

Embryo selection: Embryologist vs. AI systems – who does it better?

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Introduction

Traditionally, embryologists assess embryo quality based on morphological characteristics and developmental rates to determine the most viable embryo for transfer. However, manual evaluation is inherently subjective and may lead to inconsistent outcomes. To enhance the precision and success rates of embryo selection, AI-driven models have been developed to assist embryologists in identifying embryos with the highest implantation potential. These models analyze extensive datasets, including time-lapse imaging, to predict embryo viability more accurately than traditional methods. Studies have demonstrated that AI can evaluate embryo quality comparably to human experts, offering a promising tool to improve IVF success rates.

Our aim was to compare embryo selection made by an AI system with those made by a human embryologist, in order to evaluate the system's potential to enhance selection accuracy and improve pregnancy rates.

Results

Out of the 75 cases analyzed, the embryologist's selection matched the AI system's recommendation in 50 cases, resulting in 27 pregnancies (54% pregnancy rate).

In the remaining 25 cases where the embryologist's choice differed from AI's recommendation, 11 pregnancies were achieved (44% pregnancy rate). No significant difference was demonstrated ($P > 0.05$).

Pregnancy	Matched selection	Unmatched selection
Positive	27	11
Negative	23	14
Pregnancy	54%	44%

Conclusions

The findings suggest a high degree of concordance (67%) between the embryologist's selections and the AI-based system. The pregnancy rate was higher when the embryologist's choice aligned with AI recommendation (54%) compared to when the selections differed (44%).

Although the results did not differ significantly, they do highlight the potential of AI tools like iDA (*Virto-life*) to support clinical decision-making in embryo selection, potentially improving success rates in IVF treatments.

Further studies with larger datasets are needed to validate these findings and explore the integration of AI systems into routine clinical practice.

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