Embryoscope

An Advanced Embryo Monitoring Biomedical Instrument

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Abstract

Embryoscope is a machine which is used to monitor embryo from the time of conception. It allows fertility specialist to select the most viable embryo during *in-vitro* fertilization. This instrument reduces the risk of taking embryo from the incubator for observation. It can monitor 12 embryos at once and take photos of each embryo every 5 to 10 minutes during the entire incubation period. With the help of this instrument, fertility expert can also monitor the abnormality in embryo. The embryoscope is an incubator with an integrated camera. The detection of abnormality can be done without harming the embryo.

Introduction

An embryoscope is a machine which uses digital photography and image processing to monitor up to 72 embryos simultaneously, capturing fertilization and providing valuable information which improves embryo evaluation and could increase the chance of a pregnancy. The sophisticated imaging technology provides very clear, high resolution images of each embryo with a frequency of up to 1 image every 10 minutes. This provides some of the most accurate data on various developmental parameters, such as time to first cell division, and has identified abnormal development such as the simultaneous division from 1 cell to 3 cells.

Uses of an Embryoscope

An embryoscope is used in an IVF laboratory and is operated by highly qualified and trained scientists who continue to monitor the additional information an embryoscope provides on the developing embryo. It is well established that evaluation of embryo development currently provides the best available prediction of which embryos will remain viable and more likely to result in a live birth. This method of evaluating embryos has been used for decades. An example is the embryo transition from 2 cells to 4 cells, which occurs at about 42 hours post fertilization. This and many other developmental changes occur in a very time dependent manner with an implied normal time range in which the changes should be completed. Developmental changes outside this range may be associated with reduced pregnancy outcomes.

Benefits of an Embryoscope

1. Increased ability to evaluate an embryo based on a historic record of developmental changes being photographed from the start of fertilization.
2. Less risk to the embryo as they do not need to be removed from their culture media in the incubators, thereby avoiding exposure to adverse environmental variations of which temperature is the most important.
3. A more accurate assessment is possible by time lapse photography which occurs at more frequent intervals than the twice daily checks previously considered the benchmark.
4. Time lapse photography has the potential to provide diagnostic information to explain abnormalities.