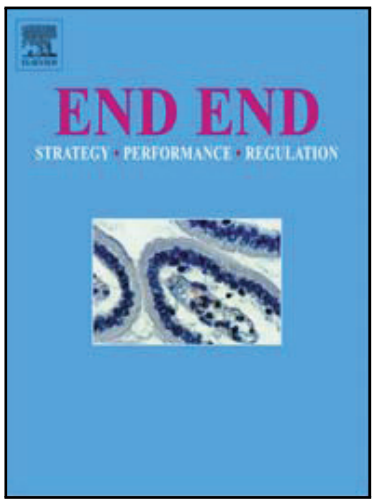
Accepted Manuscript



Biochemical pregnancy loss after frozen embryo transfer seems independent of embryo developmental stage and chromosomal status

Alberto Vaiarelli , Danilo Cimadomo , Pasquale Patrizio , Roberta Venturella , Giovanna Orlando , Daria Soscia , Adriano Giancani , Antonio Capalbo , Laura Rienzi , Filippo Maria Ubaldi

PII: S1472-6483(18)30326-2
DOI: 10.1016/j.rbmo.2018.05.019
Reference: RBMO 1964

To appear in: *The End-to-end Journal*

Received date: 6 December 2017
Revised date: 4 May 2018
Accepted date: 11 May 2018

Please cite this article as: Alberto Vaiarelli , Danilo Cimadomo , Pasquale Patrizio , Roberta Venturella , Giovanna Orlando , Daria Soscia , Adriano Giancani , Antonio Capalbo , Laura Rienzi , Filippo Maria Ubaldi , Biochemical pregnancy loss after frozen embryo transfer seems independent of embryo developmental stage and chromosomal status, *The End-to-end Journal* (2018), doi: 10.1016/j.rbmo.2018.05.019

Short title: Biochemical pregnancy after different frozen embryo transfer policies

Biochemical pregnancy loss after frozen embryo transfer seems independent of embryo developmental stage and chromosomal status

Alberto Vaiarelli [a,b,1,*], Danilo Cimadomo [a,c,1], Pasquale Patrizio [d], Roberta Venturella [e], Giovanna Orlando [a], Daria Soscia [a], Adriano Giancani [a,c], Antonio Capalbo [c,f], Laura Rienzi [a], Filippo Maria Ubaldi [a]

[a] GENERA Centre for Reproductive Medicine, Rome, Italy; [b] Unit of Gynecology and Obstetrics, Department of Human Pathology in Adulthood and Childhood 'G. Barresi', University of Messina, Messina, Italy; [c] Sezione di Istologia ed Embriologia Medica, University of Rome 'Sapienza', Rome, Italy; [d] Yale University Fertility Centre, New Haven, CT, USA; [e] Department of Obstetrics and Gynaecology, Magna Graecia University of Catanzaro, Catanzaro, Italy; [f] Igenomix, Marostica (VI), Italy

* Corresponding author. *E-mail address*: alberto.vaiarelli@gmail.com (A Vaiarelli).

[1] These authors contributed equally to this work.

Key message

There is no evidence of correlation between embryo developmental stage at transfer, use of trophectoderm biopsy procedure or chromosomal constitution and biochemical pregnancy losses. No patient, cycle or transfer characteristics were associated with their occurrence. Future investigations should focus on yet unknown embryonic/endometrial parameters playing a role in implantation.

Abstract

Research question: Biochemical pregnancy loss (BPL), defined as serum beta-human chorionic gonadotropin levels ≥50 IU/l in at least two pregnancy tests, not associated with any ultrasonographical evidence of pregnancy, is often attributed to chromosomal abnormalities; however, no hard evidence exists to support this hypothesis. Are any IVF cycle parameters associated with the occurrence of a BPL?

Design: Retrospective study aimed at evaluating the effect of embryo developmental stage at transfer and chromosomal assessment on the BPL rate in IVF after frozen embryo transfer (FET). Specifically, 641 FET of 1179 cleavage stage untested embryos (Group A), 1021 FET of 1259 untested blastocyst stage embryos (Group B), and 789 blastocyst stage FET of 803 euploid embryos (Group C) were performed in a 6-year period. Only FET were evaluated to avoid a potential effect of ovarian stimulation on endometrial receptivity.

Results: The BPL rates were similar (n = 30/217, 13.8% in Group A; n = 37/412, 9.0% in Group B; n = 42/433, 9.7% in Group C). Neither embryo developmental stage at FET nor chromosomal assessment showed a correlation with BPL. Furthermore, logistic regression analyses did not show any association between BPL and patient, cycle and/or transfer characteristics.

Conclusions: BPL seems independent of the embryo's developmental stage, the use of trophectoderm biopsy and the chromosomal constitution at FET. Similar BPL rates after transferring euploid blastocysts compared with both untested cleavage and blastocyst stage embryos suggest investigating the role of endometrial and other embryonic factors putatively involved in the process of implantation.