COMPARATIVE STUDY BETWEEN LAPAROSCOPIC AND ULTRASOUND GUIDED TRANSVAGINAL OVARIAN DRILLING IN POLYCYSTIC OVARY SYNDROME

By
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ABSTRACT

Background: Polycystic ovary syndrome is a heterogeneous clinical syndrome, which has been defined as the association of hyperandrogenism with chronic anovulation in women without specific adrenal and pituitary gland disease.

Objective: To compare the effect of laparoscopic ovarian drilling and ultrasonographic transvaginal ovarian drilling on patient with polycystic ovaries.

Patient and Methods: Forty women with ultrasonographic as well as clinic and/or biochemical findings consistent with PCOs will be recruited into the study from the outpatient infertility clinic at Syed Galal hospital between June 2015 and June 2016. All patients in the study are seeking for treatment of infertility. These patients are randomly divided into two groups; one group has traditional laparoscopic ovarian drilling while the other group has transvaginal ultrasonographic ovarian drilling.

Results: that there was a significant increase in FSH in both groups after treatment, but the improvement was higher in GI.

Conclusion: In this study we found that there was a restoration to normal cycle in both groups with marked improvement in GI than GII in all parameters (ovulation rate and pregnancy rate).

Key words: Polycystic ovary syndrome, gonadotrophines, menstrual disturbances, hyperandrogenism.

INTRODUCTION

Polycystic ovary syndrome is a clinical diagnosis characterized by the presence of two or more of the following features: chronic oligo-ovulation or anovulation, androgen excess and polycystic ovaries. It affects 5 to 10% of women of childbearing age and is the most common cause of an ovulatory infertility in developed countries. Common clinical manifestations include menstrual irregularities and signs of androgen excess such as hirsutism, acne, and alopecia (Sirmans, S. M., & Pate, K. A. 2014).

Polycystic ovary syndrome is a heterogeneous clinical syndrome, which has been defined as the association of hyperandrogenism with chronic anovulation in women without specific adrenal and pituitary gland disease. A family history of polycystic ovary syndrome may be present in a subset of
patients; however, the genetic basis of the syndrome remains unclear. Most often, the age of onset is perimenarchal and it is characterized by the appearance of menstrual disturbances, hirsutism and acne. Polycystic ovary syndrome is also associated with metabolic disturbances, such as obesity and insulin resistance with hyperinsulinemia, for which the pathophysiological role in the development of the syndrome has been recognized (Legro, R. S., et al., 2013).

Medical induction in anovulatory women with PCOs who fail to respond to clomifen citrate becomes complicated; as this involves parenteral administration of gonadotrophines, either human menopausal gonadotrophines (hMG) or pure follicular stimulating hormones (FSH) with or without pituitary down regulation with GnRH-analogue. However, these medications are relatively expensive, require extensive monitoring, and are associated with a significant risk of multiple pregnancy and ovarian hyperstimulation syndrome (Balen, A. H., et al., 2016).

Surgical treatment of anovulation in women with PCOs was introduced by Stein and Leventhal about 25 years before medical treatment was available, they performed bilateral ovarian wedge resection (BOWR) in a series of seven PCOs patients thereby removing one half to three fourths of each ovary. Interestingly, all women menstruated within six days postoperatively and three pregnancies occurred in two of these infertile women. At this stage (BOWR) was the treatment of choice for (BOWR) (Sohn, et al., 2005). Subsequently (BOWR) lost popularity as reported results were variable, with significant relapse rate, a high incidence of postoperative peri-adnexal adhesion formation 10 (Sarnie, A., et al., 2019).

A surgical approach to ovulation induction for PCOs holds many attractive advantages for patients over gonadotropine therapy because of cost in money, time and efforts. This line of therapy is extremely suitable to our patients (Conway, G., et al., 2014).

**PATIENTS AND METHODS**

Forty women with ultrasonographic as well as clinic and/or biochemical findings consistent with PCOs will be recruited into the study from the outpatient infertility clinic at Syed Galal hospital between June 2015 and June 2016. All patients in the study are seeking for treatment of infertility. These patients are randomly divided into two groups; one group has traditional laparoscopic ovarian drilling while the other group has transvaginal ultrasonographic ovarian drilling.

**The inclusion criteria:** All patients have the characteristic PCOs, plus at least one of the following associated symptoms (oligomenorrhea or amenorrhea, hirsutism or acne or obesity) and or endocrine abnormalities. All the patient will be unresponsive to treatment with clomiphene citrate in doses up to 150 mg/day for 5 days for at least 6 months. Others will be treated with FSH or hMG plus hCG and have failed to ovulate. Failure of ovulation will be confirmed by a combination of ultrasound scan and low midluteal phase serum progesterone (<3 ng/ml). All patients will be patent tubes on hysterosalpingography. None of the
patients will receive any hormonal treatment or drugs known to affect endocrine or metabolic parameters.

**Exclusion criteria:** Patients who will refuse the technique. Patients will be excluded from the study if they have other causes of infertility or any pelvic abnormality other than PCOs is evident during laparoscopic examination. Rare causes of hyperandrogenism such as Cushing syndrome, ovarian or adrenal tumors will be ruled out. Women with abnormal thyroid functions will be excluded from the study.

**Statistical analysis of the data:** Recorded data were analyzed using the statistical package for social sciences, version 20.0 (SPSS Inc., Chicago, Illinois, USA). Quantitative data were expressed as mean± standard deviation (SD). Qualitative data were expressed as frequency and percentage.

**RESULTS**

The results of the present study are demonstrated in the following tables and figures.

**Table (1): Comparison between Laparoscopic Ovarian Drilling and Ultrasonographic Ovarian Drilling according to Age, cycle regularity and BMI.**

Using: Independent Sample t-test; p-value >0.05 NS

<table>
<thead>
<tr>
<th>Variables</th>
<th>Laparoscopic Ovarian Drilling (n=20)</th>
<th>Ultrasonographic Ovarian Drilling (n=20)</th>
<th>t-test</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>27.17±3.71</td>
<td>28.29±4.10</td>
<td>1.616</td>
<td>0.143</td>
</tr>
<tr>
<td>Irregular cycles</td>
<td>47.60±15.65</td>
<td>48.19±9.89</td>
<td>0.237</td>
<td>0.758</td>
</tr>
<tr>
<td>Body mass index</td>
<td>26.19±3.94</td>
<td>26.26±3.26</td>
<td>0.113</td>
<td>0.836</td>
</tr>
</tbody>
</table>

**Table (1): Comparison between Laparoscopic Ovarian Drilling and Ultrasonographic Ovarian Drilling according to Duration of infertility, presence of hirsutism and duration of clomid therapy.**

Using: Independent Sample t-test; p-value >0.05 NS

There was higher percentage of hirsutism in group I (40%) than group II (35%) but with no significant statistical difference.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Laparoscopic Ovarian Drilling (n=20)</th>
<th>Ultrasonographic Ovarian Drilling (n=20)</th>
<th>t-test</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration of infertility</td>
<td>5.88±2.88</td>
<td>7.07±3.81</td>
<td>1.654</td>
<td>0.077</td>
</tr>
<tr>
<td>Duration of clomid therapy</td>
<td>8.12±8.43</td>
<td>9.31±2.48</td>
<td>1.739</td>
<td>0.066</td>
</tr>
<tr>
<td>Positive Hirsutism (%)</td>
<td>8 (40%)</td>
<td>7 (35%)</td>
<td>0.160</td>
<td>0.663</td>
</tr>
</tbody>
</table>
Table (2): Comparison between Laparoscopic Ovarian Drilling and Ultrasonographic Ovarian Drilling according to ovarian volume. Using: Independent Sample t-test; p-value >0.05 NS

There was no significant difference between Laparoscopic Ovarian Drilling and Ultrasonographic Ovarian Drilling according to ovarian volume.

<table>
<thead>
<tr>
<th>Ovarian volume</th>
<th>Laparoscopic Ovarian Drilling (n=20)</th>
<th>Ultrasonographic Ovarian Drilling (n=20)</th>
<th>t-test</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>9.60-19.19</td>
<td>10.23-18.24</td>
<td>0.745</td>
<td>0.337</td>
</tr>
<tr>
<td>Mean±SD</td>
<td>12.83±3.80</td>
<td>12.26±2.85</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table (3): Comparison between Laparoscopic Ovarian Drilling and Ultrasonographic Ovarian Drilling according to FSH. Using: Independent Sample t-test; p-value >0.05 NS; *p-value <0.05 S

There was significant difference between Laparoscopic Ovarian Drilling and Ultrasonographic Ovarian Drilling according to After FSH and % improvement.

<table>
<thead>
<tr>
<th>FSH</th>
<th>Laparoscopic Ovarian Drilling (n=20)</th>
<th>Ultrasonographic Ovarian Drilling (n=20)</th>
<th>t-test</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before</td>
<td>4.97±1.41</td>
<td>4.98±1.14</td>
<td>0.116</td>
<td>0.772</td>
</tr>
<tr>
<td>After</td>
<td>7.15±0.84</td>
<td>6.42±1.59</td>
<td>2.562</td>
<td>0.014*</td>
</tr>
<tr>
<td>% improvement</td>
<td>43.94</td>
<td>28.89</td>
<td>2.058</td>
<td>0.046*</td>
</tr>
</tbody>
</table>

Table (4): Percentage of cases with abnormal hormones before and after treatment among the studied groups. Using: Chi-square test; p-value >0.05 NS; *p-value <0.05 S

There was significant difference between groups after treatment in LH >11

<table>
<thead>
<tr>
<th></th>
<th>Laparoscopic Ovarian Drilling (n=20)</th>
<th>Ultrasonographic Ovarian Drilling (n=20)</th>
<th>X2</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>FSH &lt;3.5 Before</td>
<td>3 15%</td>
<td>0 0%</td>
<td>4.541</td>
<td>0.026*</td>
</tr>
<tr>
<td>&lt;3.5 After</td>
<td>7 35%</td>
<td>0 0%</td>
<td>6.243</td>
<td>0.013*</td>
</tr>
<tr>
<td>LH &gt;11 Before</td>
<td>19 95%</td>
<td>20 100%</td>
<td>0.118</td>
<td>0.731</td>
</tr>
<tr>
<td>&gt;11 After</td>
<td>0 0%</td>
<td>7 35%</td>
<td>6.243</td>
<td>0.013*</td>
</tr>
</tbody>
</table>
DISCUSSION

These results are in agreement with Farquhar C, et al. 2012 when comparing data, as the results were in agreement with the current study in greater change in AFC and AMH in serum than TVOI obtained at the time of IVM collection. However, pregnancy outcomes were similar between the two groups, as was the decrease in BMI. Indicating that despite moderate changes in markers secondary to outcomes obtained with TVOI compared to LOD, these changes are sufficient to lead to a good likelihood of pregnancy. Likelihood of pregnancy at 6 months of age in this study was consistent with the published results of pregnancy after LOD (35%) obtained in the most discontented meta-analysis comparing LOD and ovulation induction drugs in PCOS.

Also Ibrahim et al. 2017 reported that there were insignificant differences as regarding base-line hormonal levels, including LH, FSH, LH/FSH, AMH, Proges-terone, SHBG.

This result is also in agreement with Kandil M, et al., 2018 when comparing data as no statistically significant differences were found between the two groups in terms of age and BMI.

However, both studies found that at 3 months of age, Patients in the LOD group experienced a significant decrease in AMH compared to the TVOI group in a manner similar to ours a study. However, we continued to see improvements in AMH and AFC levels at six months compared to the pre-treatment Baseline, which was lost at that point in the Qandil study Population (Kandil M, et al., 2018).

The study also agreed with the Zakherah MS, et al., 2011 study that a complication associated with LOD Ovarian failure. And the uncontrolled use of ironing has caused this to happen Cases where the ovary is basically "cooked", resulting in hormonal and ovulation failure. This is unlikely to be a risk With TVOI. A previous study investigated the results After IVM-induced ovarian injury (Zakherah MS., et al., 2011).

One of the complications associated with LOD has been ovarian failure. Uncontrolled use of cautery has resulted in cases where the ovary was in essence "cooked" and hormonal and ovulation failure resulted. This is unlikely a risk with TVOI. A previous study has investigated outcomes after IVM-induced ovarian injury (Zakherah MS., et al., 2011).

And it was clear from our study that there was no significant difference between laparoscopic ovarian drilling and ultrasound ovarian drilling in the duration of sterility and the duration of clomid use. There was a higher rate of hirsutism in the first group (40%) than in the second group (35%), but without statistically significant differences, as there was no significant difference between laparoscopic ovarian drilling and ultrasound ovarian drilling according to the size of the ovary, which was the same as the technique used in this study. Future studies should be directed at determining ideal levels of disruption to obtain ideal pregnancy rates using the TVOI approach. It may be hypothesized that passing a needle 30 to 40 times through the ovary may cause more pain than a standard IVF collection. However, in spite of this technique IVM collections
have previously been demonstrated to be less painful than IVF collections possibly because often smaller gage collection needles are used or lower suction pressure (Seyhan A. et al., 2014).

It is also evident from our study that there was a significant increase in FSH in both groups after treatment, but the improvement was higher in GI. There was a significant decrease in LH in both groups after treatment with a higher improvement in GI. There was a significant decrease in GI of testosterone while the decrease was minimal in GII. The improvement was higher in GI. There were statistically significant differences in the second group patients before and after with regard to the hormonal basal profile. At the end of our study, it became clear that there was no significant difference between the two groups according to abortion in the third and ectopic pregnancy.

This results is agree with Ibrahim et al 2017 when report No statistically significant differences were found between the two groups in terms of ovarian volume (10.85±1.72 vs. 10.75 ± 1.62, P < 0.787).

In our finding when comparing two groups for FSH there was a significant difference between laparoscopic and transvaginal ovarian drilling guided by sound waves according to After FSH. This is in agreement with Ibrahim et al. 2017 results indicating that there was a slight increase in FSH after treatment in Group A with laparoscopic ovarian drilling compared with group treatment with transvaginal ultrasound (6.95 ± 0.98 versus 5.66 ± 0.38, P <0.01).

Morad & Mohamed 2012 report There were non-significant differences between both groups as regards the rates of ovulation per cycle, pregnancy, miscarriage and trimester abortion The trimester abortion rate was similar in group A and B (13.33% vs 14.29%) respectively. This was comparable to (11.1% and 10.8%, respectively) reported by Hashim et al 2015.

This contrast with Sorouri et al., 2015 in his study, found no significant difference in FSH in both groups (5.7±1.7 vs. 5.7±2.1, P =0.940).

Sorouri et al., 2015 In his study, found significant decreases in serum levels of LH and testosterone in both groups that were similar in both groups this agree with our result but in our result not similar in both groups There was high significant decrease in LH in both groups after treatment with higher improvement in GI. There was high significant decrease in GI in testosterone while the decrease was insignificant in GII. The improvement was higher in GI.

The study by Ibrahim et al. 2017 demonstrated that the pregnancy rate was higher in group B (LE) than in group A (LOD), but although these differences were not statistically significant. The pregnancy rate was 35% in Group B (LE) while in Group A (LOD) it was 27.5%.

**CONCLUSION**

It can be concluded that, we found that there was a restoration to normal cycle in both groups with marked improvement in GI than GII in all parameters (ovulation rate and pregnancy rate).
REFERENCES


مقارنة بين تثقيب المبيض عن طريق المنظار البطنى وعن طريق المهبل مسترشدا بالمجامل الصوتية في حالات متلازمة تكيس المبيضين

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خلفية البحث: تمثل متلازمة تكيس المبيض السبب الأكثر شيوعا لقلة الإباضة وانقطاع الإباضة في عموم السكان وفي الإناث المصابة بالبطن. وتشمل صحيحة، الإناث المصابة بالبطن اللائي تعاني من انقطاع الإباضة المرشحات لتحريض الإباضة.

الهدف من البحث: تقسيم مدى أمان وفاعلية الطرق المختلفة في تثقيب المبيض عن طريق منظار البطن وعن طريق المهبل مسترشدا بالموجات فوق الصوتية المهبلية في حالات تكيس المبيض.

نتائج البحث: يفضل استخدام المنظار البطنى في عمل تثبيب المبيض لكى نتجنب حدوث التصاقات بعد العملية. وأيضاً يمكن تثبيب المبيض عن طريق المهبلى مسترشدا بالموجات فوق الصوتية المهبلية في تثبيب المبيض.

الاستنتاج: يمكن تشخيص التبويض عن طريق استخدام أقراس لتشخيص المبيض ويمكن إعطاء أمبولات لتشخيص المبيض وفى حالة عدم استجابة المبيض وفى حالة عدم استجابة المبيض للعلاج السابق يفضل استخدام المنظار في عمل تثبيب المبيض لكى نتجنب حدوث التصاقات بعد العملية. وأيضاً يمكن تثبيب المبيض عن طريق المهبلى مسترشدا بالموجات فوق الصوتية المهبلية في تثبيب المبيض.