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Donating a Kidney

Living Donor Kidney Program

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INTRODUCTION

This booklet has been written to provide you with information about living donor kidney transplants. If you or someone you know is considering live kidney donation and would like further information, please contact us:

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OUR KIDNEYS

Normally we are born with two kidneys situated on either side of the spine just under the lower ribs. They are shaped like kidney beans and are about the size of a clenched fist.

Kidneys are vital organs. They help to maintain our body in perfect balance by producing urine, and secreting critical hormones that regulate other body systems.

Kidneys do the following:

1. remove wastes from the body by filtering the blood
2. control the salt and fluid levels by removing the excess or retaining what our body needs
3. help control blood pressure
4. produce a hormone which stimulates red blood cell production

Some of us are born with only one kidney and can go through life without even knowing this, because a healthy kidney has the ability to increase its workload and do the work of two.

KIDNEY FAILURE

There are many causes of kidney failure. When both kidneys stop functioning, the result is a life-threatening situation that requires treatment.

Acute Kidney Failure occurs when the kidneys stop functioning all of a sudden. Dialysis, a machine which filters the blood and then returns it to the body, may be required for a short time and kidney function may return to normal.

Chronic Kidney Failure develops over months to years. There is a slow deterioration of kidney function, and when kidney function is less than 10% of normal, the result is **End Stage Renal Disease** (ESRD); dialysis or transplantation are needed at this time, or a person will die from renal failure.

Some of the many diseases that can potentially effect kidney function are listed here:

- Glomerulonephritis
- Diabetes
- Uncontrolled high blood pressure
- Polycystic kidney disease and
- Recurrent kidney infections

TREATMENT FOR KIDNEY FAILURE

When the kidneys fail the following treatment options are available:

- **Dialysis**
- **Kidney Transplant**

DIALYSIS

Dialysis is a treatment that takes over some of the kidney's function by removing wastes, excess fluid and salt from the blood.

There are two types of dialysis that patients with E.S.R.D can choose from:

Hemodialysis and Peritoneal Dialysis

TYPES OF DIALYSIS

Hemodialysis is a treatment that passes the patient's blood into an artificial kidney (called a filter), which cleanses the blood in a similar manner to how normal kidneys work. The blood flows into an artificial kidney by way of a surgically created fistula or central line, usually in the arm or leg. The cleansed blood is then returned to the patient and the cycle repeats many times over the course of one dialysis treatment. Patients generally require four hours of treatment, three times per week.

Peritoneal Dialysis is a treatment in which special dialysis fluids are infused into the peritoneal cavity of the abdomen via a catheter. The fluid is left in the peritoneal cavity for several hours during which time the waste products, excess water and salts from the body move into the special fluid. This is then drained out into a bag and fresh fluid is put in. This cycle is repeated at least four times a day, and sometimes uses a machine to cycle the fluid more rapidly during sleep time.

Each type of dialysis has advantages and disadvantages and each will require some restrictions to lifestyle. Although many people do well for years on dialysis, some develop problems that can make dialysis difficult or less effective. Statistically speaking, all forms of dialysis shorten ones life, with hemodialysis more so than peritoneal.

KIDNEY TRANSPLANT

Kidney transplantation is the gold standard in the treatment of end stage renal disease. A kidney transplant provides the renal failure patient with the best chance to return to a normal life.

A kidney transplant is a treatment and not a cure for kidney disease. Following a transplant, medications to suppress the recipient's immune system must be taken as long as the transplanted kidney is in place. A transplanted kidney can function well for many years.

Over time, rejection of the transplanted kidney can occur even if medications are taken, and the recipient has taken good care of themselves. Should this happen, the patient may be able to have another kidney transplant, but may need to return to dialysis before a suitable donor kidney is found.

Kidneys which are used in transplantion come from two sources:

- **Living Kidney Donors**
- **Deceased Kidney Donors**

TYPES OF KIDNEY DONORS

Living Kidney Donors are special people who choose to donate one healthy kidney. In most cases, the donor and recipient are family members, friends or otherwise emotionally related to each other. In some cases, individuals receiving a transplant from a living kidney donor may be able to avoid the need for dialysis completely; this is called pre-emptive transplantation.

Deceased Kidney Donors are people who have died but whose last wish included the donation of their organs for transplantation, or whose family members have consented on their behalf for organ donation. People waiting for a kidney transplant from a deceased donor can expect to wait between 5 and 10 years due to an ongoing shortage of donor organs.

DONOR CONSIDERATIONS

The decision whether to donate a kidney to a family member or friend is ultimately a very personal decision. There is no right or wrong choice. Oftentimes, it is difficult for a renal failure patient to ask someone to donate, or to even accept the offer of a kidney from a potential donor. The decision has to be the one that is best for the donor, and the Living Donor Team is committed to supporting the potential donor throughout the decision making process.

A live donor kidney transplant is usually the best treatment option for someone with the End Stage Renal Disease. When successful, the transplant will restore the patient's health and vitality and allow the recipient to return to an essentially normal life. But the success rate is not yet 100% and some recipients experience complications or even premature failure of the transplanted kidney. It is important as a potential donor to be aware of these possible outcomes.

PRE-DONATION FINANCIAL CONSIDERATIONS

Another important factor to consider when donating a kidney is the financial implications. The **British Columbia Medical Services Plan (MSP)** covers the medical costs of the living donor assessment such as lab work, team consultations and the surgery itself, even if the potential donor lives outside of the Province of BC. If a potential donor lives outside of Canada arrangements can usually be made to reimburse the donor or the assessment centre for the costs of the tests. The non-medical costs involved in the assessment and donation, however are not covered by MSP, but may be covered through the Living Organ Donor Expense Reimbursement Program.

The Living Organ Donor Reimbursement Program (LODERP) is administered through the Kidney Foundation of BC. This program may provide some financial assistance to living kidney donors to help cover the costs of travel, accommodation, meals, and loss of income. The LODERP program does not cover the costs of BC Ferries, however, the provincial Travel Assistance Program (TAPS) offers free travel on BC Ferries and discounted air travel when authorized by a doctor. These forms can be obtained from your Transplant Coordinator or your family doctor.

Another important factor to consider when donating a kidney is financial remuneration during your recovery. If the donor has banked sick time or short-term disability benefits through work they will qualify for the sick benefits as described by the plan. The fact that this may be a voluntary medical procedure does not disqualify the donor from receiving benefits. If a donor has no sick benefits through work, but has made contributions to the unemployment insurance program, they should be eligible to receive up to 15 weeks of medical benefits provided the donor meets the number of qualifying hours of work in the past year. Medical unemployment insurance benefits may be up to 55% of the maximum insured weekly earning.

In situations where donors have no sick benefits through work or they do not qualify for medical unemployment insurance, an application for loss of income subsidy benefits can be made through the Living Organ Donor Expense Reimbursement Program. All sources of funding must be considered before LODERP will provide funds for loss of income. For individuals who are self-employed, an application for the loss of income subsidy benefits can be made, but proof of income must be provided.

Obtaining relief from loan or mortgage payments during the recovery period will depend on whether the donor has loan insurance and/or on the discretion of the banking institution. A letter from the Transplant Team, describing the procedure and supporting the donor's request, may make a difference.

The support of family and friends will assist in preparing for surgery and recovery. Support can reduce healing time and will contribute to an overall sense that the decision to be a donor is the right one. On a more practical level, family and friends may help with some cooking and housekeeping after the donor's discharge from hospital. As with all other similar surgeries, a nephrectomy is considered an acute illness and therefore housekeeping support is not available through the Provincial Long Term Care Program. Some people choose to hire a private homemaker temporarily during the recovery period if their financial situation allows this. There are some meal and grocery delivery programs available, about which your Transplant social worker can provide information.

THE POST-DONATION EXPERIENCE

The period leading up to donation may be very intense. There will be medical tests and appointments and frequent contact with the Transplant Team. There may be practical affairs to arrange such as leave from work, short-term disability applications to be completed and perhaps child-care arrangements to be made. The donor usually spends a lot of time talking about the donation with friends and family and a sense of anticipation is normal.

Many donors report feeling a sense of relief after surgery, watching the recipient recover with restored kidney function may give the donor a sense of satisfaction and well being while recovering from the surgery. Donors often feel a very strong conviction that they made the right decision and express a desire to speak with other donors about their experience.

Occasionally, donors report experiencing a sense of let-down or disappointment, particularly in rare cases where the transplant is not entirely successful or the donor or recipient experience complications and a prolonged recovery. The let-down that some donors experience usually does not last long and disappears with regained strength. It often helps if the donor discusses the experience with family and friends, and it may be helpful to talk about these feelings with the Transplant Team.

PHASES OF DONOR ASSESSMENT

If you or someone you know is interested in donating a kidney, initial screening will be carried out over the phone or in person. A potential donor must be a least 19 years of age. There is no upper age limit for donors as physiological age is more important than chronological age. You will be asked to complete a medical and social history questionnaire to determine if you have any health issues which may exclude you as a donor. Information shared between the donor and the transplant centre is confidential, and test results will only be given to the donor. Information will be shared with the recipient and other family members only if permission to do so is given by the donor. It is important that the donor and recipient maintain good communication throughout the process.

Potential donors must be evaluated to make sure he or she is healthy enough to donate and it is safe to proceed. The assessment proceeds in a stepwise fashion and includes blood and urine samples, medical imaging and interviews with the donor transplant team.

The assessment is carried out in the following order:

- Step 1: Compatibility tests
- Step 2: Laboratory and x-ray studies
- Step 3: Transplant team evaluation and medical imaging

STEP 1: COMPATIBILITY TESTING

It is important to determine whether the potential donor and the recipient have compatible **blood types**. You can find out what your blood type is by doing a simple blood test which can be arranged by the transplant coordinator.

There are four major blood types: A, B, O and AB.

Recipient Blood Type	Compatible Donor Blood Type
A	A or O
B	B or O
AB (universal recipient)	A, B, AB, or O
O	O (universal donor)

The Rhesus factor, or positive and negative part of your blood, is not important in organ donation.

If the donor and recipient are not blood group compatible, they can be considered for the **National Paired Exchange Program.**

If the donor and the recipient are blood type compatible, **tissue typing and a crossmatch** will then be arranged by another simple blood test. The purpose of these tests is to determine if your tissue is compatible with the recipient.

In some situations the recipient may have a **positive crossmatch** which could decrease the chance of a successful transplant. If this is the case, the donor and recipient can be considered for the **National Paired Exchange Program,** and your doctor or transplant nurse will discuss options with you. A **negative crossmatch** decreases the chance of rejection.

In some circumstances, the recipient may have **antibodies** to the donor blood which decrease the chance of success. If this is the case, the donor and recipient pair may be considered for the **National Paired Exchange Program.**

Prior to the transplant, the compatibility testing is repeated to ensure the result has remained negative.

The National Paired Exchange Program makes it possible for incompatible pairs to proceed with transplantation despite a positive crossmatch or antibodies, by exchanging kidneys with donor-recipient pairs who are likewise not directly compatible with each other. Non-directed or anonymous donors are also part of this program. See information included in this package.

STEP 2: LABORATORY AND X-RAY STUDIES

The following is a brief description of the some of the tests you will be required to do as part of your donor assessment. These tests may take a number of months to complete and some will be done with the help of your family doctor. Most testing can be done at a laboratory close to the home or work place. If the potential donor lives in a different province or country than the recipient, the Transplant Coordinator will make alternate arrangements for the testing to be done. Some tests need to be done twice, and additional testing may be required if any of the test results are abnormal.

Test	Purpose
Viral Screening: Hepatitis B, C, Syphilis HIV, West Nile Virus (seasonal) (blood test)	Check for viruses which may be transmitted to the recipient.
Electrolytes, kidney function, liver function, complete blood count, clotting tests, cholesterol and triglycerides (blood test)	These tests are done to ensure all blood levels are normal.
Blood sugar	This test screens for diabetes or impaired glucose tolerance. You may also be asked to do a 2-hour glucose tolerance test.
Urine testing	Two urine samples will be required to determine if there is any blood, protein, or bacteria in your urine.
Electrocardiogram	A tracing of your heart rhythm is done to make sure it is normal.
Blood pressure readings	Three blood pressure readings will be requested through your family doctor's office.
Pap smear	Required for all women who are sexually active, or have ever been sexually active. If you have had a hysterectomy you may not need a pap.
Mammogram	Required for all women >40 years.
Chest x-ray	This test is done to ensure that your heart and lungs appear normal.

STEP 3: TRANSPLANT TEAM EVALUATION AND MEDICAL IMAGING

If the results of the testing are within normal range and the donor wishes to continue with testing, appointments are made in Vancouver with members of the Transplant Team.

Members of the Transplant Team Include:

- **Transplant Nephrologist (Kidney Specialist)**
- **Transplant Urologist (Surgeon)**
- **Clinical Coordinator**
- **Social Worker**

The potential donor will meet with the Clinical Coordinator and also with the Social Worker. The doctors will ask you for a detailed medical history and will perform a physical exam. This is an excellent opportunity to discuss the benefits of donating a kidney, the risks, and the recovery time to ensure you are making an informed decision.

Consultations with a Transplant Psychologist and an independent physician may also be arranged.

Additional imaging tests are booked in Vancouver:

Abdominal Ultrasound	The ultrasound is done to ensure that the organs of the abdomen appear normal and healthy. The kidneys will be measured.
Pelvic Ultrasound	A pelvic ultrasound will be scheduled for women. The purpose is to ensure that the female internal organs are healthy.
Renogram	This test is done in the nuclear medicine department at the Vancouver General Hospital. During this test, a tracer is injected into the bloodstream and flows into the kidneys. A scanner detects the tracer and shows how well the kidneys are functioning and if one kidney is working harder than the other. This test takes a few hours.
CT Angiogram	A **3D Spiral CT angiogram** scan is the final radiology test routinely required for the donor evaluation. The procedure for this test involves an intravenous injection of contrast agent. The result of this test, in combination with functional imaging, will determine which kidney will be used for donation.

After the living donor evaluation is complete all of the tests and information will be carefully reviewed. Donation can proceed only if all the tests, medical examinations and other consultations indicate that it would be a safe procedure. If there are any concerns that donating a kidney puts the donor at risk beyond usual accepted risks (surgical risks are described in a later section), donation will not be possible. The primary objective of this intense donor workup is to identify possible health conditions which may eventually compromise a donor who has only one kidney remaining.

If the donor is declined for any reason, the recipient will be told that the donor is not suitable. Specific reasons for turning down the donor are not disclosed unless permission is granted to do so.

In some circumstances, the donor may meet the medical criteria, but decides that they do not want to donate for various reasons. It is important not to feel pressured by others to donate, and to make a well informed decision. If at any time a potential donor decides not to proceed with donation, the donor assessment team will provide assistance in notifying all parties involved via a discreet and sensitive manner.

SURGICAL ASPECTS OF KIDNEY DONATION

A donor nephrectomy is considered a major operation. The most important consideration when planning this surgery is the safety of the donor. The following is a review of the surgical aspects of live kidney donation.

A. PLANNING THE OPERATION

Every donor operation is unique and there are many different factors that need to be considered when planning the operation. One of the first decisions to be made is which kidney to remove; the right or the left. If one of the kidneys appears to be smaller than the other or provide less function than the other, then this smaller kidney would be preferred for donation. In other words, the donor would be left with the "better" kidney, while still providing an excellent kidney to the recipient. If medical evaluation suggests the two kidneys are identical in size and function then the arterial anatomy (seen on the CT scan x-rays) will determine which kidney is preferred.

After the donor and recipient are approved for surgery, **choosing a date** for the surgery requires some discussions between the donor, recipient, surgeon, nephrologist and transplant coordinator.

B. PRE-ADMISSION OR PRE-ASSESSMENT CLINIC

An appointment will be arranged with the Pre-Admission Clinic at **Vancouver General** Hospital, where the surgery will be performed. The main purpose of this appointment is to prepare for the day of surgery and the donor's hospital stay. A nurse will go over any questions the donor may have.

An anaesthesiologist will discuss the events which occur on the day of surgery and pain control following the operation.

C. THE SURGICAL TEAM

The actual operation is performed with the help of a number of individuals. There is an anaesthesia team led by the attending anesthesiologist who will stay with the donor from the time they come in the operating theatre until the time they wake up and are stable in the recovery room. The anaesthesiologist is responsible for administering and monitoring the general anaesthesia. The anaesthesiologist may also be involved in postoperative pain management **(Section G)**.

D. THE ANAESTHETIC

The operation is performed while the donor is under a general anaesthetic. After the patient is anaesthetized, an endotracheal tube will be placed in the patients' windpipe and the donor will be placed on a mechanical ventilator for the duration of the procedure. An intravenous needle will be placed in one of the veins in the forearm in order to administer fluids, painkiller and antibiotics. At the end of the operation, as the anaesthetic wears off, the endotracheal tube is removed and the donor will breathe normally.

E. THE OPERATION (DONOR NEPHRECTOMY)

The donor nephrectomy operation may be performed as an **Open, Flank** incision or by a minimally invasive procedure called **Laparoscopic Nephrectomy**. The type of incision will be determined by the surgeon during the final stage of your pre-transplant assessment. Laparoscopic nephrectomy is currently the most common approach.

Laparoscopic surgery **(also know as "keyhole surgery", Diagram 1)** is performed by insufflating the abdomen with gas and manipulating the tissues with narrow instruments that are passed through small punctures in the abdominal wall. The instruments are used to free the kidney up and tie off the blood vessels which supply the kidney with blood. The surgeon then removes the kidney through a short incision about 8-10cm long, below the belly button on the pubic bone (much like for caesarean sections). After the kidney is removed, absorbable stitches are used to sew the strength layer of the lower abdomen back together, usually no muscle is cut during this type of incision. The skin is closed with fine absorbable sutures; they absorb by themselves within 6 weeks. The length of the surgery is approximately three to five hours.

The benefits of Laparoscopic surgery come from avoiding the incision through the flank muscles used as for Open Nephrectomy surgery. Also, open flank incisions often require manipulation of the lower ribs and may even require removal of the 12th rib in order to work on the kidney. Compared to patients who underwent Open Flank Nephrectomy, donors who had a Laparoscopic Nephrectomy reported a significant reduction of pain, and enjoyed a shortened recovery time. Most surgeons quote an approximately 5% chance of open conversion when starting a an operation laparoscopically, meaning that there is a 5% chance of converting the operation to a standard Open Flank Incision to complete the operation if the Laparoscopic approach does not seem to be going according to plan; this is the attending surgeon's decision at the time of the operation. Despite the very short stay in hospital, laparoscopic kidney donation is as big or bigger operation compared to open flank nephrectomy, and patients are cautioned against excessive activity in the first 6 weeks following either operation. Additionally, it is recommended that patients not drive motor vehicles within the first 2 weeks following the operation due to potential for accidents caused by sudden discomfort while driving.

F. INTRA-OPERATIVE AND POST-OPERATIVE RISKS

A 1992 review of the safety of the donor operation reported that there have been 17 donor deaths worldwide as a direct result of the operation in approximately 60,000 operations since the mid 1960's. The estimated risk of dying as a result of the donor operation is therefore 0.03%. Most of the deaths occurred in the 1960's and 1970's and were a result of blood clots that traveled from the leg veins to the lungs (pulmonary embolisms).

RISK OF SURGICAL COMPLICATION FROM LAPAROSCOPIC NEPHRECTOMY	
Heart Attack/Cardiac Arrest	< 0.02%
Pulmonary Embolism (blood clot travelling to the lung)	< 0.1%
Venous Thrombosis (blood clot in the leg (s))	< 0.5%
Bleeding requiring a blood transfusion	< 0.5%
Injury to bowel, spleen, liver, pancreas	< 0.5%
Post-Operative pneumonia	1-2%
Post-Operative urinary tract infection	1-2%
Post-Operative wound infection	1-2%
Areas of skin numbness around incisions	2-5%
Chance of conversion from Laparoscopic Nephrectomy to Open Nephrectomy	2-3%
OTHER RISKS	
Post-operative pain for 1-3 weeks	Universal
Post-operative nausea for 24-48 hours	Very common
Post-operative constipation for 1-2 weeks	Very common
RISK OF ANAESTHETIC COMPLICATIONS	
Injury to teeth, pharynx, larynx during intubation	< 1%
Allergic/Adverse reaction to the anaesthetic	< 1%

Diagram 1: Normal Renal Anatomy

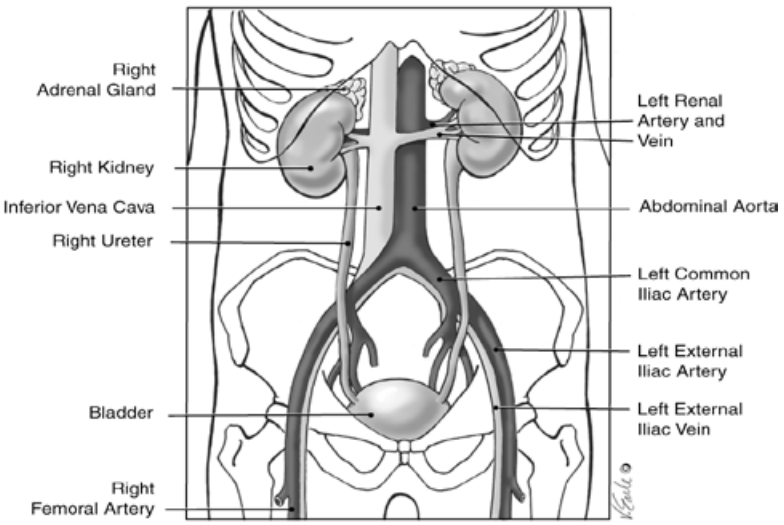


Diagram 2: Laparoscopic Donor Nephrectomy

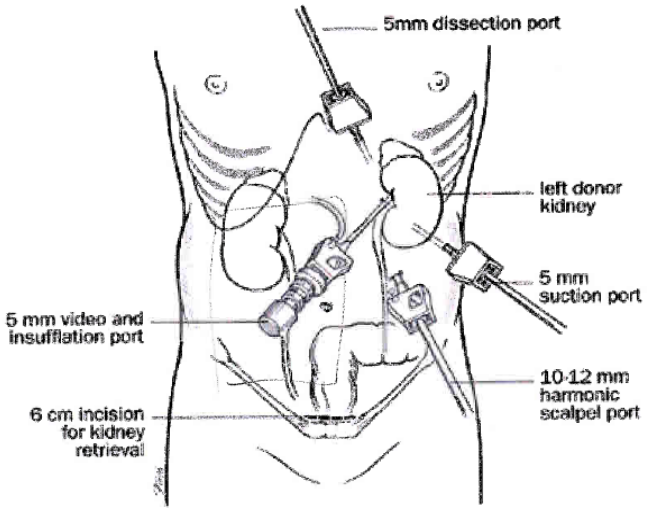
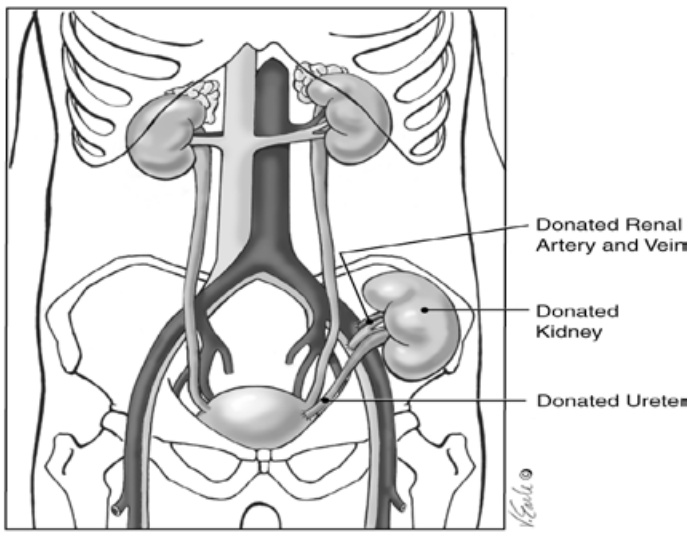


Diagram 3: Transplanted Kidney



G. POST-OPERATIVE PAIN CONTROL

Pain is a 'complication' of surgery that is unavoidable but it is also something that can be well controlled with appropriate **analgesics (painkillers)**.

One option for pain control is called **patient-controlled analgesia (PCA)**. This involves the use of a machine which delivers a controlled dose of intravenous narcotic when the patient pushes a button when they have pain. The machine does not allow overdose of drug and has been shown to match the amount of painkiller more closely to the degree of pain experienced than traditional delivery methods.

A second technique is called **epidural analgesia** and this involves placement of a small flexible plastic catheter into the space around the spinal cord. Painkillers are infused through the catheter via pump after the operation, and this blocks the pain signals coming from the incision. The narcotics do not block normal sensation or motor function so the patients can walk around with the epidural catheter still in place. The epidural is reserved for patients undergoing an open flank incision and is not used in laparoscopic surgery.

These days, donors who undergo laparoscopic donor nephrectomy are given a "super aspirin" called Toradol in the intravenous for postoperative pain control. This drug is not a narcotic and is stopped the day after surgery, to be transitioned to extra strength Tylenol. More often than not, donors are discharged without any narcotic pain killers at all.

The choice of pain control is largely up to the patient although some people with prior back surgery or back problems may not be good candidates for the epidural catheter. The intravenous narcotics do have some side effects such as nausea, drowsiness and itchy skin. There is no risk of narcotic addiction developing in the few days that the drugs are administered

H. THE IN-HOSPITAL RECOVERY

Typically, a kidney donor remains in hospital for between **two to three** days following laparoscopic donor surgery. Hospital stay may be more prolonged in those undergoing open approaches. The evening after surgery, most patients are drowsy or fatigued so they stay in bed until the following morning. Nausea and dry mouth/thirst are sometimes experienced. A nurse will monitor the vital signs, urine output and level of pain. A catheter drains the urine from the bladder so the patient does not need to go to the washroom. Pain is controlled by one of the methods outlined above.

The day after surgery, the donor is asked to mobilize to a chair for short periods of time. A physiotherapist will be available to assist in recovery by demonstrating deep breathing and coughing exercises and movement post-surgery. The donor may walk around, if pain control is adequate and typically is able to eat regular food in small amounts by dinnertime. The catheter in the bladder is removed in the morning and voiding habits are monitored.

The second day after surgery, the donor is encouraged to walk as much as possible. If the patient feels well and the bloodwork parameters are within expected patterns, the donor may leave the hospital with the knowledge that they are to "take it easy" for a number of weeks postop.

I. THE FIRST TWO MONTHS AFTER SURGERY

The skin incision may appear to be well healed although the muscles and fascia underneath are still healing and knitting together for about eight weeks after surgery. It is **very important to avoid straining** these abdominal and flank muscles during this healing period as they are vulnerable to stretching and may develop permanent weakness resulting in a hernia. We encourage walking and light activities as soon as the donor is able but there should be no heavy exercising, stretching or physical labour until eight weeks has passed. Many people start driving around ten days after discharge from hospital but it is important not to drive while you are taking narcotic pain medication such as Tylenol #3. Some donors return to work around three to four weeks after surgery if the job does not involve much physical activity, however most people go back to work between **six and eight** weeks after surgery. The donor's kidney function will be checked **two to three** months after the opeation.

J. LONG-TERM FOLLOW-UP

It is important that donors are seen on an annual basis by the transplant team or family practitioner for a blood pressure measurement and laboratory tests to monitor kidney function and to ensure the single kidney is working well

LONG TERM HEALTH OF THE DONOR

Live donor kidney transplantation has been performed since the late 1950's. Donors from this early period have been evaluated in several long-term follow up studies to document the safety of the procedure. There has been no evidence that kidney donation leads to any medical problems, even 30 years after the operation. Several studies have shown that there is no increased incidence of hypertension, renal disease, cancer, heart disease or diabetes among former kidney donors as compared to the general population. Some studies have found that up to 30% of kidney donors may develop protein in the urine 10 to 20 years after donation but this protein is not associated with any long-term kidney problems.

The follow-up outlined in section "J" is important. Hypertension (high blood pressure) and diabetes occur in the general population. If kidney donors develop hypertension or diabetes later in life, renal problems may develop if appropriate medical treatment is not given. As a donor, you should make a commitment to maintaining a healthy lifestyle which includes regular exercise, maintaining a healthy weight, limiting your intake of salt, and eating a healthy diet. We encourage the donors to be physically active and this includes returning to most recreational activities such as skiing, snowboarding, running, soccer, hockey, rugby etc. although it is advisable to wear protective gear for contact sports. There are a few activities that may be considered high risk for someone with one kidney including skydiving, boxing, competitive martial arts and highly competitive or professional contact sports. Life insurance and disability insurance rates should not be affected as long as the donor's overall kidney function is still normal, but you should check with your Insurance Provider. If you have any concerns regarding activity or future career plans, please discuss them with the Transplant Team.

Many women are concerned about **future pregnancies** and whether kidney donation will complicate the pregnancy or delivery. The medical evidence available suggests that there is no additional risk to a former kidney donor's kidney function if she becomes pregnant. Likewise, having a solitary kidney does not appear to interfere with a woman's chances of becoming pregnant or delivering a healthy baby. It is recommended to avoid trying to get pregnant for six months after surgery. If a former kidney donor does become pregnant, we generally recommend an ultrasound of the kidney during the first and third trimesters to verify that the kidney is healthy during the pregnancy.

Thank you for your interest in the **Living Donor Kidney Program**. If you have any questions or concerns, we will be pleased to discuss them with you.

Living Donor Nurse

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