9th Yazd International Congress and Student Award on Reproductive Medicine with 4th Congress of Reproductive Genetics

Key Lectures

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The use of time-lapse technology for embryo culture, is it necessary?

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Setting up efficient criteria and reproducible approach to identify the best embryo is an important challenge in in vitro fertilization laboratory. Also, embryo culture in optimal conditions is a crucial factor for assisted reproductive techniques success. Conventional incubators and morphological microscopy assessment are routinely used to culture and select embryos with the highest developmental potential to transfer. Conventional microscopy analysis requires embryo removal from the stable condition of the incubator. So, it exposes the embryos to temperature, pH and oxygen level changes. However, the morphological analysis may include discrete data of blastomere size, number and symmetry, fragmentation, the appearance of inner-cell mass, and trophectoderm of the blastocyst.

In recent years, new incubators and culture medium have been improved which provide better development of embryos. Time-lapse technology provides continuous culture and observation of embryos. It eliminates the need for embryo removal from the stable condition of the incubator. Also, time-lapse technology allows embryologists to assess the exact developmental events of embryos. The embryologists are allowed to access and register the embryo development events from extrusion of the second polar body to blastocyst formation. Time-lapse technology has spread rapidly and a large number of in-vitro fertilization labs produced considerable data. Although, there is no consensus on which morphokinetics parameters, or combination of them, should have a main role in the selection of an embryo. Several confounding factors including patient characteristics and clinical procedures have been seen to influence the development of embryos.

However, there is not sufficient research of difference in clinical pregnancy, live birth, miscarriage rates between Time-lapse technology and conventional incubation. The application of this technology is quickly growing, becoming increasingly more accurate. Studies contain deep-learning models, artificial intelligence, and embryo morphokinetics are currently increasing. It enhances hopes for time-lapse technology for clinical use in the near future.

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