

Factors affecting obstetric outcomes of IVF singletons

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Further evidence of how maternal characteristics can influence the development of children born after in vitro fertilization was presented to the annual conference of the European Society of Human Fertilization and Embryology today. A study of all 8941 IVF children born in Sweden between 2002 and 2006 where only one baby was born as a result of a single pregnancy showed that maternal age, primiparity, smoking, maternal infertility and body mass index, both over and underweight, were associated with an adverse perinatal outcome.

In Sweden almost 40 000 children have now been born after IVF, around 3 500 each year, and IVF children constitute 3% of all newborns. "This represents a large number of children and any adverse outcomes related to IVF are therefore a major public health issue," said Dr. Antonina Sazonova, from Sahlgrenska University Hospital, Gothenburg, Sweden, who carried out the research with colleagues from the hospital and from Lund University. "New methods and more advanced techniques are being developed all the time, and safety and quality aspects have, rightly, been of great interest during the past few years. We particularly wanted to know whether the number of embryos transferred influenced obstetric outcomes."

Since 2004, 70% of all of Sweden's 13 000 per year [IVF cycles](#) have been single [embryo transfer](#) (SET). The policy of using SET has resulted in an unchanged [live birth](#) rate and a decrease in the multiple [birth rate](#) from 25% to 5%. Earlier research from the same group had shown that IVF singletons as a group, irrespective of the number of embryos

transferred, had a poorer obstetric outcome than singletons in the general population. The researchers therefore decided to investigate predictors for an adverse outcome in singletons from IVF/ICSI.

"Besides the known predictors of particular maternal characteristics, we also included details of IVF techniques such as the number of oocytes retrieved, and differences in embryo culture and preservation. We wanted to find whether there was any independent association with the four outcomes – preterm birth, small for gestational age, placenta previa, where the placenta grows in the lowest part of the uterus and covers the cervix, and placental abruption, where the placental lining separates from the uterus," said Dr. Sazonova.

The researchers found that primiparity, maternal smoking, BMI and "vanishing twin" (where a foetus dies in the uterus and is reabsorbed by the mother or the other twin) were all associated with a risk of pre-term birth (before 32 weeks gestation). Maternal age, primiparity, smoking, BMI, and years of infertility were associated with an increased risk of small for gestational age (SGA), but no association with the number of embryos transferred was found. [Maternal age](#) and blastocyst transfer (using five or six day embryos) were associated with an increased risk of placenta previa, whereas primiparity was associated with a decreased risk. The only significant factor associated with placental abruption was smoking.

"The finding of a positive association between blastocyst transfer and placenta previa is new and has not been described before," said Dr. Sazonova. "At a time when blastocyst transfer is increasingly used as a way of improving the chances of pregnancy, it is important that we should investigate this further. We also intend to look at differences in obstetric outcomes between singletons born from frozen/thawed cycles and compare them with singletons from fresh cycles and in the general population."

A better outcome for singletons after SET would increase the pressure on all IVF centres worldwide to introduce SET as their primary IVF transfer strategy, the researchers say. Today SET is most often performed in Sweden and the other Nordic countries, The Netherlands and Belgium, while in the rest of the world two or three embryos are still being transferred in the majority of IVF cycles. "SET means less social and economic burden on parents and healthcare systems, fewer risks of maternal complications, and healthier children," said Dr. Sazonova. "We hope that our analysis, which is not only large in terms of the numbers studied but includes a complete national cohort of IVF singletons, will add to the weight of evidence in favour of this practice."

Provided by European Society of Human Reproduction and Embryology

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