

## **PRACTICE POINTS - DRILLING THE OVARIES : WHAT IS THE LATEST EVIDENCE?**

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Polycystic ovarian syndrome (PCOS) is a common endocrine disorder, characterized by menstrual irregularity and hyperandrogenism. This hyperandrogenemia leads to chronic anovulation, irregular periods, and infertility. It affects 5-10% women of reproductive age, and is responsible for 75% cases of anovulatory infertility.

Treatment of PCOS includes a symptom-oriented approach to the presenting problem and a preventive strategy for the associated long-term morbidity. Weight reduction in obese patients improves symptoms and endocrine profile. Combined oral contraceptive pills are used for menstrual irregularities, while hyperandrogenic skin symptoms can be treated with oral contraceptive pills or with antiandrogenic therapy. Anovulatory infertility can be treated by insulin sensitizing measures (like lifestyle modification and metformin), clomiphene citrate(CC), and gonadotropins. Although most symptoms are managed medically, surgical intervention in the form of diathermic laparoscopic ovarian drilling (LOD) and laser plays a significant role in managing PCOS.

Laparoscopic Ovarian drilling should also be considered when the leutenising hormone (LH), follicular-stimulating hormone (FSH) ratio is altered. Although gonadotropin treatment and laparoscopic ovarian drilling have demonstrated similar reproductive outcomes, Laparoscopic ovarian drilling has some advantages over gonadotropin treatment such as lower cost per pregnancy, improvement in menstrual regularity and better long term reproductive performance and decreased rate of miscarriage due to PCO

#### **Criteria to consider an infertile patient for laparoscopic ovarian drilling**

- Diagnosed PCOS by Rotterdam criterion
- Elevated androsternidione levels.
- Elevated Anti-Mullerian Hormone (AMH)
- Ovarian volume – calculated by the formula  $0.523 \times \text{length} \times \text{width} \times \text{thickness}$  of each ovary  $> 10\text{cc}$
- LH:FSH $>2$ .

Both gonadotropins and LOD have been considered equally effective as second-line management for CC resistant PCOS. The surgery may also be recommended for patients who need laparoscopic assessment of their pelvis, women who persistently hypersecrete LH, or who live too far away from the hospital for the intensive monitoring required during gonadotropin therapy. Extensive ovarian diathermy is not indicated to prevent hyper-responsiveness to exogenous gonadotropins<sup>3</sup>. Women with LH level  $>10$  IU/L, normal BMI, and shorter duration of infertility have chances of achieving spontaneous ovulation post LOD.

#### **When not to perform LOD?**

Laparoscopic Ovarian Drilling (LOD) is a surgical intervention and involves calculated irrevocable loss of ovarian reserve. Hence, the selection of patients should be done very meticulously.

#### **LOD should not be considered for:**

- Unmarried girls
- Reproductive age group patients who have completed family (noninfertility indications)
- Marked Obesity (BMI  $> 35\text{kg/m}^2$ )
- Marked hyperandrogenism (testosterone  $>4.5\text{nmol/L}$ )
- Long duration of infertility ( $>3$ years) seems resistant to LOD<sup>6-7</sup>

## **Technique of Laparoscopic Ovarian Surgery**

The monopolar needle is kept at right angles to the ovary. Antimesenteric border of the ovary of the ovary is chosen for drilling in view of less vascularity. Care should be taken to avoid injury to hilum, ovarian ligament and fallopian tube. The utero-ovarian ligament should not be grasped for fixation of the ovary in any case. Overly aggressive manipulation should be avoided, since it can cause lacerations in the capsule, follicles and the utero-ovarian ligament, which can result in bleeding. Power is set at 40 watts current in cutting mode, and full length of needle is inserted on each surface of the ovary at the depth of 4-6mm on both the ovaries. Current is activated for 4 sec and 4 punctures done in each ovary. Take precaution not to injure the ovary by heat of prolonged coagulation current inside the ovarian tissue. A thorough suction irrigation is done with saline or ringer lactate after the drilling.

Laparoscopic ovarian drilling was carried out by doing multiple punctures using cutting current of 30-40 watts in 64 patients, while in 23 patients only 3-6 punctures were done. Better conception rates were observed over a period of two years in the group with multiple punctures. Laparoscopic ovarian drilling with short burst cutting current and multiple punctures has good outcome in terms of regularization of menstrual cycles, ovulation and conception.

Ameret. Al. found that 4 punctures per ovary at 30W for five seconds (150 J) per puncture, (600 J) energy per ovary to be the optimum number required to achieve the best results.

## **Ovulation and Pregnancy**

Ovulation occurs after 2-4 weeks of LOD and menstruation occurs within 4-6 weeks in the responders. Regular ovulatory cycles occur in 70-80% of cases. Gjonaess with his multi-electrocauterisation in PCOD achieved an ovulation rate of 92% and pregnancy rate of 69%. And the abortion rate was 15%.

## **Miscarriage**

Increased LH levels are known to cause early pregnancy loss in women with PCOS. Ovarian Drilling appears to decrease the spontaneous abortion rate associated with PCOS.

## **KEY POINTS**

- LOD is a successful second-line treatment for ovulation induction in CC-resistant women with PCOS, can avoid or reduce the need for gonadotropins.
- Destruction of the androgen – producing stroma is its beneficial effect, which leads to reduction in intra-ovarian androgen production and decreased circulating androgen.
- LOD leads to increase in ovarian volume transiently, followed by a reduction.
- Ovulation occurs after 2-4 weeks of LOD and menstruation occurs within 4-6 weeks in the responders.
- Ovarian drilling appears to improve reproductive outcome, decrease the spontaneous abortion rate associated with PCOS
- Repeating LOD is highly effective in women who previously responded to the first procedure.
- The procedure must be carried out using a meticulous, atraumatic technique with proper respect to tissues.
- LOD is advantageous as it is a single treatment which will be followed by spontaneous unifollicular ovulation.