

Re-Evaluating the Ethics of Uterine Transplantation

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ABSTRACT

In February 2016, the Cleveland Clinic initiated the first attempt at cadaveric uterine transplantation (UTx) in the United States. The transplantation was ultimately unsuccessful, but it opened doors for further research on both live and cadaveric UTx. While initial strides toward successful transplantation have been made, questions persist on the ethics of UTx: whether the uterus is a vital organ, whether we should prioritize live or cadaveric options, and how the procedure should be covered by health insurance. If we agree that the goal of the medical profession is both to treat and improve quality of life, then the question of whether or not infertility is considered a disease becomes inconsequential in the discussion. As such, the medical enterprise should move forward with research in UTx. In doing so, considering the ethical implications of UTx remains essential—and we must remember to pair innovation with regulation.

Two years ago, Mats Brännström at the University of Gothenburg in Sweden reported the first successful live birth following uterine transplantation. A 61-year-old woman who had been postmeno-

pausal for seven years had donated a uterus to a vetted recipient. The pregnancy suffered from no complications until gestational week 31, day five, when the woman who received the transplant was admitted for pre-eclampsia, and a healthy baby boy, named Vincent, was delivered by cesarean section, with normal weight and Apgar scores.¹ In the following month, Brännström reported two additional successful live births, this time without pre-eclampsia.

While the long-term implications of uterine transplant for Baby Vincents and their mothers remain unknown, the work that Swedish researchers have done is impressive. For those who suffer from absolute uterine factor infertility (AUI), the Swedish researchers have opened a door to an alternative to adoption or gestational surrogacy. (It is worth noting that gestational surrogacy is banned in Sweden and other parts of the world, unlike in the U.S.²). Moving forward, Brännström's team hopes to reduce surgery time and risk using three-dimensional mapping for advanced planning and using robotic assistance.³ Given this, one can assume that researchers will continue to innovate and improve the uterine transplant procedure to the extent that it gains “alternative” rather than “experimental” status.

As the U.S. now looks to experiment with the possibility of UTx, many relevant ethical considerations have been raised that have kept deliberative conversations ongoing. In particular, three points are

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worth focusing on: (1) the medical necessity of UTx when considering the vitality of the uterus, (2) the issue of live versus cadaveric donation in UTx, and, finally, (3) the question of funding streams for these transplants. This article offers a brief overview of the aforementioned ethical considerations and concludes by arguing that the U.S.—as a leader in medical research—should move forward with UTx, to set a regulatory model that can be adopted/emulated by countries that similarly offer this transplant procedure.

IDENTIFYING THE STAKEHOLDERS

Patients

Within the U.S., of approximately 62 million women of reproductive age, almost 9.5 million suffer from uterine factor infertility (UFI), and seven million suffer from absolute UFI.⁴ UTx offers these women an alternative to adoption or gestational surrogacy. It allows a genetic link between parent and child (not possible through adoption), and offers some of the physical and psychological aspects of pregnancy and childbearing that are lost in gestational surrogacy.⁵ To those who identify UFI as a “diseased state,” a transplant would be a step toward a “treatment” for infertility, although it cannot be seen as a “cure,” as UTx would still require assisted reproductive technologies (ART) through in-vitro fertilization (IVF) and—more importantly—a transplanted uterus would need to be removed after a given number of pregnancies to reduce the long-term side-effects of immunosuppressive medications.⁶ Some of the obvious harms to a patient who receives a transplant would include (1) repeated surgeries: a cesarean section to deliver each child, and at the completion of childbearing, a hysterectomy; (2) the side-effects of immunosuppressive medication, which would subside upon removal of the uterus (the same cannot be said for other, nonvital transplants like the hand and face that require lifelong immunosuppression); and (3) the possible psychological harms of feeling obligation, indifference, or guilt at sharing another’s organ and—by association—that person’s reproductive identity.⁷

Donor

A donor faces more risks in donating a uterus than she would for other organs due to the greater duration (roughly 10 hours) it takes to procure the organ.⁸ Risks similarly seen in hysterectomy would be characteristic of live donors, including bleeding, infection, damage to the urinary tract or bowel, and/or adverse reactions to anesthesia.⁹ There are also

potential risks for coercion, especially in the context of related donors.¹⁰ This can be avoided through altruistic donation.

Fetus and Potential Child

Medical risks to the potential child are, as yet, unknown. However, before the successful birth of Baby Vincent, Brännström posited that immunosuppressive medications could potentially lead to prematurity and the risk of the newborn being small for gestational age (SGA), both contributing factors to neonatal death.¹¹ However, the subsequent successful pregnancies indicate that, with proper prenatal care, immunosuppressive medications should not cause uncontrollable complications during pregnancy. Some have pointed to the aforementioned medical harms in forming an argument similar to arguments against ART: one is better off not having been born, given the medical risks of UTx and ART. Others find this line of reasoning weak, unconvinced that “existence” is a harm done upon an agent.¹²

Third Parties

There are also relevant, nonclinical parties who have a stake in this discussion: partners, doctors, and funders. Partners of recipients—despite the stress of planning for and waiting during transplantation—have reportedly responded positively in psychological follow ups by Brännström’s team, grateful to the recipient and for their relationship.¹³ Medicine also has much to benefit from UTx: the procedure will continue to push ART forward, and also (if funding for UTx remains private) be a considerable source of revenue. This leads to the final stakeholder: funders. If health-maintenance organizations (HMOs) decide that infertility is indeed a disease, and medical experts can point to UTx as a treatment option, it will present significant costs to funders. Funding could be paid with taxpayers’ dollars; in this scenario, debate would open on whether UTx would be a cost-effective means to treat infertility.

THE “VITALITY” OF THE UTERUS

Within the Montreal Criteria for the Ethical Feasibility of Uterine Transplantation, one of the clinical ethical points made against the practice of UTx is that—unlike the heart, liver, or kidneys—the uterus is a “non-vital organ” that is not physiologically necessary for life.¹⁴ This is the starting point for an interesting conversation, because it raises important questions: (1) What are the doctor’s professional role and obligations? (2) Do we accept infertility as a disease? and (3) How do we define vital

organs? These questions are a basis for how institutions could evaluate requests for UTx.

The foundational question is, in this context, what does the professional role of the medical enterprise entail? And, relatedly, how does that play out in the obligations we owe our patients? Is the role of the physician simply to treat disease or is it also to improve the quality of life? These are tricky questions. Some may immediately point to palliative care as a compassionate example of physicians who are not (solely) focused on treating disease. In this field of medicine, the ultimate goal of the physician is to minimize pain and improve quality of life.¹⁵ But the questions are more complicated when debating the necessity of elective cosmetic medical procedures performed by plastic surgeons. This specialty also improves patients' quality of life, even with, as Eric Swanson termed it, its "commercialized underbelly."¹⁶ In both instances, disease is not the primary concern: in palliative care, disease is no longer being treated, and, in plastic surgery, there may be no disease to treat. Despite the lack of disease, both fields have credibility in the medical arena. This implies that, within medicine, the primary goal of treatment is complemented by a secondary goal, to improve the quality of life. The acceptance of "non-vital" transplants like that of the hand and face further support the notion that the transplant enterprise has multiple goals (saving but also improving lives).¹⁷ If we accept this premise, we need not move further in argument: UTx improves the quality of life of infertile women who express a desire to become pregnant.

Some would still argue that quality of life should not be a concern within medicine; as such, treating disease becomes the sole goal. This leads to the following question: How do we define disease, and does infertility fall under that category or not? A disease is any disorder of the human body that produces signs and symptoms that are generally replicated across patients. The World Health Organization (WHO) defines infertility as "a disease of the reproductive system defined by the failure to achieve clinical pregnancy after 12 months or more of regular unprotected sexual intercourse."¹⁸ Whatever the causation—UFI, cancer, and so on—infertility is a disorder that has recognizable symptoms across patients; and, given expert opinion of its status as a disease, it demands treatment.

Some may rush to argue that a uterus is not a "vital organ"—but what makes an organ vital? The uterus is not necessary to individual survival. Generally, the transplant community has sought to uphold a commitment to save lives; and, on the sur-

face, UTx does not do so.¹⁹ A counterclaim is that one of the vital functions of the female body is to reproduce; without this, humanity would cease to exist. From a Darwinian standpoint, the organ is vital for "fitness" and the survival of the species.

Furthermore, with advances in technology, one could make the case that some organs are losing their "vitality." For example, there have been cases in which patients have lived on dialysis for 20 to 30 years; does this lead us to conclude that kidneys are no longer vital to human function?²⁰ No. The point of medicine is to help make our patients whole; to restore their body to a proper, nondisease state of function in which they can perform all the functions of their species and sex.

LIVE OR CADAVERIC TRANSPLANTS?

Brännström and his team have put forth medically relevant and pragmatic reasons to argue in favor of live transplantation, at least in this early stage of UTx.²¹ Not only does live donation allow proper planning with donor and recipient, it also allows logistical flexibility leading up to, and during, the procedure. From a clinical standpoint, the viability of the organ is greater in live donation, with minimal ischemia and improved graft survival due to minimal systemic inflammation.²²

Those in favor of deceased or cadaveric donation offer both clinical and ethical arguments. In pointing to an unsuccessful instance of UTx in Saudi Arabia, it has been reported that the length of vasculature used was insufficient to supply blood to the uterus.²³ It would be impossible to excise a vessel graft that is the preferred length from a live donor, but from a living donor, the abdominal aorta and vena cava could be integrated into the graft.²⁴ But beyond the science, proponents of deceased donation also argue on several ethical fronts. For one, they claim that deceased donation can avoid instances of coercion and manipulation, by both family members and/or researchers (for example, organ harvesting).²⁵ More interestingly, proponents of deceased donation find that harm to a donor is justified in common transplant cases like the living donation of kidney, liver, bone marrow, *et cetera*. But, given the early stages of UTx, the unfavorable harm to benefit ratio does not (yet) ethically justify live donation.²⁶

WHO PAYS?

As UTx grows more promising, the question of who funds such an expensive procedure becomes

more pressing. Some critics of public funding refuse the WHO's definition of infertility as a disease, instead arguing that it is an impediment to those who have a certain "desire."²⁷ Relatedly, some question whether fertility is mislabeled as a disease, and argue instead that it is more of a social wrong. Similar to ideas of racial superiority, height, *et cetera*; this line of reasoning finds that there is nothing fundamentally wrong with infertility; it is a social problem that has come to be seen as a disease.²⁸ These arguments seek to dispel the view that infertility is a disease; if it is so defined, public funds and/or HMOs would not have to pay for UTx.

Still others argue that, while infertility is indeed a biological disease, there are appropriate alternatives that are cheaper and less risky. They argue that, rather than spend research and public dollars on UTx, efforts should be made to improve adoption laws and gestational surrogacy regulations; community engagement initiatives should seek to downplay the emphasis that society has placed on genetic relatedness.²⁹ However, there is an inconsistency in this line of reasoning; that is, surrogacy is practiced for the very reason of genetically related offspring.

Moreover, proponents of public funding for UTx have argued that, while UTx may not be necessary, there are other medically elective treatments that are funded either publicly or through HMOs, and that UTx should be treated no differently than these other elective treatments.³⁰ A final point related to cost is that it remains unclear whether "commercial surrogacy arrangements" in some countries are cheaper than UTx.³¹ It may cost as much—or be even more expensive—for a family to opt for gestational surrogacy. (The high price of gestational surrogacy within countries like the U.S. has led to the growth of an international surrogacy market, as seen in countries like India).

Much of the ethical deliberation, up till now, has taken place in Europe, where most countries have public healthcare systems. In the U.S., the question of funding is more complicated, as governmental healthcare coverage is complemented by private health insurance. It will be interesting to see how HMOs will react to advances in UTx, given that most of them fund infertility treatments like IVF (but rarely gestational surrogacy)—although this is inconsistent across state lines.³² But transplant procedures to address infertility are picking up steam; and with the U.S. Department of Defense negotiating funding for penis transplantation for wounded veterans, it will not be long until the spotlight shines even brighter on UTx and how it will be funded in the U.S.³³

CONCLUSION

Uterine transplantation is an exciting reality in the field of obstetrics and gynecology, offering for the first time an opportunity for infertile women to gestate their own child. Research across the world, particularly in Sweden, has opened the door to this procedure. The world now looks to the U.S. and other countries to see further innovation in UTx. But we should not fail to pair "innovation" with "regulation," to think not just of the science behind a procedure, but the complexities associated with its implementation and bringing it to scale. This review sought to give a condensed (but not exhaustive) primer on the ethical considerations surrounding UTx, from an understanding of infertility as a disease, to the ethics of live versus cadaveric donors, to the pragmatics of funding streams. As the global medical community moves to lead the next charge in UTx research, obstetricians and gynecologists, researchers, and bioethicists ought also to lead in the conversation on the regulation and implementation of UTx.

NOTES

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3. Brännström, "The Swedish Uterus Transplantation Project," see note 1 above.
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7. R. Catsanos, W. Rogers, and M. Lotz, "The Ethics of Uterus Transplantation," *Bioethics* 27, no. 2 (2013): 65-73; Arora and Blake, "Uterus Transplantation," see note 4 above.
8. Brännström et al., "Livebirth after Uterus Transplantation," see note 6 above; Farrell and Falcone, "Uterine Transplant," see note 6 above.
9. Arora and Blake, "Uterus Transplantation," see note