Is transferring a lower-quality embryo with a good-quality blastocyst detrimental to the likelihood of live birth?

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- **embryo-endometrial ‘‘crosstalk’’**
- to protect the mother from the dangers of an abnormal pregnancy by altering the receptivity of the endometrium

- could be potentially harmful to patients with infertility or recurrent implantation failure

- **Transfer of a poor-quality embryo with a good-quality embryo**
- send aberrant and harmful signals to the endometrium resulting in detrimental reproductive outcomes

- One study investigated this question
- Live birth did not differ between the groups

-single embryo transfer

-double good –good quality embryo transfer

-double good-poor quality embryo transfer

- This study was to determine

- Transferring a second poor-quality embryo with a good-quality blastocyst is associated with a diminished likelihood of live birth

MATERIALS AND METHODS

- A retrospective cohort analysis

- patients who underwent a fresh autologous embryo transfer
  - ✓ either a single good-quality blastocyst
  - ✓ Or double-embryo transfer of a good-quality blastocyst and a second embryo was either
    - a fair- or poor-quality blastocyst
    - or early blastocyst
    - or a morula

Embryo Morphological Assessment

- Modified Gardner and Schoolcraft grading
- Blastocyst grading was simplified to good, fair, or poor quality
- good grade (AA ,AB)
- fair grade (BA, BB, BC)
- poor grade (CB, CC)

- **primary outcome**
- live birth, defined as a living birth after 23 weeks of gestation

- **Secondary outcome**
- multiple gestation, defined as a live birth of multiple infants after 23 weeks of gestation

RESULTS

- 4,640 autologous fresh IVF embryo transfer cycles
- 889 double-embryo transfers with one good-quality blastocyst and a second poorer-quality embryo
- **primary analysis**
- live birth with single- versus double-embryo transfer was 6% higher with transferring a second poor-quality embryo (44% vs. 50%)

- multiple gestations
- 1% in single-embryo transfer v.s 16% in double-embryo transfer with a second lower-quality embryo

- expanding the analysis to patients with vitrification supernumerary blastocysts(8,889 cycles)

- Live birth rates

  7% higher in the double embryo transfer group

- Multiple gestations
- Increased by 20% with the transfer of the second poor quality embryo (1% vs. 21%)

- Impact of the lower-quality embryo on the results
- primary analysis was done base on the stage of the second transferred embryo
- **Transferring a second fair- or poor-quality blastocyst**
- live birth rate improved (49% vs. 61%, respectively)
- increasing the twin birth rate from 1%–27%
- **Transfer of early blastocyst**
- increase in live birth rate with transferring
- increase in twin birth rate from 1%–22%

- **Transfer of a morula**
- did not improve the live birth rate
- Increased multiple gestations

- the ASRM guidelines recommended

✓ **single-embryo transfer in good prognosis patients younger than 38 years**

stratified analysis to patients older than and younger than 38 years

- In 3,202 patients **younger than 38 years old**
- transferring a second poor-quality embryo
- Increased the live birth rate by 7% (51% vs. 58%, respectively;)
- Increase in the multiple gestations rate from 1%–19%

- In 1,438 **patients 38 years of age or older**
- Improvement in live birth from 33%–45%
- The twin birth rate increased from 0%–15%

DISCUSSION

- **Addition of a lower-quality embryo to a good-quality blastocyst transfer**

  - Did not diminish the likelihood of live birth
  - Absolute increase in live birth rate from 1%–12%
  - Absolute increase in multiple gestations rate ranging from 15%–26%.

- Patients 38 years and older benefitted the most from the transfer of a second poor quality embryo
  - Increase in live birth rate of 12%
  - Increase in twins was 15%

- This finding is in line with previous data

- benefits of single embryo transfer in patients younger than 38 years old
- and current transfer guidelines

- Further support the use of single-embryo transfer in good-prognosis patients

- Dobson study
- higher risk of multiples with double embryo transfer
- no difference in live birth rate

- Wintner study
- found no difference in either live birth or multiple gestation with double-embryo transfer

Current study

increased both live births and multiple gestations,

- with the increased risk of multiple gestations being larger.

- **several strengths**
- Large sample size
- an analysis of fresh, autologous transfers on day 5

- **study limitations**
- Retrospective study design
- not have DNA fingerprinting on the transferred embryos

- we believe this large data set does not support the hypothesis that the transfer of a second poor-quality embryo negatively affects the likelihood of live birth in a cycle and increases both the live birth rate

- The patients included in the study represent a good prognosis cohort with a good-quality blastocyst

- This study demonstrate that

- **Even poor-quality embryos have the ability to implant and morphological assessment of embryos is only a partial predictor of success**

conclusion

- This study did not observe a detriment in live birth with the transfer of a second poor-quality embryo

- In patients younger than 38 years
- single-embryo transfer should be encouraged due to
  - high live birth rate and
  - minimizes the risks of multiple gestations