

Splitting human embryos to produce twins for IVF may not be viable

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Human twin embryos created in the laboratory by splitting single embryos into two using a common method known as blastomere biopsy may be unsuitable both for IVF and for research purposes, according to a new study led by King's College London.

In the UK, the Human Fertilisation and Embryology Authority Code of Practice makes it clear that clinics should not be producing [embryos](#) for IVF treatment by embryo splitting. Such genetically identical embryos should be used only for research purposes. However, in the US the Ethics Committee of the American Society for Reproductive Medicine has not indicated any major ethical objections to placing two or more artificially created embryos with the same genome into the uterus.

The latest study, led by PhD student Laila Noli from King's College London and published in the journal *Human Reproduction*, set out to determine whether the quality of [human embryos](#) generated by twinning 'in vitro' (in the laboratory) was comparable to the quality of embryos created by fertilization.

Using time lapse monitoring, researchers compared the development of 176 twin embryos created by splitting 88 human embryos at two different stages with embryos created by IVF resulting in pregnancy and live births. The authors found delays in the development of the embryos generated by twinning, compared to those obtain by IVF, suggesting that a 'developmental clock' plays a critical role in earliest stages of human development and may have been interrupted by the splitting process.

Dr Dusko Ilic, corresponding author from the Division of Women's Health, King's College London, says: 'Our study suggests that a 'developmental clock' drives human early development, although we don't yet know the precise ways in which it works. The timings set by this clock appear to be crucial for embryo development and cell commitment into different lineages. Embryo splitting interferes with this development, causing discordance in the period during which the embryo's structure would normally start to emerge and cells begin to specialise. Using a different 'twinning' method might circumvent this problem, but at present embryo twinning does not appear to be viable for IVF or research.'

Dr Antonio Capalbo, co-author from GENERA and GENETYX centers for reproductive medicine and preimplantation genetics, Italy, said: 'Our study provides important information that represents a key step in understanding the molecular basis behind the 'developmental clock' in human preimplantation embryos.'

Dr Yacoub Khalaf, co-author and Director of the Assisted Conception Unit & Centre for Pre-implantation Genetic Diagnosis at Guy's Hospital, says: 'Our research sends a note of caution that twin embryos generated by embryo splitting may not be as reliable, for biological reasons, as previously thought to use for research or for treatment.'

Provided by King's College London

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