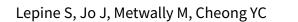


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# Ovarian surgery for symptom relief in women with polycystic ovary syndrome (Review)



Lepine S, Jo J, Metwally M, Cheong YC.
Ovarian surgery for symptom relief in women with polycystic ovary syndrome.
Cochrane Database of Systematic Reviews 2017, Issue 11. Art. No.: CD009526.
DOI: 10.1002/14651858.CD009526.pub2.

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## [Intervention Review]

# Ovarian surgery for symptom relief in women with polycystic ovary syndrome

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**Editorial group:** Cochrane Gynaecology and Fertility Group. **Publication status and date:** New, published in Issue 11, 2017.

**Citation:** Lepine S, Jo J, Metwally M, Cheong YC. Ovarian surgery for symptom relief in women with polycystic ovary syndrome. *Cochrane Database of Systematic Reviews* 2017, Issue 11. Art. No.: CD009526. DOI: 10.1002/14651858.CD009526.pub2.

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#### **ABSTRACT**

# **Background**

Polycystic ovary syndrome (PCOS) is a common endocrine condition, affecting approximately one in 10 women. PCOS is defined by two of three features: oligo- or anovulation, clinical or biochemical hyperandrogenism or both, or polycystic ovaries.

Women with PCOS can have a wide range of health problems, including infrequent and irregular periods, unwanted hair growth and acne, and subnormal fertility. Long-term health concerns include an increased risk of heart disease, diabetes and the development of precancerous disease of the womb.

# **Objectives**

To assess the effectiveness and harms of ovarian surgery as a treatment for symptomatic relief of hirsutism, acne and menstrual irregularity in PCOS.

# **Search methods**

We searched the Cochrane Gynaecology and Fertility Group specialized register, CENTRAL, MEDLINE, Embase and PsycINFO (from inception to 17 October 2016). We handsearched citation lists, registers of ongoing trials and conference proceedings.

## **Selection criteria**

We included randomized controlled trials (RCTs) of women undergoing ovarian drilling in comparison to no treatment, medical treatment, or other forms of surgical treatment for the symptoms of PCOS.

# **Data collection and analysis**

We used standard methodological procedures recommended by Cochrane. The primary outcome measures were improvement in menstrual regularity and androgenic symptoms of PCOS (hirsutism, acne); the secondary outcome measures included harms, change of body mass index (BMI), waist circumference, androgen levels, metabolic measures and quality of life. We assessed the quality of the evidence using GRADE methods.



#### **Main results**

We included 22 RCTs (2278 women analyzed) of participants with PCOS and symptoms of acne, hirsutism or irregular menstrual cycles, all of which included laparoscopic ovarian drilling (LOD) as an intervention.

Two studies reported their funding source (Farquhar 2002 - supported in part by the Auckland Medical Research Foundation; Sarouri 2015 - the authors thank the Vice Chancellor for Research of Guilan University of Medical Sciences for funding this project).

The quality of the evidence ranged from very low to moderate quality. The main limitations were imprecision associated with the low number of studies, inconsistency and risk of bias associated with the inability to blind participants. There were too few studies to assess risk of publication bias.

# **Menstrual Regularity**

Two studies compared LOD versus metformin (n=226) but no conclusions could be drawn with regard to menstrual regularity, as their findings were inconsistent and they were unsuitable for pooling. There appeared to be little or no difference in the rate of women reporting improvement in menstrual regularity when LOD was compared with medical treatment including metformin + clomiphene (OR 1.02, 95% CI 0.64 to 1.64, 2 studies, 332 women,  $I^2 = 13\%$ , low-quality evidence), letrozole (OR 1.08, 95% CI 0.64 to 1.84, 1 study, 260 women, low-quality evidence), or metformin + letrozole (OR 0.95, 95% CI 0.49 to 1.81, 1 study, 146 women, low-quality evidence). However, one study reported that LOD was superior to gonadotrophin (OR 19.2, 95% CI 3.17 to 116.45, 1 study, 35 women, very low-quality evidence).

There appeared to be little or no difference in the rate of women reporting improvement in menstrual regularity when bilateral unipolar LOD was compared to unilateral LOD (OR 1.51, 95% CI 0.62 to 3.71, 2 studies, 104 women, I<sup>2</sup> = 0%, moderate-quality evidence), transvaginal ultrasound-guided LOD (OR 1.23, 95% CI 0.64 to 2.37, 1 study, 147 women, low-quality evidence), LOD using adjusted thermal dose in accordance with the ovarian volume (OR 0.42, 95% CI 0.16 to 1.14, 1 study, 115 women, low-quality evidence) or bipolar LOD (OR 1.00, 95% CI 0.05 to 18.57, 1 study, 18 women, low-quality evidence).

Four to five punctures per ovary may improve the rate of women reporting menstrual regularity compared with two or fewer (OR 16.04, 95% CI 4.19 to 61.34, 2 studies, 73 women, 12 = 0%, low-quality evidence).

# **Androgenic Symptoms**

There was probably little or no difference in improvement in androgenic symptoms when LOD was compared to metformin (OR 1.00, 95% CI 0.42 to 2.37, 1 study, 126 women, moderate-quality evidence) or gonadotrophins; acne (OR 3.20, 95% CI 0.33 to 30.94, 1 study, 25 women, low-quality evidence), hirsutism (OR 2.31, 95% CI 0.22 to 23.89, 1 study, 25 women, low-quality evidence).

There appeared to be little or no difference in improvement of androgenic symptoms when LOD was compared to transvaginal ultrasound-guided LOD, with respect to hirsutism (OR 1.09, 95% CI 0.30 to 3.91, 1 study, 39 women, low-quality evidence) or acne (OR 0.84, 95% CI 0.20 to 3.50, 1 study, 31 women, low-quality evidence).

## Harms

LOD was associated with fewer gastrointestinal side effects than metformin plus clomiphene (OR 0.05, 95% CI 0.01 to 0.36, 2 studies, 332 women,  $I^2 = 0\%$ , moderate-quality evidence). One study suggested little or no difference in rates of ovarian hyperstimulation syndrome between LOD and gonadotrophins (OR 0.08, 95% CI 0.00 to 1.61, 1 study, 33 women, low-quality evidence).

There were fewer adhesions with transvaginal hydrolaparoscopy compared to LOD (OR 0.10, 95% CI 0.05 to 0.18, 1 study, 246 women, moderate-quality evidence). There appeared to be little or no difference in adhesions when variable energy LOD was compared with standard LOD (OR 0.96, 95% CI 0.32 to 2.88, 1 study, 64 women, low-quality evidence). Another study (44 women) reported that none of the women who returned for surgery following either traditional or unilateral LOD were found to have adhesions.

# **Authors' conclusions**

There was no clear evidence that LOD improves menstrual regularity or the androgenic symptoms of PCOS, compared to most of the medical treatments used in the included studies. LOD was associated with fewer gastrointestinal side effects compared to metformin and clomiphene.

There was also no clear evidence of different effectiveness between types of LOD, except that LOD with four to five punctures per ovary may be more effective than two or fewer punctures. There was little evidence comparing LOD with different types of surgery, although one study concluded that transvaginal hydrolaparoscopy had a lower risk of adhesions than LOD.

There was evidence from one small study of benefit from LOD compared to gonadotrophins for menstrual regulation. However, gonadotrophins are seldom used for this indication.



## PLAIN LANGUAGE SUMMARY

## Ovarian surgery for symptom relief in women with polycystic ovary syndrome

## **Review question**

Cochrane researchers reviewed the evidence about the effect of ovarian surgery on symptoms of polycystic ovary syndrome (PCOS). We found 22 studies that compared it to surgical and non-surgical treatments, and variations of surgical technique. The main outcomes measured were improvement in the regularity of periods, and a decrease in unwanted hair growth and acne (androgenic symptoms). We also looked at harms from treatment, change in body weight, change in testosterone levels, changes in metabolic measures and quality of life.

## **Background**

Women with PCOS can have a wide range of health problems, including infrequent and irregular periods, unwanted hair growth and acne, and subnormal fertility. Long-term health concerns include an increased risk of heart disease, diabetes and the development of precancerous disease of the womb.

Most of the current research has looked at the effect of ovarian surgery in improving fertility in women with PCOS. Our review aims to look at the impact of laparoscopic (keyhole) ovarian surgery (LOD) on the improvement in the other symptoms of PCOS.

#### Search date

The evidence is current to October 2016.

## **Study characteristics**

We include 22 randomized controlled trials (RCTs), covering 2278 women. A randomized controlled trial is a type of medical experiment where participants are randomly given one or other different treatments in the study. The participants had PCOS and were from different settings around the world.

Ten out of the 22 RCTs compared LOD to medical treatments. These treatments included metformin, clomiphene, gonadotrophins, letrozole and rosiglitazone. Ten out of 22 studies compared traditional LOD to variations in surgical techniques. Two out of 22 RCTs looked at using different energy levels or number of ovarian drill holes during LOD.

## **Study funding sources**

Two studies reported their funding source (Farquhar 2002 - supported in part by the Auckland Medical Research Foundation; Sarouri 2015 - the authors thank the Vice Chancellor for Research of Guilan University of Medical Sciences for funding this project).

## **Key results**

LOD may be better at regulating menstrual cycles than gonadotrophins. However, most doctors would consider other options for first-line treatment. LOD with four or five drill holes versus two or fewer per ovary may be more effective at menstrual regulation in women with PCOS.

There was not enough evidence to tell whether there is a difference between LOD and other medical treatment or variations in surgical technique in improving the regularity of periods or androgenic symptoms.

LOD was associated with fewer gastrointestinal side effects compared to metformin and clomiphene, but involves surgery and is not standard treatment for menstrual disturbance or unwanted hair growth. There was less scar tissue with transvaginal hydrolaparoscopy compared to LOD.

Overall LOD can be considered to have a low risk of harm, and to be an option in the management of symptoms of PCOS.

# **Quality of evidence**

The quality of the evidence ranged from very low to moderate quality. The main limitations were imprecision associated with the low number of studies, inconsistency and risk of bias associated with the inability to blind participants (conceal the type of treatment from them). There were too few studies to assess risk of publication bias.