

# Ovulation – Regulation and Self-Control

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## **Abstract**

The aim of this paper is to summarize all known up-to-date methods of medical inductions of ovulation up to and including surgical procedures. The authors would like to present also their philosophical and practical point of view and some remarks connected with ovulation, neogenesis and psychology.

## **Zusammenfassung**

Das Ziel dieses Beitrags ist, die heutigen Methoden der medizinischen Auslösung der Ovulation einschließlich chirurgischer Eingriffe zusammenfassend darzustellen. Die Autoren stellen ebenso philosophische und praktische Gesichtspunkte dar und machen einige Überlegungen im Zusammenhang mit Ovulation und Psychologie.

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The question of ovulation, as well as pregnancy or malignancy is one of the main issues to be solved at each gynecological examination. From one side it concerns the general state of health of a woman's body throughout her fertility period and from the other side, it is the subject of constant clinical evaluation.

Natural ovulation in the past could be confirmed only by the detection of pregnancy, exceptionally discovered during surgery or lastly laparoscopy<sup>5</sup>. Now it is a question of visualization by the latest achievements of technology: sonography and magnetic resonance imaging (MRI)<sup>7</sup>. Nevertheless, clinicians always rely upon surgery as the approval of their indirect methods of assessment of the occurrence of ovulation.

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*From a purely psychological point of view*, ovulation nowadays can be self-controlled and regulated by women themselves and what is more significant, without the knowledge of her partner or partners and even doctors. Using oral contraceptives (OC) a woman in accordance with her general knowledge can not only block ovulation, but also with prolonged use, she can disrupt all neurohormonal regulations of the body state. This is why from both points of view, mainly from the doctor's but also the patient's, problems of ovulation should be evaluated by the physician.

*From purely physician's point of view*, ovulation can be induced with conservative treatment and/or surgery. Unfortunately, around the world, this problem is confronted chiefly by "so called" endocrinologists and not general gynecologists. This means that, too often medical treatment of anovulation is prolonged to such an extent that overstimulated ovaries can not properly react to subsequent surgical procedures; these can vary – as originally was stated by Stein and Leventhal<sup>10</sup> – from only puncture of the ovary, to wedge resection as well. Since 1906, it has been known that wedge resection of the ovaries in patients with polycystic ovaries syndrome (PCO) is followed by resumption of regular menses in 60–95% of cases and by initiation of ovulatory cycles in 60–80% of cases. The average conception rate is 39%<sup>10</sup>. There is a considerable recurrence rate of this syndrome some time after surgery. Therefore only the gynecologist is skillfully qualified to perform both medical and surgical inducement of ovulation. This is the proper position from which to provide help and needed medication.

The aim of our presentation is to summarize all known up-to-date methods of medical inductions of ovulation up to and including surgical procedures. Surgery provides not only the opportunity to finalize the diagnosis (by providing surgical specimens for the pathological evaluation) but simultaneously offers the possibility to treat patients.

The problem of ovulation and especially the successful ovulation, is only a first step to happy parenthood. We know very well that the rates of miscarriage and unsuccessful pregnancy are higher after induced ovulations than after spontaneous ones<sup>4,13</sup>. In our past papers<sup>3</sup> many, many years ago we indicated not only the difficulties with support or induction of ovulation, but also the high percentage of miscarriage in cases, associated with use of medications such as Clomiphene citrate, Bromocriptine or exogenous estrogens (EE).

Lastly, Insler and collaborators summarised problems of the role of the uterine cervix in reproduction. When under strong estrogenic stimulation, for example during the peri-ovulatory period or when potent exogenous estrogens are administered, the uterine cervix produces abundant, watery, thin mucous almost free of cell elements, with high spinnbarkeit and pronounced ferning capacity. Sperm penetrability is at its highest during this period. When under the influence of both estrogen and progesterone or progesterone alone, for example during the luteal phase, under combined contraceptive pill usage or during pregnancy, the cervical epithelium produces scant, thick mucous of high viscosity and low spinnbarkeit. At this point, it is almost devoid of ferning capacity and contains many cells. Such mucous is practically impenetrable by sperm<sup>1</sup>.

Failure of the endocervical crypts to react to estrogen stimulation (“dysmucorrhoea”) may be a late sequelae of an inflammatory process or a consequence of surgical procedures such a conization, amputation or electrocoagulation of the uterine cervix. However, there are undoubtedly other still unknown causes. Recently, it was shown that women producing poor cervical mucus were lacking estrogen receptors in their endocervical mucosa<sup>1</sup>.

Pregnancies following ovulation induction with Clomiphene citrate or menotropins have been reported to result in an abortion rate significantly higher than that observed in the normal population. However, the rate of abortions occurring in a normal population has not been well defined:

Women cured of infertility, in contrast to all other pregnant women had a statistically significant greater rate during the first 28 weeks of gestation, of uterine bleeding as well as threatened abortions, provoked and stimulated labors, disturbances of uterine contractions, cesarean sections and fetal heart distress. These observed changes in clinical and laboratory findings indicate that provocation of pregnancy in anovulating women demands the intensive care and follow up of such pregnancies up to and including labor<sup>3,9</sup>.

In our Institute, in the early 50s, we originated the “hypothalamic era” of medical control of ovulation, using natural hypothalamic hormone<sup>2</sup>. This was later confirmed by synthesis of hypothalamic hormones, and the analogues (agonists and antagonists) of releasing hormones (Table 1)<sup>12</sup>.

**Table 1.** First pregnancies after induced ovulations

Year	Medication	Author
1935	Estrogens	Clanberg
1935–49	Wedge resection	Stein et al.
1961	Clomiphene	Greenblatt et al.
1962	Gonadotrophins	Lunenfeld et al.
1963	natural LH-RH	Klimek
1971	synthetic LH-RH	Kastin et al.
1973	Bromocriptine	Thorner et al.

The first result of the successful induction of ovulation with natural hypothalamic hormone had at that time an unwanted side effect; the unwanted pregnancy<sup>2</sup>; now, this has turned out the big success story of all such methods, in which we are using synthetic hypothalamic hormones to promote ovulation and subsequently pregnancy.

We would like only to add that the same problem was announced later<sup>5</sup> in cases using surgery, where conservative induction of ovulation had failed. Ovarian surgery in anovulatory women is an efficient method of treatment, not only in the case of Stein-Leventhal Syndrome, but also in those women who do not respond to hormonal stimulation. In some of these patients, ovarian enlargement and cortical thickening may progress during the hormonal therapy such that the ovaries may become more recalcitrant if hormonal therapy continues. Prolonged medical management in such patients becomes more radical than wedge resec-

tion. The male factor seems to have a prognostic value in surgical treatment of anovulation but the question whether or not wedge resection should be performed in the cases of severe semen abnormalities remains to be answered.

In conclusion we can say that the control of ovulation is a medical problem from both the diagnostic point of view as well as from a therapeutical one. Fortunately or for some women unfortunately, over the last 20 years, many women in their normal reproductive life have been involved with self-control of ovulation, which complicates this problem. This is why we would like to warn women about the consequences of such an attitude, especially those cases using OC. If they are used as one of the methods of family planning, it should be obligatory to follow the four mentioned rules:

1. instead of constant – only periodical use of OC,
2. obligatory change of the type of pills, after a period of time because even the color of a drug has its own influence upon the psychological states of a woman,
3. it is very important to promote ovulation in three consecutive cycles after a prolong period of using OC,
4. it is very important that OC should not be used before the full biological maturation of the neuroendocrine system of a mother-to-be.

Such compounded problems have a leading role as decisive factors in the psychological and social behavior of women. We know very well that neither scientific papers, nor the mass media, but in general the common sense of women are the problem with controlling use of OC.

It is estimated that 20% of all married couples are infertile; in 10% of cases – the cause remains unknown. In the remaining 90% of couples – the male factor accounts for 40%, the female factor accounts for 30% and changes in both partners have been observed in the remaining 30% of causes<sup>10</sup>.

In accordance to the philosophy presented in this paper, it is only natural that the physician's lack of knowledge about the partner's sperm condition is a decisive factor. Many women believe that only they are the source of the problem, without any suspicion that azoospermia may be a main factor<sup>10</sup>.

Anovulation is not only a problem associated with the diagnosis of cancer, gestation or the neurohormonal state. It also shapes the attitude towards childhood and assumes a feedback role of the partner's social position.

It is very important that the physician treating women with cancer in any stage, first remembers to restore the proper neuroendocrine condition of the patient, the indicator being ovulation. Thus, our actions should not be directed against ovulation with disturbance away from the equilibrium state, but towards restoration of ovulation as one of the methods used or needed to be used in conquering cancer<sup>7</sup>.

As we know, obviously anovulation is an indicator of sterility; but from another side, cancer of the cervix or any neoplasms of the body are also indicators of the near or far from equilibrium situations of the body state as a whole<sup>8</sup>. This means, that cancer coexisting with anovulation is an indicator that the physician can treat cancer directly, using currently accepted methods or weapons, and ad-



ditionally through normalization of the neurohormonal state, controlling intra-body information. It means also that, when we promote or restore the ovulation, we are not putting the patient at risk for pregnancy but rather primarily are removing the situation of a cancerous or precancerous condition far away from what is the normal equilibrium of the body.

In conclusion, we again stress that, ovulation is important as an objective indicator of normal neurohormonal body regulation. This is of primary importance for any potential pregnancy as well as significant in naturally occurring phenomenon such as cancer. Therefore from a psycho-medical point of view, a women's self-control of ovulation has to be more rationally evaluated in the face of mass media information mainly devoted to popularizing oral contraceptives.

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