

Robot-assisted kidney transplantation – pilot study

This leaflet explains more about a technique called 'robot-assisted kidney transplantation'. This is a pilot study – this means that we are offering the procedure to a small number of carefully selected patients in order to evaluate its usefulness. This leaflet will tell you why you are being offered robot-assisted kidney transplantation, and what the benefits, risks and alternatives are. It will give you an overview of the process, from being referred to our clinic to follow-up after your kidney transplant. If you have any further questions or concerns, please speak to a doctor or nurse caring for you.

You have already been given information about the different types of kidney transplants. The transplant team here at Guy's and St Thomas' has performed more than 1,000 laparoscopic (keyhole) operations on living kidney donors, making us the most experienced team in the UK for this type of procedure.

However, there are technical difficulties in performing a laparoscopic operation in transplant recipients. Using a robotic system to help in the operation may allow us to overcome these problems and perform a less invasive procedure. The operation is likely to be longer than a conventional transplant, taking 4-5 hours (compared with 2.5-4 hours for traditional open surgery).

What is robot- assisted kidney transplantation?

We have had a robotic system (da Vinci®) at Guy's Hospital for over a decade. It is mainly used to perform urological surgery, such as operations on the prostate or bladder.

Laparoscopic surgery is often called 'keyhole surgery'. It is carried out using several small incisions (cuts, also called 'keyholes' or 'port holes') rather than the one large incision for traditional open surgery.

Robot-assisted surgery is a laparoscopic technique that uses a robotic console (the da Vinci® system) to help the surgeon during your operation. Your surgeon is in the same room, but away from you, and controls the robotic arms to perform the operation. **It is important to understand that the robot is not performing the surgery.** The surgeon still carries out the procedure, but the robotic console allows for more controlled and precise movements.

The robotic console has four arms. One holds a high magnification 3D camera, which is inserted into your abdomen through one of the keyholes. This allows your surgeon to see inside your abdomen. The other robotic arms can hold various instruments, which your surgeon will use to carry out the operation. The instruments are smaller than those used for traditional open surgery.

Robot-assisted surgery has a number of advantages over traditional open surgery:

- Average blood loss may be less.
- You are generally able to start eating and drinking again more quickly.
- You are often able to leave hospital a day or two sooner than if you have traditional open surgery.

For robot-assisted kidney transplantation, the aim is to use a much smaller incision (about 7cm) than used for traditional open surgery to insert the kidney into the abdomen, and then to stitch the blood vessels and the ureter (the tube which connects the kidney to the bladder) using robotic instruments. As well as this incision, four or five small (0.5 to 1cm) incisions are used to insert the instruments into the abdomen.

Why should I have robot-assisted kidney transplantation?

Robot-assisted kidney transplantation is a programme in the UK and was introduced at Guy's and St Thomas' in the summer of 2016. In the first instance the procedure is offered to patients undergoing living donor transplantation.

We believe that robot-assisted kidney transplantation will allow you to recover more quickly and that you will experience less pain after the operation than with traditional open surgery, although this is still to be tested in large trials.

Has the procedure been performed already?

There is a great deal of international experience in this field, with this procedure having been performed in Chicago, two centres in India, and in Europe. Results from all these centres have been good, although formal comparisons with traditional open surgery, in the form of trials, are yet to be carried out.

The largest experience is from the two hospitals in India that have carried out over 300 robot-assisted transplants between them. The first hospital has reported one major surgical complication (clotting of the renal vein) and the second hospital no major surgical complications.

Guy's and St Thomas' has started a small pilot programme for these cases, as have a group of other transplant centres in the UK. The Guy's and St Thomas' team have experienced only one major surgical complication during this time, which is thought to be due to an undiagnosed condition in the patient. This complication led to that transplant failing. As a result of this, further diagnostic testing has been added to the preparation for these procedures.

What are the risks of robot-assisted kidney transplantation?

There are some risks that are associated with transplant surgery, irrespective of the technique used. There is more detail about the risks associated with transplant surgery in the booklet, **Your guide to kidney transplantation**. Please ask for a copy of this booklet if you don't have one. Your surgeon will discuss the possible risks of this operation with you in more detail before asking you to sign a consent form. Please ask questions if you are uncertain about anything.

Possible early complications of any major operation

Problems that can occur while you are in hospital recovering are similar to those for any major operation. These include:

- bleeding, requiring the need for a blood transfusion or re-operation
- injury to nearby nerves or tissues
- a chest infection
- blood clots in your lower leg (deep vein thrombosis or DVT), which could pass to your lung
- wound infection
- bruising around your wounds, poor wound healing or weakness at the wound sites.

Specific risks for a robot-assisted kidney transplantation:

- Damage to structures inside your abdomen, blood vessels and other organs from the instruments. This risk is higher when the instruments are inserted, so the telescopic instrument (the high magnification 3D camera) is inserted first and then used to help insert the other instruments.
- There is a risk of developing a hernia due to the small incisions made for the instruments, which is known as 'port site hernia'.
- There is the potential risk of twisting of the kidney (torsion) after the transplant, as it is placed in the main abdominal cavity rather than behind it, however this risk should be minimised by fixing the kidney to the abdominal wall.
- There may also be an increased risk of scarring affecting the bowel in the long term (adhesive obstruction).
- Carbon dioxide (used during surgery) could become trapped in your abdomen. This can cause pain in one or both shoulders, but disappears as the gas is reabsorbed by your body.
- The need, during the procedure, to convert to traditional open surgery.
- Nerve compression - where the pressure from the positioning of your body during the operation can reduce the blood flow supplying your nerves and cause damage. This may require further treatment.
- There is a small risk of swelling of the optic nerve at the back of the eye, thought to be associated with having to lie flat, with the head higher than the feet, during the procedure.
- There is a small risk of dying from this surgery (1 to 2 in 100 patients). This is no higher than for traditional open surgery.

What is the experience of the team?

The team consists of six surgeons - four transplant surgeons, all of whom have an extensive experience of laparoscopic donor operations, and two urology surgeons, who have an extensive experience of robot surgery.

Members of the team have visited the two Indian centres, and have watched the technique being performed. The team have also undergone specific training on the robot, and have practised techniques using both the robot itself and a simulator (model).

Urology surgeons with extensive experience in robotic surgery will also provide advice and support to the pilot study.

Are there any alternatives?

Yes – you do not have to agree to undergo robot-assisted transplantation. You can have traditional open surgery, and if you chose to do so your care will not be affected. You will be given adequate time to think about your choice, and opportunities to discuss this with a member of the surgical team.

Consent – asking for your consent

We want to involve you in decisions about your care and treatment. If you decide to go ahead, you will be asked to sign a consent form. This states that you agree to have the treatment and you understand what it involves.

If you would like more information about our consent process, please speak to a member of staff caring for you

What happens after I have my transplant?

For information about your care after the operation, please see the booklet, **Your guide to kidney transplantation**. We will ask you some questions while you are in hospital (for instance about your pain) in order to determine the effectiveness of the procedure, and will collect some data (such as time taken to return to normal activities) on your recovery when you are seen at the transplant clinic.

We hope you have found this leaflet useful. All patients are different and we strongly advise that you discuss your situation carefully with your medical and nursing teams to make sure that you understand the implications for you personally.

Contact us

Professor Nizam Mamode, consultant transplant surgeon, **t:** 020 7188 1543, Monday to Friday, 9am-5pm.

Lisa Silas, advanced nurse practitioner – living donation, **t:** 020 7188 5688, Monday to Friday, 9am-5pm.

Out of hours, **t:** 07917 084 532.

For more information leaflets on conditions, procedures, treatments and services offered at our hospitals, please visit **w:** www.guysandstthomas.nhs.uk/leaflets

Pharmacy Medicines Helpline

If you have any questions or concerns about your medicines, please speak to the staff caring for you or call our helpline. **t:** 020 7188 8748, Monday to Friday, 9am-5pm

NHS 111

Offers medical help and advice from fully trained advisers supported by experienced nurses and paramedics. Available over the phone 24 hours a day. **t:** 111 **w:** www.111.nhs.uk

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