“Transfer of a Human Zygote” (1973), by David De Kretzer, Peter Dennis, Bryan Hudson, John Leeton, Alexander Lopata, Ken Oucht, James Talbot, and Carl Wood


On 29 September 1973, researchers David De Kretzer, Peter Dennis, Bryan Hudson, John Leeton, Alexander Lopata, Ken Oucht, James Talbot, and Carl Wood published “Transfer of a Human Zygote,” in The Lancet. In the article, the authors describe an experiment that resulted in one of the first pregnancies established via in vitro [5] fertilization [6], or IVF. Prior to the article’s publication in 1973, there was no published evidence demonstrating whether IVF treatment would work in humans [7], although evidence existed showing that IVF worked in other mammals for breeding purposes. At the end of the article, the authors state that the embryo failed to implant into the wall of the patient’s uterus [8], leading to a miscarriage [9] less than a week after the authors found evidence of pregnancy [10] in the patient. The authors of “Transfer of a Human Zygote” were some of the first researchers to perform IVF, although unsuccessfully, which contributed to the overall understanding of IVF as an emerging technology.

The article “Transfer of a Human Zygote” is a short report describing an IVF experiment led by a team of IVF researchers from Australia in 1973. IVF is a medical procedure where scientists fertilize egg [11] cells with sperm [12] cells outside of a woman’s body, in a test tube or glass dish. After the sperm [12] cell fertilizes the egg [11] cell, which then begins to divide, embryonic development begins. The next step in the IVF procedure is to transfer the embryo from the sterile laboratory environment to the inside of the woman’s uterus [8], where it can implant and continue the early stages of embryonic development. The uterus [8] is a female reproductive organ in which embryos develop into fetuses. While the goal of IVF is for the fertilized egg [13] to implant in the uterus [8] and result in a viable [14] pregnancy [10], sometimes that does not happen. Because of that, scientists typically transfer several embryos to improve the possibility of producing a pregnancy [10].

The authors of the article worked together in affiliation with the Monash IVF team in Melbourne, Australia. Physicians Leeton and Wood established the Monash IVF team in 1971. The team also included De Kretser, whose name is also sometimes spelled as De Kretzer, Dennis, Hudson, Lopata, Ouch, and Talbot, who were the other authors of the paper, “Transfer of a Human Zygote.” The members of the team had all studied developmental or reproductive science prior to the creation of the Monash IVF team.

In the article, which is formatted as a letter to the editor, the authors discuss the methods and outcomes of the overall experiment. First, they discuss the various medical complications that the female patient faced that led to her infertility [15], as well as why she and her husband decided to both become subjects in the experiment. Then, the authors describe their methods for collecting egg [11] cells from the female patient and sperm [12] cells from the patient’s husband. In the following five paragraphs, the authors describe their methods for egg [11] cell fertilization [6] and for transferring the fertilized egg [13] into the patient’s uterus [8]. The article ends with the authors’ documentation of changes in the patient’s hormone [16] levels, namely the rise of hCG, which they used as an indication for evidence of pregnancy [10] in the female patient.

In the first section of the article, the authors note previous medical complications that the female patient had which led to her infertility [15]. The authors describe how the thirty-six year old woman had previously had her right ovary [17] and right fallopian tube removed because of pelvic pain, and they added that the woman also had a blockage in her left fallopian tube, making it difficult for an egg [11] cell to release during ovulation [18]. The complications ultimately led to the patient’s inability to conceive children through intercourse alone, because poorly-functioning ovaries often cannot produce viable [14] egg [11] cells, and blocked or absent fallopian tubes [19] mean any produced egg [11] cells cannot reach the uterus [8] for further development. Fallopian tubes are two tubes in the female reproductive system where egg [11] cells are fertilized and then travel to the uterus [8], where they can eventually implant. Implantation is when pregnancy [10] begins. The authors mention that they informed the patient and her husband of possible risks that could occur as a result of the IVF procedure. According to the Mayo Clinic, some of the risks of IVF include miscarriage [9], premature birth, low neonatal birth weight, and ectopic pregnancy [20], which is when an embryo implants outside of the uterus [8], typically in the fallopian tube. They state that the patient and her husband both owned and managed a dairy farm and were familiar with the IVF techniques used on animals in the early 1970s.

In the next part of the article, the authors describe the methods they used to collect the woman’s egg [11] cells and the man’s sperm [12] cells. For five days, the authors gave the patient clomiphene citrate [21], a drug used to stimulate the growth of egg [11]...
Sources

5. "From Vitro to Vivo and Back: Forty Five Years of IVF."
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