# Uterine Transplant: An Emerging Resolution to Absolute Uterine Factor Infertility

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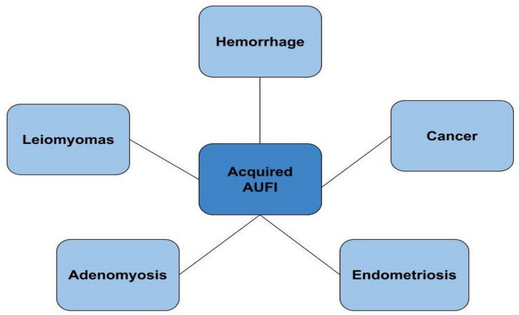
## AUFI and Uterine Transplant

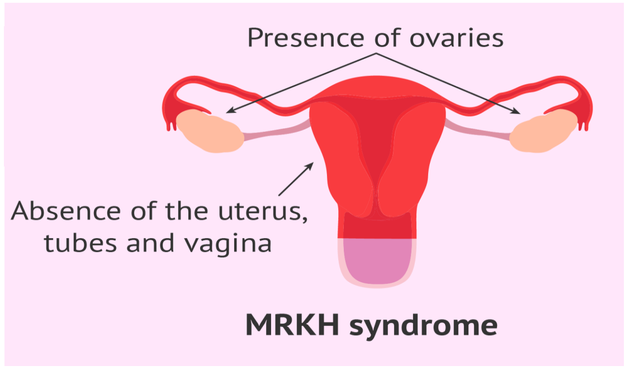
Acquired Uterine Factor Infertility, or AUFI, is the "Physiological inability or anatomical absence to sustain a pregnancy due to having an absent or non-functioning uterus" (Richards et al., 2019).

- AUFI is acquired or congenital; Acquired being the most common
- Congenital AUFI occurs when a patient is born with an underdeveloped or absent uterus; Mayer-Rokitansky- Küster-Hauser syndrome (MRKH)
- Current options for these women to achieve parenthood are surrogacy and adoption
- Uterine transplantation serves as an option for AUFI if developed thoroughly and efficacy is proven
- Thorough screening process for transplant candidates
- Uterine transplants are only used for 2 pregnancies, or up to 5 years
- Limited use due to immunosuppression and increased risk for vascular complications

## Acquired AUFI




## Congenital AUFI - MRKH




## Surgical Techniques and Considerations

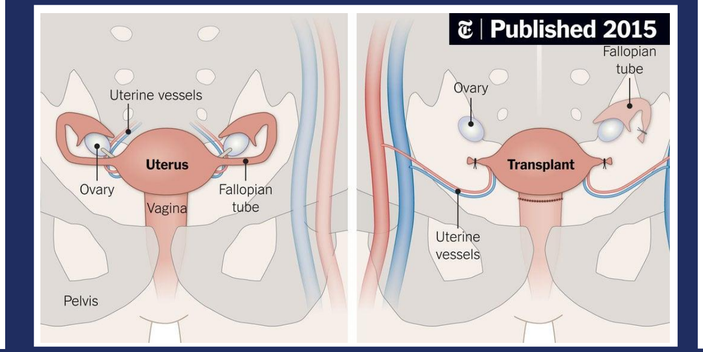
- Donor can be living or deceased; donor can be pre- or post-menopausal
- If donor is post-menopausal, donor will undergo hormone treatment
- Only the uterus is transplanted from the donor, using donor uterine vessels and recipient iliac vessels
- Pregnancy is achieved through embryo transfer and delivered via cesarean section
- Successful transplantation results in a live birth
- Surgical risks are greater for donor than recipient
- Risks include physical, emotional, monetary, and ethical for both donor and recipient
- Physical risks include infection, thrombosis, vascular fistula, pseudoaneurysm, and ureter injury
- Ethical risks present when the donors/recipients are not related, and monetary subsidization takes place
- In vitro fertilization, numerous consultations, imaging exams, as well as the surgery are cause for increased financial expenditure
- Increased risk of malignancy due to immunosuppression, just as with other transplants

## Historic and Current Research

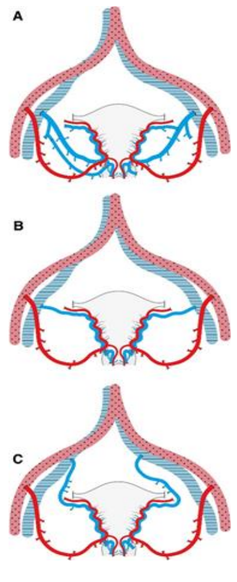
Uterine transplantation is a newly developed technique used in the treatment of AUFI.

- Research began in 1999 on small and large animals
- The first successful transplant, live birth, was achieved in a rat
- Further research was performed on sheep to evaluate anastomotic techniques
- Strict immunosuppression regimens were developed prior to human clinical trials in non-human primates
- The first human uterine transplant attempt was performed in 2000
- The first human uterine transplantation resulting in pregnancy was performed in 2011
- The first successful uterine transplantation was performed in 2014
- Research on uterine transplantation and its potential uses with AUFI continues to evolve
- Current success rates: 35% achieve pregnancy after embryo transfer; 28% result in live birth

## Normal Pelvis vs Transplant




## Vascular Anastomoses

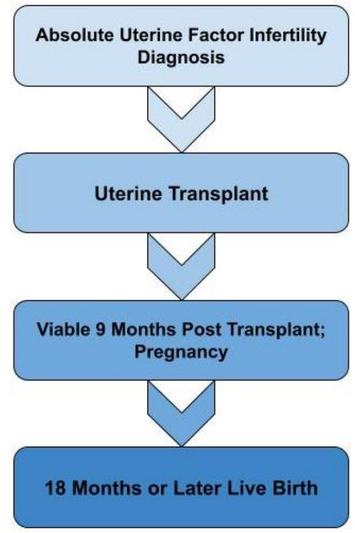



Donor uterine vessels to recipient external iliac vessels

Donor uterine vessels to recipient external iliac artery and internal iliac vein

Donor uterine vessels to recipient external iliac artery and common iliac vein

## Uterine Transplant Timeline

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