Comparison of 5-, 10-, and 15-Point Laparoscopic Ovarian Electrocauterization in Patients With Polycystic Ovarian Disease: a Prospective, Randomized Study

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ABSTRACT

Objective: We compared 12-month pregnancy and live birth rates in patients with polycystic ovarian disease undergoing 5-, 10-, and 15-point laparoscopic ovarian electrocauterization.

Methods: This was a prospective, randomized study performed at the Dabirashrafi Fertility and Endoscopy Research Center, Tehran, Iran. The study included 187 patients with polycystic ovarian disease who were randomly assigned to 3 groups. Group I comprised 67 patients whose ovaries received 5-point electrocauterization. Group II comprised 57 patients whose ovaries received 10-point electrocauterization. Group III comprised 63 patients whose ovaries received 15-point electrocauterization.

Laparoscopic ovarian electrocauterization with a unipolar current was used. The main outcome measures were 12-month pregnancy and live birth rates.

Results: Patients were homogeneous for age, body mass index, and type and duration of infertility. Twenty pregnancies resulted in Group I, with a pregnancy rate of 29.9% (20/67) and a live birth rate of 20.9% (14/57). Eighteen pregnancies resulted in Group II, with a pregnancy rate of 31.6% (18/57), and a live birth rate of 28.1% (16/57). Thirty-three pregnancies resulted in Group III, with a pregnancy rate of 52.4% (33/63), and a live birth rate of 47.6% (30/63). Comparison of Group III with Groups I and II revealed a statistically significant increase in pregnancies (P=0.016) and live birth rates (P=0.004).

Conclusion: We recommend 15-point electrocauterization of ovaries in patients with polycystic ovarian disease.

Key Words: Laparoscopic ovarian electrocauterization, Ovarian drilling, Polycystic ovarian disease.
the senior author of this article. After inserting of an 11-mm trocar intraumbilically, the single laparoscope (Storze, Germany) was passed into the pelvic cavity. Then a 6-mm suprapubic trocar was inserted in the left side. After careful examination of the pelvic cavity, patients with any other abnormality were excluded from the study. Cauterization of ovaries was performed as recommended by Gjoannaess by using a unipolar current (300 W to 400 W, 5 to 6 seconds at each point).

At the end of the operation, 500 mL of ringers lactate solution was left in the pelvic cavity as recommended by Naether et al.

None of the patients had any complications after laparoscopy. After excluding the patients from any other pelvic abnormalities, 187 patients remained (67 in group I, 57 in group II, and 63 in group III). All patients were followed up for 12 months. Twelve-month pregnancy and live birth rates were compared among the 3 groups by using Pearson \(\chi^2\).

Each of the 4 confounding variables (age, BMI, duration of infertility, and percentage of primary infertility) were compared among the 3 groups by using 1-way ANOVA.

**RESULTS**

Table 1 provides a comparison of the age, BMI, duration of infertility, and type of infertility among the 3 groups, with no statistical difference. Table 2 provides a comparison of 12-month pregnancy rates and live birth rates among the 3 groups. Twelve-month pregnancy rates (\(P=0.016\)) and live birth rates (\(P=0.004\)) were statistically different among the 3 groups.

Considering the use of 5 points as the basic method, no significant difference was noted between groups 1 and 2 (\(P=0.835\) for 12-month pregnancy rates and \(P=0.353\) for live birth rates), but both rates in group 3 were significantly better than those in group 1 (\(P=0.009\) for pregnancy rate and \(P=0.001\) for live birth rate).

**DISCUSSION**

In 1984, Gjoannaess introduced the method of ovarian cauterization via laparoscopy, but the ideal number of points of cauterization came into question. Armer et al. used 4 points of ovarian cauterization and stated that ovarian diathermy can initiate regular ovulation in women with polycystic ovaries although the mechanism is uncertain. On the other hand, Neather emphasized the importance of androgen-making tissues. He showed that a decrease in total serum testosterone concentration is proportional to the number of points of cauterization.

However, Armer et al. believe that using more points of ovarian cauterization increases the risk of periadenexal adhesion that could have negative effects on future pregnancies of the patient.

To our knowledge, no prospective, randomized study answers this contradiction. Our study showed that pregnancy rates and, more importantly, live birth rates are significantly higher at 15 points of cauterization compared

**Table 1.**

Comparison of Age, Body Mass Index, Duration of Infertility, and Percent of Primary Infertility Between Groups I, II and III

| Characteristics               | 15 Points (n = 63) | 10 Points (n = 57) | 5 Points (n = 67) | \(P\) Value |
|-------------------------------|-------------------|-------------------|------------------|-------------|
| Age                           | 25.7±3.95         | 25.1±3.91         | 26.61±5.62       | 0.107       |
| BMI                           | 26.69±4.48        | 28.48±4.38        | 27.44±4.62       | 0.98        |
| Duration of infertility       | 4.25±3.59         | 3.96±2.48         | 4.48±3.20        | 0.439       |
| Percent of primary infertility| 76.2%             | 61.4%             | 71.6%            | 0.197       |

**Table 2.**

Shows Comparison of Pregnancy Rate and Live Birth Rate Between Groups I, II and III

| Outcomes                     | 15 Points (n = 63) | 10 Points (n = 57) | 5 Points (n = 67) | \(P\) Value |
|------------------------------|-------------------|-------------------|------------------|-------------|
| 12 months pregnancy rate     | 33 (52.4%)        | 18 (31.6%)        | 20 (29.9%)       | 0.016       |
| Live birth rate              | 30 (47.6%)        | 16 (28.1%)        | 14 (20.9%)       | 0.004       |
with 5 points and 10 points. Because more damage to the ovary could increase the risk of adhesion formation and at the same time result in a greater decrease in androgen-making tissues, our study shows that the decrease in androgen-making tissues is more important. Our previous finding, showing that the rate of adhesion formation after ovarian cauterization is generally low, supports our present findings.

Furthermore, Greenblatt and Casper found no correlation between the degree of ovarian damage and subsequent adhesion formation.

CONCLUSION

In a prospective, randomized study of 187 patients with PCOD, we found that ovarian cauterization of 15 points results in higher pregnancy and live birth rates compared with the rates with cauterization of 5- and 10-points.

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