



Fertility after Discontinuation of Contraception

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Abstract

Family planning allows individuals and couples to decide when to have children and the use of a birth control method to attain their desired number of children, spacing and timing of their births. Family planning contributed to reduce maternal mortality. The ability to space and limit the pregnancies has a direct impact on the health and well-being as well as on the outcome of each pregnancy. Globally, 14.3% of women in reproductive age (15-49) used intrauterine contraceptive device (IUCD), however the use of IUCD varies by country with some being less than 2% and others above 40%. Nonetheless, IUCD has been steadily gaining preference and importance as a contraceptive method over the last 20 years. The rate of pregnancy in women following contraceptive cessation shows that 1-year pregnancy rates after copper IUDs and injectable contraceptives were high, ranging between up to 91% and 83%, respectively. Oral contraceptives showed a fertility pattern less favorable than seen in those discontinuing short term IUCD (< 42 months), with increasing duration of intrauterine device use being associated with decreasing fertility. Moreover, the rate of pregnancy was 83.1% within the first 12 months of IUCD discontinuation. Any fertility delay following the cessation of a given contraceptive method may be associated with reduced use and poor user satisfaction especially in young women.

Keywords: time to fertility return, pregnancy rate, IUCD, contraceptive.

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1. Introduction

Women's reproductive goals and contraceptive practices change depending on their life situation. The ability to control fertility with highly effective reversible contraceptives has emancipated many women to choose to become pregnant by choice not chance. An essential feature of any reversible method of contraception is that it should not adversely affect future fertility—often an important concern for women. Any fertility delay or impairment following cessation of a given contraceptive method may be associated with reduced use and poor user satisfaction especially in young women, where misconceptions and lack of information add to their general distrust of effective contraceptive methods [1]. In the 1960s, following discontinuation of oral contraceptives, initial reports suggested a syndrome of anovulation and infertility in some women who previously had regular menses. Clinicians feared that long-term ovulation suppression with oral contraceptives could lead to a state of prolonged ovulatory suppression where return to normal menstruation was delayed resulting in some women remaining amenorrhea for more than 1 year. This so-called post pill amenorrhea syndrome has subsequently refuted [1].

2. Return of Fertility after discontinuation of contraception

There is wide overlap in the reported 1-year pregnancy rates after the cessation of various methods of contraception. The baseline prevalence of infertility will influence the fertility rates of women seeking pregnancy following discontinuation of a contraceptive method. The ranges of the 1-year pregnancy rates Elnagar et al., 2023

for oral contraceptives, copper IUDs and the LNG-IUS broadly overlap those reported in retrospective studies of women wishing to conceive following discontinuation of barrier methods or using no contraceptive method (85.2%– 94%) [2]. Moreover, these results are at least consistent with 1-year pregnancy rates (92%) reported by Gnoth et al. in women who proactively used “natural family planning” to conceive—most of these women had used fertility awareness as their contraceptive method immediately before trying to conceive. Overall, population surveys suggest 12-month infertility prevalence rates of 3.5%– 16.7% (median 9%) [3]. 1-year pregnancy rates for past users of implants were unexpectedly wide (37.5–85.6%) and showed greater variability than those reported following barrier method use or no contraceptive method. This anomaly was attributable to one study in Indonesian women that reported unusually low 1-year pregnancy rates (37.5% and 48.8% for Norplant and Implanon, respectively). Lower than expected pregnancy rates noted even up to 2 years following implant discontinuation [4].

Although factors that might explain the low pregnancy rates were not discussed further in the original report, it is possible that there was underreporting of aborted pregnancies. Another explanation may be that the motivation to become pregnant was lower in this population of women with a mean parity of 2.3 than among women in the comparator studies. Considering that the low pregnancy rate seen with both implants and is not consistent with other reports or with a biologically plausible mechanism, it is unlikely to be a clinically important difference [5]. The median time to pregnancy in women who

conceived within 1 year after oral contraceptives (2.5–3 cycles) and copper IUDs (2–3.7 months) use were at least consistent with those reported for no contraceptive method (1.5–2.0 months). Median time to conception in those who proactively used natural family methods to conceive within 1 year has been estimated as two cycles. These results are probably not suggestive of transient persistent ovarian suppression with oral contraceptives or residual foreign body reaction following removal of copper IUDs [6]. Moreover, LNG-IUS (4 months) and implants (2.9–4.4 months, excluding study in Indonesian women with unexpectedly low pregnancy rates) had median time to pregnancy at least consistent with copper IUD use. Indeed, following removal of LNG-IUS or implants, plasma progesterin levels become undetectable within a few days [7].

For monthly injectable contraceptives (i.e., norethisterone enanthate and Cyclofem), the 1-year pregnancy (72.5% and 82.9%) rates were also generally lower than those reported following barrier method use or no contraceptive method. A biologically plausible mechanism may exist, as hormone levels remain elevated in some women who receive depot injections. Although no studies with depot medroxyprogesterone met our inclusion criteria, reported 1-year pregnancy rates following discontinuation typically range between 51.6% and 78.2%. Two-year pregnancy rates following discontinuation of depot medroxyprogesterone are typically N90% [5]. Median times to pregnancy following injectable contraceptives use (i.e., norethisterone enanthate and Cyclofem) were slightly longer (4.5 and 5 months) relative to other contraceptive methods assessed [8]. In addition, discontinuation was defined as 90 days or 30 days after last injection in two studies, respectively, which may be considered as an additional delay should the desire for pregnancy be made shortly after receiving injection. Longer median time to conception following injectable contraceptives use (in addition to recognized 90- and 30-day contraceptive efficacy period, respectively) may reflect prolonged transient residual contraceptive effects [9]. Nonetheless, resumption of ovulation has been reported to occur in 70% of women within 90 days (100% within 140 days) after last norethisterone enanthate injection.

For Cyclofem, although follicular activity usually returns within 28 days after injection, luteal function can be suppressed for at least seven weeks. In comparison, the mean time for return to ovulation after discontinuing depot medroxyprogesterone has reported as 210 days after last injection [10]. The pharmacokinetics of DMPA and other injectables suggest a mechanism for prolonged contraceptive effects in some users beyond the recognized window of contraceptive efficacy and a basis for slightly lower 1-year pregnancy rates following use of injectable contraceptives. Indeed, a prospective follow-up assessing ovarian function and return of fertility following DMPA discontinuation in 188 women who dropped out of the Up John collaborative Depo-Provera® clinical study to become pregnant published in 1979 by Schwallie and Assenzo, reported a pregnancy rate of 67% at 12 months since last injection (median time to conception 10 months). However, there was a high loss to follow-up or a change of mind regarding becoming pregnant (39%) in this latter study [10]. There was heterogeneity in the reporting of various subject characteristics (i.e., not all the relevant parameters influencing fertility were consistently reported such as smoking habits, history of sexually transmitted infections and prevalence of nulliparity) [11]. In general, factors that may influence fertility rates were accounted for by conducting subgroup analyses,

although not all studies did formal statistical subgroup analyses or showed evidence of accounting for confounding factors.

For example, age may be a confounding factor in subgroup comparisons based on duration of use or parity [12]. However, the mean age across all the studies included in this review ranged between 24.8 and 30.5 years in those studies that reported this parameter, with no obvious differences in the ages of participant between the various methods or studies. In addition, the small sample sizes of most of the studies limited the ability to draw conclusions about subgroups. Three studies did not perform any subgroup analyses [13]. There were no apparent concerns regarding pregnancy outcomes following cessation of the various contraceptive methods in the studies that reported this outcome. Spontaneous and induced abortions were reported consistently across these studies, ranging between 3% and 15% and between 0% and 6%, respectively [14]. The incidence of spontaneous abortion across the studies is consistent with that generally accepted once pregnancy has been clinically recognized (12%–15%). A history of one or more induced abortion was reported by 15% of the participants in the Nurses' Health Study II, although it was not clear how many among these were specifically trying to get pregnant. Importantly, there were no congenital malformations or newborn health concerns in studies that reported fetal outcomes [15].

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