

Study: 'Icy' technique improves robotic kidney transplants

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A collaboration of surgeons at Henry Ford Hospital and Medanta Hospital in India successfully transplanted kidneys into 50 recipients using an innovative robot-assisted procedure in which the organ is cooled with sterile ice during the operation.

The research project – published online ahead of print in *European Urology*, the journal of the European Association of Urology – advances minimally invasive robotic surgery as a safe alternative to traditional open surgery.

"Minimally invasive surgery reduces post-operative pain and minimizes complications in comparison to conventional surgery," says Mani Menon, M.D., chair of Henry Ford's Vattikuti Urology Institute and co-author of the study.

"The benefits of [minimally invasive surgery](#) in removing donor kidneys has been well established in earlier studies, but the use of robot-assisted surgery in transplanting those kidneys is comparatively a frontier," Dr. Menon adds.

The Henry Ford researchers and their counterparts in Gurgaon, India, reasoned that since minimally invasive robotic surgery has proven to be a great benefit to healthy [kidney](#) donors, it might also be a boon to the ill and weakened transplant recipients who are at greater risk of complications. But they noted British research from 1971 that showed that [kidney function](#) was partially impaired in recipients if blood flow

was interrupted for longer than 30 minutes during transplant.

So they decided to chill both the [donor kidney](#) and the transplant site with sterile ice slush in hopes of increasing the amount of time in which they could safely learn and perfect the robot-assisted surgery.

"To our knowledge, ours is the first study to use renal cooling during robotic [kidney transplant](#)," Dr. Menon says. "It had already proved useful during minimally invasive prostate surgeries."

After three years of planning and simulated surgeries at Henry Ford, 50 consecutive transplant patients who had volunteered for the minimally invasive procedure underwent robotic kidney transplant at Medanta Hospital between January and October 2013.

In all, Medanta Hospital has performed 54 operations and International Kidney and Renal Diseases at Ahmedabad, India, has done 56 operations, for a total of 110 transplants in one year. The surgeons in charge of the two programs are Dr. Rajesh Ahlawat and Dr. Pranjal Modi.

In each case, surgeons filled the kidney cavity with ice slush through a specially designed port in the patient's abdomen before transplanting the donor kidney, which was also chilled with ice slurry held in place by gauze wrapping.

Blood vessels were attached to the transplanted kidney using suturing techniques refined in other types of minimally invasive procedures. Immediately after transplant, all of the grafted kidneys functioned normally and patient levels of creatinine – used to measure kidney function – were well within normal range.

None of the patients developed blood or urine leaks, infections or other

complications from their surgical wounds. None required dialysis after surgery.

When given follow-up exams six months after surgery, nearly all of the first 25 patients who underwent the procedure developed no complications, although two required exploratory surgery and one died of acute congestive heart failure.

Dr. Menon attributed the success of the study in part to "the seamless collaboration" between surgeons experienced in conventional "open [surgery](#)" kidney transplants and surgeons skilled in using robotic techniques.

By the time they began the study, the teams from Henry Ford and Medanta hospitals had performed more than 10,000 robotic procedures and 2,500 conventional kidney transplants.

"The individual surgeons involved had built an atmosphere of trust and mutual respect over 30 years of collaborative work," Dr. Menon says. "While this benefit can't be precisely measured, it clearly contributed to the success of this endeavor."

The researchers noted that further studies will be needed before robotic kidney transplant is widely accepted as a "reasonable" alternative to conventional transplantation.

Provided by Henry Ford Health System

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