The impact of frozen-thawed embryo transfers on long-term pregnancy and neonatal health.

Cheng Duan*

Obstetrics and Gynecology Hospital, Fudan University, China

Introduction

Frozen-thawed embryo transfer (FET) has become a widely used technique in assisted reproductive technology (ART), providing a means to preserve embryos for later implantation [1]. This method offers several advantages, including the ability to select the optimal timing for embryo transfer and reduced risk of ovarian hyperstimulation syndrome (OHSS). However, there is growing interest in understanding the potential long-term impacts of FET on pregnancy and neonatal health [2].

Research into FET outcomes has indicated that frozen-thawed embryo transfers are generally associated with similar pregnancy success rates compared to fresh embryo transfers, although some studies suggest subtle differences [3]. For example, some reports show a slightly higher risk of preterm birth, low birth weight, or small for gestational age (SGA) infants following FET [4]. These differences are thought to be related to the hormonal environment during embryo development, as FET cycles typically use hormone replacement therapy rather than natural cycles, which may affect uterine receptivity and placental development [5].

Additionally, the cryopreservation process itself may influence the epigenetic regulation of the embryo, potentially leading to altered gene expression [6]. While most studies show that the health risks associated with FET are minimal, concerns remain regarding long-term developmental outcomes [7]. Some evidence suggests a potential increase in the risk of certain conditions, such as autism spectrum disorder and childhood cancers, in children born from FET [8].

On the positive side, FET has been shown to contribute to improved neonatal health in specific contexts. For instance, the ability to freeze embryos allows for better selection of viable embryos, leading to higher-quality transfers and potentially better outcomes for both the mother and the child [9]. Additionally, the improved techniques in cryopreservation, such as vitrification, have significantly reduced the risks of damage to embryos during freezing and thawing, further minimizing potential long-term health impacts [10].

Conclusion

While FET has revolutionized ART and has largely similar pregnancy outcomes as fresh embryo transfers, its impact on long-term neonatal health remains an area of ongoing research. Although risks such as preterm birth and SGA infants have been observed, the overall safety of FET is considered high. Continuous improvements in cryopreservation methods and understanding of the underlying mechanisms will be key in ensuring the long-term health of both the mother and the child.

References

1. Chen M, Li ZL, Lin H, et al. Comparison of Pregnancy and Neonatal Outcomes Between Fresh Embryo Transfer and Frozen–Thawed Embryo Transfer. Ther Hypothermia Temp Manag. 2023;13(3):120-5.
2. Berntsen S, Pinborg A. Large for gestational age and macrosomia in singletons born after frozen/thawed embryo transfer (FET) in assisted reproductive technology (ART). Birth Defects Res. 2018;110(8):630-43.
3. Zolfaroli I, Romeu Villarroya M, Serralta García LB, et al. Impact of prolonged embryo storage on reproductive and neonatal outcomes: a systematic review and meta-analysis. J Assist Reprod Genet. 2024 Oct 19:1-0.
4. Pereira N, Petrini AC, Lekovich JP, et al. Comparison of perinatal outcomes following fresh and frozen-thawed blastocyst transfer. Int J Gynaecol Obstet. 2016;135(1):96-100.
5. Berntsen S, Pinborg A. Large for gestational age and macrosomia in singletons born after frozen/thawed embryo transfer (FET) in assisted reproductive technology (ART). Birth Defects Res. 2018;110(8):630-43.
6. Hajshafiha M, Behrouzilak T, Nobakht V, et al. Comparison of Pregnancy and Neonatal Outcomes in Frozen and Fresh Embryo Transfer in ART Cycles: A Retrospective Cohort Study. Hum Reprod. 2020;8(4).
7. Zhang W, Xiao X, Zhang J, et al. Clinical outcomes of frozen embryo versus fresh embryo transfer following in vitro fertilization: a meta-analysis of randomized controlled trials. Arch Gynecol Obstet. 2018;298:259-72.
8. Rafael F, Robles GM, Navarro AT, et al. Perinatal outcomes in children born after fresh or frozen embryo transfer using donated oocytes. Hum Reprod. 2022;37(7):1642-51.
9. Li B, Zhou Y, Yan Z, et al. Pregnancy and neonatal outcomes of artificial oocyte activation in patients undergoing frozen–thawed embryo transfer: A 6-year population-based retrospective study. Arch Gynecol Obstet. 2019;300:1083-92.
10. Qiu M, Qu J, Tian Y, et al. The influence of polycystic ovarian syndrome on obstetric and neonatal outcomes after frozen-thawed embryo transfer. Reprod Biomed Online. 2022;45(4):745-53.

***Correspondence to:** Cheng Duan, Obstetrics and Gynecology Hospital, Fudan University, China. E-mail: dcheng@uf.ch.co

Received*:** 24-Oct-2024, Manuscript No. AAGGS-24-155110; ***Editor assigned: 25-Oct-2024, Pre QC No. AAGGS-24-155110(PQ); ***Reviewed*:** 08-Nov-2024, QC No. AAGGS-24-155110; ***Revised:*** 13-Nov-2024, Manuscript No. AAGGS-24-155110(R); ***Published:*** 20-Nov-2024, DOI: 10.35841/aajnnr-8.6.236

Citation: *Duan C. The impact of frozen-thawed embryo transfers on long-term pregnancy and neonatal health. Gynecol Reprod Endocrinol.2024;8(6):236*