

Zygote Intrafallopian Transfer

Zygote intrafallopian transfer (ZIFT) is an assisted reproductive technology (ART) first used in 1986 to help those who are infertile conceive a child. ZIFT is a hybrid technique derived from a combination of in vitro fertilization (IVF) and gamete intrafallopian transfer (GIFT) procedures. Despite a relatively high success rate close to that of IVF, it is not as common as its parent procedures due to its costs and more invasive techniques. Some patients prefer ZIFT, however, considering it more natural because the fertilized oocyte, the zygote, is placed in the woman's body for implantation much sooner than with IVF.

To be a suitable candidate for ZIFT, a woman must have at least one healthy fallopian tube where the physician can implant the zygote. The entire ZIFT process takes approximately four weeks, including the period when the patient must first undergo hormone treatment called superovulation. With superovulation, the physician administers fertility medications such as Clomid to stimulate the ovaries to produce several mature eggs, or ova. Clomid will increase the amount of follicle-stimulating hormone (FSH) and luteinizing hormone (LH) in the female, two hormones that are required for oocyte maturation. If Clomid is not enough to stimulate oocyte maturation, the physician can also inject the patient with additional FSH and LH intravenously to supplement the oral Clomid medication for a more aggressive hormone therapy.

Once the hormone treatment helps produce several mature ova, the physician extracts the ova through a noninvasive procedure called transvaginal oocyte retrieval, the same technique used with IVF and GIFT. For transvaginal oocyte retrieval, a thin needle guided by sonogram is inserted through the vaginal wall and enters the ovaries to extract several mature ova. Then shortly before implantation the physician obtains sperm from the male either by masturbation, by using a collection condom, or with surgical methods if there is an obstruction preventing the normal ejaculation of sperm.

Once the sperm and oocytes are prepared, the physician allows the sperm to fertilize the oocyte in a petri dish either naturally or manually with a procedure called intracytoplasmic sperm injection (ICSI). If there is a male fertility problem such as low sperm count, a high concentration of misshapen sperm, or low sperm motility, ICSI is a good procedure to use in conjunction with ZIFT. With ICSI, the sperm is injected directly into the egg in the petri dish to increase the chances of fertilization. Studies are conflicted on whether ICSI will increase the chances of birth defects in newborns, but any increased chance is too low to determine accurately.

After fertilization in vitro, the physician monitors the fertilized oocyte(s) for approximately twenty-four hours until cell division begins. With ZIFT, the physician then implants the zygote into the fallopian tube. This differs from IVF, where the physician waits until the fertilized egg has divided into eight cells before implanting it into the uterus. The location where the physician implants the developing embryo depends on the stage of the embryo's development and thus models the path that the developing embryo would follow after natural conception.

During ZIFT, the physician places one to four zygotes in the fallopian tubes through a surgical technique called laparoscopy, an invasive procedure utilizing a small abdominal incision unlike IVF, where the physician places the 8-cell embryo in the uterus by entering through the cervix. The zygote then travels down the fallopian tube and hopes are that at it will implant on the uterine wall. In a healthy young woman, there is approximately a 32-36% chance that the fertilized egg will implant in the uterine wall and result in pregnancy. The number of zygotes the physician places in the fallopian tube will depend on the patient's age as well as her preference. The greater the woman's age, the more difficult it becomes for pregnancy to occur, thus physicians may insert more

zygotes to increase the chance of a successful implantation and resulting live birth.

As with GIFT, there is a greater chance of an ectopic pregnancy (the fertilized egg implants anywhere other than inside the uterus) when using ZIFT. Although the probability of pregnancy with ZIFT is close to that of IVF, it makes up only 1% or less of all ART currently used in the United States. The invasive surgery of laparoscopy and the relatively higher costs have made ZIFT less appealing than IVF, which due to its popularity has attracted more research and resulted in higher success rates for both fertilizations and live births.

ZIFT, like GIFT, followed the development of IVF as another technique to help achieve pregnancy. Currently, every year in the United States approximately 250-280 babies are born as a result of ZIFT compared to 40,000 babies born from all assisted reproductive technologies.

Sources

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