INITIAL SERUM HUMAN CHORIONIC GONADOTROPIN LEVELS PREDICT LIVE BIRTH OUTCOMES FOLLOWING FROZEN EMBRYO TRANSFER WITH AND WITHOUT PREIMPLANTATION GENETIC TESTING FOR ANEUPLOIDY (PGT-A).

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OBJECTIVE: Initial serum human chorionic gonadotropin (hCG) levels have an established association with IVF pregnancy outcomes1-3. However, many studies that have examined this association involved fresh transfers, transfer of multiple embryos, and embryos at varying stages of development. As contemporary practice patterns have shifted towards frozen transfer of a single blastocyst, evaluating the predictive value of initial hCG levels in this population is of interest. Additionally, it is not known if the predictive value of the initial hCG level is different for embryos that have undergone PGT-A. The objective of this study is to evaluate early serum human chorionic gonadotropin levels as a predictor of live birth following frozen embryo transfer (FET) of a single blastocyst with and without PGT-A.

DESIGN: Retrospective cohort study.

MATERIALS AND METHODS: All FETs of a single blastocyst at a large IVF center between 2010 and 2016 were reviewed for inclusion. Only those FET cycles resulting in a positive hCG nine days post-transfer were included in this analysis. Initial hCG levels were stratified and live birth rates were analyzed. Chi square analysis was used to compare live birth rates for each hCG category following transfer of embryos with and without PGT-A.

RESULTS: A total of 5280 FET cycles were included and 3417 (64.7%) of those cycles resulted in live birth. The mean hCG for a pregnancy resulting in live birth was 185 (+101.4) versus 60.7 (+76.1) mIU/mL for a non-viable gestation (P<0.01). Table 1 displays the live birth rate following FET of embryos with and without PGT-A, stratified by hCG level 9 days post-transfer. Initial serum hCG levels < 50 mIU/mL were associated with reduced live birth rates. For initial hCG levels between 50 and 150 mIU/mL, the live birth rate was approximately 10% higher following transfer of a genetically screened embryo. Live Birth Rates Initial hCG (mIU/mL) Live birth rate with PGT-A (n=43,592) Live birth rate with no PGT-A (n=1,688) P-value 0.1-50 94/779 (12.1%) 48/510 (9.4%) 0.14 50.1-100 377/534 (70.6%) 163/269 (60.6%) <0.01 100.1-150 549/688 (79.8%) 199/283 (70.3%) <0.01 150.1-200 487/567 (85.9%) 207/244 (84.8%) 0.70 >200 947/1024 (92.5%) 346/382 (90.6%) 0.24