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Editorial

Uterus transplantation in transgenders: Will it happen one day?



Since the demonstration of its efficacy in 2014 [1], uterine transplantation (UT) has made it possible for patients with absolute uterine factor infertility (AUF) to envisage the possibility of one day bearing their own children. According to the recent congress of the International Society of UT, which was held in Ghent in October 2018, 52 UTs have been performed, leading to the birth of 13 healthy children in total.

Recent societal developments, including requests to expand the indications for assisted reproductive technology (ART), and technological advances have raised the question of access to UT for transsexual patients in the context of uterine infertility. Gender dysphoria is a condition in which individuals identify themselves as having a gender different from the sex assigned to them at birth. Transsexuals are individuals with gender dysphoria who feel the need to transition physically from one sex to another. The prevalence of male-to-female transsexualism is between 1/10,000 and 1/45,000 in Europe as a whole, and is thought to be similar in France [2]. According to ICD-10 (International Classification of Diseases) criteria, transsexualism is defined by the following three criteria: (1) a desire to live and be accepted as belonging to the opposite sex, generally accompanied by a desire to modify the body through surgery and hormonal treatment to resemble the desired sex as much as possible; 2) persistence of the gender identity concerned for at least two years; 3) condition not a symptom of another mental disorder or chromosomal abnormality. Male-to-female transsexuals can apply to the courts (*tribunal de grande instance* in France) to be legally recognized as women. For such recognition to be granted, the person must present the case that their sex status on official records does not correspond to that in which they present themselves to the court [2]. This request cannot be refused on the grounds of the person not having undergone medical treatment [3,4]. As a result of this change in legal status, male-to-female transsexuals become women with infertility due to the absence of a uterus. UT could, theoretically, cure this infertility and would thus become the final step in gender reassignment in these women.

UT is still in its infancy, and some authors are already raising questions about the legal, ethical, and technical challenges of UT for transgender women [5,6]. These questions appear highly topical, but it should not be forgotten that the first UT was performed in 1931 in a transgender woman, the Danish artist Lili Elbe, who died three months after the procedure [5]. We aim here

to raise awareness of this sensitive issue raised by the potential uses of UT among members of the medical profession. We will address the possible technical and anatomical obstacles to UT in transsexual patients. We will not address ethical and legal considerations here, as these concerns are best dealt with in the legal and societal domain.

Is UT technically possible in transsexual women?

Endocrinological treatment is the first step in hormonal and surgical gender reassignment in transgender women. It consists of two phases: a “reversible” phase in which the male hormones are suppressed, followed by an “irreversible” phase consisting of orchiectomy and the administration of female hormones, which continues after surgery [2]. The drugs used to suppress testosterone production are cyproterone acetate or LH/RH agonists, associated to various degrees with spironolactone or finasteride, which have antiandrogenic effects. In the second phase, 17- β -estradiol, a natural female hormone, is administered transcutaneously [2].

The second stage of hormonal and surgical gender reassignment is that of vaginal reconstruction, allowing sexual activity. Many methods have been developed, but vaginoplasty, involving the involution of penile and scrotal skin, is the most common practice. However, in some cases, there may be too little skin available to obtain a satisfactory vaginal cavity [7]. In such cases, other techniques, such as sigmoidoplasty, can be used [8]. Vaginoplasty may expose the patient to a significant risk of infection in cases of UT, potentially compromising a possible pregnancy. Indeed, in cases of vaginoplasty using penile and scrotal skin, the high pH in the newly formed vaginal cavity, and the absence of the vaginal flora normally associated with the vaginal mucosa lead to a risk of vaginal infections in the context of induced immunosuppression [9]. In the UT following sigmoidoplasty, the digestive secretions of the sigmoid graft might enter the uterus, rendering embryo implantation difficult and leading to spontaneous miscarriage, as in the first pregnancy after UT reported in Turkey [10]. The viability of the sigmoid graft might also be compromised by the surgical procedure for UT. A similar risk of a loss of graft viability following UT also exists for vaginoplasty with penile and scrotal skin [11].

Uterine vascularization poses no particular problem, as it would be ensured by endolateral anastomoses of the external

iliac vessels, as in non-transsexual patients. However, fixation of the graft might be problematic, due to the absence of the round, uterosacral or parametrial ligaments used in non-transsexual patients. However, it may be possible to find other peritoneal fixation sites in the pelvis in transsexual women. The use of uterine grafts from deceased donors would have the advantage of allowing the collection of more tissue than would be possible with a living donor, and this might facilitate intrapelvic fixation.

Is pregnancy possible in transsexual women?

In the case of UT in a transsexual woman, pregnancy would necessarily involve the use of oocyte donation and *in vitro* fertilization (IVF). It should be borne in mind that all pregnancies in non-transsexual women with transplanted uteruses to date have involved IVF, because the Fallopian tubes are not transplanted, but with the patient's own gametes (no oocyte donation).

Hormonal replacement in a transsexual patient would be very similar to that in women with uterine or ovarian infertility. If the initial treatment included finasteride or spironolactone, these treatments would need to be stopped when trying to conceive, given the potential teratogenic risks of such treatment [9]. The need for both uterine and oocyte donation calls into question one of the chief objectives of UT: making it possible for the woman to bear her own genetic child. However, unlike non-transsexual women with both uterine and ovarian infertility and no frozen oocytes of their own, a transsexual woman could use her own gametes (sperm) collected and frozen before reassignment surgery, to fertilize the donor oocyte. This would make it possible for a transsexual patient undergoing UT to carry her own genetic child.

The immunosuppressive treatment and obstetric follow-up would be no different from that conventionally used in patients after UT. However, the narrowness of the male pelvis might prove a major problem, as it could potentially prevent expansion of the uterus during pregnancy, thereby hindering the correct development of the fetus [6]. This narrowness of the pelvis might also necessitate cesarean delivery, because it seems unlikely that the male pelvis would be able to adapt sufficiently to allow unobstructed vaginal delivery. However, it is also important to remember that, to date, all deliveries in non-transsexual women who have undergone UT have been by cesarean section.

In conclusion, objectively, UT would be technically feasible in transsexual patients and would be similar to the procedure performed in non-transsexual women with ovarian and uterine infertility. The transsexual patient would have the advantage of being able to use her own, previously frozen, male gametes. Obviously, it is not our role to legislate or take a stand concerning access to ART and UT for these women. Indeed, it is not because it is technically possible that such procedures must necessarily be performed, and it is not up to the medical profession alone to decide on the possibilities for fertility in transsexual women, particularly as this topic is a subject of heated debate in society. There will certainly be a period of reflection concerning this issue, given the progress made in the field of UT. However, such a procedure is likely to be first performed in countries in which ethical considerations are less contentious than in France.

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