

Frozen vs. Fresh: A comparative study on implantation rates and pregnancy success in embryo transfer cycles.

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Introduction

Embryo transfer (ET) is a key procedure in assisted reproductive technologies (ART), with options for both fresh and frozen embryo transfers [1]. A comparative study of these two methods has garnered significant attention in recent years, particularly regarding implantation rates and pregnancy success. Both fresh and frozen embryo transfers have distinct advantages and challenges, and understanding their differences is essential for improving ART outcomes [2].

Frozen embryo transfer (FET) involves the cryopreservation of embryos after fertilization, followed by their thawing and implantation in a later cycle [3]. Fresh embryo transfer (FET) occurs immediately after ovarian stimulation, with embryos being transferred directly into the uterus. One key area of focus in comparing these two methods is the implantation rate—the percentage of embryos that successfully implant in the uterine lining [4].

Several studies have suggested that FET may offer superior implantation rates compared to fresh embryo transfers [5]. A large meta-analysis published in *Human Reproduction Update* (2017) showed that FET significantly improved pregnancy outcomes, particularly for women with polycystic ovary syndrome (PCOS), where the ovarian stimulation process in fresh cycles may lead to a hyper-response and a higher risk of ovarian hyperstimulation syndrome (OHSS) [6]. In contrast, FET cycles reduce the risk of OHSS by allowing for embryo transfer in a cycle without the stimulation of ovaries. This reduced risk allows the body to return to a more natural state, potentially improving uterine receptivity [7].

FET has also been associated with a higher live birth rate in some studies. A 2016 study in *Fertility and Sterility* found that frozen embryo transfers resulted in a higher live birth rate compared to fresh transfers, particularly in women who underwent ovarian stimulation with higher doses of medication [8]. The study suggested that the frozen embryos may benefit from a less stressed uterine environment compared to fresh transfers, leading to better implantation success. The timing of the transfer, when the uterine environment is hormonally optimized through medication, also plays a critical role in the success of frozen transfers [9].

Fresh embryo transfers still have benefits in certain cases, especially when embryos are transferred immediately after

fertilization. Some studies, including one published in *Reproductive BioMedicine Online* (2020), showed that fresh embryo transfers could be equally successful when the ovarian stimulation and response were optimal and no complications like OHSS were present. Fresh transfers are generally quicker and may be preferable in younger women or those with fewer embryos [10].

Conclusion

Both fresh and frozen embryo transfers have their respective advantages. FET has shown promise in improving implantation rates and reducing complications, making it a preferred choice in many ART cycles. However, the decision between fresh and frozen transfers depends on individual patient circumstances, including ovarian response, embryo quality, and medical history.

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