass index (BMI)
- Parity
- Mode of conception
- Menstrual history
- Previous obstetric history

Participants were monitored through routine antenatal visits until delivery.

Outcome Definitions

- **Gestational Diabetes Mellitus (GDM):** Diagnosed using 75 g OGTT with 2-hour plasma glucose ≥140 mg/dL [9].
- **Pregnancy-Induced Hypertension (PIH):** Blood pressure ≥140/90 mmHg after 20 weeks of gestation [10].
- **Preterm Birth:** Delivery before 37 completed weeks [11].
- **Spontaneous Abortion (SAB):** Pregnancy loss before 20 weeks gestation [12].

Statistical Analysis: Data were analyzed using SPSS version 25. Categorical variables were compared using the chi-square test. A p-value <0.05 was considered statistically significant.

Results

Demographic Characteristics: Women in the PCOS group had a significantly higher proportion of BMI ≥25 kg/m² compared to controls. Advanced maternal age (>30 years) was more frequently observed in the PCOS group.

Maternal Complications

Complication	PCOS (n=60)	Control (n=60)
GDM	12 (20%)	5 (8%)
PIH	15 (25%)	8 (13%)
Preterm Birth	18 (30%)	9 (15%)
SAB	4 (6.6%)	2 (3.3%)

Women with PCOS exhibited nearly double the incidence of GDM and preterm birth compared to controls.

Mode of Delivery

Mode of Delivery	PCOS	Control
Vaginal	20 (33%)	36 (60%)
Cesarean	39 (65%)	24 (40%)

The cesarean section rate was significantly higher among women with PCOS.

Discussion

The findings of this study demonstrate a strong association between PCOS and adverse obstetric outcomes. The elevated rate of gestational diabetes observed in the PCOS group may be attributed to underlying insulin resistance and metabolic dysregulation inherent to the syndrome [7,8].

Hypertensive disorders were also more common among PCOS women, consistent with previous studies reporting endothelial dysfunction and metabolic syndrome as contributing factors [13]. Additionally, the higher incidence of preterm delivery aligns with findings from international meta-analyses [3].

The increased cesarean section rate in PCOS pregnancies may reflect higher obstetric complications, failed induction, or fetal distress, as previously documented [6].

Overall, these results reaffirm that PCOS significantly influences pregnancy outcomes and warrants specialized antenatal care.

Limitations

- Single-center study

- Moderate sample size
- PCOS phenotypes were not separately analyzed
- Neonatal metabolic parameters were not extensively evaluated

Conclusion

Pregnant women with PCOS are at increased risk for:

- Gestational diabetes mellitus
- Pregnancy-induced hypertension
- Preterm delivery
- Cesarean section

These findings underscore the need for early metabolic screening, strict antenatal surveillance, and multidisciplinary management in PCOS pregnancies.

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