







6minutes News

Uterus transplants: We speak to the gynaecologist leading Australia’s landmark trial

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Dr Rebecca Deans.

From next year, 12 women will become Australia’s first recipients of uterus transplants, in pioneering surgery that has its origins in a conversation between a doctor and his patient in Adelaide more than two decades ago.

Back in 2000, the Swedish gynaecologist, Professor Mats Brännström, was working at Royal Adelaide Hospital when a young woman about to undergo a hysterectomy for cervical cancer asked him for a new uterus so she could have a child.

Obviously the answer had to be no, but it sparked an idea that resulted in the landmark trial about to begin in Australia.

“The patient was young, and hadn’t started a family,” says paediatric and adolescent gynaecologist Dr Rebecca Deans, the lead investigator of the uterus transplant research project at the Royal Hospital for Women in Sydney.

“But she said “I’ve got a sister and a mother who’d be willing to donate me a uterus. Why can’t you do a uterine transplant?”

"I want to have a family one day. I understand I have to have a hysterectomy, but I just don't understand — why don't you do a transplant?"

"And so Professor Brännström took that back with him, post-fellowship.

From 2000 to 2010, says Dr Deans, he carried out the ideal scientific research, trying his technique on mice, rats, up through to dogs. His team then used sheep and non-human primates, to perfect the surgical technique.

He also brought in microsurgeons to ensure optimal vascularisation to the organ.

The first uterine transplant in a human subject took place in Sweden in 2012, Dr Deans said.

Since then, around 75 uterine transplants have been performed around the world, resulting in close to 40 live births, with the procedure generally using the same approach to immunosuppression as the kidney transplant protocol.

Read more:

- [What are uterus transplants, who donates their uterus, and what are the risks?](#)
- [Use of frozen embryos tied to higher odds for dangerous complication of pregnancy.](#)

Australian surgeons are now taking part in two separate uterine transplant trials.

One is based at Sydney's Royal Prince Alfred Hospital, using only live donors. That trial was given the go ahead in 2019, but was expected to begin next year.

The other, led by Dr Deans through the Royal Hospital for Women, will carry out 12 uterine transplants, using six live and six deceased donors (see below).

Professor Brännström will travel to Australia to oversee the first transplant surgeries.



Professor Brännström and his team performing a womb transplant. Photo: AAP.

"I think he's really keen to help our team, particularly because he does feel a strong alliance with Australia and Australian doctors, and would like for it to go the full circle where he had the idea," she said.

Dr Deans herself is a specialist in Mayer-Rokitansky-Küster-Hauser (MRKH) syndrome or Müllerian agenesis, congenital absence of the uterus and vagina. It is estimated to affect one in 4000-5000 women.

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She says she first became interested in Professor Brännström's work in 2010.

At the time she was doing further training in the UK when patients mentioned they had read media reports about a Swedish team which had approval to perform uterine transplants.

"So I endeavoured to contact Professor Brännström, and then spent time with him, observing him do a transplant on a rat.

"He subsequently presented the first live birth in about 2014. And then from that point on, he's been training a lot of the teams around the world — more than 30 — in the technique. So, we're one of the teams that have started training with him."

Dr Deans said a key part of a transplant's success is getting the anastomosis correct, with the blood supply being among the main reasons for success or failure of the transplant.

Professor Brännström had developed a technique of doing the hysterectomy a lot further laterally, closer to the iliac vessels than a standard procedure.

"And that gives you a little bit more length of vessel and a bigger bore of vessel to actually be able to vascularise the uterus," Dr Deans said.



Professor Brännström. Photo: [Vogler](#) (CC BY-SA 4.0).

Candidates for the upcoming trial would be women with MRKH syndrome or who had undergone a hysterectomy for uterine or cervical cancer or childbirth complications, Dr Deans said.

One 29-year-old Australian woman who has expressed interest in taking part underwent an emergency hysterectomy for a life-threatening haemorrhage while giving birth to her first child. Her mother has offered to be a donor.

In the cases of live transplants, the process is generally to remove the uterus from the donor to ensure it is suitable for transplant before then anaesthetising the recipient for the transplant surgery, which takes place on the same day, she said.

The organ rejection rate in uterine transplants conducted internationally so far is about 10% — similar to the rejection rate for other organ transplants such as kidneys, she said.

She says under the trial protocols women will undergo a hysterectomy at five years post-transplant or after two children so they don't have to have lifelong immunosuppressants to retain the organ.

Professionally, the experience of being involved in the research had been a high point and medically the transplant surgery was "fascinating", said Dr Deans.

"The journey's been wonderful, being able to cross-collaborate with all these other different teams.

"One of the beauties of this is I go to [to] lots of meetings now with transplant physicians and psychologists, vascular surgeons, the whole gamut.

"It keeps you interested.

“And that’s why you become a doctor, really. You could do a whole lot of different other careers, but it’s one of the best things about it ... you’re constantly learning”

Come 2023, Dr Deans said she hoped her 15 years of work with women facing infertility would culminate in a successful transplant.

“It will be wonderful when we can actually see it through to fruition and then actually see a live birth from it. I think it’ll be fabulous,” she said.

Case report: Livebirth after uterus transplant from deceased donor

The first baby born to a woman who received a uterus transplant from a deceased donor occurred in 2017 at Hospital das Clínicas at the University of São Paulo School of Medicine in Brazil.

It provided proof of concept for the treatment of absolute uterine factor infertility.

The woman was 32-years-old when she underwent the transplant surgery, which took ten hours.

She was administered a series of immunosuppression drugs: prednisolone and thymoglobulin and continued with tacrolimus and mycophenolate mofetil until five months post-transplantation, at which time azathioprine replaced mycophenolate mofetil.

According to the case report published in *The Lancet*, the donor was a 45-year-old woman who had died following a stroke.

The recipient had previously been diagnosed with [MRKH](#) syndrome.

Months before the transplant, she underwent IVF, where eight early-stage embryos were collected and cryopreserved.

Thirty-seven days after the transplant, she experienced menstruation.

At seven months post-transplant, doctors implanted a fertilised egg, with pregnancy confirmed 10 days later.

She had no serious health issues during the pregnancy itself.

Her daughter, weighing nearly 2.6kg, was born via a C-section at 35 weeks and three days.

The uterus was removed in the same surgical procedure as the livebirth.

Writing in *The Lancet*, the doctors concluded: “[To our knowledge], this is first case worldwide of live birth following uterine transplantation from a deceased donor in a patient with MRKH syndrome.

“The results establish proof of concept for treating uterine infertility by transplantation from a deceased donor, opening a path to healthy pregnancy for all women with uterine factor infertility, without need of living donors or live donor surgery.”

[Lancet 2018; 4 Dec.](#)

More information:

- [Aust NZ J Obstet Gynaecol 2021; 6 May.](#)
- [John Flynn Private Hospital: Baby born after uterus transplant: A world first!; 1 October 2014](#)
- [The Guardian: ‘An amazing gift’: Australia’s first uterus transplants to take place in 2023; 9 September 2022](#)
- [Nine News: Australian women could undergo a uterus transplant as part of new trial; 25 October 2019](#)