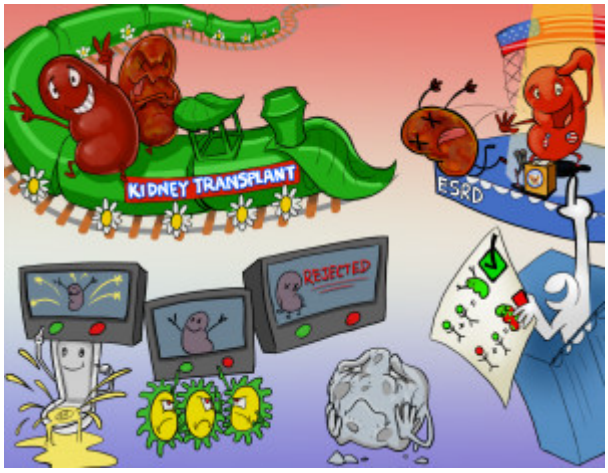
Kidney Transplant

Kidney transplant is a surgical procedure indicated to replace a diseased kidney with a healthy kidney along the iliac crest (extraperitoneal). Indicated for patients with end-stage kidney disease, candidacy for kidney transplants is selective and requires close compatibility. After the surgery, the patient is closely monitored for signs of rejection and infection. Immunosuppressants are administered to minimize the risk of kidney transplant rejection. Monitoring the patient's urine output is critical for determining the development of acute tubular necrosis. The high disparity between kidney transplant supply and demand results in kidney transplantation in less than 4% of individuals requiring a donor kidney.



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Indications

End Stage Renal Disease (ESRD)

End of Stage Kidney Diseased

Kidney transplants are indicated for patients with end-stage kidney disease in stages 4-5. In the late stages of the disease, the kidneys are no longer able to properly remove waste and excess water from the body. Diabetes and hypertension are common causes of end-stage kidney disease. Refer to the Picmonics on "Chronic Kidney Disease Early Symptoms Assessment," "Chronic Kidney Disease Late Symptoms Assessment," and "Chronic Kidney Disease Interventions" for additional information.

Considerations

Selective Candidacy

Selecting Presidential-candidate

Kidney transplant recipient selection is critical for successful results. After a thorough evaluation, selective candidacy is determined based on medical and psychosocial factors. A kidney transplant may be contraindicated in individuals who are morbidly obese or continue to smoke despite smoking cessation interventions. Patients with cardiovascular disease or diabetes are considered high-risk and require close evaluation. Other factors that affect the patient's likelihood of transplant selection include a history of malignancy, infection, HIV, or hepatitis B/C. Histories of noncompliance and substance abuse are also contraindicating selection factors.

Close Compatibility

Compatibilities-chart

Establishing close compatibility of the recipient with the donor kidney is critical in minimizing rejection complications. Compatibility procedures include crossmatching, antibody screening, and tissue typing. A negative crossmatch indicates no preformed antibodies are present, and transplantation is safe to proceed. A positive crossmatch indicates incompatibility because the recipient's antibodies will immediately react against the donor's cells.

Immunosuppressants

Moon-suppressed

Immunosuppressive therapy is critical to prevent rejection of the transplanted kidney. Since transplant recipients must take immunosuppressants for the rest of their lives, the side effects of many immunosuppressant drugs increase the risk of toxicity (refer to the Picmonic on "Cyclosporine (Sandimmune) Mechanism" and "Cyclosporine (Sandimmune) Side Effects"). Examples of immunosuppressants include tacrolimus (Prograf), corticosteroids (prednisone, methylprednisolone), mycophenolate mofetil (CellCept), and sirolimus (Rapmune). The doses of immunosuppressive drugs are decreased over time.

Monitor for Rejection

Monitor Rejecting

Organ rejection is a major complication of kidney transplantation. Symptoms of rejection include decreased organ function, presenting as decreased urine output. Additional indicators of kidney rejection include pain or swelling at the operative site, fever, and flu-like symptoms. Acute rejection occurs within one year of transplantation, while chronic rejection caused by fibrosis of the transplanted kidney tissue's blood vessels manifests years after transplantation.

Monitor for Infection

Monitor Infectious-bacteria

Surgery and immunosuppressive drugs increase the kidney transplant recipient's risk of infection. Underlying systemic illnesses such as diabetes and older age also suppress the body's normal defense mechanisms. Manifestations of bacterial infection include fever, elevated white blood cell count, malaise, wound discharge, and tenderness at the operative site. Other causes of infection may be fungal or viral.

Monitor Urine Output

Monitor Urinal

After undergoing a kidney transplant, the recipient's urine output should be closely monitored to determine proper kidney functioning. Typically with the establishment of blood supply to the transplanted kidney, large volumes of urine output occur, as much as 1 L/hr. This output gradually subsides as creatinine, BUN, and electrolyte levels return to normal. However, a significant percentage of transplant recipients experience acute tubular necrosis (ATN) due to prolonged cold times leading to ischemic damage. Kidney function may take several weeks to take effect until ATN resolves. While waiting for the donor kidney to start working, the recipient will require dialysis.