



www.sciencedirect.com  
www.rbmonline.com



## REVIEW

# Ovarian drilling for surgical treatment of polycystic ovarian syndrome: a comprehensive review


Hervé Fernandez <sup>a,b,c,\*</sup>, Michèle Morin-Surruca <sup>d</sup>, Antoine Torre <sup>e,f</sup>,  
Erika Faivre <sup>e,f</sup>, Xavier Deffieux <sup>e,f</sup>, Amélie Gervaise <sup>a,b</sup>

<sup>a</sup> Univ Paris-Sud, Bicêtre F-94270, France; <sup>b</sup> AP-HP, Gynaecology/Obstetrics, Hôpital Bicêtre, Kremlin Bicêtre F-94270, France; <sup>c</sup> INSERM U 1018, Le Kremlin Bicêtre F-94276, France; <sup>d</sup> Haute Autorité de Santé – HAS, 2 Avenue du Stade de France, 93218 Saint-Denis La Plaine Cedex, France; <sup>e</sup> Univ Paris-Sud, Clamart F-92140, France; <sup>f</sup> AP-HP, Gynaecology/Obstetrics and Reproductive Medicine Department, Hôpital Antoine Béclère, Clamart F-92141, France

\* Corresponding author. E-mail address: [herve.fernandez@bct.aphp.fr](mailto:herve.fernandez@bct.aphp.fr) (H Fernandez).



Hervé Fernandez has been a professor of gynaecology and obstetrics since 1992 and is editor of the official review of French College of Obstetricians and Gynecologists. His focuses are the fields of surgery and specifically infertility surgery. He published a new surgical technique of ovarian drilling by fertiloscopy in 2001.

**Abstract** This systematic literature review is intended to clarify and evaluate the results obtained by ovarian drilling as surgical treatment for polycystic ovarian syndrome (PCOS). Four databases were consulted (Medline at the National Library of Medicine, USA; Cochrane Library, UK; National Guideline Clearinghouse, USA; and the Health Technology Assessment Database, Sweden) and searched for 'polycystic ovary syndrome' plus 'drilling' in the title or abstract. The assessment criteria used to define the efficacy of the procedure were the rates of ovulation, clinical pregnancy and early miscarriage. Alternatives to surgical ovarian drilling were evaluated. This search produced 147 references, 81 of which met the selection criteria. This review of infertility management in women with PCOS indicates that ovarian drilling is a second-line treatment when treatment with clomiphene citrate fails to lead to conception. The benefits of ovarian drilling are that it does not induce either hyperstimulation syndrome or multiple pregnancies. It is concluded that ovarian drilling is an option in the management of female infertility associated with PCOS, especially as a second-line treatment after the failure of clomiphene citrate treatment. 

© 2011, Reproductive Healthcare Ltd. Published by Elsevier Ltd. All rights reserved.

**KEYWORDS:** fertiloscopy, laparoscopy, ovarian drilling, PCOS

## Introduction

Polycystic ovarian syndrome (PCOS) is the most common endocrine disorder affecting young women (over 5% of women of childbearing age) (Adams et al., 1986). It is the

cause of over 70% of cases of infertility due to anovulation (Carmina and Lobo, 1999).

In 2004, an international working group (Rotterdam consensus) put forward a new, more permissive definition of this syndrome (ESHRE/ASRM, 2004). Under this definition,

women with at least two of the following criteria are regarded as having PCOS: (i) oligo-anovulation or anovulation (oligomenorrhoea or amenorrhoea); (ii) high concentrations of androgen in the bloodstream (biological hyperandrogenism) and/or clinical signs of androgen surplus (hyperandrogenism); and (iii) polycystic ovaries shown by ultrasonography (more than 12 follicles measuring 2–9 mm on at least one ovary). The other causes of hyperandrogenism must be ruled out (for example, acromegaly, Cushing's syndrome, 21-hydroxylase block, hyperprolactinaemia, tumour-secreting androgens, the patient taking androgens without the practitioner's knowledge). These changes to the definition of PCOS make it more difficult to compare published data.

Treatment of PCOS involves loss of excess weight and the treatment of dyslipidaemia, carbohydrate intolerance or diabetes and hypertension. Appropriate treatment must also be given for functional signs such as menstrual disorders, acne and hirsutism. It is against this background that the 2008 consensus conference decided that patients should lose 5% of their initial weight by any diet that works for them before undergoing fertility treatment (ESHRE/ASRM, 2008).

The first-line treatment of anovulation for patients wishing to conceive is clomiphene citrate, a selective modulator of the oestradiol receptor, given at an initial dose of 50 mg per day from days 2 to 6, 3 to 7 or 5 to 9 of the menstrual cycle, once it has been re-established. The dose can be increased to 50–250 mg per day for 5 days if the patient still does not ovulate. To avoid multiple pregnancies, practitioners are strongly advised to monitor ovulation while administering clomiphene citrate, by measuring oestradiol hormone concentrations and performing at least one pelvic ultrasonography. Clomiphene citrate leads to a cumulative ovulation rate over 6 months of almost 80% and almost 40% of women receiving this treatment become pregnant (Legro et al., 2007). Prolonging clomiphene citrate treatment for more than 6 months does not improve results (ESHRE/ASRM, 2008; Gysler et al., 1982).

When clomiphene citrate treatment fails, defined as failure to ovulate after 6 months of treatment at an appropriate dose, the patient is regarded as resistant to it. By extension, failure to conceive can also be regarded as treatment failure. Articles do not always make this distinction, however, and failure to conceive after clomiphene citrate may include either absence of ovulation or failure to conceive after ovulation. In these circumstances, ovarian drilling, also called multiperforation or laparoscopic ovarian diathermy, can be suggested as first-, second- or third-line treatment for PCOS-related anovulation. This procedure, which can be performed by different approaches and with mono- or bipolar power, involves one or usually more perforations of the ovarian cortex.

The aim of this systematic review, performed at the request of the French Authority for Health (Haute Autorité de Santé, HAS), is to assess the efficacy and the safety of ovarian drilling for treating anovulatory infertility in clomiphene citrate-resistant patients. This review also provides some evidence more recent than the last Cochrane review (Farquhar et al., 2007).

## Materials and methods

The following databases were consulted: Medline (National Library of Medicine, USA); the Cochrane Library (UK); the National Guideline Clearinghouse (USA); and the Health Technology Assessment Database (Sweden). Articles with keywords that included 'polycystic ovary syndrome' and the single word 'drilling' in the title or abstract were identified. The search produced 147 references, 32 of which were literature reviews since 1970. The reference lists from the literature reviews were also analysed to ensure comprehensive coverage of original scientific publications.

All 60 publications initially identified were analysed based on the scientific relevance of the article to an evaluation of the clinical benefits of ovarian drilling. The same selection criterion was used to choose the articles cited in the literature reviews.

The criteria used to assess the efficacy of the procedure were: the ovulation rate, the clinical pregnancy rate (defined by the existence of an embryo with heart activity, shown by ultrasonography) and the early miscarriage rate (defined by cessation of embryo development and/or its expulsion before 12 weeks of gestation, defined from the last day of the last menstrual period). In total, 81 bibliographical references meeting the selection criteria were examined.

## Surgical technique of ovarian drilling

The poor success rate and the risks of medical treatment of infertility in women with PCOS, together with advances in minimally invasive surgery, made the concept of ovarian surgery seem highly appealing since the first description by Gjonnaess of laparoscopic drilling in 1984 (Campo, 1998; Gjonnaess, 1984; Li et al., 1998; Merchant, 1996). The idea was to reproduce the beneficial effects of ovarian wedge resection while avoiding its main adverse effect, pelvic adhesions. This laparotomy procedure had been the first effective treatment for infertility due to PCOS and was associated with a pregnancy rate of 60% (Donesky and Adashi, 1995), but in almost all cases it led to pelvic adhesions, which theoretically are detrimental to fertility and can cause gastrointestinal disorders. Because these adhesions were usually observed after laparoscopic treatment, new approaches used surgery by minimally invasive routes and endoscopy.

The mechanism by which surgical treatment for PCOS-related infertility acts is not clearly understood. It is thought that it may involve destruction of the ovarian stroma that produces the androgens. The following results always occur: a decline in plasma LH and in pulsations; a temporary fall in inhibin B; a (moderate) rise in FSH and sex hormone-binding globulin; and a constant fall in androgens (especially testosterone) and in the Ferriman–Gallwey score (Api et al., 2005; Kandil and Selim, 2005; Kucuk and Kilic-Okman, 2005). Lower serum oestradiol concentrations are linked to a decline in aromatase activity. In practical terms, the LH/FSH ratio always returns to normal, with follicular development and ovulation resuming in 80% of cases. However, the physiological principles that make this surgical treatment effective have not yet been satisfactorily

Download English Version:

<https://daneshyari.com/en/article/3971293>

Download Persian Version:

<https://daneshyari.com/article/3971293>

[Daneshyari.com](https://daneshyari.com)