



What I tell my patients about living kidney donation

Since the first living donor transplant 50 years ago, living donation has increasingly become, by necessity, a more commonplace event in the field of renal transplantation. The number of patients waiting for kidney transplantation continues to increase, while the number of organs available from cadaveric (deceased) donors is decreasing and, therefore, not meeting the demand (UK Transplant data).

It is generally accepted that a healthy individual should not suffer any long-term ill effects from the donation and that recipient outcomes are expected to be superior to other forms of renal replacement therapy, particularly if the live transplant can be performed pre-emptively.

Kidney failure affects the whole family but, nevertheless, the decision to offer to donate a kidney is a major undertaking and one that requires careful consideration. The primary role of the living donor transplant co-ordinator is to act as the advocate of the potential living donor – to give information and support to the donor and their family throughout the work-up process, whether or not donation is possible.

What is living donation?

Living donation is the process where a healthy individual, who is willing and physically able to donate, undergoes surgery to remove a kidney for transplantation. Living donors may be genetically related to the recipient or have a close personal relationship. There is no particular upper age limit for suitability for donation, rather physical fitness to donate. Living donation is purely voluntary on the part of the donor. The donor should not be subject to any coercion by the recipient or any other person, and is free to withdraw at any time throughout the whole process. It is important to put into perspective the role of living kidney donation as a treatment option for renal failure.

What is kidney failure?

Kidney failure has many different components and affects several processes in the body. With declining renal function, the possibility is that you will stop producing as much urine, and there is a potential to become overloaded with fluid. Toxins that are normally excreted by the kidneys cease to be as efficiently removed. Failure of your kidneys also predisposes you to anaemia, and the

imbalance of different substances in your bloodstream can also affect the health of your bones. All of these factors predispose you to certain symptoms, such as nausea, vomiting, itching, tiredness, lethargy, cramps, lack of energy, loss of libido and difficulties maintaining a normal quality of life. Your doctor will discuss treatment options with you at an early stage.

As a recipient, what treatment options do I have?

Treatment options for established renal failure include dialysis (either haemodialysis or peritoneal dialysis) or transplantation, either from a living or cadaveric donor. Conservative management, when you choose not to undergo dialysis or a transplant, may also be an option for you. It is important for a potential donor to appreciate where living donation fits into your treatment option plan.

Kidney dialysis

During dialysis treatment, some of the toxins are removed from the bloodstream, but other imbalances may not be corrected by dialysis. You will still have a degree of uraemia and may often be anaemic. Therefore, although you usually feel better on dialysis, you may not feel 'normal'. It will be necessary to adhere to certain dietary and fluid restrictions, and dialysis places a strain on the lifestyle of you and your family.

Kidney transplantation

Transplantation offers you a much more 'normal' life. Freedom from the commitment to regular dialysis, and the impact that this has on lifestyle, together with the lifting of dietary and fluid restriction and the return to near normal biochemical status of your body, all enhance your wellbeing. Transplantation offers a better 'quality' as well as 'quantity' of life.

Why don't all kidney patients have living donor transplants?

A recipient who does not wish to put a family member or close friend through the trauma of donating a kidney often considers kidney transplantation from a cadaveric donor to be a more desirable option. Asking a loved one to donate a kidney is the most difficult question you could face; fearing a negative response, you face possible rejection or the feeling that people do not

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Figure 1.
The live donor co-ordinator consults with potential donors

care enough. However, in the UK, there is a considerable shortfall of cadaveric organs available for transplantation. Therefore, to increase the number of kidneys available for transplantation, living donation is explored more vigorously. Living kidney donation offers the potential for a superior form of treatment and kidneys transplanted from living donors have the potential to work better and to last longer than transplants from cadaveric donors.

From the recipient perspective, living kidney donation potentially offers the most positive outcome; however, it is important to focus on the needs of, and potential risks for, the living donor.

Who can be a living donor?

Someone who is genetically related or who has a close personal relationship with the recipient and wishes to donate can be considered. Certain medical conditions, such as diabetes, heart disease and cancer, would exclude someone from donating.

How do I go about live donation?

The process of preparing to be a living kidney donor is lengthy and arduous and, in some circumstances, the donor may be unable to donate their kidney for a variety of reasons. An initial discussion with the live donor transplant co-ordinator takes place either in the hospital or in the home, explaining fully the benefits and the short- and long-term risks of donation, and outlining all the tests and investigations to be completed to ensure that the donor is fully prepared (Figure 1).

What tests can I expect to undergo?

Stage 1. Compatibility

● **Blood group compatibility** (Table 1). A simple blood test will establish whether the potential donor is blood group-compatible with the recipient. In most centres, this is still a requirement to proceed to donation. However, a procedure to desensitise the recipient (make the body less sensitive) to antibodies against the donor's blood group is currently being explored, and has the potential to enable us to proceed with blood group-incompatible donors.

Table 1. Blood group compatibility

Recipient's blood group	Possible blood group of potential donor
O	O
A	O or A
B	O or B
AB	O or A or B or AB

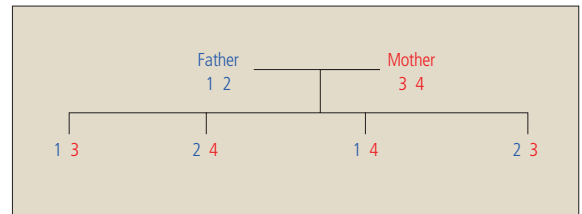


Figure 2. How sets of genes are inherited from our parents. Each set of genes is represented by the numbers 1, 2, 3 and 4

● **Tissue-type compatibility** (see Figure 2). Tissue-type testing involves further, more in-depth screening of the donor's genetic make-up, and comparing this with the tissue type of the recipient. Human leucocyte antigens (HLA) are 'marker' cells that are present on the surface of all the cells in your body. These 'markers' can be varied, and the higher the number of markers that match between donor and recipient, the greater the chances of successful transplantation in the long term. Donor and recipient pairs who are genetically related are likely to have a chance of better matching. However, increasing numbers of transplants are successfully being performed between genetically unrelated pairs, where the level of matching is not so good. The advantage of having a 'live' transplant outweighs the inferior matching.

Parents donating to offspring or vice versa will usually share at least three out of six HLA antigens; siblings donating may share six out of six, three out of six or may not share any genes with their recipient.

Some recipients may have developed antibodies, either from pregnancy, blood transfusion or a previous transplant or, rarely, from a virus. Sometimes, it can be more difficult for such patients to receive a well-matched transplant from a cadaveric donor and, therefore, a live donor may offer a better option. Once the tissue match has been established, a cross-match test is performed to ascertain whether the recipient has any antibodies to the mismatched antigens of the donor. In the UK, a positive cross-match is usually taken to indicate that donation should not take place. However, it is likely in the future that some transplant centres will be able to proceed with transplants of this nature after desensitisation of the recipient.

Stage 2. Medical tests and investigations

Once the first stage is completed and it is established that a potential living donor is compatible, the second stage of the work-up process begins to establish the potential donor's medical suitability to go through major surgery, to live the rest of their life with one kidney and to be sure that it is a good kidney to donate to the recipient.

- **Blood and urine tests.** Analysis of blood and urine samples are performed to rule out any abnormality. Specifically, to ensure optimal kidney function now and exclude as far as possible any risk for the future.
- **Chest X-ray.**
- **Electrocardiogram (ECG).**
- **Computed tomography (CT) angiography.** To establish that the kidneys appear normal and to view the blood supply to the kidneys. The scan will also detect any gross abnormality in the abdomen.
- **Cardiological review.**
- **Psychological assessment.** Both donor and recipient should have the opportunity for this.

The consultant nephrologist discusses the potential risks and hazards of living donation with the donor, performs a physical examination and reviews the results. Once all these tests and investigations have been completed it may be necessary to further evaluate, using different methodology, any abnormal results that have been detected.

Sometimes, the donor may face the distressing fact that they have a medical problem that they were unaware of. Once the consultant nephrologist has established medical suitability,

then the donor is referred on for surgical evaluation by the consultant surgeon.

Surgical assessment

This involves a review of the results of the medical evaluation, together with a lengthy explanation of the operative procedure and the risks involved. During this consultation, the potential donor will be told of the small, but not insignificant, risks of having a major operation. This includes the risk of death of less than three in 10,000, the risk of haemorrhage, the risk of blood clot formation and other risks such as infection, wound pain and the effects of living the rest of their lives with one kidney. Review of the CT angiogram will enable the surgeon to decide on the surgical procedure to be used to remove the kidney.

In our centre, the options for surgery are the conventional open retro-peritoneal approach and the hand-assisted laparoscopic (keyhole) surgery. If both surgical procedures are possible then the patient is offered the choice. The traditional operation is performed via a short incision to minimise postoperative discomfort (Figure 3). The laparoscopic procedure is performed with the assistance of a hand inserted into the abdomen and two additional ports for the instruments. This procedure is less invasive and appears to shorten recovery time. At this consultation the date for the operation will be set.

How will the donation affect me?

Emotional effects

The process of living kidney donation can be an emotional 'rollercoaster', both for the donor and



Figure 3.
The open
surgical
approach



recipient, with feelings often very difficult to deal with. The donor quite normally will have periods of fear, anxiety, ambivalence and pressure about the impending donation. Appropriate time should be given to both the potential donor and the recipient to assimilate and express their fears and concerns. It is a situation that has the potential to put additional pressure, not only on the possible donor and recipient, but also on their families. It is important for the donor to understand that they can withdraw from the process at any stage. No explanation will need to be given and no pressure should be brought from any member of the family or the transplant team.

Physical effects

If the tests and investigations conclude that the donor is fit enough to donate, there should be no reason not to live a normal, healthy life afterwards. Kidney donors may have an increased potential for requiring medication for blood pressure in the future, and may have some proteinuria (protein in the urine), which is usually not significant. There have been a few reported cases of the donor experiencing long-term pain.

How long will it take me to recover?

Every individual is different and no two people recover in the same way (Figure 4). Following discharge from hospital, it is advisable for both donors and recipients to take the appropriate length of time to recover. This may mean having help for housework, shopping, childcare or gardening for the first month and, after that, slowly resuming normal activities. It may be two to three months before you feel back to normal and able to go back to work (depending on the nature of the work and the physical demand).

Follow-up appointments are given for immediate postoperative review, at three months and annually thereafter to ensure your continued good health.

As a donor, could I lose out financially?

Throughout the work-up process there will be a time commitment to attend the hospital for the

Figure 4. Live donor and recipient two weeks after the transplant. In this case, a daughter donated to her father



various appointments. This necessitates time from work, which may have a financial implication. The operation involves a hospital stay of three to five days and, afterwards, a recuperation period of six to 12 weeks. It is possible for the donor to claim for compensation for loss of earnings, to make up any shortfall in his income, attributable to the donation.

Are there any special precautions donors need to take in the future?

Although there is no reason not to maintain a normal healthy existence following donation, it should be stressed that it is important to take care of yourself by not smoking and by maintaining an ideal weight. Healthy eating, drinking and exercise promote good health and help to ensure a long and healthy future. Live donation is continuing to increase and, over the next few years, is likely to develop in the following areas:

- Altruistic donation – where a motivated, healthy person donates one of their kidneys to the ‘waiting list’
- Paired donation – where kidneys are ‘swapped’ between two couples who are incompatible with their own partners but are compatible with another partner
- Kidneys from living donors who are either blood group-incompatible or cross-match positive, may be transplanted successfully following desensitisation of the recipient.

The increasing numbers of living donor transplants performed in the UK makes the meticulous follow-up of the donors and the rigorous maintenance of a donor registry all the more important ■

Key points

- Living donor transplantation offers the best possible treatment for established renal failure.
- It can be performed safely and with minimal risk to a healthy donor.
- It is an emotionally charged situation for both donor and recipient.
- The live donor co-ordinator plays a pivotal role in all aspects of the process.

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