

Effect of ovarian stimulation and oocyte retrieval on reproductive outcome in oocyte donors

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Objective: To assess whether there is an increased risk of infertility in women that have previously undergone ovarian stimulation and oocyte retrieval for oocyte donation.

Design: Cross-sectional survey.

Setting: Tertiary referral center.

Patient(s): A total of 194 past oocyte donors.

Intervention(s): Telephone questionnaire.

Main Outcome Measure(s): Incidence of infertility after oocyte donation.

Result(s): Of the women who indicated having pursued conception after oocyte donation, 95% (57/60) became pregnant unassisted. Before oocyte donation, 41 women in this cohort had already been trying to conceive, of which 38 had delivered a child and 3 (7.3%) had needed infertility treatment.

Conclusion(s): The data suggest that oocyte donation does not affect short-term reproductive health. (*Fertil Steril*® 2012;97:1328–30. ©2012 by American Society for Reproductive Medicine.)

Key Words: Oocyte donation, ovarian stimulation, reproductive outcome, infertility

Since the first successful pregnancy after oocyte donation was reported by Lutjen et al. in 1984, oocyte donation has become an established infertility treatment (1). It offers the opportunity to previously untreatable infertile couples to conceive and have children, with excellent success rates. However, this method of fertility treatment relies on young healthy women undergoing hormonal stimulation of the ovaries and oocyte retrieval. In contrast to the well known medical and psychologic burdens related to the procedure, data on the effect of these procedures on the future reproductive health of oocyte donors are scarce. A recent survey by Kramer et al. (2) in a cohort of 155 past oocyte donors showed that 9.6% of the donors reported infertility problems after

donation, and 26.4% of respondents recalled menstrual cycle disturbances and/or a new infertility problem. The cohort of that trial, however, may not be representative owing to self-selection because it consisted of registrants at a public website. The authors, despite the lack of robust evidence, concluded that these data might suggest an adverse effect of hormonal stimulation on the menstrual cycle or on fertility and increased risk for premature ovarian insufficiency.

The importance of assessing potential reproductive health risks for oocyte donors after oocyte donation is even greater if we consider that the advent of successful oocyte freezing led to the introduction of social freezing to avoid age-related subfertility (3). Inherent to their motivation to freeze

oocytes, all of these women envisage a pregnancy at some point after the ovarian stimulation(s) and oocyte retrieval(s). The question therefore remains whether ovarian stimulation and oocyte retrieval may eventually impair their future fecundity. Recent evidence further support this concern, given that among healthy young women the most important factor affecting their attitude toward oocyte cryopreservation is the potential risk of any reproductive health problems after social oocyte freezing (4). Consequently, the need for evidence about the incidence of fertility risk after oocyte donation or oocyte freezing appears to be of paramount importance for all women of reproductive age considering donation or cryopreservation of their oocytes.

In view of this concern, we decided to investigate the reproductive performance of oocyte donors.

MATERIALS AND METHODS

A standardized telephone questionnaire was developed, aiming to evaluate fecundity before and after the donation

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TABLE 1

Active desire for children after oocyte donation: fertile versus subfertile ex-donors.

	Fertile	Subfertile	P value
No. of women	51	3	–
Mean age at first donation, y (SD)	29.7 (3.9)	29.0 (6.1)	.78
Mean no. of donations	1.6 (0.8)	1.7 (0.6)	.83
Mean age at time of survey, y (SD)	34.0 (4.5)	33.3 (4.0)	.80
Proportion bearing children before donation (%)	42/57 (73.7)	3/3 (100)	1.00
Proportion with fertility treatment before donation (%)	3/42 (7.1)	0/3 (0)	1.00
Proportion with menstrual changes after donation (%)	9/51 ^a (17.6)	0/3	1.00

^a Six women were excluded, because the menstrual pattern could not be evaluated owing to an intrauterine device.

Stoop. Reproductive outcome in past oocyte donors. *Fertil Steril* 2012.

procedure. The study was conducted with the approval of the Institutional Ethics Committee. We were able to contact 205 of the 307 women that underwent oocyte donation in our center between 1999 and 2010. Respondents were informed about the purpose of the study, and 194 consented orally to participate, representing a total of 343 donation cycles.

RESULTS

Sixty past oocyte donors had attempted to conceive since the donation procedure. At the time of survey, 47 of these women (78.3%) had given birth and another seven (11.7%) had an ongoing pregnancy (Table 1). The remaining six women (10%) reported an as yet unfulfilled desire of ≤ 12 months for a child. Further follow-up of these six women found that all of these eventually conceived within 1 year. The mean age at first donation was 29.7 years (SD 3.9), with an average follow-up since that first donation of 4.5 years (SD 2.3). The oocyte donors performed an average of 1.6 donations (SD 0.8). Forty-one oocyte donors (75.9%) had given birth to 75 children in total before being involved an oocyte donors in a donation procedure. Out of these 41 women, three (7.3%) had pursued fertility treatment before oocyte donation and all three had achieved a pregnancy. The indication for fertility treatment was male-factor infertility in all three cases. On the other hand, unassisted pregnancy after oocyte donation occurred in 57 past oocyte donors (95%), mostly within a period of 12 months (54 women), whereas the other three donors reported intervals up to 18 months between desire of pregnancy and conception. Three women (5.0%) needed fertility treatment after oocyte donation: Two cases had primary male-factor infertility, and one had primary unexplained subfertility at the age of 38 years. It is noteworthy, however, that incidences of infertility among donors before their donation is biased by donor selection and therefore limits its value as a control group. Changes in the menstrual pattern after oocyte donation were reported by 16.3% of the respondents, although none of the women reporting these changes reported fertility problems.

DISCUSSION

Although our study could not fully exclude a possible negative effect of donating oocytes on the reproductive outcome after oocyte donation, the results of this trial demonstrate

a low incidence of need for fertility treatment in past donors (5.0%). The incidences of subfertility reported in the present study are lower than the 9.6% reported by Kramer et al. (2), which to our knowledge is the only published survey evaluating the reproductive outcome after oocyte donation. However, Kramer et al. did not report the etiology of new infertility problems after oocyte donation.

Although our study suggests that short-term fertility after oocyte donation appears to be unaffected, longer-term studies are needed to assess the possibility of accelerated ovarian aging after oocyte donation. There is some literature evidence to suggest that ovarian trauma associated with ovarian puncture may induce the production of antiovary antibodies (AOAs) (5). Relatively higher concentrations of these antibodies have been observed in infertile women or in association with idiopathic premature ovarian insufficiency (6, 7). Nevertheless, the observed increase of AOA levels with consecutive oocyte collection procedures did not appear to affect the oocyte recovery rate, which may suggest the absence of an immediate effect on the ovarian reserve. Furthermore, a recent trial examining antimullerian hormone (AMH) levels following repetitive oocyte donation appears to further corroborate our findings (8). According to that trial, serum AMH levels did not decrease over repetitive oocyte donation cycles, a finding which may simply imply that accelerated ovarian aging may not occur in oocyte donors.

In conclusion, our study supports that oocyte donation does not have a negative impact on oocytes donor short term reproductive outcome. Future larger studies with longer follow up and prospective studies are essential to validate our findings and ascertain long-term fertility risks.

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