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The relationship between blastocyst inner cell mass size and pregnancy outcome

Nothing to declare
The relationship between blastocyst inner cell mass size and pregnancy outcome

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Blastocyst Transfer

Preferable to day 3 transfer:

• Better odds of transferring a viable embryo
• Better embryo-endometrium synchrony

Hatching Blastocyst
Blastocyst Scoring

Gardner and Schoolcraft (2000) scoring of blastocysts:
• The stage of expansion of the blastocyst
• Inner cell mass (ICM) consistency
• Trophectoderm cohesiveness

Richter et al. 2001
• Positive correlation between ICM shape and size and blastocyst viability

EmbryoScope
Positive Predictors

- Time to:
  - 2, 4 and 8 cells
  - Start of Blastulation
  - Expansion of Blastocyst
- Synchrony of cell divisions

Negative Predictors

- Multinucleation
- Direct Cleavage from 1-3 cells
Our aim

To provide an additional tool for selecting the best blastocyst for transfer
Phase I

Retrospective review of 63 Single Blastocyst transfers

Inclusion criteria

- Continuous culture in the EmbryoScope
- Single blastocyst transfer on day 5
- Easily measured inner cell mass

Age and cycle number were not taken into consideration
Blastocysts were measured 114 – 116 hours after ICSI

ICM/BL ratio = $\frac{\text{ICM diameter}}{\text{Blastocyst diameter}}$
ICM/BL ratio?

ICM/BL ratio

Ratio ≤ 0.25 - no pregnancy
Phase II

• Based on phase I – desired ICM/BL ratio ~ 0.48
• Blastocysts were measured before transfer
• Single blastocyst transfer to 64 women with average ICM/BL ratio of 0.46 (SD±0.073)
Phase II

Pregnancy rate

Age-33.8
Ratio = 0.46

Age-35.1
Ratio = 0.44

43 (67%)

21 (33%)
Conclusions

• Average ICM/BL ratio of 0.48 is associated with significantly increased pregnancy rates

• Measurement of ICM/BL ratio may be used as an additional strongly predictive parameter of successful implantation

• Blastocyst inner cell measurement has become routine policy in our lab
Thank you!