

Strategies In Surgery

Transplant Services Providing Excellent Patient Survival Outcomes

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Improvements in renal and/or pancreas transplantation management have made more patients with kidney failure candidates for transplantation. Transplantation offers several advantages to the patient including longer life, better quality of life and freedom from dialysis and/or insulin. The one-year patient survival rates after transplantation are 95 percent and the one-year organ survival rate is around 90 percent. After the first year, annual mortality is about one percent per year for patients. The one-year patient survival rates for kidney/pancreas transplantation are just a few percentage points less than those for the kidney alone.

The average functional duration of a donated kidney ranges from 10-18 years, depending on the source of donation. The need for immunosuppression is ongoing during the lifespan of the kidney, and the patient must remain in contact with his/her physicians and the transplant program throughout this time to monitor graft infection and side effects of immunosuppressants.



Transplant surgeons Ronald A. Squires, M.D., (left) and Larry R. Pennington, M.D., (center), are part of the OU Physicians transplant team.

The OU Physicians transplant program offers several advantages. The program is involved in current research and has access to a broad range of clinical specialists immediately available to provide excellent patient care.

One- and three-year survival rates for both the organ(s) and the patient are closely monitored by a central credentialing agency, the United Network for Organ Sharing (UNOS). UNOS is a non-profit, scientific and educational organization that administers the nation's only Organ Procurement and Transplantation Network (OPTN).



Transplant team members Ronald A. Squires, M.D., (left), and Puneet Sindhwani, M.D.

TRANSPLANT TEAM

The OU Physicians transplant program provides a team effort. The transplant team is comprised of three surgeons (two general surgeons and a urologist), five nephrologists, four transplant coordinators, a social worker and a financial counselor. Each of these team members communicates and coordinates care with the patient, dialysis center and referring physician.

The transplant team provides comprehensive and timely communication to the referring physician regarding the patient's care. The goal is to successfully return the patient to his/her referring physician following transplantation. Management of the immunosuppression is shared, with the level of our involvement depending on the experience and desires of the referring physician. Natural transition points occur at six months, one year and three years.

ADVANTAGES OF TRANSPLANTATION

The OU Physicians transplant team offers kidney, kidney-pancreas, pancreas after kidney and pancreas alone transplants. Survival with a renal transplant is better than for those on dialysis. With a renal transplant, the one-year patient mortality is less than five percent for the first year and less than one percent for each year after that. The mortality on dialysis is up to 10 to 15 percent per year.

If the patient is a Type 1 diabetic, combining the transplantation of a kidney with a pancreas, a pancreas after kidney transplant or even a pancreas alone offers freedom from the need for insulin injection as well as freedom from the risk of hypoglycemia or diabetic coma. It also broadens the diet and stabilizes or prevents the occurrence of secondary complications of diabetes.

PRE-TRANSPLANT EVALUATION

Following referral, a pre-transplant evaluation will be conducted. This includes a thorough history and physical with appropriate blood work, annual review and monthly antibody testing while the patient waits for an organ. The patient is thoroughly evaluated to ensure successful outcomes for both the patient and the organ. The referring physician notifies the transplant team of any major health events the patient may experience, especially the occurrence of a myocardial infarction or development of a malignancy.

Patients accepted to the program range from 16 to 75 years of age, are on dialysis, or have an impending need for dialysis. They must be in reasonably good health. Patients with end stage heart, liver or lung disease, and those with active or recent cancer are excluded.

PATIENT EXPENSES

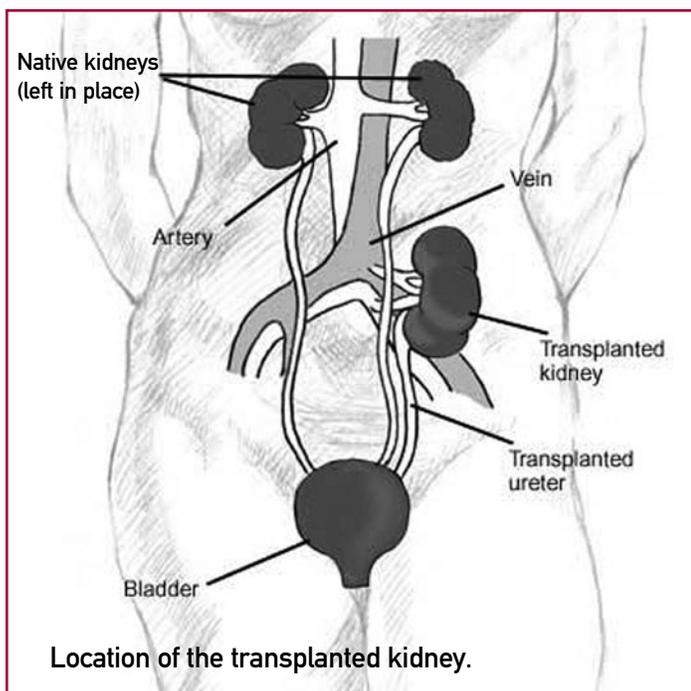
Medicare covers 80 percent of the costs of renal transplantation. The cost of medications is largely covered by Medicare for the first three years. We actively assist patients before listing them to assure medications are available after transplant.

AVOIDING COMPLICATIONS

The OU Physicians transplant team begins by selecting good quality organs. The selection of the organ always involves the referring nephrologist and the transplanting surgeon.

The technical complication rate for OU Physicians is below the national average. Rejection and infections are the most common postoperative problems encountered. Renal function is carefully monitored with blood work. Infections are prevented with prophylaxis and then treated on an occurrence basis. About 10 to 15 percent of patients will have an episode of acute rejection, but the vast majority respond to treatment of pulsed steroids (70 percent) or antithymocyte globulin (90 percent of those not responding to steroids).

The most common serious infections are viral with cytomegalovirus or polyoma virus. Fortunately, we have good antiviral therapy for cytomegalovirus. Therapy for polyoma virus is still under development.



Long-term graft dysfunction occasionally is a problem and is brought on by chronic graft rejection or allograft nephropathy from the medications used to prevent rejection. This often can be managed by altering the immunosuppressive regimen.

DONOR OPTIONS

Once a patient is accepted for transplantation, a donor is sought. If the recipient has a living donor available -- related or unrelated -- the wait is shorter and the donated organ is of better quality. If no living donor is available, the candidate is placed on the UNOS waiting list and kidneys are dispersed to active candidates based on blood type, human leukocyte antigen match, waiting time and the proximity of the donor and recipient. A kidney from a living donor gives the recipient and the transplanted organ a longer life. We offer both open and laparoscopic donation. The advantages and disadvantages of these options are discussed with the potential donor.

Waiting time for an organ from a deceased donor now averages almost three years in Oklahoma. The time spent waiting for each individual patient is difficult to predict. It can range from a few months to five years and is not controlled by the local transplant program. Waiting time depends on the availability of donor organs that match the recipient.

Historically, most kidneys originated from deceased/ cadaveric and unrelated donors. Recently, however, more than half of the kidneys originate from living donors.

Living donors may be either related or non-related. Usually a strong emotional tie connects donors and patients, especially if they are not biologically related.

Living donor organs offer many advantages. These include:

- The living donor kidney is the best quality kidney that a patient can receive because the donor can be tested thoroughly prior to transplantation.
- Living donor kidneys last longer. Half of living donor kidneys transplanted today will still be functioning 16 to 18 years from now, whereas half of cadaveric kidneys will fail in the first 10 to 12 years.
- The living donor kidney can be transplanted immediately. The waiting time for a cadaveric kidney is often three to five years.
- Most living donor kidneys function immediately after transplantation, while 20 percent of cadaveric kidneys do not function well initially, but improve over time.
- The living donor has his/her own team of physicians and surgeons to focus on his/her overall health and the safety of the procedure.

It is true that living related donors are closer matches to the intended recipient than an unrelated donor. However, modern immunosuppression overrides almost all of this advantage and the survival of organs from living, unrelated donors is excellent and considerably better than an organ from a deceased donor. The half-life of a deceased donor organ is 10 to 12 years and 16 to 18 years for a living donor organ.

THE PROCEDURE

Once an organ is offered, the recipient's referring nephrologist is called and the organ offer plus the current condition of the recipient are discussed. If the organ is acceptable and the recipient is healthy, the patient is called to the hospital.

After the patient is admitted, he/she receives a thorough evaluation in preparation for surgery. A four-hour blood screening test (crossmatch) is done to ensure initial compatibility between the donor and recipient. If the recipient needs dialysis, that is done.

If the crossmatch is negative, the procedure commences. Storage times for donated kidneys are kept under 24 hours if at all possible. The time to reperfusion may be extended to 36 hours but usually not beyond that. The procedure takes about four hours, including pre-anesthesia time, and is well tolerated. The new kidney is connected to the iliac artery and vein as depicted in the figure on the previous page. Mortality is almost zero for

the transplant procedure, barring a heart attack or stroke. The patient is ambulatory the day after surgery and is encouraged to start eating. He/She is physically ready to go home by day five but usually stays seven to 10 days so the team can adjust medications and get him/her and the new kidney off to a good start.

Immunosuppression starts before the transplant with blocking antibodies, steroids and mycophenolate mofetil. It is continued after transplantation with the addition of cyclosporine or tacrolimus, and the antibodies are stopped after day four. The recipient continues on three drugs initially to prevent rejection (cyclosporine or tacrolimus, mycophenolate mofetil and prednisone) as well as medication to prevent some common viral infections, fungal and bacterial infections.

The immunosuppressive regimen is tailored to each patient's needs: i.e., those with a history of rejection versus older patients or those who may have a weaker immune system. Several options are now available. Short courses of antibody infusion (ATGAM, Thymoglogulin, OKT3) are occasionally given for specific indications. Other frequent options include giving Rapamycin instead of Mycophenolate Mofetil if a stronger approach is required.

Later, immunosuppression is reduced as the patient and the new organ grow more tolerant of each other. We have experience with steroid and cyclosporine or tacrolimus withdrawal as dictated by individual patient needs.

A strong bond is created between the patient and the transplant coordinator giving the patient and the referring nephrologist access to local resources. An OU Physician is always available. Resources provided by the coordinators include assistance getting medications, answering simple questions or referral to other medical services as necessary. A deliberate attempt is made to help the patient in finding medical resources locally.

After transplantation, the patient is seen frequently by the transplant team early on but care is transferred back to the referring nephrologist for long-term maintenance. The transplant team is always just "a phone call away" and will continue to monitor the patient and his/her new kidney indefinitely.

REFERRING TO OU PHYSICIANS TRANSPLANT TEAM

Type 1 diabetic patients who might benefit from transplantation and patients with renal failure and on dialysis or with impeding dialysis may be referred to the OU Physicians transplant team by their primary care physician, nephrologist or endocrinologist. Once a referral is made, the patient's transplant coordinator arranges all appointments, tests and evaluations. The results of these evaluations are then brought to a committee who will review them and determine transplant candidacy. This process often requires a couple months to complete.

Additional reading

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Additional information on pancreatic transplantation can be found in *Strategies in Surgery – A Cure for Diabetes*; 2005; Squires, R.A.; a copy can be seen at: www.ouhsc.edu/surgery/Strategies.asp



www.ouhsc.edu/surgery
www.ouphysicians.com

Referrals can be made by calling the transplant center directly at 405-271-7498.