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## Spontaneous live birth after IVF treatment: what can we learn?

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**Introduction.** Spontaneous live births (SLB) after in vitro fertilization (IVF) treatment are not unusual, but reported SLB rates vary widely and little is known of their associated factors. Moreover, most studies, especially those investigating SLB after unsuccessful IVF treatment, have been conducted in a

rather limited number of couples. Our objective was to examine the frequency of SLB and their associated factors among couples who had had IVF, successfully or unsuccessfully.

**Population and Methods.** A retrospective cohort of couples was recruited in eight French IVF centers. The couples had begun IVF treatment between 2000 and 2002. They were followed up by postal questionnaire sent seven to nine years after they had started IVF treatment in their inclusion center. SLB were studied among 2,134 couples who were still together at the time of the postal survey. Separate analyses were conducted according to the outcome of medical treatment: live birth (n = 1,320) or no live birth (n = 814). Multivariate analysis that included socio-demographic and medical characteristics of the couples was conducted using logistic regression.

**Results.** Of the 1,320 couples who had already obtained a live birth through medical treatment, 17% later had an SLB (286 spontaneous pregnancies leading to 218 SLB). The median interval between the two births was 33 months. In this group, the women's median age at the first attempt was 32 years [29-35].

Of the 814 couples who had unsuccessful IVF treatment, 24% later had an SLB (220 spontaneous pregnancies leading to 193 SLB). The women's median age at the first attempt was 34 years [31-38]. The spontaneous pregnancy was the reason for discontinuing IVF treatment for 13% (n=29) of these couples. When treatment had been discontinued before the occurrence of the spontaneous pregnancy, the median interval between the first IVF attempt and the SLB was 28 months [16-41], and the median time elapsed since the initial pregnancy attempt was 6 years [5-7].

In both the successful and the unsuccessful groups, the probability of SLB decreased among older women and with increasing number of IVF attempts. SLB was associated with medical characteristics: probability tended to be higher when the origin of infertility was a female factor or was unexplained (compared with a male origin). Duration of infertility and transfer of at least one embryo during IVF treatment were also associated with SLB among unsuccessful couples (but not among successful couples). Already having a child before starting IVF in the inclusion center was not associated with SLB.

**Conclusions.** Based on a large sample of spontaneous live births ( $n = 411$ ), the frequency of SLB was estimated at 17% among couples who had already had a child through medical treatment and 24% among those who had been treated unsuccessfully. The probability of SLB decreases in older women, in agreement with the literature. Other factors associated with SLB are the indicators of the seriousness of infertility. Couples with SLB had a better prognosis when starting IVF treatment than those who had no SLB: they had a shorter duration of infertility, had undergone fewer IVF attempts and their infertility was more often unexplained or due to a female factor. These prognostic factors appeared to have a lower impact in couples who already had a child by IVF. To conclude, even in a population which had had IVF because of a very low monthly probability of conception, spontaneous live birth is still possible, especially among couples who did not succeed in having a child through fertility treatment.