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Uterine health more important than egg quality

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For women seeking pregnancy by assisted reproductive technologies, such as in-vitro fertilization (IVF), a new study shows that the health of the uterus is more relevant than egg quality for a newborn to achieve normal birth weight and full gestation. This study, published in *Fertility and Sterility*, an international journal for obstetricians, offers new information for women with infertility diagnoses considering options for conceiving.

The study was conducted by Dr. William Gibbons, director of The Family Fertility Program at Texas Children's Hospital and professor of obstetrics and gynecology at Baylor College of Medicine, along with colleagues at the Society for Assisted Reproductive Technologies (SART) Marcelle Cedars, MD and Roberta Ness, MD. They reviewed three years of data that compared average birth weight and gestational time for single births born as a result of standard IVF, IVF with donor eggs and IVF with a surrogate. While the ability to achieve a pregnancy is tied to egg/embryo quality, the obstetrical outcomes of birth weight and length of pregnancy are more significantly tied to the uterine environment that is affected by the reason the woman is infertile.

There were more than 300,000 IVF cycles during the time of the study producing more than 70,000 singleton pregnancies.

"This is the first time that a study demonstrated that the health of a women's uterus is a key determinant for a fetus to obtain normal birth weight and normal length of gestation," said Dr. Gibbons. "While

obvious issues of uterine fibroids or conditions that alter the shape of the uterus are suspected to affect pregnancy rates, conditions that result in poorer ovarian function to the point of needing donor eggs are not known. Further research is needed to fully understand this complex issue."

As assisted reproductive technologies (ART) in the U.S. mature, increasing attention is directed not just to pregnancy rates but also to the obstetrical outcomes of those resulting pregnancies – meaning the newborn's birth weight, health and gestational age. Currently, about one percent of U.S. births are the result of ART therapies such as IVF, donor eggs, intracytoplasmic sperm injection, embryo cryopreservation, embryo donation, preimplanation genetic diagnosis, and male infertility surgery and medical therapy.

The study explored several scenarios and found that the birth weight associated with standard IVF – in which the patient carried the embryo created with her own egg – was greater than that associated with donor egg cycles, and less than that in gestational carrier cycles. This finding held true even when other factors were considered showing that the woman's own uterus may be a determining factor.

Gibbons said the study also determined that a diagnosis of male infertility did not affect birth weight or gestational age, yet every female infertility diagnosis was associated with lower birth weight and a reduced gestational age.

Patients diagnosed with a uterine health issue, such as fibroids or other factors, had babies with the lowest birth weights and gestational ages. This led the researchers to examine the uterine environment as it relates to the type of therapy being considered.

Gibbons explains that in standard IVF, an embryo is transferred to a

woman who has just undergone controlled ovarian hyperstimulation, while in donor egg IVF and gestational carrier IVF, the embryo is transferred to a "natural" or unstimulated uterus. Then, the researchers looked at IVF utilizing frozen embryo transfer in which an embryo created with a patient's own egg is transferred to her own unstimulated uterus. They found that babies born of frozen embryo transfer cycles had markedly greater birth weights than those born as a result of standard IVF.

"That finding may help women seeking pregnancy and their physicians to consider frozen embryo transfer as a possible option if the uterine health is not a consideration," said Gibbons. "This study shows us how so many factors are related to a successful outcome and we continue to learn where further research may be needed."

Provided by Texas Children's Hospital

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