Uterine Transplants in the Canadian Setting: A Theoretical Framework

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Abstract

The uterine transplant is an innovative surgical procedure whereby a healthy uterus is transplanted into a woman with uterine factor infertility (UFI) for the purpose of procreation. Twelve uterine transplants have been attempted in the world in the last two decades, and five have led to viable births. While uterine transplantation is still in its experimental stages, it remains unclear whether Canadian centres plan to attempt the procedure in the near future. Herein, I raise several observations that are specific to the Canadian setting and apply the Montreal Criteria for the Ethical Feasibility of Uterine Transplantation to determine whether there is fertile ground for a uterine transplantation program to be adopted in Canada.

Résumé

La greffe d'utérus est une intervention chirurgicale novatrice qui consiste à transplanter un utérus sain à des fins de procréation chez une femme présentant une infertilité liée au facteur utérin. Au cours des deux dernières décennies, on a tenté douze greffes d'utérus dans le monde entier, et cinq d'entre elles ont donné lieu à des naissances viables. Bien que la greffe d'utérus en soit toujours au stade expérimental, on ignore si certains centres canadiens prévoient d'essayer de réaliser cette intervention dans un proche avenir. Dans le présent article, je formule plusieurs observations qui portent spécifiquement sur le contexte canadien et qui s'appliquent à l'ensemble de critères intitulé *Montreal Criteria for the Ethical Feasibility of Uterine Transplantation*, afin de déterminer s'il existe un terrain fertile pour l'adoption d'un programme de greffe d'utérus au Canada.

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INTRODUCTION

Uterine transplantation is an innovative surgical procedure whereby a healthy uterus is transplanted into a woman with uterine factor infertility for the purpose of procreation.[1,2] Women with either congenital or acquired UFI traditionally seek gestational surrogacy or adoption to build families. Following the advent of uterine transplantation, candidates for the procedure have been considered in two main, non-mutually exclusive scenarios.[1–3] First, a number of countries, cultures, and religions forbid surrogacy and adoption as a means to become a parent, even among infertile couples.[4] For patients in such situations, the uterine transplant provides the only viable alternative to establish a family. Second, some infertile women value the process of gestation, from carrying the pregnancy to experiencing delivery, as a process separate from raising a family. Here, too, the uterine transplant has advantages that surrogacy and adoption cannot provide.[5]

Pursuant to these considerations, 12 uterine transplants have been attempted in the last two decades and five have led to viable births, effectively providing the first proof of cure for absolute UFI.[6] An international effort is now underway to train centres in performing the 10+ hour procedure. Indeed, teams in Sweden, Turkey, Saudi Arabia, and the United States have all attempted transplants, and teams in the United Kingdom and India are in the preparatory stages. While the transplant procedure is still in its experimental phase, it remains unclear whether Canadian centres plan to attempt the procedure in the near future. Herein, I raise several observations specific to the Canadian setting that provide fertile ground for a uterine transplantation program to be adopted in Canada.

Adoption and Gestational Surrogacy in Canada—Viable Alternatives?

Before contemplating the implications of having uterine transplants performed in the Canadian setting, it is imperative to determine whether its alleged alternatives, namely gestational surrogacy and adoption, are viable and affordable options for Canadian women with UFI.

To begin, the argument that alternatives to uterine transplantation already exist is arguably flawed.[5] The question that must be first addressed is this: what is the primary goal

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of uterine transplantation? If it is to allow a woman with UFI to become a parent, no clinician would argue that a uterine transplant is potentially superior to adoption or surrogacy in terms of efficacy or safety in this respect.[5] However, the proper question is whether uterine transplantation is superior to alternatives in allowing a woman with UFI the opportunity to carry a pregnancy. In this respect, the uterine transplant has the full potential for superiority, given that surrogacy and adoption are not true alternatives.[2,5] Yet, if for argument's sake we discard the technicalities and consider that uterine transplantation leads to the same outcome as adoption and gestational surrogacy (namely, a child), we can more readily compare these interventions.

As Canadians, we benefit from rights and privileges that many countries do not. The possibility to adopt legally, both within our borders and at the international level, is one of these privileges. Provincial guidelines regulate the process of adoption, which may last anywhere from nine months to nine years and may cost up to $30 000.[7] In addition, most provinces require some type of adoption readiness training or preparation before parents are permitted to adopt.[7] It is therefore conceivable that these delays and high costs may be deterrents to certain individuals with UFI, who may find the option of uterine transplantation attractive.

Furthermore, guidelines regulating gestational surrogacy were enacted by the Parliament of Canada through the 2004 Canadian Assisted Human Reproduction Act.[8] The primary purpose of such legislation was to regulate assisted human reproduction and related research, while providing Canadians with a system of licensing, monitoring, inspecting, and enforcing activities within the Act. The AHR Act states in section 6.1 that, "No person *shall accept* consideration for arranging for the services of a surrogate mother, *offer* to make such an arrangement for consideration or *advertise* the arranging of such services." Additionally, section 6.3 states, "No person *shall pay* consideration to another person to arrange for the services of a surrogate mother, *offer to pay* such consideration or *advertise* the payment of it." In other words, Canada has banned commercial, but not altruistic, surrogacy.[9] Even so, following enactment of the AHR Act, reimbursing an altruistic surrogate for her expenditures during gestation became a controlled activity and required a license and compliance with regulations.[9] The overall costs of surrogacy in Canada are near $60 000 per pregnancy, a sum that is unaffordable for a considerable proportion of Canadians. In addition, despite the fact that surrogacy ensures a genetic relationship with the offspring, motherhood rights in Canada are granted to the surrogate mother bearing the child. For the genetic parents, the process of becoming a child's legal parent following surrogacy is lengthy and intricate, resembling that of adoption.

Indeed, although some forms of surrogacy and adoption are available in Canada, they are either costly, time consuming, highly regulated, or simply not acceptable options for some women because of personal, religious, and cultural concerns. No polling data are currently available, but an interest in undergoing uterine transplantation may very well be present among Canadian women with UFI who are seeking to build a family.

Ethical Overview

In its current state, a principlistic analysis of uterine transplantation reveals arguments in favour of the principles of autonomy and beneficence, but it remains largely equivocal with respect to the principle of justice. Nevertheless, the main ethical concerns in the case of uterine transplantation revolve primarily around the concept of nonmaleficence. Fears of causing harm stem from biological concerns regarding donors, recipients, and their pregnancies. Indeed, a pregnancy in a transplanted uterus implicates undergoing a mandatory IVF treatment cycle, exposing the fetus to long periods of immunosuppression, tolerating the gestational plasma volume expansion with uterine vascular graft anastomoses, undergoing delivery by CS, and eventually undergoing hysterectomy to remove the graft in order to spare the recipient from lifelong exposure to antirejection regimens (Figure 1). The combined potential for complications at any given stage is thus exponential. Furthermore, the lengthy transplantation process is carried out for a procedure that is not considered life saving because the uterus is considered a non-vital organ.[2] However, it may be argued that there is inherent legitimacy in approaching the topic of uterine transplantation using the same ethical framework currently shaping the transplantation of other non-vital organs, such as the larynx, hand, and face.[1] An overview of such analysis follows.

Moore defined the criteria for ethical analysis of surgical innovation.[10] These criteria have three components: laboratory background, field strength, and institutional stability. The first of these (laboratory background) mandates that the research foundation for the procedure be sound. The second (field strength) requires the adequate synthesis of knowledge and expertise from all fields related to the

ABBREVIATIONS

AHR	assisted human reproduction
UFI	uterine factor infertility