

Single-embryo transfer transforms IVF treatment



Advances in growing embryos to an advanced stage of physiologic development have made single-embryo transfer a superior procedure for many patients seeking in vitro fertilization (IVF). Recent research confirms that in appropriate candidates, single-embryo transfer results in pregnancy rates of approximately 50 to 60 percent — similar to the rates of pregnancy achieved with multi-embryo transfer but without the attendant risks.

Guidelines issued by the American Society for Reproductive Medicine in 2009 established the concept of limiting the number of embryos transferred during IVF to a single embryo in some cases. That opinion was strengthened by the Society in a November 2012 report that called for single-embryo transfer in patients under the age of 35 with a favorable prognosis. Further, no more than two embryos should be transferred in women ages 25 to 37 with a favorable prognosis.

Advantages of singleton births

Reducing the rate of multiple births is a major objective in infertility treatment today to address both medical and financial concerns, says Daniel Dumesic, MD, division chief and professor, Reproductive Endocrinology and Infertility.

“Mothers who have multiple births are at greater risk of cesarean section, have a longer time to recovery, a delayed time to return to work and the additional cost of neonatal intensive care and pediatric care afterward,” he says. “There is a huge financial impact.”

At UCLA, appropriately selected patients are presented with a family-building treatment plan known as Cumulative IVF — elective single-embryo transfer followed by cryopreservation of remaining embryos.

“Couples may perceive that twins are good because they get their family at a lower cost,” Dr. Dumesic says. “But if you space the births out — with single-embryo transfer — you can achieve the same success in getting pregnant while reducing the risks associated with multiple births.”

Development of embryos to blastocyst stage

Pregnancy rates from single-embryo transfer have improved due to laboratory techniques that better identify the nutritional and metabolic needs of embryos as they grow to the blastocyst stage. Previously, embryos were cultured for two to three days and then transferred. Today, UCLA embryologists employ an improved culture media that optimizes embryo development for five days.

In nature, about 25 percent of eggs are chromosomally abnormal, a rate that increases with advancing maternal age. These abnormalities result in embryos that arrest early in development. Culturing embryos to the blastocyst stage avoids the selection of embryos with little or no developmental potential.

This additional period of development permits embryologists to better assess embryo quality and the capacity of the cells to divide. The term elective single-embryo transfer (eSET) is used to convey the selection of the most optimal-looking embryo to transfer, thus increasing the chances of successful implantation.

Cryopreservation of remaining embryos

Single-embryo transfer is best suited for women who make a number of embryos that can be cultured to the blastocyst stage. After cultivation of embryos, a single embryo is transferred to the patient, who has undergone hormonal treatment to prepare the endometrium. The remaining embryos can be cryopreserved for subsequent embryo-transfer attempts.

Studies show that a frozen single-embryo transfer to a patient during her natural menstrual cycle results in pregnancy rates similar to a fresh single-embryo transfer. Moreover, research has demonstrated that a singleton born at term following embryo transfer to a hyperstimulated uterus is about 100 to 150 grams lighter at birth than babies conceived naturally. The reason for this phenomenon is unknown. However, this difference in birth weight disappears following transfer of a frozen embryo during a natural cycle, suggesting a modest advantage to fetal health from transfer of a single frozen embryo during a natural cycle. This procedure also reduces the risks to the patient from hyperstimulation of the endometrium.

The multiple advantages of single-embryo transfer

Elective single-embryo transfer lowers the rate of multiple births from approximately 25 percent to 4 percent or less. Significant benefits are realized from this approach. Infants born in multiple births are more likely than singletons to be premature, smaller for gestational age or experience adverse health outcomes.

The IVF team at UCLA evaluates and counsels patients on elective single-embryo transfer. Patients who are not good candidates for the procedure are advised on the appropriate number of embryos to transfer while minimizing the risk of higher-order multiple births.

UCLA also offers assistance in third-party reproduction, including egg and sperm donation, embryo adoption and gestational surrogates. Women ages 35 and older who use donor oocytes have exceptionally high rates of pregnancy and live birth.

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