Ectolife: A New Age of Ai-Assisted Conception

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ABSTRACT
A facility for creating artificial wombs for genetically altered lab infants has been invented by German biotechnologist Hashem Algeli, owner of EctoLife. Babies in which every characteristic was carefully chosen by the parents from conception to birth. According to Hashem, this is a good choice for women who had their wombs surgically removed due to cancer or other reasons, as well as those who do not want to undergo a C-Section, go through the IVF process or even use a surrogate. Artificially created baby foetuses are growing within life-sized pods at this facility. It also presents an elite package that allows the parents to select the baby's skin tone, hair colour, and even eye colour. Building a prototype by merging all the elements into a single gadget will help to carry out the genetic erections in cases of hereditary health issues. According to the researchers involved, this facility will permit extremely intelligent children. The facility has 30,000 baby-growing capacity. Using this facility will re-evaluate Darwin's idea of the survival of the fittest.
Keywords—Artificial Intelligence (AI),Artificial womb, conception, pods.

1. Introduction

The concept of development of embryos outside the human body is not new, from Mahabharata the world-famous epic says Rishi Vyasa helped Gandhari queen of Dhritarashtra to produce a hundred of babies at once with the help of the pots and produces strong and powerful children's from the history itself the ectolife concept was implemented. Ectolife is all about improving reproductive technology. To provide a safe, nurturing and infection-free environment for the development of embryos outside the human body. According to Hashem, every person should have access to safe and reliable options when it comes to starting a family. Ectolife prioritizes the wellbeing of both parents and babies. The goal of the process is to offer an alternative option for those who don't want to undergo natural pregnancy, and at each stage of the process is carefully monitored for a successful pregnancy. The artificial womb could provide a solution for those unable to conceive and can also avoid high-risk pregnancies and premature birth. Countries with low populations can take this as a solution.

2. Working of Ectolife

The goal of an "ectolife" system, an artificial womb based on AI, is to offer a setting similar to a natural womb for the gestation and growth of a fetus outside the mother's body. The objective is to promote a preterm or premature baby's growth and, possibly, provide a future gestational alternative. The artificial womb mimics the uterus of the mother by creating a bioreactor-like environment which offers the developing fetus a stable, sterilized, and controlled environment.
A substitute for amniotic fluid is placed within the bioreactor. This substance is crucial for protecting the embryo and promoting lung development because it enables the fetus to practice swallowing and breathing. The fetus requires a method to get the oxygen and nutrients it needs, as well as a mechanism to get rid of waste. This is accomplished by a link to the bioreactor that resembles an umbilical cord and imitates the placenta's role in a natural womb. To monitor and control the environment in the bioreactor, AI algorithms are used. Temperature, pH level, oxygen and carbon dioxide concentrations, and nutrition levels are all measured by various sensors. This

information is used by the AI to modify the environment to promote the foetus's healthy growth and development. To respond to the unique needs of each fetus, the AI system can also apply machine learning and adaptive algorithms. It can learn from the past experiences and make real-time adjustments to provide personalized support for each individual's development. The artificial womb's AI system can communicate with healthcare providers, relaying vital information about the foetus's progress and any potential issues that may require intervention.

3. How artificial intelligence helps in ectolife

The Ectolife is implemented with the help of artificial intelligence. AI is used to understand and control the biological processes of the foetus. Ai has the ability to do many works at a time which makes them ideal for analyzing the fetal health parameters during the gestation inside the pods and also Ai can control over temperature, deliever the necessary nutrients, oxygen to the foetus.

With the help of Ai the foetus will grow in safe environments outside the mother's body. In addition, the technology helps to watch over the growth of unborn babies with a smartphone application now we can access the real time data about babies development from the comfort of home. With this technology, parents can track the babies heart rate, breathing rate, temperature and oxygen levels. With the help of application we are able to see videos and capture every moment of our babies growth.

4.Why artificial womb facility needed?

Artificial wombs, also called extrinsic genetic systems, are being researched and developed to address medical and social challenges related to human reproduction and prenatal care. These artificial wombs are considered necessary and beneficial for several reasons.

1.Premature birth prevention: Premature birth is a major health problem worldwide and can lead to complications and death in new-borns. Artificial wombs have the potential to provide preterm infants with an optimal, controlled environment for gestation to continue outside the mother's body until they are more developed and viable.

2.Improving neonatal care: Despite advances in modern neonatal intensive care units (NICUs), there are still limitations in replicating the natural uterine environment. Artificial wombs can provide a more natural and friendly environment for premature babies, ultimately leading to better outcomes and reducing the risk of complications.

5.Advantages of Ectolife

● EctoLife allow women who are unable to carry a baby during pregnancy still have children.
● Babies who are born too soon are more likely to die and have a much higher risk of lifelong health problems such as cerebral palsy or poor hearing or vision can be drastically reduced
● Artificial womb may be safer than normal womb as the influence of the following can be eliminated: accidents, drugs, alcohol, pollutants, diseases, and inadequate nutrition.
● Can be safer for women who may have the danger to die due to childbirth.
● Allow same-sex parents to have a baby without hiring a surrogate or adopting.
● Can reduce the rate of abortion as the baby can be transferred to an artificial womb.
● Equality between males and females, and eliminates loss of pay or maternity leaves.
● Doctors and parents often have to decide whether to revive a very premature baby, knowing that it could spend months in neonatal intensive care and then die or be seriously handicapped. Instead of intensive care, prematurely born babies could be put back into an artificial womb that mimics the normal course of gestation as much as possible. In this way, premature babies who would otherwise be too premature for survival could be saved.

6. Disadvantages of Ectolife

●Studies have been done and any hidden issues can only be discovered by trial, error and practical application.

●Mother is unable to breastfeed their child because the child isn't in the natural womb, which would cause the milk production to be initiated. The foetus is calmed and assisted in growing in a healthy way by the mother's heartbeat and warm safety while it is in distress.

●If numerous people use this method, it might eventually be impossible for organisms to reproduce normally.

●The mother-child relationship may naturally weaken significantly with time.

●Depending on one's religious or cultural beliefs, it might be regarded as unethical. The unborn child would also be unable to give his or her consent to being artificially raised

CONCLUSION

Artificial womb technology will make a strong base for future technology in reproduction science. This mission helps the dream of parenthood come true in a safe and compassionate manner. With the help of Ectolife where infertility is no longer a barrier where couples can experience the joy of parenthood. Ectolife is providing personalized care throughout the entire process, ensuring a comfortable and supportive experience. Women have the right to choose over her body and the outcome of their potential fetus. Ectolife will be a better choice than abortion but the downside of the artificial womb technology should be also taken into consideration. Artificial intelligence plays a vital role in artificial womb technology. Overall we can say that Ectolife offers huge potential benefits for parenthood.

References
1. Julia Dalzeil, The Impact of Artificial Womb Technology on Abortion Jurisprudence, 25 Wm. & Mary J. Women & L, 2019: 327.[CRISS REFF].
2. Hern, warren, Abortion: medical and social aspects.[CROSS REF]
3. Reporter, Metro Tech. "World's First 'artifical Womb Facility' Is Glimpse of Pregnancy in the Future." Metro,13 Dec.22.
4. Lorna Adams, Mark winterbotham. Pregnancy and maternity-related discrimination and disadvantage: first findgs, 23 July 2015.[CROSS REF]
5. Randall & Randall,supranote,23, at 292.
6. MED LAW REV, 2020; 28(2): 342-374.2019 DEC 18. [CROSS REF]
7. Pregnancy birth and baby, Surrogency. [CROSS REF]
8. Amy Borovy, Beyond Choice: A new framework for abortion? [CROSS REF] 1995.
9. Nicola Davis, Artificial womb: Dutch researchers given €2.9m to develop prototype, 8 oct.., 2019. [CROSS REF]