

## OBSTETRIC OUTCOME IN PREGNANT WOMEN WITH POLYCYSTIC OVARY SYNDROME AT LALADED HOSPITAL A TERTIARY CARE MATERNITY HOSPITAL

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### ABSTRACT

Polycystic ovary syndrome (PCOS) is one of the most common endocrine disorders in women of childbearing age. The prevalence of PCOS is 3%–7% in the general population<sup>1</sup> and might be as high as 20% in women presenting with infertility<sup>2</sup> Rotterdam criteria most widely accepted requires the presence of two of the following<sup>3</sup> oligo/anovulation, clinical or biochemical signs of hyperandrogenism, polycystic ovaries on USG. **Aims and objective:** To look for obstetric outcome in pregnant women with PCOS in terms of: Abortion, Development of GDM, PIH, Preterm Delivery, Perinatal outcome. Study included 270 patients among which 54 were selected as (study group) and 216 as control after proper selection Present study compares the outcome of pregnancy in women with PCOD in terms of abortion, GDM, PIH, preterm delivery and perinatal outcome with those pregnant women who do not have PCOD. **Result:** The mean age of our study group pregnant with PCOS was 27.2±2.19 years and of control 27.2±2.18 years. There were 44 (77.8%) Primi, in study group and 168 (77.8%) in control group. While as there were 12 (22.2%) multi parous in study group and 48 (22.2%) in control group. In the study group, 31 (57.4%) were in first trimester, 31.5 (17%) in second trimester and 6 (11.1%) in third trimester, while as in control group, there were 124 (57.4%), 68 (31.5) and 24 (11.1%) in their first, second and third trimester respectively. In a total of 54 patients 12 (22.2%) had GDM while in control group among a total of 216 patients 17 (7.9%) had GDM. 6 (11.1%) in study group had pregnancy induced hypertension, In control group, 4 (1.9%) developed PIH. 9 (16.7%) patients had abortion in study group while 31 (14.4%) women in control group had abortion. Preterm delivery was observed in 10 (18.5%) patients in PCOS group while as in control group preterm delivery was present in 16 (7.4%) patients. 23 (42.6%) women in PCOS group delivered their babies through caesarean section while in control group 53 (24.5%) . 11 (20.4%) of neonates born by women in PCOS group were admitted in NICU while 17 (7.9%) neonates of control group .In PCOS group there was 1 (1.9%) perinatal mortality while in control group there was 2 (0.9%) perinatal mortality. Three (5.6%) neonates born by women with PCOS had Apgar score of <7, while as 9 (4.2%) in control group had Apgar score <7. **Conclusion:** This present study confirms the higher association of pregnancy complications like abortion, preterm delivery, GDM, PIH, increased caesarean section rate in pregnant women with PCOS compared with pregnant women without PCOS. It is necessary to establish guidelines for supervision during pregnancy and parturition to prevent these complications.

**KEYWORDS:** hyperandrogenism, polycystic ovaries on USG.

Polycystic ovary syndrome (PCOS) is one of the most common endocrine disorders in women of childbearing age. The prevalence of PCOS is 3%–7% in the general population,<sup>[1]</sup> and might be as high as 20% in women presenting with infertility.<sup>[2]</sup> Rotterdam criteria most widely accepted requires the presence of two of the following.<sup>[3]</sup>

1. Oligo/anovulation

2. Clinical or Biochemical signs of Hyperandrogenism

3. POLycystic ovaries on USG (presence of 12 or more follicles in each ovary measuring 2-9mm in diameter and/or increased ovarian volume >10ml. one ovary fitting this definition is sufficient to define PCOD on USG).<sup>[4]</sup>

4. Other entities that could cause similar findings such as congenital adrenal hyperplasia, androgen secreting tumours, Cushing syndrome, thyroid

dysfunction and hyperprolactinaemia are excluded.<sup>[5,6]</sup>

The most common features of PCOS are anovulation, clinical or laboratory evidence of increased androgen levels, and polycystic ovaries on ultrasonography. Clinical manifestations of PCOS are menstrual irregularity-oligomenorrhoea or amenorrhoea (Oligomenorrhoea defined as menstrual bleeding occurring more than 35 days apart and which remains constant in frequency), hirsutism, acne, androgen dependent alopecia, abdominal obesity, hypertension and infertility.<sup>[7]</sup>

Although the prevalence of PCOS and clinical symptoms are known, the exact pathogenesis of PCOS is not fully recognized yet. It is commonly believed that insulin resistance, hyperandrogenism and obesity play a significant role in the pathophysiologic process of PCOS.<sup>[8,9]</sup> Insulin resistance is universally accepted as one of the key biochemical features of PCOS and the resultant hyperinsulinemia is associated with ovarian hypersecretion of androgen by theca cells that lead to hyperandrogenism.<sup>[10,11]</sup> Obesity, a characteristic of 60–80% of PCOS patients, has an additive effect on features of PCOS such as insulin resistance, hyperandrogenism, infertility, hirsutism and pregnancy complications.<sup>[12]</sup> The definite phenotype of PCOS (different combinations of oligo/anovulation, hyperandrogenism, polycystic ovaries), and the extent of obesity in PCOS patients influences the level of insulin resistance.<sup>[13,14]</sup> Insulin resistance in non-pregnant and pregnant PCOS patients has been demonstrated in many reports.<sup>[15,16]</sup> Furthermore, the interaction of insulin resistance, hyperandrogenism and obesity results in an increased risk of diabetes mellitus type 2 (DM2), metabolic syndrome (MS), cardiovascular diseases (CVD), pregnancy loss and late pregnancy complications (Preeclampsia, Gestational Diabetes). This indicates that PCOS is a chronic disease that impacts women across the lifespan.<sup>[17]</sup>

Women with PCOS tend to require ovulation induction or assisted reproductive technology (ART) in order to become pregnant and this treatment often results in an increased rate of multiple births.<sup>[18,19]</sup> Now-a-days a growing body of evidence points to a high prevalence of pregnancy complications in PCOS women. PCOS is not only related to metabolic abnormalities, menstrual irregularity and infertility, but is becoming increasingly associated with problems of gestational diabetes (GDM), pregnancy induced hypertension, Preeclampsia, Premature delivery rate, low birth weight, high caesarean section rate and admission to NICU. These are all considered to be adverse pregnancy outcomes of PCOS during pregnancy.<sup>[20,21,22]</sup>

The elevated risk for adverse obstetric complication that was observed in women presenting with PCOS varied

widely depending on different phenotypes and features of PCOS.<sup>[23]</sup>

### AIMS AND OBJECTIVE

To look for obstetric outcome in pregnant women with PCOS in terms of:

1. Abortion
2. Development of GDM
3. PIH
4. Preterm Delivery
5. Perinatal outcome.

### MATERIALS AND METHOD AND STUDY DESIGN

This is a comparative study which was conducted in the Post-graduate Department of Gynaecology and Obstetrics, Government Lalla Ded Hospital an associated hospital of Government medical college, Srinagar which is the sole tertiary care referral centre in the valley.

This was a hospital based comparative study conducted over a period of one and a half years after obtaining institutional ethical committee approval.

#### Inclusion Criteria

All PCOS patients who are pregnant irrespective of gravidity and parity.

#### Exclusion Criteria

- Women with obesity other than PCOS.
- Twin Pregnancy.
- Women with Pre-existing DM or Hypertension

Subjects who had a diagnosis of PCOS based on Rotterdam Criteria (2003) were included in the study irrespective of natural or assisted conception. Subjects who had a two step approach to screening for gestational diabetes were included in the study. An initial screen was performed by measuring the 2 hour glucose level after a 75 gm oral Glucose load. The 3 hour oral glucose tolerance test (GTT) was performed if the screening level is >140 mg/dl. Oral glucose tolerance test was done in second trimester (22-28 weeks). Gestational diabetes mellitus (GDM) was defined as two or more abnormal blood glucose level on a 3 hour GTT (Fasting > 95 mg/dl, 1 hour level > 180 mg/dl 2 hour level > 155 mg/dl, 3 hour level > 140 mg/dl. Pregnancy induced hypertension (PIH) was defined as BP  $\geq$  140/90 mmHg after 20 weeks gestation without proteinuria and with normal blood pressure prior to pregnancy. Spontaneous abortion was defined as a pregnancy failing to reach 20 full weeks of gestation excluding losses due to ectopic pregnancy or induced Abortion. Preterm Delivery was defined as delivery occurring between 22 and 37 weeks of the gestational age.

#### Control Group

- Pregnant women with no PCOS history.
- Matched according to age, trimester, parity

- Taken in a ratio of 1:4 (for each case 4 controls will be selected).

Study included 270 patients among which 54 were selected as cases (study group) and 216 as control after proper selection as per inclusion and exclusion criteria. Present study compares the outcome of pregnancy in women with PCOD in terms of abortion, GDM, PIH, preterm delivery and perinatal outcome with those pregnant women who do not have PCOD.

## RESULT

The mean age of our study group pregnant with PCOS was  $27.2 \pm 2.19$  years and of control it was  $27.2 \pm 2.18$  years. There were 44 (77.8%) Primi,s in study group and 168 (77.8%) in control group. While as there were 12 (22.2%) multi parous women in study group and 48 (22.2%) in control group. In the study group, 31 (57.4%) were in first trimester, 31.5 (17%) were in second trimester and 6 (11.1%) were in third trimester, while as in control group, there were 124 (57.4%), 68 (31.5) and 24 (11.1%) in their first, second and third trimester respectively. In a total of

54 patients 12 (22.2%) had GDM while in control group among a total of 216 patients 17 (7.9%) had GDM. Six (11.1%) in study group had pregnancy induced hypertension, while 48 (88.9%) were normotensive women. In control group, 4 (1.9%) developed PIH while as 212 (98.1%) remained normotensive. Nine (16.7%) patients had abortion in study group while 31 (14.4%) women in control group had abortion. Preterm delivery was observed in 10 (18.5%) patients in PCOS group while as in control group preterm delivery was present in 16 (7.4%) patients. Twenty three (42.6%) women in PCOS group delivered their babies through caesarean section while in control group 53 (24.5%) women delivered their babies through caesarean section. Eleven (20.4%) of neonates born by women in PCOS group were admitted in NICU while 17 (7.9%) neonates of control group were admitted in NICU. In PCOS group there was 1 (1.9%) perinatal mortality while in control group there was 2 (0.9%) perinatal mortality. Three (5.6%) neonates born by women with PCOS had Apgar score of  $<7$ , while as 9 (4.2%) in control group had Apgar score  $<7$ .

**Table 1:**

S.NO	Parameters	Pcos Cases (n 54)	Controls (n 216)	P value
1	Mean age distribution	$27.2 \pm 2.19$	$27.2 \pm 2.14$	
2	Primi	77.8% (n 42)	77.7% (n 168)	
3	BMI	$22.3 \pm 1.44$	$22.6 \pm 1.72$	
4	G D M	22.2 % (n 12)	7.9 % (n 17)	0.001
5	PIH	11.1 % (n 6)	1. (n 4)	0.005
6	Preterm delivery	18.5 % (n 10)	7.4 (n 16)	0.013
7	Abortion	16.7 % ( n 7)	14.4 (n 31)	0.668
8	Caesaern	42.6 % (n 23)	24.5 ( n 53 )	0.008
9	Apgar score $\leq 7$	5.6 % (n 3)	4.2 ( n 9)	0.941
10	Admission to NICU	20.4 9(n 11)	7.9 (n 17)	0.006
11	Perinatal Moritilty	1.9(n 1)	0.9(n2)	0.489

## DISCUSSION

In the present study incidence of GDM among study group was 22.2% and among control group was 7.9%. This is three times more than control group. These observations are in consonance with study of **M. Mikola et al (2001)**.<sup>[31]</sup> and **Bjercke S et al (2002)**.<sup>[32]</sup> A possible explanation for the increased incidence risk of GDM in women with PCOS is altered insulin metabolism which is partly independent of body weight. Early alteration of insulin sensitivity and compensatory insulin hypersecretion constitute specific risk factors in PCOS patients for development of abnormalities of glucose tolerance (**Paradissi et al. 1998**).<sup>[16]</sup> In the present study, 11.1% in PCOS group had PIH and in control group 1.9% had PIH with p value of 0.05%. These observations are in consonance with the study of **Bjercke S et al (2004)**.<sup>[32]</sup> In the present study preterm deliveries were present in 18.5 % of patients with PCOS while it was present in 7.45 patients in control group with p value of

0.013. These observations are in consonance with the study of **Nathalie Roos et al (2011)**.<sup>[51]</sup> and with **M Mikola et al (2001)**.<sup>[31]</sup> In the present study 16.7% patients had abortions in PCOS group b and 14.4% in control group had abortion. These observations are in consonance with **N.A Bagegni et al (2015)**.<sup>[52]</sup> In the present study 42.6% women in PCOS group delivered their babies through caesrean section and in control group 24.5% women delivered their babies through caesrean section. 57.7% women in study group delivered vaginally and 75.5% women in control group delivered vaginally. This study is in consonance with the study of **Jun Z Qin et al (2013)**.<sup>[47]</sup> In the present study 20.4% of neonate born by women in PCOS group were admitted in NICU and 7.9% of neonates born by women without PCOS were admitted in NICU. In PCOS group there was 1.9% perinatal mortality and 0.9% in control group. These observations are in consonance with the study of **Bjercke S et al (2002)**.<sup>[32]</sup> and **C. M. Bacomsa et al (2006)**.<sup>[35]</sup>

**CONCLUSION**

This present study confirms the higher association of pregnancy complications like abortion, preterm delivery, GDM, PIH, increased cesarean section rate in pregnant women with PCOS compared with pregnant women without PCOS. It is necessary to establish guidelines for supervision during pregnancy and parturition to prevent these complications.

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