Global Conference on Multidisciplinary Research and Innovation
Hosted Online from Berlin, Germany
Date: 2nd March, 2026
Website: https://econferencia.com

COMPARISON OF FERTILITY RESTORATION METHODS IN WOMEN WITH POLYCYSTIC OVARY SYNDROME

Razhabova Gulzoda Oybekovna
Department of Obstetrics, Gynecology and Oncology,
Urgench State Medical Institute, Uzbekistan

Xakimov Xayrullo Ne'matullayevich
Department of Obstetrics, Gynecology and Oncology,
Urgench State Medical Institute, Uzbekistan

Abstract:
Polycystic ovary syndrome (POS) is a leading cause of endocrine infertility. This study evaluates the comparison of conservative, surgical, and combined treatment methods for POS.
Objective: To evaluate the effectiveness of various fertility restoration methods in patients with POS.
Material and Methods: This prospective study included 70 women with POS-related infertility and 20 women in a control group. Clinical, hormonal, metabolic, and ultrasound parameters were analyzed.
Conclusions: A combined approach, including conservative therapy followed by surgery, ensures more sustainable restoration of reproductive function.

Keywords: infertility, polycystic ovary syndrome, laparoscopy, ovulation stimulation.

According to European data, the prevalence of PCOS reaches approximately 15%. Among patients with endocrine infertility, the proportion of women with PCOS is up to 73% [2,8], and in the structure of infertile marriages, this pathology

is detected in 20-22% of cases, occupying 5th-6th place. The high relevance of the problem is due to the significant prevalence of the syndrome and its adverse impact on reproductive function.

It should be emphasized that the effectiveness of treatment for patients with PCOS is determined not so much by the elimination of ovarian morphological changes as by the restoration of ovulatory function and the achievement of pregnancy. Surgical methods are considered a second-line therapy for PCOS. Despite the variety of laparoscopic interventions, their pathogenetic essence lies in the partial disruption of the integrity of ovarian tissue, which leads to a temporary decrease in androgen activity and the restoration of endocrine regulatory mechanisms [2].

The aim of the study was to evaluate the effectiveness of various methods for restoring fertility in patients with PCOS.

Subject and object of the study: 90 women were examined. The prospective study included 70 women with infertility and polycystic ovary syndrome; the control group consisted of 20 women of reproductive age with regular ovulatory cycles. Therefore, women included in the main group were divided into three subgroups depending on the treatment methods used. The first subgroup (A) (n = 25) included patients who achieved an antiandrogen effect by using combined oral contraceptives (COCs) for at least 3 months, followed by ovulation induction.

The second subgroup (B) (n = 20) included patients who, after using COCs for 3–6 months, underwent laparoscopic ovarian drilling surgery.

The third subgroup (C) (n = 25) included patients who underwent laparoscopic drilling surgery without prior preparation. We observed 70 patients with polycystic ovary syndrome (PCOS) aged 22 to 37 years (mean age 31.9 ± 1.4 years) who had suffered from infertility for 1 to 10 years (mean 5.3 ± 1.2 years).

Tubal, cervical, immunological, and male factors of infertility were excluded in all cases.

Research Methods

Women are examined using conventional methods, including anamnesis, complaints, physical examination, and laboratory tests (on days 2-5 of menstruation, FSH, LH, prolactin (PRL), free androgen index (DHEA-S, testosterone), AMH (anti-Müllerian hormone), and UTT are determined.

Glucose metabolism disorders were determined using a glucose tolerance test (GTT). In addition, fasting plasma insulin concentrations were determined. Insulin resistance (IR) criteria were: the I/G index (the ratio of basal insulin levels to basal glucose levels), and the HOMA (Homeostasis Model Assessment) index: basal glucose level (mmol/L) x basal insulin level (μIU/ml) / 22.5. Insulin resistance was considered based on the index of indicators HOMA>2.77.

Ultrasound examination: To determine the condition of the pelvic organs, an ultrasound examination was performed on days 5-7 of the menstrual cycle using a SonoScape 40 (China) with transvaginal monitoring.

Ovarian morphology was simultaneously assessed: antral follicle count (on days 2-3 of the menstrual cycle), capsule thickness, stromal echogenicity, and ovarian volume. Uterine size and endometrial thickness were also assessed.

Study Results:

A comparative analysis of lifestyle factors between the study and control groups revealed statistically significant differences in the incidence of chronic stress ($p = 0.0005$) and eating disorders ($p = 0.0011$). Differences in physical activity levels between the groups were not statistically significant ($p = 0.53$); Table 1.

It should also be noted that women engaged in heavy physical labor had a more severe form of polycystic ovary syndrome (PCOS). This may be due to the relatively increased secretion of adrenal steroid hormones under conditions of physical overexertion. Most women in the study group had a history of significant psychoemotional stress during adolescence and over the past 3-5 years, accompanied by chronic stress. Stress is known to increase the secretion of adrenal steroid hormones, which, in turn, could contribute to the secondary development of PCOS. Women with PCOS experienced infertility, which itself leads to psychoemotional instability and thus exacerbates the disease.

From a diagnostic perspective, the clinical manifestations of PCOS are of particular interest. The clinical manifestations of polycystic ovary syndrome (PCOS) in the women examined can be roughly divided into three main groups: neuropsychiatric changes, including sleep disturbances, irritability, fatigue, and decreased libido; autonomic disturbances, such as unstable blood pressure, edema, and sweating; and metabolic changes, including hirsutism, acne, and decreased ability to lose weight.

An analysis of the selected groups of women revealed that differences in neuropsychiatric disorders between the study and control groups were statistically insignificant. Thus, excitability was observed in 28.6% of women in the study group and 25% of women in the control group ($\chi^2 = 0.001$; $p = 0.975$), sleep disturbances were observed in 21.4% and 15%, respectively ($\chi^2 = 0.10$; $p = 0.751$), and fatigue was observed in 24.3% of women in the study group and 40% in the control group ($\chi^2 = 1.21$; $p = 0.271$). Thus, neuropsychiatric symptoms were comparable between the groups, but there was a tendency toward greater fatigue in the control group.

Autonomic dysfunction was significantly more pronounced in women in the study group. Unstable blood pressure was observed in 64.3% of patients in the

study group, compared with 5% in the control group ($\chi^2 = 19.57$; $p < 0.0001$). Edema was observed in 44.3% of women in the study group and only 10% in the control group ($\chi^2 = 6.47$; $p = 0.011$), while excessive sweating was observed in 37.1% and 5%, respectively ($\chi^2 = 6.20$; $p = 0.013$). These results indicate a statistically significant increase in the frequency of autonomic dysfunction in women in the study group, which may be associated with prolonged stress and endocrine disorders.

Metabolic manifestations of PCOS were also significantly pronounced in the study group. Acne was reported in 82.9% of women in the study group versus only 5% of the control group ($\chi^2 = 38.38$; $p <0.0001$), hirsutism was reported in 85.7% versus 20% of women in the study group ($\chi^2 = 29.58$; $p <0.0001$), and weight loss difficulties were noted in 51.4% of patients in the study group versus only 15% of the control group ($\chi^2 = 6.99$; $p = 0.008$). These data highlight the significant impact of PCOS on the manifestations of hyperandrogen syndrome and metabolic parameters.

Thus, a comprehensive analysis of clinical manifestations shows that neuropsychiatric changes in women in the study group did not statistically differ from those in the control group, but autonomic and metabolic disorders were significantly more pronounced.

Body mass index (BMI) is known to characterize the metabolic changes characteristic of PCOS.

The presented analysis of the hormonal profile revealed significant differences between the study and control groups in a number of key parameters. Specifically, luteinizing hormone (LH) levels were statistically significantly higher in the study group compared to the control group (16.4 ± 1.3 IU/L versus 5.1 ± 1.2 IU/L; $p < 0.001$), indicating significant impairment of the hypothalamic-pituitary regulation of the reproductive system.

Prolactin levels in the study group were also significantly higher than in the control group (499.6 ± 22.1 mIU/L and 321.2 ± 26.4 mIU/L, respectively; $p < 0.001$), indicating the presence of hyperprolactinemia and its potential impact on reproductive function. A similar trend was observed for dehydroepiandrosterone sulfate (DHEA-S) levels, which in the study group exceeded those in the control group by more than 1.8 times (15.22 ± 1.7 mmol/L versus 8.03 ± 1.4 mmol/L; $p < 0.001$), indicating signs of adrenal hyperandrogenism.

Testosterone levels in the study group were also statistically significantly higher compared to the control group (3.8 ± 0.6 nmol/L and 1.9 ± 0.8 nmol/L, respectively; $p < 0.01$), confirming the presence of androgen imbalance in the examined patients. Moreover, the level of anti-Müllerian hormone in the study group was significantly higher than in the control group (4.7 ± 0.9 ng/ml versus 3.2 ± 0.7 ng/ml; $p < 0.05$), reflecting the characteristics of ovarian reserve and ovarian function.

According to our data, the most unfavorable factor in patients with polycystic ovary syndrome (PCOS) is a combination of elevated luteinizing hormone (LH) levels, reflecting insulin resistance associated with increased ovarian volume and contributing to polycystic transformation, and a combination of clinical and laboratory parameters.

These data indicate a synergistic effect of insulin and LH, which, in turn, leads to the development of polycystic ovaries.

Diagnostic criteria for PCOS include echographic features during ultrasound examination. The main manifestations of the disease are increased ovarian volume (over 10 cm^3), the presence of at least 25% hyperplastic stroma, the presence of atretic follicles greater than 10 mm in diameter, and a decrease in the anteroposterior diameter of the uterus.

The anteroposterior diameter of the uterus ranged from 32.0 to 34.0 mm in Group 1 and from 35.0 to 42.0 mm in Group 2, with a statistically significant difference between the groups.

Laparoscopic examination of women with PCOS revealed characteristic features: a pearly-gray color, a smooth, shiny, stretched surface with a characteristic vascular pattern or looped vessels, the presence of subcapsular clear cysts ranging from 0.3 to 2 cm in diameter, and a dense or uniformly thickened capsule.

Sectional examination of the ovaries revealed small clear or yellowish cysts ranging from 0.3 to 2 cm in diameter (usually 10 to 15 cysts per ovary).

The ovaries varied in size, from slightly enlarged (4.5 × 2.5 × 4.5 cm) to significantly enlarged (11.4 × 5.7 × 8.6 cm). In 82.1% of patients, the ovaries were enlarged, while in 17.9%, they were within the normal range (the upper limit of normal ovarian size is 4 × 1.5 × 3 cm). Unilateral enlargement was observed in only 19 patients, while the remaining patients had bilateral enlargement. In 30 patients (66.7%), the ovaries were spherical, and in 15 patients (31.2%), they were oval.

All 45 cases showed five or more characteristic features of PCOS, including enlarged ovaries, a smooth, shiny surface with a vascular pattern on the membrane, a stretched surface, subcapsular cysts, and the presence of small cysts on incision.

In 42 patients (93.3%), no free fluid was detected in the posterior fornix of the uterus. Similar findings on laparoscopic examination indicate the absence of ovulation. It should be noted that despite the different nature of menstrual cycle disorders, the endoscopic appearance of the ovaries in patients with PCOS did not differ.

After treatment, hormonal parameters were re-evaluated only in subgroups A and B of the study group. This is because group C and the control group did not receive any drug therapy.

Subgroups A and B were re-evaluated after a six-month course of treatment for LH, FSH, and blood glucose levels. In women with hyperinsulinemia, blood glucose levels completely normalized.

In women in subgroup A, 9 pregnancies (45%) were recorded within 1 year of treatment, but only 3 of these (12%) resulted in term delivery, while 2 cases (8%) resulted in preterm delivery. Two women (8%) had non-viable pregnancies, and another 2 patients (8%) experienced spontaneous abortion in the early stages. Two women became pregnant again shortly after pregnancy loss. Three patients who had successfully delivered went on to have a second pregnancy: one 40 days after delivery, the second 3.5 months later, and the third 6 months later. Despite the short interval between births, the pregnancy was prolonged in 2 women. In one case, given a history of cesarean section and the onset of pregnancy within 40 days after delivery, the pregnancy was terminated for medical reasons to prevent obstetric complications. In Group B, the total number of pregnancies was 12 (60%). The most favorable outcomes were observed in this group: 9 pregnancies (45%) resulted in term delivery. A non-viable pregnancy was detected in one woman (5%), and a spontaneous miscarriage occurred in two patients (10%). Repeat pregnancies during treatment were recorded in three women (15%), and repeat pregnancies after childbirth were recorded in four patients (20%), demonstrating the high effectiveness of the comprehensive treatment and the restoration of reproductive function.

In Group C, which primarily utilized surgical (laparoscopic) treatment, four pregnancies were recorded (16%). Of these, only two cases (8%) resulted in term delivery. One woman (4%) experienced a spontaneous miscarriage, and one case

(4%) was diagnosed with an ectopic pregnancy. No repeat pregnancies were observed during treatment or after delivery in this group, indicating lower fertility recovery rates compared to groups A and B.

Thus, the best fertility recovery rates were observed in group B, which had the highest rates of pregnancy and term delivery. In group A, reproductive outcomes were less stable, with a higher rate of complicated and terminated pregnancies. Fertility rates remained the lowest in group C, while the control group had the highest rate of favorable pregnancy outcomes.

Conclusion

In women with polycystic ovary syndrome, the effectiveness of surgical treatment without prior endocrine correction was low. Selecting a treatment strategy based on the duration of infertility demonstrated high efficacy. A combined approach to PCOS treatment, including conservative therapy followed by surgery, ensured more stable and long-term fertility recovery compared to surgical treatment alone.

References

1. Adamyan L. V. et al. Clinical guidelines "Polycystic ovary syndrome" // Problems of endocrinology. - 2022. - Vol. 68. - No. 2. - Pp. 112-127.
2. Ivanova A. Yu., Mokhort T. V. Polycystic ovary syndrome: updated recommendations of the 2023 international evidence-based guidelines. - 2024.
3. Matrizaeva G. D., Ikramova Kh. S., Rajabova G. O. To evaluate the cumulative effectiveness of monoovulation stimulation in women with Stein-Leventhal syndrome in different age groups // Tibbiyotda yangi kun1 (29) 2020. P. 273-275
4. Mozheiko L. F., Potockaya A. A. Polycystic ovary syndrome: a modern view of the problem (literature review) // Reproductive health. Eastern Europe. - 2022. - Vol. 12, No. 3. - P. 390-403. - DOI: 10.34883/PI.2022.12.3.010

5. Ryazanova D. E., Ivanova E. G. A modern view on the pathogenesis of polycystic ovary syndrome (literature review) // International scientific journal "Vector of scientific thought. - 2023. - No. 5. – P. 5.
6. Sosnova, E. A., Gracheva, T. S. Results of surgical treatment of polycystic ovary syndrome in women of reproductive age // Archives of Obstetrics and Gynecology named after V. F. Snegirev. - 2023. - Vol. 10, No. 2. - P. 105–111. - DOI: 10.17816/2313-8726-2023-10-2-105-111.
7. Turchinets A. I. et al. Targeted therapy of polycystic ovary syndrome // Medical Council. - 2023. - Vol. 17. - No. 5. - P. 7-13.
8. Matrizayeva G. D, Ikramova X. S, Xaitov A. O. Assistance of quality of life indicators in hormonal infertility in women and determine the value of melatonin in treatment// Research journal of trauma and disability studies. Volume: 01 Issue: 10/ Oct – 2022. ISSN: 2720 - 6866
9. Xie J. et al. The role of lncRNA HUPCOS in androgen metabolism and follicle growth arrest in polycystic ovary syndrome // Cell Biology and Toxicology. – 2025. – T. 41. – No. 1. – P. 105.