Title: Multinucleation per se is not always sufficient as a marker of abnormality to decide against transferring human embryos

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Multinucleation (MN) can result in impaired development of human embryos, presumably from chromosomal aberrations. Dynamic aspects of the chromosomes of human embryos were monitored in vitro. About a quarter of the embryos underwent abnormal cytokinesis. All of these showed MN and their development was impaired significantly. More than three-quarters of embryos that underwent normal cytokinesis at first mitosis displayed MN. However, the subsequent development of embryos with MN was similar to that of embryos without MN in vitro and in vivo. Most blastocysts were euploid. The implantation potential of embryos with MN was similar to that of embryos without MN and healthy babies were born from the former types of embryo following transfer. Thus, the presence of MN after the first mitosis does not adversely affect subsequent development if embryos undergo normal cytokinesis at this stage. The poor development of embryos with MN is mainly caused by abnormal first cytokinesis.