

Orthodox view on the problem of human embryos' cryopreservation.

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The crucial point of the Orthodox anthropology is that the life of a human (possessing full moral status), begins from the moment of conception. This statement is based on Scriptures' witnesses about God's embodiment [5], about God's blessing of a prenatal human [6]. Almost unanimously patristic writings affirm the presence of the human soul in a body from conception [1, 2, 4], admitting possibility of gradual emergence of soul's expression in accordance with gradual development of body's features.

Such Orthodox view on the time of the beginning of a human life is in line with the experience of the early embryologic development of a human. Just after fertilization the expression of embryo's own genes begins (already at pronucleotic stage) [7, 9, 12], zygote's metabolism strengthens [3] and oxygen consumption goes up. The processes of ageing and disruption of an unfertilized oocyte change into synthesis and building of a new matter in a zygote. The new model of cell behavior emerges, demonstrating that the advent of a new autonomous organism has happened. Such organism keeps his own structure, acts independently (based on his unique genetic material) in the environment.

Admitting the fact that an embryo has full moral status implies that we must refer him as a real person. So, the destruction of embryos will be qualified as the direct or mediated murder. Hence any treatment of humans that includes all kinds of procedures implying destruction of embryos or doing harm to them are unacceptable.

One of the most actual medical procedures pertaining embryos is In Vitro Fertilization. The most widespread variant of it uses superovulation, which creates a large number of oocytes in one cycle. They are being fertilized and a lot of embryos emerge. According to contemporary medical guidelines only 1 or 2 embryos should be transferred into uterus [13]. And the other embryos have to be frozen.

The comparative data of IVF done with fresh embryo and IVF done with frozen-thawed embryo shows better chances of getting pregnant and better pregnancy outcomes in the case of frozen ones [14]. But even though cryopreservation affects positively the infertility treatment, there is obvious negative influence of this procedure on embryos: 5 - 13% of embryos with good quality being frozen do not survive after thawing [8, 10], and weak embryos deteriorate or die much more [11].

We have here two processes. The first one is deaths of fresh embryos transferred into uterus (pregnancy is achieved in 38.4% cases [16]). The other one is the loss of embryos cryopreserved (survival rate is up to 95%). But these processes are totally different in nature. Cryopreservation loss is a result of direct human act on wholesome embryos, while loss of embryo transferred into uterus represents the death of genetically defective ones.

Therefore, regardless of low percentage of the death of frozen-thawed embryos, it is the result of a deliberate human act done over an organism with full moral status, and has to be perceived as a murder. So, IVF with cryopreservation needs to be qualified as ethically unacceptable method of treatment of infertility.

Nevertheless some situations during IVF may justify freezing. For example, an inflammation of the endometrium (where implantation has to occur) would bar implantation and the embryo

would be threatened with death. In such cases, after fertilization the embryo transfer should be postponed. In order to save the embryo, it should be cryopreserved, and only by vitrification (a method of ultra-rapid freezing, which has the least number of loss of embryos).

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