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UK: another baby born from three biological parents using immoral technique

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Mitochondria are organelles in the cytoplasm of cells and their main function is energy production. Even the female egg cell - the oocyte - has its own mitochondria. It can happen that these organelles in the oocyte are damaged and this can result in children

being born who with multiple pathologies, such as muscle weakness, blindness, deafness, convulsions, epilepsy, stroke, severe dementia, learning difficulties, diabetes, heart and liver failure. The outcome is often fatal. This disease of the mitochondria, however, remains rare (the disease affects one in 6,500 children).

In order to give birth to healthy babies, as there is no effective cure for adults, researchers have long since developed a mitochondrial replacement technique that can be carried out in two ways. The first is to create a zygote in the laboratory - a human being formed from a single cell - born from the meeting of the gametes of the parent couple, in which the woman is the carrier of the disease, and another zygote born from the meeting of the gametes of two donors, with healthy mitochondria. The two pronuclei - the sperm nucleus and the oocyte nucleus - not yet fused together are then removed from the parents' zygote, and the two pronuclei of the donor zygote are also removed. The parents' pronuclei are then inserted into the donor zygote.

The second technique involves removing the pronucleus of the future mother's oocyte, an oocyte with damaged mitochondria, and the pronucleus of the donor's oocyte, a healthy oocyte. Then the pronucleus of the future mother is inserted into the donor oocyte. Finally this oocyte will be fertilised by the sperm of the future father. In both cases we will have a zygote with the parents' nucleus and donor mitochondria. One of the salient problems with this technique lies in the fact that the child to be born will have the DNA of three biological parents, since even in the mitochondria there is a minimal amount of DNA. More precisely, there are at least 13 important genes in the mitochondria, compared to the 23,000 important genes in the nucleus. So the mitochondria provide a tiny amount of genetic information, but more than enough to say that the unborn child is the biological child of two women and a man.

The first experiments on cytoplasmic transfer were carried out by a clinical embryologist, Dr Jacques Cohen, and his team at the St Barnabus Institute in New Jersey (USA) in the late 1990s. In 2002, the FDA (Food and Drug Administration) advised against these experiments, but in 2014 it reconsidered the issue without making a definitive statement. Worldwide there are an estimated 30 to 50 children born with this technique, some of them now teens or young adults. One case caused quite a stir: in the United States in 2016 a child was born with this procedure by the staff of Dr John Zhang (click here and here for a more in-depth study), but the procedure did not go smoothly because some of the mother's diseased mitochondria were accidentally imported into the donor oocyte.

The only country in the world where this technique has been expressly approved

is the United Kingdom. In 2015, Parliament legitimised this procedure. A few days ago, the Human Fertilisation and Embryology Authority (HFEA) announced that “less than five children” (sic) have been born until 20 April 2023. This news was also relayed by the BBC, which, evidently to arouse the reader's attention, titled one of its articles “Baby born from three people's DNA in UK first”. Instead, as stated by the HFEA, this is not the first time this has happened.

There are numerous moral reservations about this technique. Firstly, by natural law a person must be the offspring of two persons (and of two persons of different sexes) and not of three or four or more persons. This procedure therefore represents an intrinsically evil action and this can never be justified by a good intention, such as wanting to achieve the birth of healthy children. Parental multiplication, though not of a biological nature, has been a social phenomenon for some time: think of heterologous fertilisation and of womb for rent. The case presented here, is anticipated by the phenomenon of same-sex parenthood: just as these children have two biological mothers, also children brought up in a lesbian couple have two 'mothers', albeit only one social one. Let us therefore say that these embryonic experiments were either preceded or in any case accompanied by a culture that wants to erase the natural order of procreation and filiation.

Another censure of an ethical nature, closely consequent on the first, relates to the identity of the person: the genetic alteration, albeit quantitatively small and qualitatively relevant because it affects the essence of the person, since we are talking about important genes that intervene in the very first phase of the person's development. The objection “even in transplant recipients, the recipient's organism has a share of DNA from someone other than the parents” can be overcome precisely by referring to the binomial 'essential/accessory'. The DNA of the organ or tissue (think of blood from a bone marrow transplant) taken from a third party does not affect the biological identity of the person. Otherwise, the intervention would be censurable: think of a futuristic intervention that would change the chromosomes that characterise a person's sex.

Another reason for moral censure concerns the fact that in order to conceive a healthy embryo, it is necessary to go through artificial fertilisation. There are essentially two reasons for rejecting such a technique: reification of the unborn child and exposure to a high risk of death. In particular, in a technique described earlier, a zygote is voluntarily destroyed in order to create a healthy one. With regard to the reification of the child, these procedures encourage a mentality that sees the child as an object that

can be produced, assembled, dismantled, and sacrificed.

So the baby produced in this way is the result of two intrinsically evil actions: the transfer of mitochondria and extracorporeal fertilisation. But the immorality of an act can also derive from the conditions of the act, i.e., in this case, from the effects emanating from the action itself. A first effect concerns, as already noted, the violation of the child's identity. Secondly, negative effects on the health of these children cannot be excluded. Up until 2015, 23 children with replaced mitochondria were born in the States. All 23 presented health problems. Dr Ted Morrow, an evolutionary biologist at the University of Sussex, conducted mitochondrial replacement experiments on lab animals. He says: “For the mice, there were changes in the cognitive ability … to learn and do things using their brains. In fruit flies and in beetles there were changes in male fertility, changes in ageing”. The literature then records these other damages: early miscarriages, then death of the child, lack of an X chromosome, autism.

Lastly, there is another possible if not probable negative effect: the possible ramifications of these techniques. If it is permissible to intervene on a person's genetic identity for therapeutic purposes, why not intervene on this same identity - not only by means of the mitochondria but also by modifying the nucleus - for preventive purposes or for ameliorative purposes, so that, for example, the child has more memory, or is blond with blue eyes, or is particularly gifted at painting?