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UTERUS TRANSPLANTATION: A RAPIDLY EXPANDING FIELD

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ABSTRACT

Even if reproductive medicine has been remarkably successful during the past few decades, with the introduction of in vitro fertilization in the late 1970s and intra-cytoplasmic sperm injection in the early 1990s, it has been repeatedly mocked by infertility due to an absolute uterine factor. No treatment has been available for the women suffering from an absent or dysfunctional uterus, in terms of carrying a pregnancy.

Uterus transplantation (UTx) has been successfully introduced as a treatment option for women with absolute uterine factor infertility (AUI). AUI representing approximately 3% to 5% of the female general population is linked to either congenital uterine agenesis (Mayer-Rokitansky-Küster-Hauser syndrome), major congenital uterine malformation (hypoplastic uterus, fraction of bi-cornuate/uni-cornuate uterus), a surgically absent uterus, or an acquired condition (intrauterine adhesions, leiomyoma) linked to uterine malfunction that causes implantation failure or defect placentation.

Keywords : uterus, transplantation, infertility

INTRODUCTION

Infertility due to a lack of anatomical uterus or functional uterus, i.e, an inability of the uterus to carry a pregnancy, has eluded reproductive medicine for a long period of time. Uterine factor infertility is estimated to affect thousands of women worldwide and can be caused by either congenital Müllerian malformations, such as in the Mayer–Rokitansky–Küster–Hauser (MRKH) syndrome, or more commonly acquired as in the cases of women suffering from Asherman’s syndrome, pregnancy interfering myomas, or hysterectomies. Since no successful treatment has been available for absolute uterine factor infertility, the options for these women to become mothers have been either to adopt or to go through with gestational surrogacy, a procedure that is currently banned in many countries.

A transplantation of a uterus, unlike any other organ transplantation, involves no less than four parties – recipient, donor, partner of the recipient, and the possible future child. All of them are exposed to potential risks if the surgery has to be performed. Uterus transplantation is a complex procedure and is surrounded by not only medical and psychological implications but also ethical, moral, and cultural concerns and expectations.

HUMAN UTERUS TRANSPLANTATION

The first modern day attempt at a uterine transplant occurred in 2000, in Saudi Arabia. Dr. Wafa Fageeh transplanted a uterus, taken from a 46-year-old patient, into a 26-year-old patient whose uterus had been damaged by hemorrhaging following childbirth. The first successful uterus transplant was performed in Sweden in 2014. As of late 2020, roughly 100 uterus transplants have been performed in the world, including about 30 in the United States. The first uterine transplant performed in India took place on 18 May 2017 at the Galaxy Care Hospital in Pune, Maharashtra. The 26-year-old patient had been born without a uterus, and received her mother's womb in the transplant. Womb transplants have been performed all over the world, with more than 70 procedures carried out so far. At least 23 babies have been born as a result, demonstrating that womb transplants can work. While the procedure offers a different option to adoption and surrogacy, it is associated with significant risks, including multiple major surgeries and the need to take medications that help to dampen the immune system to prevent rejection of the womb. To date there has been a 30% risk of a transplant being unsuccessful.

PROCEDURE

If the woman is approved for the procedure, the process starts with creating an embryo using in vitro fertilization (IVF), in which the woman's eggs are retrieved and fertilized with sperm. Next, a healthy uterus is transplanted into the patient. About six months after a successful uterus transplant, a single embryo is implanted into the uterus. If it leads to a successful pregnancy, the pregnancy is treated as high risk, and the baby will be delivered via Cesarean section, because women with UFI cannot delivery vaginally. Babies born from uterus transplant recipients tend to be born early, at about 35 weeks of gestation. Caring for these premature infants often requires a stay in a neonatal intensive care unit for several weeks. The entire process can take 2-5 years.

The recipient has to look at potentially three major surgeries. First of all, there is the transplantation surgery. If a pregnancy is established and carried to viability a cesarean section is performed. As the recipient is treated with immuno-suppressive therapy, eventually, after completion of childbearing, a hysterectomy needs to be done so that the immuno-suppressive therapy can be terminated.

CONCLUSION

Uterus transplantation was a breakthrough in the field of reproductive medicine and has so far showed a remarkable successful outcome. Bearing this in mind, this procedure is still only proof of concept for uterus transplantation as a treatment for uterine factor infertility in a live related donor setting by laparotomic technique.

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