Single-embryo transfer point—it is the way forward

In vitro fertilization (IVF) treatment in the United States is complicated by a high rate of multiple-gestation pregnancies. In 2014, the Society for Assisted Reproductive Technology reported that 23% of women <38 years of age with a pregnancy from their IVF treatment had a twin-gestation pregnancy (1). Although this is an improvement over past years, it remains an unacceptably high rate of twins, considering the medical risks and financial burdens associated with such pregnancies. In this issue of *Fertility and Sterility*, Mersereau et al. have added strong support to the conclusion that single-embryo transfer (SET) is highly effective at reducing multiple-gestation birth rates: a 47% decrease with the use of SET compared with double-embryo transfer (DET). Furthermore, using data from their study and others, Mersereau's team has led a revision of American Society for Reproductive Medicine committee opinion guidelines to unambiguously call for SET for women under the age of 38 years with a favorable prognosis for pregnancy (1, 2). With the increasing weight of evidence and explicit professional guidelines, why is DET still so common in the United States?

In their article, Mersereau et al. report a comprehensive analysis of 10 years of national SET data, finding a 10%–15% reduction in live birth rate (LBR) with the use of SET. This reduction is not attractive to either physicians or patients, for whom IVF pregnancy rates matter a great deal. Indeed, we have shown that, despite education about the risks of twins after DET, most patients would still choose this option over SET, even with as little as a 10% drop in the LBR (3). Yet we think that the 10%–15% difference in LBR may be an overestimate of the negative effect of SET on LBR, considering trends in current clinical IVF care. As reported, blastocyst transfers are becoming increasingly common, and SET live birth rates are higher with blastocysts than with cleavage-stage embryos (2). In fact, the LBR differences between DET and SET were still reduced, but only in the 6%–8% range, when looking at fresh blastocyst transfers in a first or second cycle. Even this may be an overestimate of the true difference between DET and SET, because higher pregnancy rates are seen when the single transferred embryo comes from a larger cohort of available embryos (4). Thus, it is likely a false comparison to judge the success of SET with one or more embryos cryopreserved (at least two embryos in the cohort) against DET with one or more embryos cryopreserved (at least 3 embryos in the cohort). In a recent analysis of national IVF outcomes data, we strictly controlled for the size of the available cohort and found very similar pregnancy rates in younger good-prognosis patients undergoing elective SET versus DET on day 5–6 (4).

We think that this trend of increasing blastocyst transfers combined with improvements in embryo selection techniques (such as preimplantation genetic screening) will result in further increases in SET pregnancy rates and allow clinics to more confidently offer SET with little to no impact on their clinic-specific pregnancy outcomes (4). Despite continuing technical advances, however, it is likely that small but potentially significant LBR differences will persist between SET and DET if as a field we continue to report and emphasize pregnancy rates per transfer instead of cumulative pregnancy rates per fresh IVF cycle. As mentioned in Mersereau et al.'s paper, predictive models suggest that cumulative LBRs with the use of sequential SET are equal or superior to DET. Further studies confirming this prediction will help to convince physicians, patients, and insurance providers of the benefits and feasibility of SET, even if this strategy requires additional transfers and a slightly longer time to pregnancy. A healthy singleton delivery should be the goal of all IVF cycles, and this is best achieved by SET.

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REFERENCES

1. Practice Committee of the American Society for Reproductive Medicine-Practice Committee of the Society for Assisted Reproductive Technology. Guidance on the limits to the number of embryos to transfer: a committee opinion. Fertil Steril 2017;107:901–3.
2. Mersereau J, Stanhiser J, Coddington C, Jones T, Luke B, Brown M. Patient and cycle characteristics predicting high pregnancy rates with single embryo transfer: an analysis of the SART outcomes between 2004–2013. Fertil Steril 2017;108:750–6.
3. Ryan GL, Sparks AE, Sipe CS, Syrop CH, Dokras A, Van Voorhis BJ. A mandatory single blastocyst transfer policy with educational campaign in a United States IVF program reduces multiple gestation rates without sacrificing pregnancy rates. Fertil Steril 2007;88:354–60.
4. Mancuso AC, Boulet SL, Duran E, Munch E, Kissin DM, Van Voorhis BJ. Elective single embryo transfer in women less than age 38 years reduces multiple birth rates, but not live birth rates, in United States fertility clinics. Fertil Steril 2016;106:1107–14.